IN THE SUPREME COURT
OF THE VIRGIN ISLANDS
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S. CT. CIV. NO. 2022-0118

IN THE SUPREME COURT OF THE UNITED STATES VIRGIN ISLANDS

MILTON A. BURT,
Appellant/Plaintiff,

v.

LOCKHEED MARTIN CORP.,
GLENCORE, LTD.,
Appellees/Defendants

On Appeal from the Superior Court of the Virgin Islands
Division of St. Croix
Superior Court No. SX-2021-CV-00548

SUPPLEMENTAL APPENDIX TO THE JOINT BRIEF OF APPELLANT, VOLUME 9 OF 10

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EXHIBIT 99

Expert Report of Nelhs Betancourt, MD, MPH, DABT, for Miguel Velez, March 21, 2020

OCCMED

Nelhs Betancourt, MD, MPH, DABT
Internal Medicine
Occupational Medicine
Toxicology

March 21, 2020

Burns Charest, LLP
365 Canal Street, Suite 1170
New Orleans, LA 70130
ATTN: Mr. Jacob Gower & Mr. Martin Barrie

Patient's Name:	Miguel Velez
SSN:	[redacted]
DOB:	[redacted]
Job Title:	Heavy Equipment Operator
Evaluation Date:	January 15, 2009
Reviewed, revised:	March 21, 2020

MEDICAL RE-EVALUATION
File Review and Update

At your request, I evaluated the above-mentioned patient. More recently I received additional records and updated reports for my review, which I have included herein.

I am pleased to present this report with my opinions regarding the effects of the work exposure, the prognosis and an interpretation of the testing results.

HISTORY AS RELATED BY THE PATIENT (2009):

Mr. Velez is a 46-year-old male examinee originally born in St. Croix in 1962. His father was a Harvey Alumina employee and his mother was a housewife. The examinee denied a history of diabetes, hypertension, liver problems, stomach ulcers, cancer, Parkinson's, allergies, kidney disease or arthritis. He is not taking any medications at this time.

Before he was hired in 1982 by Martin Marietta, the examinee worked part-time for Aquablast Water for approximately a year. He was hired by Martin Marietta in 1982 and worked there until 1985.

The examinee started working at the bauxite shed, utilizing heavy equipment-a bulldozer to shove bauxite into a hole in the ground that would deposit it inside the pit. In addition to operating heavy equipment in the shed area, the examinee also worked part-time in maintenance. He repaired and changed valves, he also worked in the carpentry shop. Sometimes he was assigned to the process of descaling some of the large vessels.

Eventually, he became a full-time heavy equipment operator and operated a variety of heavy machines. He usually wore a hat, glasses, a coverall and boots. He had the option of wearing a paper dust mask.

Martin Marietta closed in 1985. The examinee went on to operate heavy equipment for a variety of companies clearing land.

In 1990 he returned to work for VIALCO, now performing heavy equipment operation in the shed area. The company closed again 1995, and St. Croix alumina hired him to work on a "mud lake", performing some cleaning and trench digging. He worked for them until 1999.

In 1999, the examinee left St. Croix alumina to work for Bechtel, operating a crane. After that he worked for GEC in general construction, building houses and operating a backhoe to prepare the land.

The examinee refers two bouts of chest pain in the past. The first episode happened around April of 2008 while he was preparing a birthday party. The pain was localized to the mid chest area and lasted for several minutes. It did not radiate to the neck or upper extremity areas; the examinee described the pain as oppressive in character. There was no nausea, vomiting, fainting, loss of consciousness or palpitations. He was not hospitalized and did not seek medical attention. He had a less severe episode more recently, which was self-limiting. The examinee thinks that he is having "gas", and has not paid much attention to his symptoms. He was encouraged to have it checked by a physician soon. The examinee has a negative history of congenital heart disease, mitral valve prolapse, valvulopathy, or arrhythmias. He has never been diagnosed with an acute myocardial infarction.

There is no history of hemoptysis. The examinee is complaining of difficulty breathing and a frequent, dry cough. This problem started approximately one year ago. He refers shortness of breath at rest and with activity. He also provides a history of wheezing occasionally, especially when he has a "cold". The wheezing has been present for many years. He refers dyspnea on exertion, mostly generated by moderate physical activity, for example negotiating one flight of stairs. The examinee denied a history of allergies, and there is no family history of bronchial asthma or allergies. He has a history of obstructive sleep apnea and snoring.

There is a negative history of tuberculosis, bronchial asthma, emphysema, chronic obstructive pulmonary disease, cancer, sinusitis, bronchitis, pneumonia, pulmonary embolism or deep venous thrombosis. He has never been diagnosed with connective tissue disorders, has a negative history of chest surgery or significant chest trauma. He does not remember having been treated with prednisone or inhalers in the past.

The examinee denied a history of working with pottery, ceramics, cotton, birds or in the textile, smelting or mining industries. There is no history of sandblasting, cement milling, stonecutting, masonry or working in the typesetting, printing or graphic arts industry. The examinee denied working in commercial painting, electronic manufacturing/assembly, dye manufacturing, in the pharmaceuticals or explosives industry. He has never been employed as a gas station attendant, automobile repairman or dry-cleaning employee.

The examinee gave a history of profuse sweating and dizziness.

The examinee complains of heartburn. There's a history of surgery to the stomach area due to peptic ulcer disease and another one to correct a hernia and was diagnosed six years ago. There is no history of recent gastrointestinal bleeding, vomiting of blood, chronic diarrhea or constipation, jaundice, hepatitis, black, tarry stools, chronic constipation or diarrhea or unexplained weight loss.

Social Security Administration Itemized Report of Earnings: Spanning January 1982-December 2001.

CURRENT COMPLAINTS (2009):

Shortness of breath on exertion.

PAST HISTORY; PERTINENT FINDINGS (2009):

Smoking history: The examinee smokes cigarettes. He started smoking at the age of 16 years old and currently consumes, on average, three quarters of a pack of cigarettes on a daily basis. He denied smoking pipe tobacco or cigars. There are no household smokers, and he specifically denied that his spouse is a smoker.

Drinking: The examinee drinks alcoholic beverages sporadically.

Illegal Drugs: The examinee smoked marijuana for five years, starting at the age of 17 years old. Most of marijuana use was during weekends at parties. Denies use of cocaine or amphetamines.

Family History: Family history significant for cancer. Both parents are alive and in their 60s. His father was diagnosed with cancer. The examinee has one brother and one sister, in apparent good health.

Allergies: None.

Hobbies: None listed.

Surgical history: PUD and abdominal hernia.

REVIEW OF RECENTLY AVAILABLE MEDICAL RECORDS (2020):

Duplicate Records:

11/13/14-Refill Authorization Request. Curant Health Florida, LLC.
05/07/15-Laboratory Report. Governor Juan F. Luis Hospital.
09/25/09-X-ray of Chest by Dr. Andre Galiber, Jr. at Governor Juan F. Luis Hospital & Medical Center.
02/22/16-Refill Authorization Request by Illegible Signature.
03/24/16-Refill Authorization Request by Illegible Signature.
07/12/16-Refill Authorization Request by Dr. Shavell Ahleen Karel.
08/11/17-Laboratory Report.
03/29/11-Laboratory Report.
06/29/11-X-ray of Left foot by Dr. Andre Galiber, Jr.
09/01/10-Procedure Report by Dr. Michael P. Potts/Krstyn A. Lake, C.N.A.
08/24/10-X-ray of Chest by Dr. Andre Galiber, Jr.

Undated	Illegible Signature. Government of the Virgin Islands of the United States/Virgin Islands Department of Health. Drug Use Justification. Examinee with persistent shortness of breath/chest tightness relieved by Albuterol, but now require daily. Needs controller with daily Albuterol. Current Meds: Qvar 80 mcg and Flovent 110 mcg. (There is illegible information on this page.)
Undated	Problem List. Past Medical History: Hypertension. History of ulcer. Questionable bleeding, status post surgery in 2004. History of tobacco abuse. Dyspnea. Pulmonary function test, questionable sleep apnea. Negative catherization in 2010. Left lower extremity edema, negative deep venous thrombosis 2010. Diabetes mellitus 2010. (There is illegible information on this page for review.)
Undated	Illegible Signature. Frederiksted Health Care, Inc. Referral Form. (Poor Quality Image.)
Undated	Illegible Signature. Frederiksted Health Care, Inc. Referral Form. (Poor Quality image.)
Various	Frederiksted Health Care, Inc. Medication Sheet. Examinee’s medication sheet from 06/11/10 to 06/23/11 was documented. Ordered Zestoretic 20/25 mg, Keflex 500 mg, Albuterol, ELASA 8 mg, Wellbutrin XL 150 mg, Glucophage 500 mg, Claritin 10 mg and Qvar 80 mg.
04/20/03	Governor Juan F. Luis Hospital. Laboratory Report. Complete Blood Count, Automated. WBC: 16.7. RBC: 4.29. HGB: 13.0. HCT: 39.4.
06/18/08	Illegible Signature. T&G Pulmonary Services. Pulmonary Function Report

(Pre-Summary). Vitals: Height: 69. Weight: 300 lbs. Impression: SAO2: 97%. FVC: Function: Pred. FV (L): 4.88. % Pred: 81%. FEV1 (L): 3.94. % Pred: 83%. FEV1/FVC: 0.81. PEFR (L/S): 9.05. % Pred: 65%. FEF25-75% (L/S): 3.96. % Pred: 91%. Pre: Question the sawtooth pattern on expansion and inspiration limbs suggestive sleep apnea. FRC/SVC: Function: FVC (L, BTPS): 4.88. % Pred: 81%. RV (L, BTPS): Pred: 1:38. % Pred: 28%. RC (L, BTPS): Pred: 3.36. % Pred: 63%. V (L, BTPS): Pred: 1.98. % Pred: 88%. LC (L, BTPS): Pred: 6.83. % Pred: 84%. V/TLC: Pred: 0.28. % Pred: 110%. C (L, BTPS): Pred: 3.46. % Pred: 104%. Quil time (min): Measure: 1.49. DLCO: LCO (ml/m/mm Hg): Pred: 36.49. % Pred: 91%. LCO/VA: Pred: 5.52. %Pred: 109%. A (L, BTPS): Measure: 5.53. V (L, ATPD): 3.19. HT: Measure: 10.21. (Poor Quality Image).

08/25/08 Dr. Coralee Lewis, Diagnostic Radiology. Imaging Center, PC. X-ray of the Lumbar spine revealed minimal degenerative changes. No fracture or dislocation.

09/25/09 Dr. Andre Galiber, Jr, Diagnostic Radiology. Governor Juan F. Luis Hospital & Medical Center. X-ray of the Chest revealed to be normal.

09/25/09 Governor Juan F. Luis Hospital. Emergency Department Notes. At 22:48, Examinee's blood drawn, 20 G SL in right hand and sent to lab. Given Aspirin 81 mg. At 22:57, Nitro 0.4 mg SL was given and pain level was rated as 8/10. At 23:05, Examinee's pain level was rated as 1/10. Nitro 0.4 mg SL was given. Vitals: BP: 119/69. HR: 80. At 23: 58, Toradol 30 mg IVP was given for head dizziness. Examinee's chest pain was gone.

09/25/09 Governor Juan F. Luis Hospital. Laboratory Report. Complete Blood Count, Automated. RBC: 4.52. MCH: 32.5. Monocyte #: 1.0.
Coagulation Study. PT: 12.6. INR: 1.08. PTT: 28.4.
Complete Metabolic Panel. Glucose: 147. Triglycerides: 290.
BNP Triage Panel. Troponin I: Less than 0.05.

09/26/09 Governor Juan F. Luis Hospital. Emergency Department Notes. At 00:59, Examinee felt much better, and dizziness was just about to go. At 01:39, Examinee rested quietly, regular respiratory. At 02:25, Labs drawn from SL for cardiac panel repeat. At 03.26, SL discontinued cannula intact, and no pain or bruising. Examinee was discharged in stable condition.

09/26/09 Dr. Park Hwajong, Emergency Medicine. Emergency Department Notes. Examinee complained of short of breath/respiratory distress. Diagnosis: Chest pain. Rx: HCTZ 25 mg. Plan: Follow up with a cardiologist, follow up or choose a medical doctor, stop smoking and work on losing some weight.

09/26/09 Governor Juan F. Luis Hospital. Laboratory Report. Triage Panel.

	Troponin I: Less than 0.05. D-Dimer was performed and the value was found to be within normal range.
06/09/10	Frederiksted Health Care, Inc. Acknowledgment of Receipt of Notice of Privacy Practices for Protected Health Information. Examinee has received a copy of Frederiksted Health, Inc/Frederiksted Health Center/Ingeborg Nesbitt Clinic's current notice of privacy for protected health information on 06/09/10.
06/09/10	ECG revealed sinus rhythm. Normal ECG. Mild pain in left chest. No ischemic changes.
06/09/10	Consent Form. Examinee had consented for The Frederiksted Health Care, Inc to provide him or his family with medical care.
06/09/10	Illegible Signature. FHC, Inc. Adult Medicine Problem Focused Visit. Examinee complained of chest tightness, difficulty breathing, feet swollen, back pain also has a "Form to fill". Examinee had a bump on left hand and could not move sometimes. Examinee had asbestosis. In 2008 pulmonary function test with FEV1/FVC >80%. DLCO 91%. Examinee noted chest pain intermittently for 6 months, described mild pain now chest pain which resolved after a while with rest. Social History: History of tobacco abuse 8-10 years. Alcohol consumption. Review of systems was significant for fatigue, exertional, weight gain, shortness of breath/DOE x 6 months, and pulmonary edema x 6 months. On 2 pillows. Vitals: BP: 162/102. Weight: 322 lbs. Pulse: 83. Temperature: 98.0. RR: 24. Oxygen Saturation: 96%. General examination revealed Examinee was obese, and morbid. Unable to access neck. Abdominal examination revealed to be obese. Respiratory examination revealed normal breath sounds and excursion. Examination of extremities revealed 2+ pedal edema in bilateral knees. Diagnosis: Chest symptoms likely multifactorial significant edema. Dyspnea on exertion. Endo. Treatment: Given wound shot. Plan: Ordered to check labs. Follow up in 2 weeks. (There is illegible information on these pages for review.)
06/10/10	Quest Diagnostics, Inc. Laboratory Report. Comprehensive Metabolic Panel with EGFR. Glucose: 166. Urinalysis, Complete. Color: Dark yellow. Occult Blood: 1+. RBC: 10-20.
06/11/10	Illegible Signature. FHC, Inc. Progress Note. Follow up in 2 months. (There is illegible information on this page for review.)
06/23/10	Illegible Signature. FHC, Inc. Adult Medicine Problem Focused Visit. Examinee presented for routine follow up. Complained of intermittent pain to left breast region for a while, but has been constant for 3 days now.

Examinee noted improved shortness of breath and was able to walk a bit more since last seen. Examinee noted pain in left chest from morning to night. Review of systems was significant for no orthopnea. Vitals: BP: 135/85. Weight: 318 lbs. Pulse: 75. Temperature: 98.9. RR: 22. Oxygen Saturation: 97%. General examination revealed decreased shortness of breath, and able to ambulate. Respiratory examination revealed faint end expiratory wheezing and chest tenderness. Diagnoses: Chest symptoms. Examinee has had multiple ER visits. No Troponins seen. Doubt IV process. Lumbar spine pain now constant. Pulmonary problems. Abscess. Rx: Keflex. Aspirin. Plan: Apply heat x 20 minutes x 2 weeks. Add ELASA. Follow up in one month. (There is illegible information on these pages for review.)

07/26/10 Illegible Signature. FHC, Inc. Adult Medicine Problem Focused Visit. Examinee complained of left foot pain and swelling; lab results; tightness in chest. Examinee tried inhaler. Abscess resolved since last visit. Examinee noted pain in left heel with walking. Vitals: BP: 133/69. Weight: 317 1/2 lbs. Pulse: 82. Temperature: 98.6. RR: 20. Oxygen Saturation: 97%. Examination of respiratory system revealed normal breath sounds and excursion. Extremity examination of left heel tenderness and right leg pitting edema. Diagnosis: Cardiovascular check. Heel pain. Plan: Ordered complete blood count, lipid panel, urinalysis, ECG, basic metabolic panel and HgbA1c and sonogram. Requested ice. Referred to cardiologist. Follow up in 2 months. (There is illegible information on these pages for review.)

07/27/10 Quest Diagnostics, Inc. Laboratory Report. Lipid Panel. Triglycerides: 177. Basic Metabolic Panel with EGFR. Glucose: 101. Hemoglobin A1c: 7.0. Complete Blood Count. White Blood Cell Count: 11.5.

08/09/10 Dr. Andre Galiber, Jr. Governor Juan F. Luis Hospital & Medical Center. Left lower extremity venous doppler revealed to be normal.

08/24/10 Dr. Michael P. Potts, Cardiology. Government of the Virgin Islands/Governor Juan F. Luis Hospital & Medical Center. History and Physical. Examinee presented to the emergency room because of shortness of breath and anterior chest tightness. Examinee related a history of hypertension for approximately one year and at least a 4 to 5-year history of reported chronic lung disease related to lifelong history of heavy tobacco usage and reported asbestos and industrial exposure. Examinee experienced stable exertional shortness of breath with occasional anterior chest tightness for quite some time. Exertional chest tightness was not on a consistent basis. Examinee’s coronary risk profile was significant for hypertension and obesity. Social History: Chronic tobacco user. Stopped over the last 6 months by history. Current Meds: Zestoretic 20/25 mg and albuterol inhaler. Review of systems was significant for history of peptic ulcer disease, mild occasional joint discomfort, occasional lower extremity edema more in the left leg than the right and recurrent episodes of wheezing. Vitals: BP: 154/73. Temperature: 97.4. HR: 74. RR: 20. Examination of the extremities revealed trivial ankle edema. Laboratory Data: Admitting labs so far have revealed normal troponin levels x2. ECG x2 without acute ischemic changes. Admitting Diagnoses: Chest pain, rule out acute coronary syndrome. Chronic obstructive lung disease by history with bronchospasm. Hypertensive cardiovascular disease. Obesity. Long-term tobacco abuse. Plan: Examinee was admitted to the progressive care unit and would maintain constant telemetry monitoring. At this point, activity would be advanced to out of bed and chair and bedside commode. Continue with nasal oxygen to maintain an oxygen level by saturation of greater than 92%. Continue with Lisinopril, Nitroglycerin and Enteric-Coated Aspirin. Because of Examinee’s risk factor and recurrence of symptoms, right and left heart catheterization would be tentatively scheduled for tomorrow morning.

08/24/10 Dr. Angelo Galiber, Diagnostic Radiology. Governor Juan F. Luis Hospital & Medical Center. X-ray of the chest revealed the heart is normal in size. The lung fields and pulmonary vascular distribution are normal. The lung volumes are slightly shallow.

08/24/10 Governor Juan F. Luis Hospital. Emergency Department Notes. At 09:35, Examinee arrived to the emergency room complaining of chest pain and shortness of breath/very diaphoretic at this time/taken immediately to room 11/ECG done at bedside/IV heplock in place/blood drawn sent to lab/MD at bedside. At 09:35, 324 mg Aspirin chewed. Oxygen at 4L/min via NC. At 09:45, 18 gauge IV started in left hand. Blood drawn and to lab. CPP running at point of care. At 09:48: Nitro 0.4 mg SL given per order. At 09:53: Examinee’s pain decreased to 8. 2nd nitro 0.4 SL. At 09:58: Pain decreased to 6. Nitro 0.4 SL #3. At 10:08, Albuterol/Atrovent via nebulizer and Morphine 2 mg IV per order. At 10:10, Solu-Medrol 125 mg IV per order. At 10:12, Portable chest x-ray completed. At 11:00, Albuterol/Atrovent via nebulizer. At 11:15, Combivent given per aerosol nebulizer. At 11:30, DuoNebs given. At 11:45, DuoNebs given. At 11:55, DuoNebs given. At 12:20, Albuterol nebs given. At 12:40, DuoNebs given. At 13:00, Albuterol nebs given. At 15:20, Report called to charge nurse on PCU, Examinee transferred to PCU per stretcher.

08/24/10 Governor Juan F. Luis Hospital. Laboratory Report. Complete Blood Count, Automated. MCV: 94.3. MCH: 32.3. Monocytes: 14.0. Monocyte #: 1.2.
Coagulation Study. PT: 12.8. INR: 1.11. PTT: 26.4.
Complete Metabolic Panel. Glucose: 140. Triglycerides: 274. Total Protein: 8.3. AST/SGOT: 64. ALT/SGPT: 61. LDH: 815.
CK: 232. Triage Panel. At 10:05, Troponin I: Less than 0.05. At 19:40,

	Troponin I: Less than 0.05.
08/25/10	Dr. Michael P. Potts. Governor Juan F. Luis Hospital. Admit Note. Examinee was admitted yesterday. Examinee complained of dyspnea on exertion with occasional anterior chest tightness. Pain has recurred since admission. Active Problems: Chest pain, rule out acute coronary syndrome. Chronic obstructive pulmonary disease with bronchospasm. Hypertension. Tobacco abuse. Vitals: BP: 154/73. Temperature: 97.4. Pulse: 67. RR: 22. Plan: Requested telemetry. Prescribed Lisinopril/NTG/ASA and Albuterol Nebs. Recommended morning right and left heart catherization; echocardiogram.
08/25/10	Governor Juan F. Luis Hospital. Laboratory Report. Complete Blood Count, Automated. WBC: 14.9. RBC: 4.48. MCV: 94.6. MCH: 32.8. Differential Neutrophils: 83.0. Differential Lymphocytes: 16.0. Differential Monocyte: 1.0. Complete Metabolic Panel. Glucose: 159. Albumin: 3.7. Troponin I: Less than 0.05.
08/26/10	Dr. Michael P. Potts, Cardiology. Governor Juan F. Luis Hospital. Medicine Provider Note. Chest pain free and no further wheezing. Oxygen saturation was ok, on room air. Echocardiogram was normal. Unable to perform cardiac cath today. Diagnoses: Pain in limb. Radiological exam, not elsewhere classified. Plan: Right and left heart cath as outpatient next week. Discharge home today.
08/26/10	Violet V. Roach Herbe, R.N. Governor Juan F. Luis Hospital. Nurse Notes. NPO this am for procedure was cancelled. Dr. Potts examined him and wrote orders for discharge and instructions. Heplock was taken out and Examinee left the unit via wheel chair accompanied by staff in no distress.
09/01/10	Dr. Michael P. Potts. Virgin Islands Cardiac Center/Governor Juan F. Luis Hospital and Medical Center. Procedure Report. Procedure Performed: Left heart cardiac catherization. Impression: Normal coronary arteries.
09/28/10	Illegible Signature. FHC, Inc. Adult Medicine Problem Focused Visit. Examinee still complained of shortness of breath. Since last seen, had visits with Dr. Potts apparently. Examinee still has shortness of breath and wheeze at night. Examinee noted increased sneezing. Inhaler helped shortness of breath. Heel pain continues. Dry cough x one month. Examinee noted had cold x 2 weeks. Vitals: BP: 142/83. Weight: 319 lbs. Pulse: 79. Temperature: 98.3. O2 Saturation: 96%. General examination revealed smells of cigarette smoke. Examination of respiratory revealed normal breath sounds and excursion. Diagnoses: Dyspnea. Paroxysmal nocturnal dyspnea and sleep apnea, tobacco abuse. Examinee complained of dyspnea and continued to smoke. Cough. Plan: Ordered fasting glucose 75 g. Discontinue tobacco. Recommended trial of Wellbutrin. Needs

tobacco cessation. Follow up with Dr. Cook. Follow up in one month. (There is illegible information on these pages for review.)

10/13/10 Quest Diagnostics, Inc. Laboratory Report. Glucose Tolerance Test. Fasting Specimen: 105. 1 hour specimen: 204. 2 hour specimen: 216.

10/22/10 Illegible Signature. FHC, Inc. Adult Medicine Problem Focused Visit. Examinee presented to review labs with physician. Examinee has diabetes mellitus, on recent labs. Examinee noted significant changes since last visit, felt better. Examinee has stopped smoking. Noted decreased cough and dyspnea. Vitals: BP: 118/73. Pulse: 66. Temperature: 98.2. Oxygen Saturation: 97%. Weight: 310 lbs. Examination of respiratory revealed normal breath sounds and normal excursion. Diagnoses: Cardiovascular, excellent blood pressure. Diabetes mellitus. Tobacco cessation. Cough resolved, symptoms improved. Plan: Continue Aspirin. Start low dose of Glucophage. Recommended weight loss. Ordered labs. Decreased Wellbutrin. Follow up in 2 months. (There is illegible information on these pages for review.)

11/04/10 Illegible Signature. FHC, Inc. Podiatry Progress Note. Examinee complained of pain to instep on left foot for more than 6 months. Past Medical History: Diabetes mellitus. Hypertension. Vitals: Weight: 308 1/2 lbs. Temperature: 98.2. Assessment: Pain in left heel for last three weeks. Diabetes mellitus. Hypertension. Pain was excoriating. Medial pleuritic of right heel. Treatment: 1% Lidocaine injection and Marcaine given. Examinee tolerated procedure well. Follow up in one week. (There is illegible information on these pages for review.)

12/09/10 Illegible Signature. FHC, Inc. Podiatry Progress Note. Examinee complained of pain to left foot. Vitals: BP: 117/66. Weight: 301 lbs. Temperature: 98.1. Pulse: 80. Assessment: Heel pain, left greater than right. Examinee has hypertension, and diabetes mellitus. Rx: Medrol Dosepak. Plan: Referred to leg specialist. (There is illegible information on these pages for review.)

12/28/10 C. Whyte, R.N. FHC, Inc. Adult Medicine Problem Focused Visit. Examinee complained of difficulty breathing; chest tightness, Albuterol helped. Examinee continued to lose weight and noted increased sneezing. Examinee continued not to smoke. On blood pressure medications, rule out dizziness. Vitals: BP: 104/73. Weight: 302 lbs. Pulse: 68. Temperature: 98. Oxygen Saturation: 95%. Laboratory Report: HgbA1c: 6.0. Examination of respiratory revealed normal breath sounds and excursion. Diagnoses: Cardiovascular. Shortness of breath. Health management. Treatment: Flu shot given. Follow up in 3 months. (There is illegible information on these pages for review.)

03/01/11 Dr. Dante P. Galiber, Cardiology. The Heart Center. Spirometry Report. Impression: Normal spirometry.

03/25/11 Dr. Risa Nielson, Internal Medicine. Frederiksted Health Care, Inc. Office Visit. Examinee presented with pain to left back, diabetes and abscess. Pain to left back for more than a month, more pain when getting out of bed. Examinee has to wait before stepping off when awakens and has applied BenGay with mild effect. Examinee was checking glucose at home, but no diary brought in. A1c in good range. Examinee noted returns of bumps under arm and groin again with slight tenderness. Never used Keflex given before-used “black paste” from friend. This time has not worked. Vitals: BP: 136/90. Weight: 310 lbs. Temperature: 98.3. Pulse: 67. RR: 20. Pulse Oximetry: 96%. Examination of respiratory revealed lungs clear to auscultation. Integumentary examination revealed few scattered pustules in left axilla. Assessment: Diabetes, type II, well controlled. Backache, not otherwise specified. Other specific Dermatoses. Rx: Naprosyn and Keflex. Plan: Recommended antibacterial soap to prevent recurrence. Also recheck with Examinee links between recurrence and increased weight. Ordered to check microalbumin, hemoglobin Glycated, BMP, TSH. Requested to apply ice. Follow up in 3 months.

03/29/11 Quest Diagnostics, Inc. Laboratory Report. Creatinine, Random Urine: 427. Basic Metabolic Panel with EGFR. Glucose: 109.

05/05/11 Dr. Lan Cook, Podiatry. Frederiksted Health Care, Inc. Office Visit. Examinee presented with bilateral foot pain. Pills and steroids only provided temporary help. Chronic Problems: Calcaneal spur. Tenosynovitis foot/ankle. Vitals: BP: 127/71. Weight: 311 lbs. Temperature: 99.0. Pulse: 75. Examination of foot/ankle revealed moderate hindfoot and tenderness over ankle posterior. Examination of skin revealed moderate, posterolateral ankle swelling. Assessment: Bilateral foot pain. Pain in limb. Tenosynovitis foot/ankle. Calcaneal spur. Treatment: Fracture care/casting/strapping was performed. Examinee tolerated the procedure well. Plan: Advised to keep clean, dry and intact.

06/23/11 Dr. Risa Nielson. Frederiksted Health Care, Inc. Office Visit. Examinee presented with diabetes mellitus/hypertension. Dizziness for one year, worsening and occurs daily associated with nausea. Examinee described it as an imbalance. Symptom was aggravated by getting out of bed. It would occur episodically-maybe 1 or 2 days per month. However, this month noted daily symptoms. Symptoms occurred with changing position with lying down or getting out of bed. Examinee also noted upper respiratory infection 2 weeks ago. Examinee also complained of throbbing constant and worsening foot pain x 6 months radiating to the left hip. The pain was aggravated by walking. Associated symptoms include limping night-time awakening swelling and tingling in the arms and legs and limping. Above hx was inaccurate. Examinee had seen Dr. Cook and taping was done for same; Examinee has been wrapping and presented in improper footwear and no bandage noted. Noted symptoms were left greater than right. Also increase in weight noted. Vitals: BP: 145/82. Weight: 315 lbs. Temperature: 98.3. Pulse Ox: 95%. Pulse: 76. Examination of respiratory revealed lungs clear to auscultation. Examination of musculoskeletal revealed heel tenderness to palpation on sides, no plantar tenderness. Assessment: Diabetes mellitus 2, uncontrolled. Pain in limb. Shortness of breath, improved. Dizziness and giddiness. Plan: Must wear proper shoes at all times. Examinee requested x-ray. Ordered, but also need to follow recommendation for wrapping area consistently. Still requires inhalers. Trial of Meclizine both to treat any possible Eustachian tube dysfunction that caused present symptoms. Consider imaging if persists. Ordered HgbA1c, home device. Follow up in one month.

06/29/11 Dr. Andre Galiber, Jr. Juan F. Luis Hospital & Medical Center. X-ray of the left foot revealed there is a small spur seen at the plantar tendon insertion site. There is no evidence of a fracture or dislocation.

08/10/11 LabCorp. Laboratory Report. Complete Metabolic Panel, 14. Glucose: 124. Chloride: 96.
Complete Blood Count, without Differential/Platelet. WBC: 11.8.
Lipid Panel. Triglycerides: 222. HDL Cholesterol: 39. VLDL cholesterol: 44.

PSA was performed and the value was found to be within normal range.

09/26/11 Dr. Robert Thompson, Internal Medicine. Frederiksted Health Care, Inc. Office Visit. Examinee presented for follow up for foot pain and shortness of breath; hx of asthma but also has increase weight over past 5 years; was sometimes worse at night; pain to joints in hands and a bump to the back of his neck, painful. On poor diet. Examinee has labs and x-ray to review. Vitals: BP: 142/83. Weight: 316 lbs. Temperature: 98.4. Pulse: 78. RR: 20. Abdominal examination revealed to be obese. Examination of respiratory revealed normal to inspection. Lungs clear to percussion and auscultation. Assessment: Diabetes mellitus type II. Shortness of breath. Gastroesophageal reflux disease. Plan: Trial of Reglan 10 mg. Advised weight loss and exercise, and low carb.

10/21/11 Governor Juan F. Luis Hospital. Emergency Department Notes. At 11:47, Examinee complained of midsternal chest pressure radiating through back, shortness of breath, dizziness, and nausea yesterday.
At 11:54, Examinee was placed in room 9 on cardiac monitor and 2 LNC, MD notified of Examinee, ECG called.
At 12:07, ECG taken. Examinee on monitor/21 of O2 via NC. 18 g IV placed to laceration. Blood collected for labs. CPP in progress.

Cardiac cath done in September 2010. At 12:29, GI cocktail given per order. At 13:00, Chest x-ray taken by tech. At 14:01, Examinee expressed relief. Vital signs stable. Awaiting labs. At 17:57, Examinee discharged. Heplock removed. Examinee was stable and left unit ambulatory. Diagnoses: Chest pain. Esophageal reflux.

10/21/11 Governor Juan F. Luis Hospital. Laboratory Report. Complete Blood Count, Automated. RBC: 4.18. Hgb: 13.1. HCT: 38.0. MCH: 31.3. Basophil: 0.1.

Coagulation Study. PT: 13.6. INR: 1.23. PTT: 29.0.

Basic metabolic panel was performed and the values were found to be within normal range.

11/23/11 Dr. Robert Thompson. Frederiksted Health Care, Inc. Office Visit. Examinee presented for diabetes follow-up. Examinee stated that he was in the Emergency department a couple of days ago and was diagnosis with gastroesophageal reflux disease. Examinee had occasional pain in the left knee, but was very happy that he lost 22 lbs since last visit. Vitals: BP: 108/66. Weight: 294 lbs. Temperature: 98.5. Pulse: 88. RR: 18. Respiratory examination revealed normal inspection. Lungs clear to percussion and auscultation. Musculoskeletal examination revealed left knee has tenderness. Assessment: Gastroesophageal reflux disease. Diabetes, type II. General Osteoarthrosis. Rx: Lisinopril-Hydrochlorothiazide 20-25 mg, Ventolin Hfa 90 mcg, Metformin Hcl 500 mg, and Reglan 10 mg. Plan: Continue swim and exercise. Ordered A1c glycosylated Hb, home device.

11/27/11 Dr. Angel A. Lake, Internal Medicine. Governor Juan F. Luis Hospital. History and Physical. Examinee complained of headache, chest pain with diaphoresis. Examinee presented to the emergency department with complaints of posterior headache for 20 minutes, dizziness; Examinee was very diaphoretic complained of shortness of breath chest tightness and midsternal chest pain. Examinee was placed on 2 L of nasal cannula oxygen given 25 mg of Aspirin and SL Nitroglycerin with resolution of his chest pain. Prior to coming to the emergency Examinee had a net syncopal event. Examinee’s pain was extremely diaphoretic as a substernal chest pain radiating to his left arm, with numbness and tingling of the arm. Examinee felt lightheaded and dizzy. Examinee had shortness of breath with midsternal chest pain radiating to the back shortness of breath dizziness and nausea. Given a gastrointestinal cocktail in the cannula oxygen electrocardiogram was done and Examinee was discharged home. In 2010 Examinee again had a chest pain acute coronary syndrome. Diabetes mellitus type II, obesity, and long-term tobacco use but quit, hypertensive cardiovascular disease, chronic atrophic pulmonary disease by history, and chest pain, question of asbestos exposure and gastroesophageal reflux disease. Echocardiogram dated 08/26/10: Right heart size normal, no wall motion abnormalities, normal left ventricular size and normal left ventricle systolic function. Past Surgical History: Examinee underwent cardiac catheterization as an outpatient. Stated cardiac catheterization was within normal limits abdominal surgery for stomach ulcer. Social History: Quit smoking and alcohol use several years ago. Presently not working. Review of systems was significant for weakness or fatigue, headaches, blurred vision, shortness of breath with exertion, chest pain, generalized weakness, muscle weakness and diabetes. Vitals: BP: 110/70. Temperature: 97.9. Pulse: 60. RR: 20. Pulse Oximetry: 96%. General examination revealed Examinee was obese. Examination of HEENT revealed mouth was moist and pink with maxillary dentures, mandibular dentures missing. Examination of lungs revealed clear to auscultation and percussion bilaterally. Examination of extremities revealed lower extremities, trace edema bilaterally. Examination of musculoskeletal revealed strength, proximal and distal strength was 4/5 bilaterally. Grip strength of the right arm was 4 minus/5 of the left 5/5 lower extremity dorsal flexion, plantar flexion, and proximal distal strength are 4/5 bilaterally. Diagnostic Data: X-ray of the chest revealed no infiltrates noted. CT scan of the brain revealed no infarctions. Diagnoses: Chest pain. Bradycardia. Obesity. Hypertension. Diabetes mellitus type II. PPI history of ulcer. Rule out myocardial infarction. Rx: Aspirin 5 mg. Norvasc 10 mg. Plan: Recommended 2 g cardiac diet. Twelve-lead electrocardiogram pneumonia and telemetry monitoring. Recommended weight loss. Examinee does not recall medication a 2 g sodium diet was ADA 1800 kilocalorie. Requested 18 diet, Accu-Cheks a.c. and each bedtime and insulin sliding scale. Hold Metformin. Recommended Humulin 70/30 5 units subcutaneously and Lovenox 40 mg. Continue to monitor. Recommended hemoglobin A1c, fasting lipid profile, DVT prophylaxis. Prescribed Tylenol when necessary. Recommended fasting lipid profile, control heart rate blood pressure and blood sugar estimated length of stay 3-5 days.

11/27/11 Governor Juan F. Luis Hospital. Laboratory Report. Complete Blood Count, Automated. RBC: 4.51. HGB: 13.6. HCT: 41.1. Basophil: 0.1.
Coagulation Study. PT: 13.0. INR: 1.14.
Triage Panel. At 10:34: Troponin I: Less than 0.05. At 19:00, Troponin I: Less than 0.05.
Basic metabolic panel was performed and the values were found to be within normal range.

11/28/11 Emerald A. Finney, LPN. Governor Juan F. Luis Hospital. Emergency Department Nursing Notes. At 00:00, Examinee was free, resting in bed on 2L NC and continued monitor. At 02:56, Examinee was sleeping in bed, on monitor. At 05:27, Morning labs drawn, urine collected. CPP running in department. No complaints, on cardiac monitor and 2L O2 via NC. At 10:14, NS initiated at 90 ml/hr. At 10:14, ASA 325 mg PO given. Protonix 40 mg PO given. Antivert 25 mg PO given. At 10:17, Lovenox 40 mg SQ given. At 17:50, Antivert 25 mg given. At 23:15, Examinee had no complained of dizziness or weakness. Examinee was asleep.

11/28/11 Dr. Angel A. Lake. Governor Juan F. Luis Hospital. Medicine Note. Examinee presented with substernal chest pain radiating to left arm with diaphoresis, dizziness. Low BP. Dizziness and lightheadedness with sitting up. Pain level rated as 0/10. Vitals: BP: 98/54. Temperature: 97.2. Pulse: 72. RR: 20. HR 58. Diagnoses: Chest pain. ; chest pain panel negative. Bradycardia. Obesity; Examinee was to work on weight loss. Hypertension. Diabetes mellitus type II. Dizziness and lightheadedness. DVT prophylaxis. PPI history of ulcer. Rx: Aspirin 5 mg. Plan: Recommended 2 g cardiac diet. ECG tele monitoring. Cardiology consultation. Recommended 2 g sodium diet was ADA 1800 kilocalorie and 1800 diet, Accu-Cheks a.c. and each bedtime and insulin sliding scale, hold Metformin, Humulin 70/30 5 units subcutaneously twice a day. Discontinue Norvasc 10 mg. Cardia, Orthostatic IVF 1/2 NS at 90ml/hr. Ordered hemoglobin A1c, fasting lipid profile. Prescribed Lovenox 40 milligrams subcutaneously daily.

11/28/11 Dr. Michael Potts. Governor Juan F. Luis Hospital. Cardiology Consultation. Examinee presented to the emergency room with dizziness, vertigo, and diaphoresis and chest pain. History of longterm hypertension, and non-insulin dependent diabetes mellitus. Normal coronary arteries and unremarkable. Vitals: BP: 98/54. Temperature: 97.2. Pulse: 72. RR: 20. Diagnostic Studies: ECG revealed normal sinus rhythm, no acute changes. Lab test was reviewed. Assessment: Dizziness, questionable due to hypoglycemia, low blood pressure questionable. Vertigo. Atypical chest pain. Hypertension-blood pressure low. Diabetes mellitus-blood sugar low normal. Plan: Recommended reassure regarding no evidence coronary artery disease. Adjust blood pressure a diabetic meds. Trial Meclizine.

11/28/11 Governor Juan F. Luis Hospital. Laboratory Report. Complete Blood Count, Automated. RBC: 4.26. Hgb: 12.9. HCT: 38.4. Monocyte #: 1.0.
Urinalysis, Macroscopic. Blood: Trace.
Triage Panel. Troponin I: Less than 0.05.
Comprehensive Metabolic Panel. Osmolality: 271.

11/29/11 Dr. Angel A. Lake. Governor Juan F Luis Hospital. Medicine Late Note. Examinee presented with substernal chest pain radiated to left arm with diaphoresis, dizziness. Monitor showed HR 58, low BP. No chest pain, and dizziness. Examinee has lightheadedness with sitting up. Vitals: BP: 116/65. Temperature: 99.2. Pulse: 102. RR: 26. Extremities examination revealed edema of left lower leg. Laboratory Data: Accu-Chek = 86.

Assessment: Chest pain. Bradycardia. Obesity. Hypertension. Diabetes mellitus type Il. Dizziness and lightheadedness. Rx: Antivert. Plan: Ordered 2 gram cardiac diet, 2 g sodium diet is ADA 1800 kilocalorie; hold Metformin; Humulin 70/30 5 units subcutaneously; DVT prophylaxis with Lovenox 40 mg subcutaneously daily; low-fat ADA, 2 g diet. Recommended weight loss.

11/29/11 Emerald A. Finney, LPN. Governor Juan F. Luis Hospital. Emergency Department Notes. At 08:10, Examinee resting comfortably, on cardiac monitor, took O2 NC off, would continue to monitor NS infusing at 90 ml/hr. At 09:11, Daily meds given. At 13:01, heplock removed, discharge instructions given to POT.

11/29/11 Dr. Angelo K. Galiber. Governor Juan F. Luis Hospital & Medical Center. CT scan of the head without contrast revealed to be normal.

11/29/11 Dr. Angel A. Lake. Governor Juan F Luis Hospital. Discharge Summary. History of Present Illness: Examinee presented to the emergency department with complaints of posterior headache for 20 minutes, dizziness. Examinee was very diaphoretic complained of shortness of breath chest tightness and midsternal chest pain. He was placed on 2 L nasal cannula oxygen given 25 mg of Aspirin SL Nitroglycerin with resolution of his chest pain. Prior to coming to the emergency he had a net syncopal event. The pain was extremely diaphoretic as a substernal chest pain radiating to his left arm, with numbness and tingling of the arm. He felt lightheaded and dizzy and also had shortness of breath. On 10/21/07, Examinee had midsternal chest pain radiated to the back shortness of breath dizziness and nausea. He was given a gastrointestinal cocktail in the cannula oxygen electrocardiogram was done and he was discharged home. In 2010, Examinee again had a chest pain acute coronary syndrome. Hospital Course: Examinee presented to the emergency department with chest pain, dizziness bradycardia. Examinee had a long-standing history of chest pain for which he had several admissions. He had a right heart catheterization which was negative which was completed by Dr. Potts. Dr. Potts was consulted for evaluation. Examinee was given Aspirin 325 mg, cardiac diet, electrocardiogram monitoring full bradycardia. Also advised to have weight loss. Given Norvasc 10 milligrams daily for his hypertension. Examinee was on a diabetic diet with human 7030 50 units subcutaneously twice a day and hemoglobin A1c and fasting lipid profile ordered. Examinee received deep vein thrombosis prophylaxis Pantoprazole for history of peptic ulcers. Examinee’s hemoglobin A1c showed him to have a hemoglobin A1c of 6, which was well controlled. Echocardiogram showed ejection fraction of 75 percent however he noted to have dilated left and right atrium as well as the right ventricle. When Examinee saw Dr. Potts on his story was more consistent with vertigo. He was given Antivert and his dizziness resolved. Received IV fluid hydration his bradycardia also resolved. Examinee was discharged home in stable condition. Vitals: BP: 110/70. Temperature: 97.9. Pulse: 60. RR: 20. Pulse Oximetry: 96%. HEENT examination revealed missing mandibular dentures. Extremity examination revealed trace edema in bilateral lower extremities. Musculoskeletal examination revealed proximal and distal strength is 4/5 bilaterally. Grip strength of the right arm 4 minus/5 of the left. Labs and radiologic studies were reviewed. Discharge Diagnoses: Chest pain. Bradycardia. Obesity. Hypertension. Diabetes mellitus type II. Vertigo. History of peptic ulcers. Plan: Ordered 2 g sodium 1800 kilocalorie ADA diet. Continued meds. Disposition: Examinee was discharged to home in stable condition.

01/23/12 Telephone Encounter. Requested refill of Metformin HCL, Lisinopril-Hydrochlorothiazide, Meclizine, Pantoprazole and Celebrex. Instructed to keep appointment on 02/13/12 with Dr. Caruthers.

01/23/12 Telephone Encounter. Requested refill of Metformin HCL, Lisinopril-Hydrochlorothiazide, Meclizine, Pantoprazole and Celebrex.

04/20/12 Dr. Laird Caruthers, Family Medicine. Frederiksted Health Care, Inc. Office Visit. Examinee complained of pain in the bottom of foot, needs refills, sometimes got tightness in chest. Examinee was a heavy equipment operator, unemployed for last three years, had map, got shortness of breath when he tried to work. Review of systems was significant for dyspnea, chest pain and edema. Current Meds: Lisinopril-hydrochlorothiazide 20/25 mg. Ventolin HFA 90 mcg. Vitals: BP: 121/64. Weight: 303 lbs. Height: 5’9”. Temperature: 98.0. Pulse: 72. Respiratory examination revealed symmetric chest, lungs clear to auscultation, no cough, respiratory effort normal. Left ankle examination revealed 1+ pitting edema. Cardiovascular examination revealed edema. Assessment: Diabetes, type II. Hypertension, unspecified. Gastroesophageal reflux disease. Obesity, morbid. Plan: Continue Metformin 500 mg, Lisinopril/HCTZ; advised diet and exercise; ordered A1c-glycosylated hb, home device.

04/20/12 Treatment Consent. Examinee certified that he has insurance coverage with Medical Assistance Program.

06/21/12 LabCorp. Laboratory Report. Comprehensive Metabolic Panel (14). Glucose: 110. Lipid Panel With LDL/HDL Ratio. HDL Cholesterol: 39. Hemoglobin A1c: 6.2.
Random urine microalbumin, TSH, and complete blood count with differential/platelet was performed and their values were found to be within normal range.

07/17/12 Dr. Laird Caruthers. Frederiksted Health Care, Inc. Office Visit. Examinee came for follow up on weight up 3 lbs, BMI 45, wants to exercise, had gone to the ocean, not clear how much exercise was getting, both feet hurt, especially in the morning, and anytime he stands up after sitting down. Review of systems was significant for bone/joint symptoms. Negative for cough, dyspnea and wheezing, chest pain and irregular heartbeat/palpitations. Vitals: BP: 126/89. Weight: 306 lbs. Height: 5'9". Temperature: 98.9. Pulse: 78. Chest examination remains the same as the previous visit. Assessment: Diabetes mellitus type 2, uncomplicated. Benign hypertension. Obesity, morbid. General osteoarthrosis. Plan: Continue Metformin 500 mg, Zestoretic 20/25; advised diet and exercise.

10/03/12 Dr. Luis Reyes Mercardo, Emergency Medicine/Robert L. Wiggins, RN. Governor Juan F. Luis Hospital. Emergency Department Notes. Examinee complained of discomfort to left ear and the pain level was rated as 5/10. No drainage at this time. Past Medical History: Hypertension and Diabetes mellitus. Ulcer, questionable. Current Meds: Metformin HCL 500 mg, Lisinopril 20 mg, Albuterol Sulphate 18 g and Auralgan. Vitals: BP: 142/75. Weight: 280 lbs. Height: 5'8". Pulse Oximetry: 95. Pulse: 66. Temperature: 98.9. RR: 20. Diagnoses: Otalgia. Plan: Referred to ENT. Disposition: Examinee was discharged to home in stable condition.

10/23/12 Dr. Laird Caruthers. Frederiksted Health Care, Inc. Office Visit. Examinee complained of bilateral ear pain for five days; seen in Emergency Room three weeks ago for left ear pain, given drops which fixed the problem; little exercise, weight up 9 pounds. Social Habits: Former smoker cigarettes1 per day. Review of systems was significant for bilateral otalgia. Vitals: BP: 147/76. Weight: 315 lbs. Height: 5'9". Temperature: 98.5. Pulse: 64. Ear examination revealed edematous, and erythematous bilateral canals. Rest of the exam remains the same as previous visit. Assessment: Diabetes mellitus type 2, uncomplicated. Benign hypertension. Morbid obesity. Acute otitis externa. Rx: Cipro 500 mg and Motrin 600 mg. Continue meds. Diet and exercise stressed.

11/13/14 Treatment Consent. Examinee authorized Frederiksted Health Care, Inc to provide him or his family with medical care.

11/13/14 Naita Salmon, NP. Frederiksted Health Care, Inc. Office Visit. Examinee presented for annual labs and check up; back pain and diabetes mellitus/hypertension. Examinee had worsened deep and throbbing middle back pain three weeks ago which radiated to the right hip associated with tingling. Examinee's pain level was rated as 8/10. Symptoms were aggravated by bending, daily activities, extension and twisting. Examinee had chronic chest tightness. The hypertension started in 2010, which was stable exacerbated by anxiety and stress. Examinee was adhering to medication, follow-up, diet and exercise recommendations for their hypertension and diabetes mellitus. Diabetes mellitus managed with diet and oral medication. Past Medical History: Benign essential hypertension, Degenerative joint disease involving multiple joints, Morbid obesity, tenosynovitis of foot/ankle an all d calcaneal spur. Past Surgical History: Hernia surgery in 1989. Current Meds: Metformin 500 mg, Lisinopril-Hydrochlorothiazide 20-25 mg, Ciprofloxacin 500 mg, Cipro HC 0.2%-1% ear drops and Motrin 600 mg. Review of systems negative for accelerated respirations, cough, dyspnea, painful respiration and wheezing. Vitals: BP: 136/85. Weight: 289 lbs. Height: 5'9". Temperature: 98.4. Pulse: 67. RR: 20. BMI: 42.68. Respiratory examination revealed normal auscultation, palpation, cough and normal effort. Assessment: Hypertension, benign. Backache. Obesity, morbid. Poorly controlled type 2 diabetes mellitus. Rx: Lisinopril-Hydrochlorothiazide 20 mg and Metformin 500 mg. Plan: Referred to cardiologist. Ordered complete blood count, comprehensive metabolic panel, Hemoglobin A1c, lipid panel, microalbumin, random urine, PSA, ultrasensitive without serial, TSH and urinalysis, and x-ray of tailbone. Continue pain meds. Examinee was referred to Dr. Galiber, and Dr. Henry for evaluation. Also referred to podiatry for evaluation and treatment.

11/13/14 Dr. Andre A. Galiber, Jr. Gov. Juan F. Luis Hospital & Medical Center. X-ray of coccyx revealed no evidence of a fracture or dislocation.

11/13/14 LabCorp. Laboratory Report. Hemoglobin A1c: 9.9%. Lipid Panel. LDL cholesterol, calculated: 102.

Urinalysis, Routine. Appearance: Turbid. Occult Blood: Trace. Complete Blood Count. WBC: 11.6. Neutrophils (Absolute): 7.2. Lymphs (Absolute): 3.3. Comprehensive Metabolic Panel. Glucose: 114.

TSH; Microalbumin, urine; PSA were performed and their values were found to be within normal range.

11/17/14 3FH-Frederiksted. Pharmacy Program Enrollment Form. Examinee met the income requirements of the clinics financial assistance program.

01/02/15 Illegible Signature. Curant Health Florida, LLC. Refill Authorization Request. Authorization requested for refill of Ibuprofen 600 mg. Examinee has appointment on 02/18/15 with Dr. Owens.

02/18/15 Treatment Consent. Examinee was consented for The Frederiksted Health Care, Inc. Examinee had consented for The Frederiksted Health Care, Inc to provide him or his family with medical care.

02/18/15 Dr. Gemaine Owen, Family medicine. Frederiksted Health Care, Inc. Progress Note. Office Visit. Examinee presented for diabetes mellitus and hypertension. Current Meds: Ibuprofen 600 mg. Vitals: BP: 120/74. Weight: 299 lbs. Height: 5'9". Temperature: 98.6. Pulse: 66. RR: 20. BMI:

44.15 kg/m2. Oxygen Saturation: 100%. Laboratory Data: Fingerstick Glucose: 177. Assessment: Diabetes mellitus type 2, uncomplicated. Asbestosis. Plan: History of tobacco use. Referred to pulmonary. Continue Albuterol and would need inhaled steroid. Do not suggest Advair powder. Referred to Pulmonology, Dr. Polk on 04/03 and Cardiology, Dr. Galiber on 02/19.

02/18/15 DCA Vantage. Laboratory Report. HbA1c: 6.7%.

02/19/15 Dr. Dante P. Galiber, Cardiology. The Heart Center, PC. Spirometry Report. Interpretation: Normal spirometry.

04/15/15 Dr. Octavius D. Polk Jr., Pulmonology. Schneider Regional Medical Center. Consultation Report. Examinee presented with dyspnea on exertion associated with chest tightness for two to three months associated with weakness after he tried to do any exertion. Examinee had similar symptoms about one year ago that lasted for a couple of months and then resolved spontaneously. Examinee also had a dry intermittent cough. Past Medical History: Ex-smoker and stroke in 2011. Stopped working after stroke in 2011. Current Meds: Lisinopril/Hydrochlorothiazide 20/25 mg and Metformin Hydrochloride 500 mg. Prior Occupation: Examinee was a heavy equipment operator for construction. Examinee might have been exposed to asbestos during his occupation. Examinee also felt tired in the morning, but he gets up about seven to eight times per night because of nocturia. Examinee napped frequently during the day. Social Habits: Smoked about one pack per day for 10 to 20 years. He stopped about five to eight years ago. Review of systems was significant for decreased vision, cardiac catheterization about three years ago, but does admit to palpitations, urinary incontinence and nocturia six to seven times per night, some lower extremity edema, left greater than right and also complaints of low back pain. Vitals: BP: 136/71. Pulse: 88. RR: 20. Oxygen Saturation: 90%. Chest examination revealed clear without wheezes, rales, or rhonchi. Abdominal examination revealed an old vertical surgical scar. Extremities revealed peripheral edema, left greater than right. Diagnostic Data: Performed a six-minute walk test that revealed no oxygen desaturation at six minutes. The oxygen saturation ranged from 96 to 98% throughout the walk and the heart rate went from around 89 at rest to about 111 during the walk. Examinee complained of substernal chest tightness at the end of the walk. Assessment: Dyspnea, probably multifactorial. He probably deconditioned and in addition he might have cardiac disease, which needs to be worked up. Examinee scheduled to see a cardiologist in the next few weeks. Smoking history but no evidence of chronic obstructive pulmonary disease based on the recent spirometry. Hypersomnolence, likely related to pronounced nocturia frequently interrupting his sleep. Until the nocturia was corrected, not sure that would pursue a sleep study until nocturia has been corrected. History of exposure to asbestosis. Hypertension. Obesity.

Nocturia. Plan: Recommended cardiology consult and genitourinary consultation. Consider sleep study once nocturia has been improved or corrected. Repeat chest x-ray PA and lateral to see if there is any evidence of asbestosis. Follow up depending on results of chest x-ray. If chest x-ray is negative then did not believe any further workup is needed Pulmonology wise. If there is persistent dyspnea, and a cardiac workup was negative, then could re-evaluate and do full pulmonary function test.

05/07/15 Dr. Leslie J. Burton, Family Medicine/Jason R. Helton, RN. Governor Juan F Luis Hospital. Emergency Department Notes. Examinee had lung problems due to exposure to asbestos. Had been treated and monitored due to this problem. Last seen in STT three weeks ago and advised that Examinee's change in condition was not due to the lungs. Examinee had complained of increased shortness of breath, and tires with exertion. Examinee now report pain across the upper chest that comes and goes over the last two days. Also shortness of breath worsened and the pain traveled into the right side of the neck. Complained of generalized weakness. Pain rated as 8/10. Vitals: BP: 125/85. Height: 5'9". Temperature: 97.6. Pulse: 76. RR: 22. Pulse Oximetry: 99. Cardiovascular examination revealed chest pain, weakness/fatigue, right arm pain. Respiratory examination revealed anterior/posterior dyspnea bilateral upper lobes, inspiratory and expiratory phase, clear to auscultation, oxygen flow rate 2; pulse oximetry 95; cough frequency intermittent; non productive and dry cough. Muscle weakness in right arm, 4/5 strength, right arm weakness, range of motion pain with movement. Impression: Chest pain. Rx: Aspirin 325 mg. Treatment: Repeat troponin was done and taken to the lab. Toradol 30 mg IV and Pepcid 20 mg IV given as ordered. Plan: Ordered CBC, chemistry 14 panel, troponin-I, urine drug screen, urinalysis, coagulation profile, urine culture, x-ray of chest, cardiac monitoring, ECG, IV insert and blood glucose check. Disposition: Examinee was discharged to home in stable condition.

05/07/15 Dr. Andre A. Galiber, Jr. Gov. Juan F. Luis Hospital & Medical Center. X-ray of the Chest revealed the lungs are clear. The heart is normal in size and the pulmonary vascular distribution is normal.

05/07/15 Governor Juan F. Luis Hospital. Laboratory Report. Comprehensive Metabolic Panel. Glucose: 337. BUN/Creatinine ratio: 24.3. Sodium: 133. Chloride: 90. AST/SGOT: 42. Osmolality: 272. Glucose PCX: 290. At 09:19, Troponin I: Less than 0.012. At 12:35, Troponin I: Less than 0.012.

Urinalysis. Color: Dark yellow. Appearance: Turbid. Ketone and Blood: Trace. Specific Gravity: Greater than or equals to 1.030. Microscopic. RBC: 1-2. WBC: 5-9. Trans cells and Bacteria: 1+.

Urine Culture. Source: Urine. Result: Mixed skin contaminants more than

100,000 CFU/ml.

Coagulation Study. PT: 13.7. INR: 1.27. PTT: 29.8.

Complete blood count was performed and their values were found to be within normal range.

05/07/15 Governor Juan F. Luis Hospital. Laboratory Report. Urine drug screen was performed and found to be negative for Amphetamine, Benzodiazepine, Ecstasy, Opiate, Phencyclidine, Marijuana, Methadone, Cocaine, Barbiturates, Oxycodone and Propoxyphene.

05/18/15 Dr. Dante P. Galiber. The Heart Center, P.C. Office Visit. Examinee presented with essential benign hypertension, which was discovered at another doctor’s office. This was first diagnosed 7-9 years ago. Nonpharmacologic treatment was included low-sodium diet, alcohol avoidance, and smoking cessation. Examinee had not previously taken anti-hypertensive medication. Current cardiac medication regimen included an ACE inhibitor (Lisinopril). Probable contributing factors to hypertension include sleep apnea and obesity. Possible hypertension related symptoms include dyspnea on exertion, exercise limitation and loud snoring. Medical history was pertinent for diabetes (Metformin) and obesity (moderate to severe). With regard to the insomnia, this has been noted for the past month. Sleep has been disrupted by frequent awakenings. On average, he estimates that he got six hours of sleep per night. His typical schedule included retiring to bed at 9:00 PM. Associated symptoms included loud snoring that awakened him from sleep with sensation of being out of breath and snoring as reported by spouse whereby Examinee catched breath with loud snort, but not agitation, anxiety, depression or manic symptoms. Past Medical History: Chronic obstructive pulmonary disease with bronchospasm, long-term heavy tobacco usage and reported asbestos and industrial exposure, bilateral interstitial fibrosis consistent with asbestos, peptic ulcer disease, osteoarthritis and bilateral heel spurs. Past Surgical History: Right index finger splinted, ventral hernia repair, left cardiac catheterization with normal coronary arteries on 09/01/10. Current Meds: Lisinopril 20 mg, Metformin HCL 500 mg, and Albuterol HFA 90 mcg/actuation. Review of systems was significant for chest tightness, dry cough, nocturia, diabetes mellitus, and frequent wakenings. Vitals: BP: 100/70. Height: 5’10”. Pulse: 76. BMI: 41.8 kg/m2. General examination revealed Examinee was morbidly obese. Respiratory examination revealed normal respiratory rate and pattern with no distress; normal breath sounds with no rales, rhonchi, systolic murmur, grade 2/6, subtle, early systolic, and heard best at the apex. Assessment: Essential hypertension, benign. Insomnia. Plan: Ordered transthoracic echocardiography, sleep study and ECG; CBC auto, CMP, lipid panel, TSH, and automated urinalysis without microscopy; diagnostic colonoscopy. Follow up in six months.

05/18/15 Dr. Gemaine Owen. Frederiksted Health Care, Inc. Office Visit. Examinee came for follow up of diabetes mellitus and hypertension. Complained of slight discomfort in his neck, shoulder and right side of his chest. Problem List: Benign essential hypertension, Degenerative joint disease involving multiple joints, Morbid obesity, type II diabetes mellitus, tenosynovitis of foot and ankle and calcaneal spur. Past Surgical History: Hernia repair in 1989. Current Meds: Ibuprofen 600 mg and Albuterol Sulfate 2.5 mg/3 ml. Vitals: BP: 114/71. Weight: 306 lbs. Height: 5’9”. Temperature: 98.1. Pulse: 69. RR: 18. BMI: 45.19 kg/m2. Abdominal examination revealed protuberant hernia scars. Assessment: Diabetes mellitus type 2, uncomplicated. Asbestosis. Acute chest pain. Rx: Lisinopril 20 mg. Plan: Increase Metformin to 500 mg. Continue current meds. Ordered labs. Examinee was counseled on proper footwear. Follow up with Dr. Galiber with an appointment for this afternoon.

06/10/15 Dr. Dante P. Galiber. The Heart Center, P.C. Echocardiogram revealed diastolic left ventricular dysfunction. Mild left ventricular hypertrophy. Mild pulmonic regurgitation. No vegetations, thrombus, abnormal masses, or pericardial effusion. Estimated ejection fraction 76%.

07/13/15 Dr. Dante P. Galiber. The Heart Center, P.C. Office Visit. Examinee presented with essential hypertension, benign. Non-pharmacologic treatment has included low sodium diet, alcohol avoidance, and smoking cessation. Not previously taken anti-hypertensive medication. Probable contributing factors to hypertension include sleep apnea and obesity. Possible hypertension related symptoms include dyspnea on exertion, exercise limitation and loud snoring. Past Medical History: Peptic ulcer disease. Osteoarthritis primarily affecting the neck, shoulder, wrists, fingers, low back, hips, knees and ankles and bilateral heel spurs. Past Surgical History: Right index finger splinted. Left cardiac catheterization in 09/01/10. Current Meds: Multivitamins. Lisinopril 20 mg. Auralgan otic solution. Review of systems was significant for chest tightness, dry cough, uncontrolled diabetes mellitus, and frequent wakening. Vitals: BP: 120/68. Weight: 300 lbs. Height: 5’10”. Pulse: 76. BMI: 43.0 kg/m2. Assessment: Essential hypertension, benign. Plan: Tobacco use assessed. Advised to avoid licorice in diet. Follow up in six months.

07/31/15 Dr. Gemaine Owen. Curant Health FL, LLC. Refill Authorization Request. Requested authorization for Ibuprofen 600 mg 90 tabs was authorized with 3 additional refills.

01/21/16 Dr. Gemaine Owen. Curant Health FL, LLC. Refill Authorization Request. Requested authorization for Ibuprofen 600 mg.

01/28/16	Dr. Gemaine Owen. Curant Health FL, LLC. Refill Authorization Request. Requested authorization for Ibuprofen 600 mg. Appointment scheduled on 03/07/16.
02/03/16	Dr. Gemaine Owen. Curant Health FL, LLC. Refill Authorization Request. Requested authorization for Ibuprofen 600 mg 90 tabs was authorized with 3 additional refills. Appointment scheduled on 03/07/16.
02/10/16	Dr. Dante P. Galiber. The Heart Center, P.C. Office Visit. Examinee complained of constant nocturia (approximately 5 to 6 episodes per night), which began three months associated with polydipsia. The frequency of urination was quite variable. Contributing factors might be a diet that was high in alcohol. Depression screen was negative. Last ophthalmology exam was in 2015. Concurrent health problems include hypertension. Examinee had shortness of breath for the past more than five years. Its course has been worsened. Associated with chest tightness, exercise limitation and had a decrease in exercise capacity. This tends to be worsened with exertion (even minimal), walking up stairs, and walking a short distance. The shortness of breath was better with relaxation and rest. Past Medical History: Chronic obstructive pulmonary disease. Current Meds: Glucophage 500 mg, Prinivil, and daily Aspirin 81 mg. Vitals: BP: 120/72. Weight: 297 lbs. Height: 5’10”. Pulse: 76. BMI: 42.7 kg/m2. Assessment: Essential hypertension, benign. Nocturia. Type II diabetes. Shortness of breath. Plan: Ordered ECG, and x-ray of chest, and transthoracic echocardiography. Recommended HgbA1c level checked yearly, urine microalbumin test yearly, and LDL cholesterol test every two years. Also recommended colorectal cancer screening and colonoscopy. Ordered labs. Referred to Gastrologist and Urologist. Follow up in six months.
02/10/16	Dr. Dante P. Galiber. The Heart Center, P.C. ECG revealed normal sinus rhythm, rate 71, normal P axis PR, rate and rhythm. Wide/notched P waves. Otherwise normal ECG.
02/22/16	Illegible Signature. Curant Health FL, LLC. Refill Authorization Request. Requested authorization for Lisinopril-HCTZ 20/25 mg, 30 tabs.
03/16/16	Illegible Signature. Curant Health FL, LLC. Refill Authorization Request. Requested authorization for Metformin HCL 500 mg, 120 tabs.
03/24/16	Janette Bowers, NP. Curant Health FL. Refill Authorization Request. Requested Authorization for Ibuprofen 600 mg.
04/05/16	Dr. Emmanuel Graham, Urology. G.U. Center Comprehensive Urology. Progress Note. Examinee presented for impotence and prostate check up. Unable to sustain erections. Current Meds: Albuterol Sulfate 108 mcg/act. Vitals: BP: 146/91. Weight: 290 lbs. Height: 5’9”. Temperature: 99.30.

BMI: 42.82 kg/m2. BSA: 2.42. Pulse: 62. RR: 18. Assessment: Male erectile dysfunction, unspecified. Rx: Cialis 20 mg. Plan: Ordered assay of PSA, total; assay of total testosterone; urinalysis with micro; urine culture/colony count and cytology bladder washings. Follow up in one month.

05/05/16 Dr. Jennifer L. St. Croix, Emergency Medicine. Governor Juan F. Luis Hospital & Medical Center. Emergency Department Physician Documentation. Examinee presented with headache, dysuria, incontinence and sweating/fever for two days. Complained of constant, moderate (4-6/10), burning penis pain with difficulty urinating, frequency, and urgency. Left ear achy pain rated as 8/10. Associated with dysuria, fever/chills, incontinence and weakness. Current Meds: Morphine Sulfate 4 mg, Ondansetron HCL 4 mg, Phenazopyridine HCL 100 mg and Ceftriaxone Sodium 1 g. Review of systems was significant for chills, diaphoresis, fever, weakness, chest pain, nausea, burning, dysuria, frequency, incontinence, pain, urgency, dizziness, headache, and lightheadedness. Respiratory examination revealed no distress. Vitals: BP: 102/58. Pulse Oximetry: 97. Temperature: 99.1. Pulse: 82. RR: 13. Laboratory Data: Complete Blood Count, Automated. WBC: 17.7. Neutrophils%: 81.2. Lymphocytes%: 10.2. Eosinophils%: 0.4. Neutrophils#: 14.4. Monocytes#: 1.4. Metabolic Panel. Chloride: 97. Carbon Dioxide: 33. Random Glucose: 125. Osmolality: 273. Troponin I: Less than 0.012. Impression: Urinary tract infection. Disposition: Examinee was discharged home in stable condition.

05/05/16 Governor Juan F. Luis Hospital. Laboratory Report. Complete Blood Count, Automated. WBC: 17.7. Neutrophils: 81.2. Lymphocyte: 10.2. Eosinophil: 0.4. Neutrophils#: 14.4. Monocyte#: 1.4. Comprehensive Metabolic Panel. Glucose: 125. Chloride: 97. Carbon Dioxide: 33. Osmolality: 273. Troponin I: Less than0.012.

Macroscopic Urinalysis: Color: Dark yellow. Appearance: Turbid. Ketone: Trace. Blood: Moderate. Squamous Cells: Few. Bacteria: 2+.

07/12/16 Illegible Signature. Curant Health Florida. Refill Authorization Request. Requested refill of Metformin HCL 500 mg, and Lisinopril-HCTZ 20/25 mg.

08/02/16 Dr. Emmanuel Graham. G.U. Center Comprehensive Urology. Established Male Follow-up Visit. Examinee came for impotence and prostate check up. Since last visit, it was improved. In addition Past Medical History: Benign prostatic hyperplasia with obstruction. Vitals: BP: 177/74. Weight: 295 lbs. Height: 5’9”. Temperature: 98.2. BSA: 2.44. BMI: 43.56 kg/m2. Pulse: 72. RR: 18. Oxygen Saturation: 98%. Diagnoses: Hematuria, unspecified. Male erectile dysfunction, unspecified. Plan: Ordered urinalysis with microscopic, assay of PSA, total, assay of total testosterone. Follow up in one year with labs.

08/17/16 Janette Bowers, NP. Curant Health Florida. Refill Authorization Request. Requested authorization for Metformin HCL 500 mg, and Lisinopril-HCTZ 20/25 mg.

09/08/16 Dr. Leslie Burton, Emergency Medicine. Governor Juan F. Luis Hospital. Emergency Department Notes. Examinee complained of left ear pain for three days. Pain was described as aching, rated as 8/10. Had ear infection, swollen face and headache. Vitals: BP: 138/87. Height: 5’9”. Weight: 290 lbs. Pulse Oximetry: 97. Pulse: 74. Temperature: 98.8. Respiratory Rate: 20. Left ear examination revealed pain. Impression: Pharyngitis, otitis externa. Rx: Augmentin 500 mg. Plan: Ordered Cipro HC otic 3 drops. Disposition: Examinee was discharged home in stable condition.

09/19/16 Dr. Carmine E. Hendricks, Family Medicine. Frederiksted Health Care, Inc. Office Visit. Examinee came for follow up of diabetes and hypertension. Pain was rated as 5/10. Vitals: BP: 133/77. Height: 5’9”. Weight: 302 lbs. Temperature: 98.2. Pulse: 75. RR: 16. General examination revealed Examinee was obese. Respiratory examination revealed normal auscultation and normal effort. Abdominal examination revealed to be protuberant. Assessment: Type 2 diabetes mellitus without complications. Essential (primary) hypertension. Encounter for screening colonoscopy. Body mass index (BMI) 40.0-44.9, adult. Morbid (severe) obesity due to excess calories. Plan: Performed Glucose blood test, complete blood count, comprehensive metabolic panel, lipid panel, PSA, TSH, Free T4 and Hemoglobin A1c. Continue current regimen. Encouraged exercise. Referred to dietitian.

02/20/17 Dr. Gemaine Diane Owen. Curant Health Florida, LLC. Refill Authorization Request. Requested authorization for Ibuprofen 600 mg 90 tabs was authorized with 5 additional refills.

03/22/17 Dr. Jennifer L. St. Croix. Governor Juan F. Luis Hospital. Emergency Department Notes. Examinee arrived via Emergency Medical Service with complaints of right-sided chest pain for 2 days associated with pressure, shortness of breath, and diaphoresis. Examinee was given ASA 324 mg and one Nitro 0.4 mg. Pain level was rated as 6/10. Current Meds: Metformin HCl 500 mg. Vitals: BP: 107/68. Pulse: 68. RR: 20. Pulse: 77. Height; 5’9”. Pulse Oximetry: 96. Examination revealed right-sided chest pain, shortness of breath prior to arrival, non-productive cough. Diagnoses: Cholelithiasis. Biliary colic. Treatment: IV Saline lock. Plan: Ordered Morphine Sulfate 4 mg syringe, Ondansetron 4 mg vial, complete blood count, chemistry 14 panel, CPK-CKMB% panel, troponin-I and urinalysis, amylase level, lipase, urine culture, x-ray of chest, cardiac monitoring, IV, insert, cardiac enzymes and blood glucose check. Disposition: Examinee was discharged to home in stable condition.

03/22/17 Dr. Jennifer L. St. Croix. Governor Juan F. Luis Hospital & Medical Center. Emergency Department Physician Documentation. Examinee complained of right-sided chest/right upper quadrant pain, associated with eating; reported nausea. Pain was aching, burning, indigestion, pressure, associated with abdominal pain, back pain, and heartburn. Pain level was rated as 4-6/10. Review of systems was significant for abdominal pain, and nausea. Respiratory examination revealed no respiratory distress. Gastrointestinal examination revealed distended, hepatomegaly, and positive Murphy's Sign. Current Meds: Zofran 4 mg and Morphine Sulfate 4 mg. Vitals: BP: 132/78. Pulse: 72. RR: 18. Pulse Oximetry: 97. Impression: Cholelithiasis. Biliary colic. Rx: Lisinopril 20 mg, and Metformin HCL 500 mg. Plan: Ordered no conflict check 2-4 drops, Albuterol Sulfate 18 g HFA, urine culture, x-ray of chest, cardiac monitoring, IV insert, oxygen therapy, blood glucose check, oxygen therapy and CT scan of abdomen and pelvis without contrast. Recommended outpatient surgical consult. Disposition: Examinee was discharged to home in stable condition.

03/22/17 Dr. Carmine E. Hendricks, Family Medicine. Frederiksted Health Care, Inc. Office Visit. Examinee complained of right-sided mild-to-moderate chest pain radiating to back associated with dyspnea on exertion. The symptoms began four days ago. It generally lasted six days. Also complained of diaphoresis, dyspnea and fatigue. Review of systems was significant for fatigue, dyspnea, dyspnea on exertion, and chest pain. Vitals: BP: 133/82. Weight: 283 lbs. Height: 5'9". Temperature: 98.4. Pulse: 66. Exam remains the same as previous visit. Assessment: Chest pain, unspecified. Essential hypertension. Type 2 diabetes mellitus with hyperglycemia. Type 2 diabetes mellitus without complications. Body mass index (BMI) 40.0-44.9, adult. Dietary counseling and surveillance. Morbid (severe) obesity due to excess calories. Rx: Ibuprofen 600 mg and Lisinopril 20 mg-Hydrochlorothiazide 25 mg and Metformin 500 mg. Plan: Examinee was referred to Emergency Department. Continue current regimen. Encoraged exercise.

03/22/17 Dr. Andre A Galiber Jr. Gov. Juan F. Luis Hospital & Medical Center. CT scan of the abdomen and pelvis without IV contrast revealed cholelithiasis. Mild fatty infiltration of liver.

03/22/17 Dr. Andre A Galiber Jr. Gov. Juan F. Luis Hospital & Medical Center. X-ray of the chest revealed clear lungs. The heart is normal in size and the pulmonary vascular distribution is normal.

03/22/17 Governor Juan F. Luis Hospital. Laboratory Report. Complete Blood

Count, Automated. Neutrophils#: 6.8.
Comprehensive Metabolic Panel. Glucose: 253. Troponin I: Less than 0.012.

Macroscopic Urinalysis. Ketone: Trace.
Urine Culture. Source: Urine CC. Result: Mixed skin contaminants 20,000-30,000 cfu/ml.
Macroscopic urinalysis was performed and their values were found to be within normal range.

03/22/17 Illegible Signature. Frederikstd Health Care Inc. Transfer Note. Examinee complained of chest pain. Vitals: BP: 132/82. Temperature: 98.4. Pulse: 66. Examinee was transferred to UCC MD.

03/22/17 Electrocardiogram. At 17:30:52, ECG revealed sinus rhythm. At 17:31:46, ECG revealed sinus rhythm.

08/11/17 Governor Juan F. Luis Hospital. Laboratory Report. Testosterone TO: 351. PSA: 0.43.
Macroscopic urinalysis was performed and the values were found to be within normal range.

06/14/18 Dr. Robert B. Smith, Emergency Medicine. Governor Juan F. Luis Hospital & Medical Center. Emergency Department Physician Documentation. Examinee presented for dizziness, left neck and shoulder pain for one day worse with palpation and movement. Review of systems was significant for dizzy, left neck and shoulder pain, left cervical radiculopathy, tightness left trapezius with back spasm, dizziness. At 18:48, Examinee's condition improved. General examination revealed Examinee was in acute distress, left neck and left trapezius spasm. Neck examination revealed spasm. Upper extremities examination revealed left trapezius tenderness. Examinee's labs were reviewed. Impression: Dizzy. Cervical radiculopathy. Plan: Ordered chemistry 7 panel, x-ray of chest, 12 lead ECG, CT head without contrast. Disposition: Examinee was discharged home in stable and improved condition.

06/14/18 Dr. Steven Cohen. Juan F. Luis Hospital & Medical Center. CT scan of the head without intravenous contrast revealed no acute intracranial abnormality.

06/14/18 Dr. Steven Cohen. Juan F. Luis Hospital & Medical Center. X-ray of the chest when compared with prior report dated 03/22/17 revealed no consolidative pulmonary infiltrate noted. No interval change from the prior examination.

06/14/18 Gov. Juan F. Luis Hospital & Medical Center. Laboratory Report.

Completed Blood Count, Automated. WBC: 11.3. RBC: 4.69. HCT: 40.4. Eosinophil: 0.8. Neutrophils#: 7.3. Monocyte #: 1.0. Basic Metabolic Panel. Glucose: 553. Sodium: 136. Chloride: 93. Carbondioxide: 31.
Macroscopic urinalysis was performed and the values were found to be within normal range.

07/26/18 Dr. Emmanuel Graham, Urology. G.U. Center. Established Male Follow-up Visit. Examinee presented with genital problems. Had penile fissuring and sigmoid phimosis. Examinee reported ballooning of the penis with voiding, he had significant difficulty with retracting the foreskin to clean and at time when he was able to retract it and difficulty getting the skin back over the head of the penis. Also had impotence. No change since last visit. Past Medical History: Benign prostate hyperplasia with obstruction. Phimosis. Vitals: BP: 148/78. Weight: 268 lbs. Height: 5’9”. Pulse: 76. Temperature: 98.90. RR: 20. BSA: 2.34. BMI: 39.57 kg/m2. Oxygen Saturation: 97%. Penis examination revealed phimosis, other with fissuring and scarring; prostate size 45 gr; Prostate symmetry rubbery. Diagnoses: Male erectile dysfunction, unspecified. Hematuria, unspecified. Plan: Prescribed Nystatin-Triamcinolone 100000-0.1 unit/g. Advised trial of mycology II cream for 2 months and then decide if no improvement on need for circumcision, repeat labs. Ordered prostate CA screening, microscopic urinalysis, urine culture, total PSA and total testosterone. Follow up in two months.

09/25/18 Dr. Emmanuel Graham. G.U. Center. Established Male Follow-up Visit. Since last visit, Examinee’s condition has improved. Improvement in penile fissuring, but continued to have significant phimosis and swelling of the prepuce with voiding. In addition he presented with impotence. Since last visit, it showed no change. Had restriction of erections with phimosis. Past Medical History: Hematuria. Current Meds: Nystatin-Triamcinolone 100000-0.1 unit/g. Vitals: BP: 147/91. Weight: 272 lbs. Height: 5’9”. Temperature: 98.70. Pulse: 69. RR: 18. BSA: 2.35. BMI: 40.16 kg/m2. Oxygen saturation: 98%. Diagnoses: Hematuria, unspecified. Male erectile dysfunction, unspecified. Phimosis. Inflammatory disorders of other specified male genital organs. Plan: Ordered urinalysis with microscopy, urine culture/colony count and cytology bladder washings and ultrasound of abdomen back wall. Ordered sonogram. Follow up in one month.

09/26/18 Dr. Coralee Lewis. Imaging Center, P.C. Renal and bladder ultrasound revealed normal renal ultrasound. Urinary retention. Accessory spleen.

10/25/18 Dr. Emmanuel Graham/Rodger Melton, RN. G.U. Center. Established Male Follow-up Visit. Examinee was here for follow up labs and renal ultrasound. In addition, he presented with genital problems. Since last visit, it was improved. Improvement in penile fissuring but continued to have significant phimosis and swelling of the prepuce with voiding. In addition he presented with impotence. Since last visit, it showed no change. Had restriction of erections with phimosis. Vitals: BP: 153/80. Weight: 272 lbs. Height: 5'9". Temperature: 98.90. Pulse: 72. RR: 18. BSA: 2.35. BMI: 40.16 kg/m2. SAO2: 96%. Diagnoses: Inflammatory disorders of other specified male genital organs. Phimosis. Male erectile dysfunction, unspecified. Hematuria, unspecified. Plan: Would repeat cytology after circumcision to see if blood is from the fissures. Recall on 10/25/18 with Rodger Melton, NP.

11/11/18 Dr. Leslie Burton/Sullivan Arthurlyn, RN. Governor Juan F. Luis Hospital & Medical Center. Emergency Medicine Physician Documentation. History of Present Illness: Examinee presented with right-sided facial weakness. Examinee was breaking up his dogs from fighting. When he woke up had a headache and noticed that he was experienced slight weakness to the right side of his face. When he woke up in the morning the symptoms still exist so he presented to the Emergency Department. Examinee was unable to close right eye, and loss of taste since yesterday 06:00. Also had loss of balance and intermittent dizziness for 2 weeks. Current Complaint: Neuro symptoms. Headache. Pain level rated as 7/10. Current Meds: Tylenol 325 mg and Prednisone 20 mg. Review of systems was significant for headache. Respiratory examination revealed no respiratory distress. Impression: Bell's Palsy. Rx: Prednisone 20 mg. Plan: Use artificial tears as needed. Recommended over the counter Tylenol or Motrin. Ordered CT scan of head without intravenous contrast. Disposition: Examinee was discharged to home in stable condition. Follow up with Primary Care Physician as needed.

11/11/18 Dr. Amy R. Hellbusch, Diagnostic Radiology. Virtual Radiologic/Juan F. Luis Hospital & Medical Center. CT scan of the head without intravenous contrast when compared with prior heat CT dated 06/14/18 revealed no acute intracranial abnormality.

11/27/18 Dr. Carmine E. Hendricks. Frederiksted Health Care, Inc. Office Visit. Examinee presented for follow up of Bell's Palsy, diabetes, hypertension and lung disease. Review of systems was negative for cough and chest pain. Examinee's pain level was rated as 3/10. Vitals: BP: 137/85. Weight: 271 lbs. Height: 5'9". Temperature: 98.50. Pulse: 69. RR: 16. Pain 3/10. General examination revealed Examinee was overweight. Neurological examination revealed mild weakness on right face, Bell's Palsy, treated improved. Rest of the exam remains the same as previous visit. Patient Health screening questionnaire was performed and the total score was 7, which indicated mild depression. Assessment: Bells palsy. Type 2 diabetes mellitus with hyperglycemia. Essential (primary) hypertension. Pneumoconiosis due to asbestos and other mineral fibers. Body mass index (BMI) 40.0-44.9, adult. Orders not associated to today's assessments. Rx: Augmentin 500 mg, Lisinopril 20 mg-Hydrochlorothiazide 25 mg and

Metformin 1,000 mg. Treatment: Labs were performed. Plan: Ordered Albuterol Sulfate 2.5 mg/3 mL. Medications renewed. Referred to Neurology, Dr. Frias. Ordered x-ray of chest.

11/27/18 Northshore Health Center. Laboratory Report. Hemoglobin A1c: 12.2.

04/15/19 M. Chesnutt, CPFT. Chesnutt Pulmonary Service. Spirometry. Spirometry was performed. Results: Pre-Bronchodilator % Predicted: FVC: 94. FEV1: 89. FEF 25-75%: 73. TLC: 88. RV: 75. FRC N2: 81. VC: 94. DLCO: 96. DL Adj: 96. DLCO/VA: 97.

04/25/19 Dr. Andre Galiber Jr. Imaging Center PC. X-ray of the chest revealed normal radiographs.

04/30/19 Dr. Steven Haber. Frontera In-Offices Diagnostic testing. Pulmonary Scoring Report. Spirometry was performed. Vitals: Weight: 265 lbs. Height: 69”. BMI: 39.1. Tobacco Product: Cigarette 7 pack/year. Years Quit: 20.0. Medication: Albuterol (did not take today). Results: Pre-Bronchodilator % Predicted: FVC (L): 3.72. FEV1 (L): 2.86. FEV1/FVC (%): 68. FEF 25-75% (L/sec): 1.65. MVV (L/min): 93. TLC (N2) (L): 5.20. FRC (N2) (L): 2.06. RV (N2) (L): 1.39. RV/TLC (N2) (%): 24. DLCOunc (ml/min/mmHg): 24.41. VA (L): 5.48. Comment: Examinee gave a good effort with each test.

05/29/19 Updated History by Rachel Jones, PhD, CIH
Job exposure: Worked at the alumina plant 1982-2001. Maintenance man for about 5 years, then heavy equipment operator. As a maintenance man-he changed lines, blinds and worked on pumps. As a heavy equipment operator he worked with bobcats, forklifts, bulldozers and boom cranes. Unit 1-push bauxite onto the conveyor using a bulldozer (with open cab-very dusty, no dust control). VIALCO changed the bulldozer to have a closed cab. Used a dust mask intermittently. Unit 2-move bauxite into the hopper with the bobcat. Initially, when he first worked at the plant, he was assigned to unit 1, where he shoveled bauxite under the conveyor belt regularly. Unit 4-he had to move drums of caustic. White side-he worked on unit 7, 9 and 10. He was in operator loader, filled the hopper. Area was dusty with alumina dust. He carried both white and red dust on his coveralls. He operated a closed cab boom crane every day-the air conditioner was not working well so he had to open the window. It was used to lifting pipes for repairs and maintenance.

REVIEW OF SYSTEMS (2009):

General	Negative for recent, unexplained weight loss or gain.
Head and Neck	Positive for blurred vision and dizziness. Negative for headaches, frequent ear or throat infections, watery nose or excessive thirst.

Lungs	See HPI.
Cardiovascular	See history of present illness.
Gastrointestinal	Positive for heartburn and abdominal pain. Negative for vomiting of blood, chronic diarrhea or constipation, stomach ulcers, jaundice or hepatitis.
Urinary	Negative for difficulty urinating, hematuria, urinary incontinence, and enlarged prostate, kidney stones or kidney problems.
Neurological	Negative for seizures, tingling, numbness or loss of consciousness.
Muscles and Joints	Positive for joint pain and a history of arthritis. Negative for joint swelling, or joint warmth; negative for history of recent fractures or gout.

PHYSICAL EXAMINATION (2009):

Vital Signs:

Weight, pounds	Height	BP, mm Hg	HR bpm	RR/min	Temp., °F
298	69	142/92	80	18	Afebrile

General: The patient was found to be alert to time, person and place. The patient did not appear to be in acute distress, was fully cooperative and appeared to be at ease.

Head & Neck:

Head: Examination of the head failed to show any evidence of recent acute trauma, bleeding, abrasions or lacerations.

Eyes: The conjunctivae were found to be within normal limits, with no evidence of jaundice, redness, trauma or infection. The pupils reacted equally to light and accommodation (PERLA). Extraocular muscle movements were found to be normal.

Ears: The external ear canal and outer ear structures were examined for signs of recent trauma, blood in the external/internal ear canal. No evidence of such was found. There was no evidence of infection.

Nose: Examination of the overlying skin showed no evidence of recent trauma, and the nasal mucosa had a normal appearance without traces of recent bleeding.

Mouth: There was no evidence of cheilosis, and the oral mucosa was found to be well hydrated and without any signs of lesions or redness. Examination of the throat showed no signs of infection.

Neck: The neck was found to be supple. Palpation showed no evidence of masses or lymphadenopathy. The thyroid gland was found to be of normal size and consistency. It was found to be non-tender to palpation.

Lungs: Visual examination of the chest showed symmetric expansion of both lung fields. Auscultatory findings were within normal limits showing the lungs to be clear. Percussion of the chest failed to show evidence of fluid accumulation in the chest.

Cardiovascular: Palpation of the precordial area showed the point of maximum impulse to be located within normal limits. Auscultation of the cardiac sounds showed normal heart sounds, without evidence of clicks, gallops or murmurs. No jugular venous distention was noted.

The peripheral pulses were present and of normal intensity in the upper and lower extremities.

Abdomen: The abdomen was found to be soft and depressible. Peristaltic sounds were of normal intensity and rhythm. There is a well-healed, surgical vertical scar along the midline. The liver span was found to be within normal limits by percussion of the abdomen at the mid clavicular line. Auscultation failed to show any evidence of bruits in the mid abdominal area.

Extremities: Examination of the lower extremities was positive for +2 pitting edema distally.

Neurological: Examination of the cranial nerves showed the following results:

CN I: Olfactory	Not tested.
CN II: Optic	No abnormalities in funduscopic exam, visual acuity not tested quantitatively, found to be grossly normal during examination.
CN III: Oculomotor	Tested together with the other nerves involved in normal ocular movements (CN IV and VI). Ocular motion found to be normal. PERLA (pupils equally reactive to light and accommodation) through the autonomic branches of this nerve and their innervation of smooth muscle.
CN IV: Trochlear	See above.
CN V: Trigeminal	Three branches that supply sensation to the face and parts of the scalp were found to be intact. Palpation over the area does not cause tingling or pain, making trigeminal neuralgia less probable. Nerve also supplies motor innervation to the muscles of mastication. No problems were found in performance.
CN IV: Abducens	See Oculomotor above.
CN VII: Facial	Adequate facial expression with good eye closure strength. Taste (anterior 2/3 of tongue) not tested.
CN VIII: Acoustic	Hearing and balance found to be adequate.
CN IX: Glosso - pharyngeal	Tested in association with CN X. Adequate gag reflex and deglutition movements.
CN X: Vagus	See above. No hoarseness.
CN XI: Spinal Acc.	Shoulder elevation (shrug) found to be normal.

CN XII: Hypoglossal	Tongue held in the center, lateral and extension movements of the tongue were found to be normal. No fasciculations were noted.

Motor function: The patient was observed while walking from and about the examiner's room. The gait was found to be normal with balance maintained throughout.

Sensation: Sensation was found to be adequate.

Reflexes: Deep tendon reflexes were found to be of normal intensity and symmetrical bilaterally.

Coordination: Patient was found to have adequate coordination.

Skin: The skin was found to be warm. No significant lesions were noted.

Genitalia/Rectal: Deferred

Diagnostic Testing Ordered:

Spirometry: Not available for my review.

B-reader: 01/28/08, Dr. Donald Breyer. Film quality = 1. Consistent with pneumoconiosis. Small opacities: s,t - localized in the middle and lower lungs bilaterally, and 1/0 profusion. No large opacities, pleural plaque or diffuse pleural thickening noted. No other abnormalities.

Chest X-Ray: 04/14/08, Dr. Donald Breyer. IMPRESSION: Bilateral interstitial fibrosis compatible with asbestosis.

SUMMARY and DISCUSSION (2009):

Mr. Velez is a 46-year-old male examinee was complaining of shortness of breath on exertion and at rest. Imaging evidence is consistent with mixed dust pneumoconiosis. However, there is a significant smoking history and that should be taken into account for apportionment purposes. Unfortunately, I cannot determine his current pulmonary impairment according to the AMA guides, fifth edition. I am waiting for the spirometry results to be available so that I can complete that portion of his evaluation.

OPINION: Probably consistent with mixed dust pneumoconiosis, pending pulmonary function testing results.

Prognosis: Guarded. Asbestos as well as silica are carcinogens.

UPDATE (2020):

Spirometry: Chesnutt Pulmonary Service, Austin Texas, 04/15/19.
FVC = predicted - 4.63; actual 4.36 for 78 % of predicted
FEV1 = predicted-3.66; actual 3.26 for 82 % of predicted.
FEV1/FVC-predicted = 79, actual seventy-five.
DLCO = predicted = 34; actual = 32.6 for 96% of predicted.

Spirometry Intake Form: Mr. Velez work in the aluminum plant between 1982 and 1998 performing heavy equipment maintenance. He claimed exposure to asbestos. Smoking history is positive for smoking for approximately 7 years, 1 pack of cigarettes per day (7 pack years). Complained of chronic chest “tightness”, and shortness of breath which is there “all the time”, but is aggravated by exertion, for instance climbing less than one flight of stairs or walking for one half block. He has intermittent dry cough, but no history of hemoptysis. He does have a history of asthma (last episode approximately 2 years ago) and bronchitis (last episode approximately 4 or 5 years ago). There is no history of cancer; the examinee does have a past history of animal exposure to pigs, chickens, dogs and cattle. There is a positive past history of Bell’s palsy, hypertension and diabetes. Height = 69 inches, weight = 265 pounds, BP = 108/70, heart rate = 68, RR = 16, 97% SaO2.

Based on the American Medical Association Guides to the Evaluation of Permanent Impairment, fifth edition, utilizing tables 5-2a, 5-2b, 5-4a, 5-4b, 5-6a, 5-6b, 5-9 and 5-12, the overall calculated Whole Person Impairment (WPI) corresponds to a Class 1 which is defined as 0% WPI.

B-reader: 11/28/18, Dr. Christopher L. John. Film quality = 1. Consistent with pneumoconiosis. Small opacities: s,t - localized in the middle and lower lungs bilaterally, and 2/1 profusion. No large opacities, pleural plaque or diffuse pleural thickening noted. Calcified, non-pneumoconiotic nodules (e.g. granuloma) or nodes; no other abnormalities.

Chest x-ray (4V), 4/1/19, Imaging Center PC, Dr. Galiber. “The heart, pulmonary vascular distribution, lung fields on chest appeared normal. Normal chest radiographs”.

Spirometry: Frontera, 04/30/19. Current weight 265 pounds, height 69 inches, age 57.
Date of birth: 04/03/1962 former smoker, 7 pack/year, quit 20 years ago

FVC = predicted-4.61; actual 3.46 for 75 % of predicted.
FEV1 = predicted-3.60; actual 2.92 for 81 % of predicted.
FEV1/FVC = predicted-78; actual 85, for 108% of predicted.
DLCO = predicted 34.07, actual 39.02 for 114 % of predicted.

Based on the American Medical Association Guides to the Evaluation of Permanent Impairment, fifth edition, utilizing tables 5-2a, 5-2b, 5-4a, 5-4b, 5-6a, 5-6b, 5-9 and 5-12, the overall calculated Whole Person Impairment (WPI) corresponds to a Class 2 which is defined as 10-25% WPI.

Pertinent findings from the review of additional medical records recently received:

Approximately 480 pages were received for my review. The chronology of the medical records dates back to 2003, but it mostly starts around June 2008.

A chest x-ray completed on 9/25/09 was read as "normal". The examinee had a bout of non-cardiac chest pain in September 2009; troponins and d-dimer were negative. EKG was unremarkable. The examinee was referred to a cardiologist and advised to lose weight and stop smoking. He was prescribed hydrochlorothiazide.

On 6/9/10 the examinee saw his PMD from FHC-Adult Medicine. At the time his weight was 322 pounds with a blood pressure 162/102 and a pulse of 83. He complained of chest tightness with difficulty breathing. He told the provider that he had asbestosis. PE significant for bilateral lower extremity pitting edema. Laboratories showed a glucose of 166. Urinalysis was negative for protein and glucose. Did have a 1+ occult blood and RBCs were seen. Liver enzymes, BUN, creatinine and electrolytes were normal.

On 6/23/10 the examinee presented with complaints of chest pain and shortness of breath. His weight was 318 pounds. O2 sat was 97%. Physical examination showed faint end expiratory wheezing. He was treated with Keflex. Laboratories completed in July 2010 showed hemoglobin A1c of 7% with triglycerides of 177. A lower extremity (left) venous Doppler study performed in August 2010 was negative.

On 8/24/10 the examinee saw Dr. Potts, a cardiologist. The exam and had been seen at the emergency room complaining of shortness of breath and anterior chest tightness. He was admitted to the hospital. Examinee had a history of hypertension (diagnosed 2009) and chronic lung disease (tobacco usage, asbestos). He complained of exertional chest tightness and shortness of breath. He had stopped smoking over the previous 6 months. He was on Zestoretic 20/25 mg and an albuterol inhaler. Blood pressure was 154/73. Troponins were negative ×2. An EKG failed to show acute ischemic changes. Catheterization was scheduled. Dr. Potts diagnosed the patient with COPD with bronchospasm. Laboratories showed WBCs of 14,900, CMP showed glucose of 159 with negative troponin. Echocardiogram was normal; the examinee was diagnosed on 8/26/10. The left heart cardiac catheterization procedure was completed on 9/1/10 and it was unremarkable. A glucose tolerance test completed in 2010 was diagnostic of type 2 diabetes mellitus. The examinee was started on low dose of Glucophage.

The medical records document that by October 22, 2010 the examinee had stopped smoking. His weight was 310 pounds. He had noted decreased cough and dyspnea.

Laboratories completed by March 2011 showed a fasting blood sugar of 109, BUN of 13, creatinine at 0.84, normal electrolytes. Microalbumin was normal.

In September 2011 the examinee saw Dr. Thompson, an internist for Frederiksted Health Care (FHC). The examinee was complaining of foot pain and shortness of breath. Weight was 316 pounds, BP was 142/83 with a pulse of 78. The following month, on 10/21/11 the examinee was seen at the ER complaining of midsternal chest pressure. He was treated with a GI cocktail with symptom relief. Laboratories done at the time showed hematocrit of 38% with INR of 1.23.

The examinee saw Dr. Thompson on 11/23/11 for a follow-up visit. He had been diagnosed with GERD. He had been losing weight and now his weight was 294 pounds with a blood pressure of 108/66. Current medications included lisinopril/hydrochlorothiazide, Ventolin HFA, metformin and Reglan.

The examinee was evaluated by Dr. Lake at the ER on 11/27/11 after an episode in which he had chest pain, diaphoresis and a history of a syncopal event. He was feeling lightheaded and dizzy, and was given a GI cocktail after which he was discharged home. An echocardiogram completed on 8/26/10 had been unremarkable. Dr. Lake started the examinee on Norvasc 10 mg and aspirin 5 mg. He recommended weight loss, holding metformin and starting the examinee on Humulin 70/30, 5 units S/Q and Lovenox. Troponins went negative. He developed left lower leg edema. The examinee was discharged on 11/29/11.

As of October 2012, when the examinee saw Dr. Mercado at the emergency room complaining of left ear discomfort, his weight was 280 pounds. All

As of November 2014, hemoglobin A1c was 9.9%. As of February 2015, hemoglobin A1c had decreased to 6.7%. The examinee also had a spirometry, which was completed on 2/19/15, using Knudson protocol. At the time the examinee was 52 years old, weight was 298 pounds and he had a 15 pack-year smoking history. FVC was predicted at 4.48, best of 3 trials was 4.73 4 105% of predicted. FEV1 was predicted at 3.64, with best value at 3.85 4 105 of predicted. FEV1 % was predicted at 81, and it was actually 81. Interpreting physician, Dr. Galiber, stated it was normal.

On 4/15/15 the examinee was evaluated by Dr. Polk, a pulmonologist. He was complaining of dyspnea on exertion, chest tightness over the previous 2-3 months. He had this before and it had resolved spontaneously. He also referred dry, intermittent cough. The examinee was on lisinopril/hydrochlorothiazide, metformin and had been employed as a heavy equipment operator. Dr. Polk obtain a smoking history that spanned 10-20 years. Oxygen saturation was 90%. PE was significant for peripheral edema. A 6 minute walk test showed no oxygen saturation at the end of the test.

Laboratories completed in May 2015 showed a glucose of 337 with negative troponins, abnormal urinalysis. A drug screen performed was unremarkable.

The examinee saw Dr. Galiber at The Heart Center on 5/18/15. There was a history of loud snoring occasionally awakening feeling short of breath. Current medications include lisinopril 20 mg, metformin 500 mg, albuterol HFA. An echocardiogram showed diastolic left ventricular dysfunction and mild left ventricular hypertrophy, with an ejection fraction of 76%. The examinee had a history of osteoarthritis; loud snoring suggested sleep apnea. Weight was 300 pounds as of July 2015.

An EKG completed on 2/10/16 showed wide/notched P waves, otherwise normal.

On 4/5/16 the examinee saw Dr. Graham, urology. At the time BP was 146/91 with a weight of 290 pounds. Examinee had erectile dysfunction.

On 5/5/16 the examinee saw Dr. St. Croix at the ER. At the time he was complaining of incontinence, sweating/fever, dysuria and headache for 2 days. He had difficulty and burning on urination. BP was 102/58 with a pulse of 82. WBCs were 17,700 with a predominance of neutrophils. Troponin I was negative. He was diagnosed with a urinary tract infection.

On 3/22/70 in the examinee went to the ER complaining of right-sided chest pain. At the time blood pressure was 107/68 with a pulse of 68 and the respiratory rate of 20. Weight was 283 pounds.

A CT scan of the abdomen and pelvis without contrast revealed cholelithiasis and a fatty liver. A chest x-ray was unremarkable.

The examinee was evaluated at the emergency room on 6/14/18; he presented with dizziness, left sided neck and shoulder pain. He was diagnosed with cervical radiculopathy, discharged home in stable condition. A CT scan of the head without IV contrast was unremarkable.

In September 2018 and a renal and bladder ultrasound was unremarkable, except for urinary retention and accessory spleen.

Dr. Hendricks (FHC) so the Examinee on 11/27/18. He had a bout of Bell’s Palsy and was recovering. Blood pressure was 137/85 with a weight of 271 pounds. Although improved from his Bell’s palsy, he still was weak on that side. The examinee had pneumoconiosis due to asbestos and other mineral fibers. He was treated with Augmentin, and labs were ordered. Hemoglobin A1c was 12.2%.

DIAGNOSTIC IMPRESSION UPDATED 2020:

1. Mixed Dust Pneumoconiosis.
2. Obesity, Obstructive Sleep Apnea by history.
3. Type 2 Diabetes Mellitus
4. Bronchial asthma, on bronchodilators.
5. Hypertension
6. Former smoker (2010)
7. Dyslipidemia

COMMENTS and CURRENT OPINION:

I have been advised that Mr. Velez is deceased. I do not have any information in this regard, and do not know the cause of death.

Mr. Velez was exposed to bauxite and alumina dust, as well as asbestos fibers. Initially, after he was hired, he worked in the red (bauxite) part of the plant, mostly in units 1 and 2, which are notable for being very dusty. The B reader has interpreted his chest x-ray, and it is consistent with pneumoconiosis. It is worth noting that the examinee also has a history of smoking, wheezing and has been diagnosed with COPD. All of these conditions have to be considered when looking at his clinical picture.

After reviewing the most recent information and the entire file, my previously expressed opinion remains unchanged.

Limited Scope of this Evaluation

The scope of this report and any treatment offered, implemented or proposed by the health care provider signing below is specifically directed to address the issue(s) presented solely by the occupational injury, and not intended to address non-occupational medical conditions not related to the current injury. Therefore, the examination included herein is not to be construed as a complete medical exam for general health surveillance purposes.

Signed this 21 day of March, 2020 at City of Corona, Riverside County, California.

Nelhs Betancourt, MD, MPH, DABT

EXHIBIT 100

Excerpts of Transcript of Deposition of Ronald Boston, November 19, 2019

IN THE SUPERIOR COURT OF THE VIRGIN ISLANDS

DIVISION OF ST. CROIX

IN RE: BAUXITE CONTAINING SILICA) MASTER CASE NO:
) SX-15-CV-098
)
CHARLES LITIGATION SERIES) COMPLEX LITIGATION
) DIVISION

THE VIDEOTAPED ORAL DEPOSITION OF RONALD RUTHERFORD BOSTON was taken on the 19th day of November, 2019, at the Law Offices of Hunter & Cole, 1138 King Street, Christiansted, St. Croix, U.S. Virgin Islands, between the hours of 9:18 a.m. and 2:36 p.m., pursuant to Notice and Federal Rules of Civil Procedure.

Reported by:

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Also Present: Kenmore Boston
Anselmo Boston

medication?

A. No.

Q. Is there anything that would prevent you from being able to testify truthfully today?

A. No.

Q. I'm just going to run through a bit of your background.

What is your date of birth?

A. [redacted], 1945.

Q. Thank you.

And where were you born?

A. In Aruba.

Q. And can you describe your education? Did you go to school in Aruba?

A. Yes, uh-huh.

Q. What was the highest class you completed in Aruba?

A. I went to sixth grade, I believe, and then I went to technical school, Aruba Technical School.

Q. How old were you when you completed sixth grade?

A. Repeat, please.

Q. How old were you when you completed sixth grade?

A. X -- tech school?

Q. Yes. How old were you when you started tech school?

A. Oh, I think about 16.

here in St. Croix?

A. I went over to Hess Oil refinery. I did not get into the power plant section, because they didn't have no position to offer at the time, so I went into the operation. And there, I picked up more about oil refining.

Q. And what year was that, do you remember?

A. Honestly, I don't remember.

Q. Do you remember whether Harvey ever had other owners, such that it might have changed the name under which it was operating?

A. When I went down there -- when I went there, got there, or when I, you know, also, I must say there was -- CITRA was the name of that? It was a French company.

Q. Is the name Martin Marietta familiar to you?

A. Martin Marietta, yes.

Q. Did you work for Martin Marietta?

A. Yeah.

Q. And what did you do when you were working for Martin Marietta?

A. Well, I went in the operations department because we had safety department. We had all different department. And I -- the equipment that they have, the instruments that I paid now, I say this is it. I know what I want to do now. I get it. So I got into the power plant and started to move, you know, up the ladder, up the ladder, up the ladder, The bauxite dock was on the other side, you understand? You had to pass under that.

Q. Okay.

A. And lots of times, sometime air -- not air, the -- the white bauxite, the powder, would be blowing, you know, so there's always -- they had a big tractor and thing and so. And that used to pick up where, on the alumina side or bauxite side, keep the -- the road clean, you know, right? And that's it. That's as far as I can remember, you know. As far as I can remember.

MR. PATE: The camera has a battery. I just need to flip onto the battery so it will continue rolling.

MR. WU: Stop the record for a second.

MR. PATE: Sure.

(Short recess taken.)

MR. HUNTER: Let's just note on the record the power went out and so we don't have any video right now.

MR. WU: Do you want to make a statement or is take -- do you think that's enough? That's your statement.

MR. PATE: Yeah.

MR. WU: Put it on the record.

MR. HUNTER: I just did.

MR. WU: Sorry. Okay. All right.

Q. **(Ms. Sareva)** Mr. Boston, you mentioned earlier that there was a crane with a large scooper that was used to scoop the bauxite --

A. A what?

Q. -- from the dock?

A crane with a large scoop that was used to scoop the bauxite near the dock?

A. Crane?

Q. On the ship?

A. To take it out of the ship?

Yeah, I think so.

Q. When you were working at Harvey or Martin Marietta or VIALCO, did you work near that crane?

A. Near the what?

Q. Near the crane?

A. Crane? No, I work in the power plant. The crane is not part of the power plant. The crane is part of the process. Process.

Q. And the whole time you were there, you worked in the power plant?

A. At Martin Marietta?

Q. At Martin Marietta, at VIALCO, and at Harvey, you worked the whole time at the power plant?

A. It's power plant work I do.

Q. So you never worked anywhere else besides the power plant?

A. Beside the power plant. Yeah, jump in my ride and go home. Go through the main gate. I mean, the -- by the gate.

Q. Okay. So you mentioned earlier that you had a special parking that was for supervisors?

A. That what?

Q. A special parking for supervisors?

A. Salary. Salary. You didn't had to be a supervisor to be on salary. That person that was on salary, right? Okay.

Q. Okay. But so --

A. So they could come in the plant.

Q. And you were a supervisor at the plant, correct?

A. I was on salary. I was a supervisor. Yeah, supervisor, because you had operators and the supervisors, manager, assistant superintendent, and superintendent. Yeah, yeah, um-hum.

Q. Did you receive any special training when you became a supervisor?

A. When I became a supervisor, special training. General. General training. Everybody got training on the job.

Q. So what kind of training did everybody get?

A. Security. They got training in security, you know, what -- as to what the job is and all of that. And

Q. And why did you not want to inhale that dust?

A. It wasn't good for your health. It was not good for your health.

Q. And did anybody tell you that you had to wear a dust mask when you were in a dusty area?

A. Had to tell me? You mean me, specifically, at any specific time?

Q. Yes.

Did anybody tell you that you should wear a dust mask when you were in a dusty area?

A. No, because I would have it on if I'm in a dusty area, especially the areas -- almost all through the plant was dusty.

Q. And where did you get the dust mask that you wore in the dusty areas?

A. Where did you get it from?

Q. Where did you get it from?

A. The -- where did we use to have those? Because those were things that you change regular, you know. Regular, regular.

Q. Um-hum.

A. I think somewhere in the control room, something like that.

Q. I didn't hear you. Can you speak up?

A. I think the supervisors had that in his office.

Had dust masks. The supervisor was supposed to have that in his office.

Q. So you mentioned that you were a supervisor.

Did you have dust masks in your office?

A. I believe so.

Q. And you said that they were something that you changed frequently.

Could people come to your office to get a new dust mask if they wanted to?

A. If they needed it.

Q. Yes.

A. Yeah.

Q. And did you tell the people you worked with that they could come get a dust mask if they needed it?

A. The safety department said that every day -- time they had a meeting. Everybody talk about that. Safe. Everybody tried to be safe.

Q. So you said that you would wear a dust mask when you were in a dusty area.

What were some of those dusty areas that you were in where you would wear a mask?

A. I come in, freshwater tanks were over there.

MR. ALKON: Now, you have to keep your voice up.

A. Yeah, yeah, yeah. Well, I trying. We had -- we had some large tanks, right? Oil tanks and water tanks, right? And the location where they were, you understand, I -- we didn't require to have that, or where you're having lunch in the locker room -- in the -- in the operator room, they had A/C in there, not required to have that on.

Q. **(Ms. Sareva)** Why not?

A. Huh?

Q. Why not? Why were you not required there in the lunchroom?

A. Because when you had that on, how you going to eat?

Q. Okay. That's true.

Were there certain areas that were dustier than others?

A. Definitely.

Q. And so did it depend on which area you were in, whether you had to wear a mask or not?

A. Where you had to wear a mask?

Q. Did you have to wear a mask in certain areas, but not in other areas, because other areas were dustier than others?

A. I said we always used to have it around our neck.

Q. Uh-huh.

A. And you put it on if you go into a dusty area.

Q. Okay.

A. And when you going to eat or whatever, you know, you understand, when you're going to have lunch, okay? Or you going to drink water from the water cooler.

Q. Uh-huh.

A. No. So, you -- (Indicating.)

Q. So when you say that we always had it around your (sic) neck, who are you referring to?

A. Employees and supervisors. The superintendent, he hardly came out of his A/C room, air-condition, you know. So he used to come in and go to the control room and go back. And when he coming to go home, he didn't used to had that --

Q. Okay.

A. -- around his neck, the superintendent.

And you, the supervisors, yeah, you had it. We used to carry it around our neck. We had it around our neck.

Q. And were there certain rooms or areas where you did not have to wear a mask because it wasn't dusty?

A. Yeah.

Q. And did the safety department tell you to wear the mask in other areas because it was dusty?

A. Yeah.

Q. So you mentioned a water tank.

Was the area near the water tank dusty?

A. Where we had the water through the line and desal.

Q. So you said that near the water tank, you didn't wear a mask.

Was that because it wasn't dusty?

A. I'm telling you the tank -- the tank area.

Q. Um-hum.

A. They were -- it was dusty. Used to have dust blowing. Yes, if they had an area that was not dusty.

Q. Okay. Do you know what Mine Safety and Health Administration training is, or MSHA, M-S-H-A?

A. Mine Safety and Health Association, or something like that. Authority.

Q. Do you remember hearing the word "MSHA" while you were working at Harvey, Martin Marietta, and VIALCO?

A. MSHA? It's the same thing, yeah.

Q. Did you have MSHA training?

A. You mean any -- all the time, or if we ever had one while working there? If you ever have MSHA training?

Q. Um-hum.

A. MSHA training. Additional, like you mean every day during the -- during the year?

Q. Either every day or once a year, twice a year, once a month?

A. I can't recall.

Q. Okay.

A. I don't recall.

Q. That's fine.

Do you remember whether officials from MSHA came to visit while you were working at Harvey, Martin Marietta, or VIALCO?

A. Visit my department or visit the plant?

Q. Visit --

A. The plant?

Q. Yes.

A. I think they were supposed to.

Q. Did you ever see any signs or paperwork in various areas regarding safety?

A. MSHA sign, you mean?

Q. No. Just moving on from MSHA, just any sort of signs about safety telling you to do certain things, or not do certain things, all around the plant?

A. Huh-uh. To do certain things or not do certain things all around the plant? All around? No. No smoking. Yeah, they had no smoking sign --

Q. Um-hum.

A. -- and all of that. Yeah, they used to see a lot of those signs saying, so, yes.

Q. And were there signs telling you to wear your dust mask?

A. No.

Q. Okay.

A. No, no, no.

Q. And there were no signs in the power plant where you worked telling you to wear a dust mask?

A. A cortshel (phonetic spelling). Sorry. Cortshel is not a bad word, okay?

Q. Okay.

A. It's not swearing.

Q. Okay.

A. I can't recall.

Q. Okay. Do you remember receiving any sort of paperwork that discussed safety?

A. Receiving paperwork, me? Personally, me, --

Q. Yes.

A. -- Ronald Boston?

You mean that I might have thing, some MSHA sign, or something? This -- no, no, no.

Q. So when you wore a dust mask in these dustier areas, what color was the dust?

A. White or brown. White or red, reddish, you know. I does say brown, but it's reddish.

Q. And did you come in contact more with red dust or white dust?

A. Huh?

Q. Was it more red dust or white dust?

A. More? Well, I didn't really check to see which was more, but I know the areas. They had white. They had red. They had both of them.

Q. Did the dust ever get on your clothes?

A. On your clothes? Clothing?

Q. Um-hum.

A. On your clothing?

Q. Um-hum. Yes.

A. On your -- if you're wearing a coverall, it wouldn't get on your clothing because you wear the coverall over your clothing.

Q. And did you wear a coverall every day?

A. Que no. We didn't have to wear a coverall every day.

Q. Did some people have to wear a coverall every day?

A. I think so.

Q. Why did you not have to wear a coverall every day?

A. Because I wasn't in a dusty area every -- all the time.

Q. So how often were you in a dusty area where you had to wear a coverall? Was it once a week? Once a month?

A. Once a week or once a month? Every day. I walk, go down to the seawater station, I got to pass a dusty area, okay? When I come back up, you don't go to the seawater station and stay down there every day, but down there to an answer before we take a break.

MR. PATE: Ask it again.

Q. **(Ms. Sareva)** So why did your attorney tell you to go see a doctor?

And if you don't understand the question, I can try to rephrase it for you.

A. Yeah, clear it up.

Q. Do you want me to rephrase the question?

A. Yeah, rephrase.

Q. When your doctor told you to go see an attorney -- sorry. Strike that.

When your attorney told you -- when your attorney told you to go see a doctor, did he tell you why he thought you should go see a doctor?

A. If he? Probably did, I can't recall.

Q. Can you read back the answer?

A. I can't remember. I can't remember.

MS. SAREVA: Okay. Now we can take a break.

(Short recess taken.)

Q. **(Ms. Sareva)** So, Mr. Boston, do you remember seeing a female doctor at the direction of your attorney?

A. I ain't remember.

Q. Have you ever gotten an x-ray before?

A. Lots of x-ray. Lots of x-ray.

Q. Lots of x-rays?

A. Small growing up, yeah, um-hum.

Q. Did your attorney ever tell you to get an x-ray?

A. Like recently, or so?

Q. Any time?

A. I don't remember. I don't remember.

Q. You don't remember whether your attorney told you to get an x-ray?

A. No, because I say, I get more than one, you know, and I don't -- one x-ray. I don't remember when.

Q. So if you could look at this document and turn to Page -- with the Bates Stamp at the bottom.

MR. ALKON: Oh, what page? Excuse me?

MS. SAREVA: The page Bates Stamped PL BOSTON 0011.

MS. YONG: It's got to be towards the end. Maybe 8.

MS. SAREVA: Page 11.

MR. ALKON: Thank you.

MS. SAREVA: Bates Stamp 11.

MS. YONG: It's the x-ray. I can find it for you, if you like.

MR. ALKON: Thank you.

MS. YONG: Yep.

Q. **(Ms. Sareva)** Page 11. Top of the page, it says, Boston, Ronald R. in handwritten writing.

A. Yeah.

Q. And beneath that, it says, "Date of Radiograph," month, 01, day, 28, year 2008.

A. '8, yeah, uh-huh.

Q. Do you remember receiving an x-ray in 2008?

A. I don't remember.

(Respite.)

Q. Okay. If you can turn to the page that's Bates Stamped PL BOSTON 0016.

MS. YONG: Just flip it to the next page.

Q. **(Ms. Sareva)** And if you see at the top, it says, T & G Pulmonary Services. Do you see that?

A. Yeah.

Q. And it says 200 North Holland Point Drive, Stella, NC. And beneath that, it says, Primary Care, PLLC, 4000 Beeston Hill Medical Building, Suite 1, Christiansted.

Do you see that?

A. Uh-huh.

Q. Do you know what Beeston Hill is?

A. I think so.

Q. What do you understand Beeston Hill to be?

A. Beeston Hill is -- you take the road from Pueblo coming back down to come around the corner, right? Oh, to turn into --

Q. Have you ever been to Beeston Hill?

A. Yes.

Q. Yes?

A. Yeah.

Q. Okay. And what did you do there?

A. Beeston Hill.

Q. Are you having difficulty understanding the question?

A. No. Remembering where -- where to -- the location.

Q. Okay.

A. I know where they got a church someplace around there, I know for sure.

Q. Okay.

A. I know they got a church around there for sure. I can remember that. I know where the building is.

Q. Okay. And if you look at this page, it says, Dr. Prasad.

A. Dr. Prasad, yeah.

Q. Do you know who Dr. Prasad is?

A. Yeah, the name I know for sure. I can't remember what he looks like.

Q. Have you seen Dr. Prasad?

(Respite.)

Is everything okay?

A. Huh?

Q. Are you okay to keep going?

A. Memory. I trying to remember. I know Dr. Prasad --

Q. Okay.

A. -- very well, but I trying to figure it out.

Q. That's fine. We can move on.

A. Yeah.

Q. We're going to mark the next exhibit.

A. Huh?

Q. I'm going to show you another piece of paper.

A. Okay.

Q. So you can set that one aside.

This is Exhibit 4.

(Deposition Exhibit No. 4 was marked for identification.)

So if you look at the back of this top, it says, Chesnutt Pulmonary Service.

Do you see that?

A. Yes. Austin, Texas.

Q. Um-hum. And then next to name, it says, Boston, Ronald. Do you see that?

Right at the top of the page.

A. What was that? Boston, Ronald.

Q. Right. So if you look at the right side, it says that this is dated April 15th, 2019.

gate, right? That is where everyone that was going in the plant will pass. Will come through.

Q. Okay. And where else did you work at the plant? What other buildings at the plant did you work at, and where were they located?

A. The evaporator.

Q. And where was the evaporator located at the plant?

A. East of the powerhouse. The powerhouse, main building. That is where the water plants were, the evaporator, where we made water. And we had there, we had condensate tank, returning steam. You know, after the -- we use steam in some of the units, right? That steam went to the condensate tank and come back as field water to the powerhouse. Going to the powerhouse, yeah.

Q. Was any bauxite dust ever processed or refined at the evaporator building?

A. Well, it used to blow in the air and come in the operator room, control room, outside on the pumps and everything outside because it was dust.

Q. But was it processed at that room? The evaporator room?

A. Huh?

Q. Was any dust processed in the evaporator room?

A. Dust?

Q. Yes.

A. No.

Q. Okay.

A. No.

Q. Now, you mentioned in your earlier testimony that in your head, you thought about how dusty it was.

Did you ever complain to any other co-workers about the dust, or any supervisors?

A. That was a topics every day. Again, that was topics every day, sun and dust, yeah. And it's shaking up and now still have to move. They doing that, you know. Oh, my gosh, it's hot. It's dusty.

Q. Did they ever give you any advice of what to do about the dust?

A. What about the dust clothes and --

Q. Yes.

A. No, that I can recall.

Q. Do you recall specifically speaking to a supervisor about the dust?

A. Yes. To everybody, yes.

Q. What was the supervisor's --

A. It's dusty. Dusty.

Huh?

Q. What was the supervisor's name?

A. I said when I just went there, right? Mr. Helga.

THE COURT REPORTER: Mr. who?

A. Fish. Fungi and fish.

Q. Okay. Can you tell me what you ate for lunch two days ago?

A. It was -- let me see. Macaroni, hamburger, and cheese.

Q. Good.

So let's talk about the bauxite plant. You told these attorneys here you worked at the bauxite plant, correct?

A. Yes, sir.

Q. When you were at that bauxite plant, did you breathe red dust?

A. Yes, for sure.

Q. Can you tell me, was it on your clothes?

A. Yes, yes, yes.

Q. Okay. How was it on your clothes? Tell me about it.

A. In a dust form.

Q. What did it look like?

A. Red and some -- some red, some white.

Q. Where would it be on your clothes?

A. On my clothes. On my uniform. On my -- my pants and shirts.

Q. Would it get in your hair, the dust?

A. No, because I had on a safety helmet.

Q. Would it get in your ears?

A. Yeah. I believe, yeah.

Q. Did the dust get on your hands?

A. I wear gloves. Wearing gloves, no.

Q. Would the dust get in your mouth?

A. I believe sometimes, yes. Yeah.

Q. Did you ever have to spit because the dust was in your mouth?

A. Yes, yes.

Q. What was the color when you spit? Did the spit have a color?

A. Not directly, it didn't.

Q. Did you ever get dust in your nose?

A. Yes, I believe.

Q. Did you have to blow your nose because of the dust?

A. Yeah. Blow out, yeah.

Q. When you blew your nose, do you recall any color?

A. It would be like brownish, like.

Q. Did you wear your clothes home after work?

A. Wear them home? Until I reach home, I took them off.

Q. When you took off your clothes at home, did you take a shower?

A. Not all the time.

C-E-R-T-I-F-I-C-A-T-E

I, SUSAN C. NISSMAN, a Registered Merit Reporter and Notary Public for the U.S. Virgin Islands, Christiansted, St. Croix, do hereby certify that the above and named witness, **RONALD RUTHERFORD BOSTON**, was first duly sworn to testify the truth; that said witness did thereupon testify as is set forth; that the answers of said witness to the oral interrogatories propounded by counsel were taken by me in stenotype and thereafter reduced to typewriting under my personal direction and supervision.

I further certify that the facts stated in the caption hereto are true; and that all of the proceedings in the course of the hearing of said deposition are correctly and accurately set forth herein.

I further certify that I am not counsel, attorney or relative of either party, nor financially or otherwise interested in the event of this suit.

IN WITNESS WHEREOF, I have hereunto set my hand as such Registered Merit Reporter on this the 6th day of December, 2019, at Christiansted, St. Croix, United States Virgin Islands.

My Commission Expires: Susan C. Nissman, RPR-RMR
June 28, 2023 NP 234-19

EXHIBIT 101

History of the St. Croix Alumina Plant,
LMC_Halliday_00006624

A. History of the St. Croix Alumina Plant

In 1963, via Act 814 of the Virgin Islands Legislature, the Harvey family obtained a series of benefits that allowed them to build an alumina plant on St. Croix. In 1967, Harvey Aluminum Company completed the construction of the alumina plant which had an initial capacity of 226,000 TPY producing floury alumina.

In 1968, Martin Marietta Corporation acquired a controlling interest in Harvey Aluminum Company. In 1972, Harvey Aluminum (including the St. Croix facility) became a wholly-owned subsidiary of Martin Marietta Corporation. The Aluminum Company was renamed Martin Marietta Aluminum, Inc.

The St. Croix facility, while owned by Martin Marietta Aluminum, Inc., is operated by Martin Marietta Aluminum Properties, Inc., a wholly-owned subsidiary of Martin Marietta Aluminum Inc.

Through the years the St. Croix facility has gone through a series of major expansions or modifications.

- **Expansion A** - (1968) increased production from 226,000 TPY to 335,000 TPY, improving mostly the grinding and precipitation systems.
- **Expansion B** - (1972) was mainly to prepare the plant for processing Boke bauxite, although additional production (15,000 TPY) was obtained by elimination of some production bottlenecks.
- **Expansion C** - was completed in 1976. It was designed to increase the plant capacity from 350,000 TPY to 450,000 TPY. Before the expansion work was completed, the plant was operating at 375,000 TPY. After completion of expansion C, the plant operated at 500,000 TPY of sandy alumina, and this was subsequently increased to 580,000 TPY.
- **Expansion D** - was completed in 1982. Capacity was further increased to 700,000 TPY.
- **Coal Project** - Feasibility studies were started early in 1980 and the coal boiler was commissioned in December of 1982.
- **Powerhouse Upgrading** - to be completed in May 1985. Replace two small turbine generators with 12.5 M.W. machines with higher pressure rating. Increase generating voltage from 4,160 to 13,800 to allow expansion.
- **Red Mud Redigest** - concept was tested and finalized by mid-1980, and installation was successfully commissioned by mid-1984.

Additional improvements were achieved by a steady upgrading of the subsystems of the plant and through basic technological innovations. As a result, alumina quality has improved steadily to the point where it is the preferred feed to many of our customers' smelters. Plant productivity and energy efficiency have also markedly increased.

EXHIBIT 120

B Read and Impression - Milton Burt, 21-CV-548_BURT_000008 – 21-CV-548_BURT_000010

MILTON BURT.

CHEST RADIOGRAPH CLASSIFICATION

FEDERAL MINE SAFETY AND HEALTH ACT OF 1977
DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL & PREVENTION

Coal Workers' Health Surveillance Program
National Institute for Occupational Safety and Health
1095 Willowdale Road, MS LB208
Morgantown, WV 26505
FAX: 304-285-6058

OMB No.: 0920-0020
CDC/NIOSH (M) 2.8
REV. 01/2015

DATE OF RADIOGRAPH (mm-dd-yyyy) 02-28-2019

EXAMINEE'S Social Security Number ___ - __ - ____

Full SSN is optional, last 4 digits are required.

TYPE OF READING A ☐ B ☒ F ☐

FACILITY Number - Unit Number ____ - __

Note: Please record your interpretation of a single radiograph by placing an "x" in the appropriate boxes on this form. Classify all appearances described in the ILO International Classification of Radiographs of Pneumoconiosis or Illustrated by the ILO Standard Radiographs. Use symbols and record comments as appropriate.

1. IMAGE QUALITY ☐ 1 ☑ 2 ☐ 3 ☐ U/R

(If not Grade 1, mark all boxes that apply)

☐ Overexposed (dark) ☒ Improper position ☐ Underinflation ① Scapula overlay
☐ Underexposed (light) ☐ Poor contrast ☐ Mottle
☐ Artifacts ☐ Poor processing ☐ Other (please specify)

2A. ANY CLASSIFIABLE PARENCHYMAL ABNORMALITIES? YES ☒ Complete Sections 2B and 2C NO ☐ Proceed to Section 3A

2B. SMALL OPACITIES

a. SHAPE/SIZE

PRIMARY		SECONDARY	
p	[✓ s]	p	s
q	t	q	[✓ t]
r	u	r	u

b. ZONES

	R	L
UPPER	☐	☐
MIDDLE	☒	☒
LOWER	☒	☒

c. PROFUSION

0/-	0/0	0/1
[✓ 1/0]	1/1	1/2
2/1	2/2	2/3
3/2	3/3	3/+

2C. LARGE OPACITIES SIZE ☒ O ☐ A ☐ B ☐ C Proceed to Section 3A

3A. ANY CLASSIFIABLE PLEURAL ABNORMALITIES? YES ☐ Complete Sections 3B, 3C NO ☒ Proceed to Section 4A

3B. PLEURAL PLAQUES *(mark site, calcification, extent, and width)*

Chest wall	*Site*	*Calcification*
In profile	☐ O ☐ R ☐ L	☐ O ☐ R ☐ L
Face on	☐ O ☐ R ☐ L	☐ O ☐ R ☐ L
Diaphragm	☐ O ☐ R ☐ L	☐ O ☐ R ☐ L
Other site(s)	☐ O ☐ R ☐ L	☐ O ☐ R ☐ L

Extent (chest wall; combined for in profile and face on)
Up to 1/4 of lateral chest wall = 1
1/4 to 1/2 of lateral chest wall = 2
> 1/2 of lateral chest wall = 3
☐ O ☐ R ☐ O ☐ L
☐ 1 ☐ 2 ☐ 3 ☐ 1 ☐ 2 ☐ 3

Width (in profile only)
(3mm minimum width required)
3 to 5 mm = a
5 to 10 mm = b
> 10 mm = c
☐ O ☐ R ☐ O ☐ L
☐ a ☐ b ☐ c ☐ a ☐ b ☐ c

3C. COSTOPHRENIC ANGLE OBLITERATION ☐ R ☐ L Proceed to Section 3D NO ☒ Proceed to Section 4A

3D. DIFFUSE PLEURAL THICKENING *(mark site, calcification, extent, and width)*

Chest wall	*Site*	*Calcification*
In profile	☐ O ☐ R ☐ L	☐ O ☐ R ☐ L
Face on	☐ O ☐ R ☐ L	☐ O ☐ R ☐ L

Extent (chest wall; combined for in profile and face on)
Up to 1/4 of lateral chest wall = 1
1/4 to 1/2 of lateral chest wall = 2
> 1/2 of lateral chest wall = 3
☐ O ☐ R ☐ O ☐ L
☐ 1 ☐ 2 ☐ 3 ☐ 1 ☐ 2 ☐ 3

Width (in profile only)
(3mm minimum width required)
3 to 5 mm = a
5 to 10 mm = b
> 10 mm = c
☐ O ☐ R ☐ O ☐ L
☐ a ☐ b ☐ c ☐ a ☐ b ☐ c

4A. ANY OTHER ABNORMALITIES? YES ☐ Complete Sections 4B, 4C, 4D, 4E NO ☒ Complete physician info and sign form.

5. PHYSICIAN'S Social Security Number* ___ - __ - [redacted]

Full SSN is optional, last 4 digits are required.

READER'S INITIALS C L J

DATE OF READING (mm-dd-yyyy) 02-28-2019.

SIGNATURE

JOHN, M D , CHRISTOPHER L
PRINTED NAME (LAST, FIRST MIDDLE)

11321 I - 30, Suite 306
STREET ADDRESS

Little Rock
CITY

AR
STATE

72209
ZIP CODE

CDC/NIOSH 2.8 (E), Revised January 2015, CDC Adobe Acrobat 11.0, S508 Electronic Version, August 2015

4B. OTHER SYMBOLS (OBLIGATORY)

aa	at	ax	bu	ca	cg	cn	co	cp	cv	di	ef	em	es	fr	hi	ho	id	ih	kl	me	pa	pb	pi	px	ra	rp	tb
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

aa	atherosclerotic aorta
at	significant apical pleural thickening
ax	coalescence of small opacities - with margins of the small opacities remaining visible, whereas a large opacity demonstrates a homogeneous opaque appearance - may be recorded either in the presence or in the absence of large opacities
bu	bulla(e)
ca	cancer, thoracic malignancies excluding mesothelioma
cg	calcified non-pneumoconiotic nodules (e.g. granuloma) or nodes
cn	calcification in small pneumoconiotic opacities
co	abnormality of cardiac size or shape
cp	cor pulmonale
cv	cavity
di	marked distortion of an intrathoracic structure
ef	pleural effusion
em	emphysema
es	eggshell calcification of hilar or mediastinal lymph nodes
fr	fractured rib(s) (acute or healed)
hi	enlargement of non-calcified hilar or mediastinal lymph nodes
ho	honeycomb lung
id	ill-defined diaphragm border - should be recorded only if more than one-third of one hemidiaphragm is affected
ih	ill-defined heart border - should be recorded only if the length of the heart border affected, whether on the right or on the left side, is more than one-third of the length of the left heart border
kl	septal (Kerley) lines
me	mesothelioma
pa	plate atelectasis
pb	parenchymal bands - significant parenchymal fibrotic stands in continuity with the pleura
pi	pleural thickening of an interlobar fissure
px	pneumothorax
ra	rounded atelectasis
rp	rheumatoid pneumoconiosis
tb	tuberculosis

4C. MARK ALL BOXES THAT APPLY: (Use of this list is intended to reduce handwritten comments and is optional)

Abnormalities of the Diaphragm

☐ Eventration

☐ Hiatal hernia

Airway Disorders

☐ Bronchovascular markings, heavy or increased

☐ Hyperinflation

Bony Abnormalities

☐ Bony chest cage abnormality

☐ Fracture, healed (non-rib)

☐ Fracture, not healed (non-rib)

☐ Scoliosis

☐ Vertebral column abnormality

Lung Parenchymal Abnormalities

☐ Azygos lobe

☐ Density, lung

☐ Infiltrate

☐ Nodule, nodular lesion

Miscellaneous Abnormalities

☐ Foreign body

☐ Post-surgical changes/sternal wire

☐ Cyst

Vascular Disorders

☐ Aorta, anomaly of

☐ Vascular abnormality

4D. Should worker see personal physician because of findings? YES ☐ NO ☒

Date Physician or Worker notified? (mm-dd-yyyy) ☐☐-☐☐-☐☐☐☐

4E. OTHER COMMENTS

Public reporting burden of this collection of information is estimated to average 3 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection information, including suggestings for reducing this burden to CDC, Project Clearance Officer, 1600 Clifton Road, MS D-74, Atlanta, GA 30333, ATTN: PRA (0920-0020). Do not send the completed form to this address.

SOUTHWEST PULMONARY ASSOCIATES
CHRISTOPHER LEIGH JOHN, M.D.
M.B.B.CH., M.R.C.P. (UK), F.R.C.P.C., F.C.C.P.
PULMONOLOGY, INTERNAL MEDICINE, ALLERGIC DISEASES
11321 INTERSTATE 30, SUITE 306
LITTLE ROCK, ARKANSAS 72209

TEL (501) 407-0200
FAX (501) 407-0220

February 28, 2019

Re: Milton Burt

CHEST X-RAY: The chest x-ray dated 2/28/2019, read by me 2/28/2019, according to the ILO 2000 Classification was a film quality 2 due to improper position with left scapular overlay. Parenchymal changes diagnostic of pneumoconiosis are noted. They are S/T in size and shape with distribution in both mid and lower zones. Profusion is 1/0. There are no large opacities seen. No pleural changes are noted.

IMPRESSION: Given the patient's abnormal chest x-ray and the appropriate latency period, I believe beyond a reasonable degree of medical certainty that he has evidence of underlying lung disease in the form of bilateral parenchymal fibrosis diagnostic of asbestosis and diagnostic of a history of asbestos exposure.

RECOMMENDATION:

1. He is at an increased risk for the development of lung cancer, mesothelioma and other non-pulmonary malignancies associated with asbestos exposure.
2. He should be advised to have a yearly chest x-ray and pulmonary function studies.
3. He should also be advised to refrain from the use of all tobacco products.

Yours sincerely,

Christopher L. John, M. D.
M. B. B. CH., M. R. C. P. (UK), F. R. C. P. C., F. C. C. P.

CLJ:kw

CERTIFIED BY: ROYAL COLLEGE OF PHYSICIANS & SURGEONS OF CANADA
ROYAL COLLEGE OF PHYSICIANS OF GREAT BRITIAN
EUROPEAN SPECIALIST REGISTER

EXHIBIT 103

PFT- Milton Burt,

21-CV-548_BURT_000011 –

21-CV-548_BURT_000020

CHESNUTT PULMONARY SERVICE
AUSTIN, TX

Name: BURT, MILTON A.
Gender: Male
Age: 73 Race: Black
Height(in): 69 Weight(lb): 206
Any Info:

Id: BURMIL00
Date: 07/21/19
Temp: 19 PBar: 757
Physician: C. JOHN, M.D.
Technician: M. CHESNUTT, CPFT

Spirometry (BTPS)

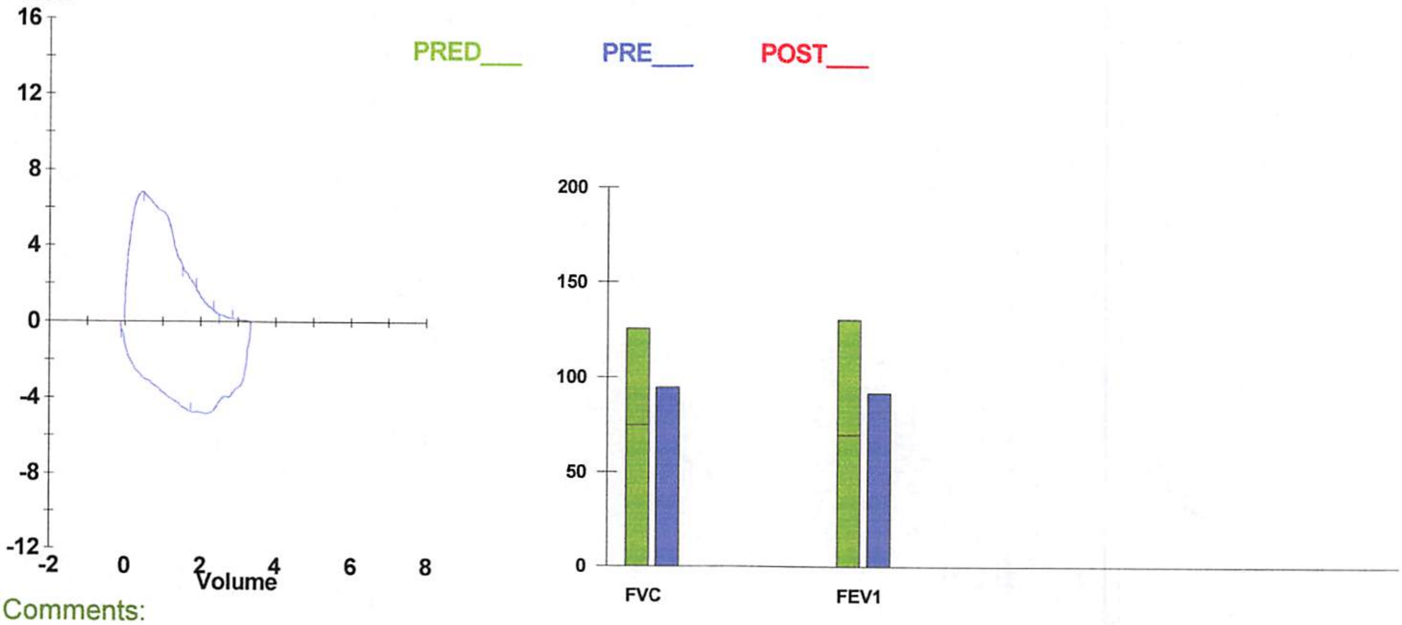
			PRE-RX		POST-RX		
		PRED	BEST	%PRED	BEST	%PRED	% Chg
FVC	Liters	3.56	3.37	95			
FEV1	Liters	2.65	2.43	92			
FEV1/FVC	%	76	72				
FEF25-75%	L/sec	2.22	1.42	64			
FEF50%	L/sec		2.55				
PEF	L/sec	7.52	8.65	115			
MVV	L/min						

Lung Volumes (BTPS)

TLC	Liters		5.88				
RV	Liters		2.42				
RV/TLC	%		41				
FRC N2	Liters		3.04				
VC	Liters		3.46				

Diffusion

DLCO	mL/mmHg/min		21.0				
DL Adj	mL/mmHg/min		21.0				
DLCO/VA	mL/mHg/min/L		3.74				
DL/VA Adj	mL/mHg/min/L		3.74				
VA	Liters		5.62				



Comments:

Spirometry data is ACCEPTABLE and REPRODUCIBLE. GOOD PATIENT EFFORT AND UNDERSTANDING.

Interpretation:

By signing this interpretation the physician is acknowledging that he/she has reviewed the computer interpretation and, in his/her professional opinion, this is a true and accurate reflection of the patient's current clinical condition.

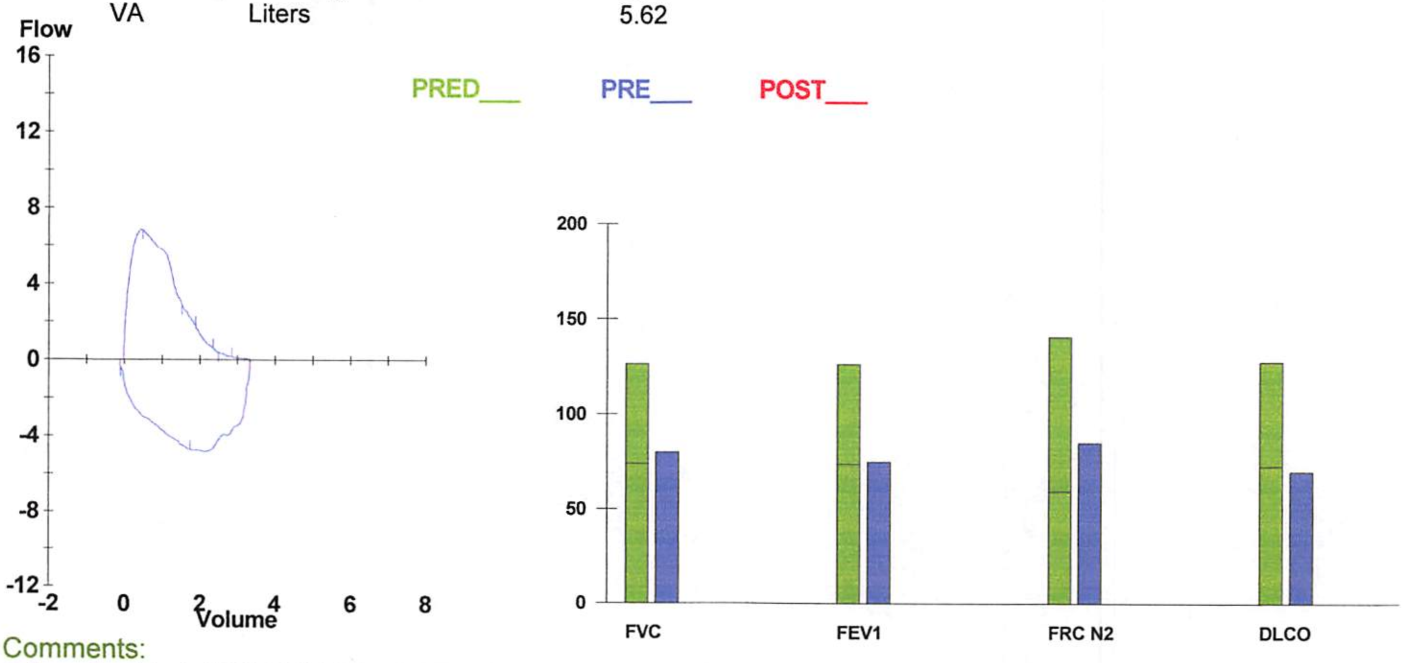
( ) = OUTSIDE 95% CONFIDENCE INTERVAL Norm Set: NHANES III - African-Ame Version: IVS-0101-21-2B

CHESNUTT PULMONARY SERVICE
AUSTIN, TX

Name: BURT, MILTON A.
Gender: Male
Age: 73 Race: Black
Height(in): 69 Weight(lb): 206
Any Info:

Id: BURMIL00
Date: 07/21/19
Temp: 19 PBar: 757
Physician: C. JOHN, M.D.
Technician: M. CHESNUTT, CPFT

			PRE-RX		POST-RX		
Spirometry (BTPS)		PRED	BEST	%PRED	BEST	%PRED	% Chg
FVC	Liters	4.23	3.37	80			
FEV1	Liters	3.23	2.43	75			
FEV1/FVC	%	77	72				
FEF25-75%	L/sec	2.91	1.42	49			
FEF50%	L/sec		2.55				
PEF	L/sec		8.65				
MVV	L/min						
Lung Volumes (BTPS)							
TLC	Liters	6.73	5.88	87			
RV	Liters	2.43	2.42	99			
RV/TLC	%	37	41				
FRC N2	Liters	3.58	3.04	85			
VC	Liters	4.23	3.46	82			
Diffusion							
DLCO	mL/mmHg/min	30.1	21.0	70			
DL Adj	mL/mmHg/min	30.1	21.0	70			
DLCO/VA	mL/mHg/min/L	4.60	3.74	81			
DL/VA Adj	mL/mHg/min/L		3.74				
VA	Liters		5.62				



Comments:
Spirometry data is ACCEPTABLE and REPRODUCIBLE. GOOD PATIENT EFFORT AND UNDERSTANDING.

Interpretation:

By signing this interpretation the physician is acknowledging that he/she has reviewed the computer interpretation and, in his/her professional opinion, this is a true and accurate reflection of the patient's current clinical condition.

( ) = OUTSIDE 95% CONFIDENCE INTERVAL Norm Set: Crapo/Hsu Version: IVS-0101-21-2B

CHESNUTT PULMONARY SERVICE
AUSTIN, TX

Date: 07/21/19 **Pre**

Single Breath DLCO — BURT, MILTON A. - BURMIL00

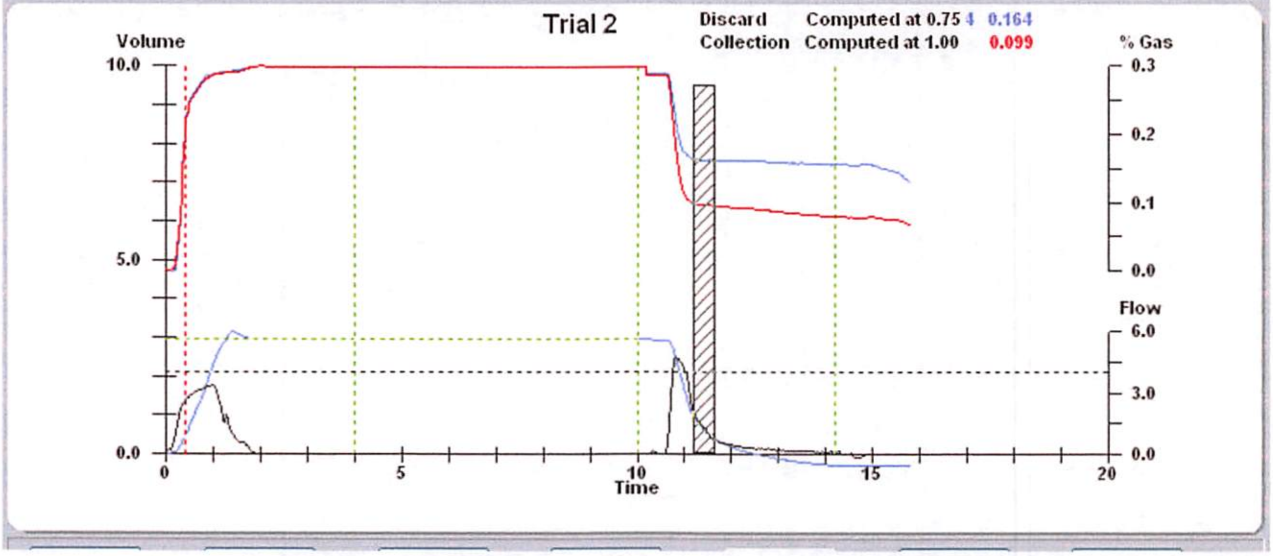
	Ref	Best	% Ref	1	2
DLCO	30.1	21.0	70	24.2	17.8
DL Adj	30.1	21.0	70	24.2	17.8
DLCO/VA	4.60	3.74	81	4.12	3.32
DL/VA Adj		3.74		4.12	3.32
IVC		3.24		3.31	3.17
VA		5.62		5.86	5.37
BHT		10.49		10.48	10.50
FI CH4		0.300		0.300	0.300
FE CH4		0.161		0.158	0.164
FI CO		0.300		0.300	0.300
FE CO		0.092		0.085	0.099
DLCO ECode		1000		000	000
DLCO Date		07/21		07/21	07/21
DLCO Time		10:14		10:14	10:19

CHESNUTT PULMONARY SERVICE
AUSTIN, TX

Date: 07/21/19 **Pre**

Single Breath DLCO --- BURT, MILTON A. - BURMIL00

	Ref	Best	% Ref	1	2
DLCO	30.1	21.0	70	24.2	17.8
DL Adj	30.1	21.0	70	24.2	17.8
IVC		3.24		3.31	3.17
VA		5.62		5.86	5.37
DL/VA Adj		3.74		4.12	3.32



CHESNUTT PULMONARY SERVICE
AUSTIN, TX

Date: 07/21/19 **Pre**

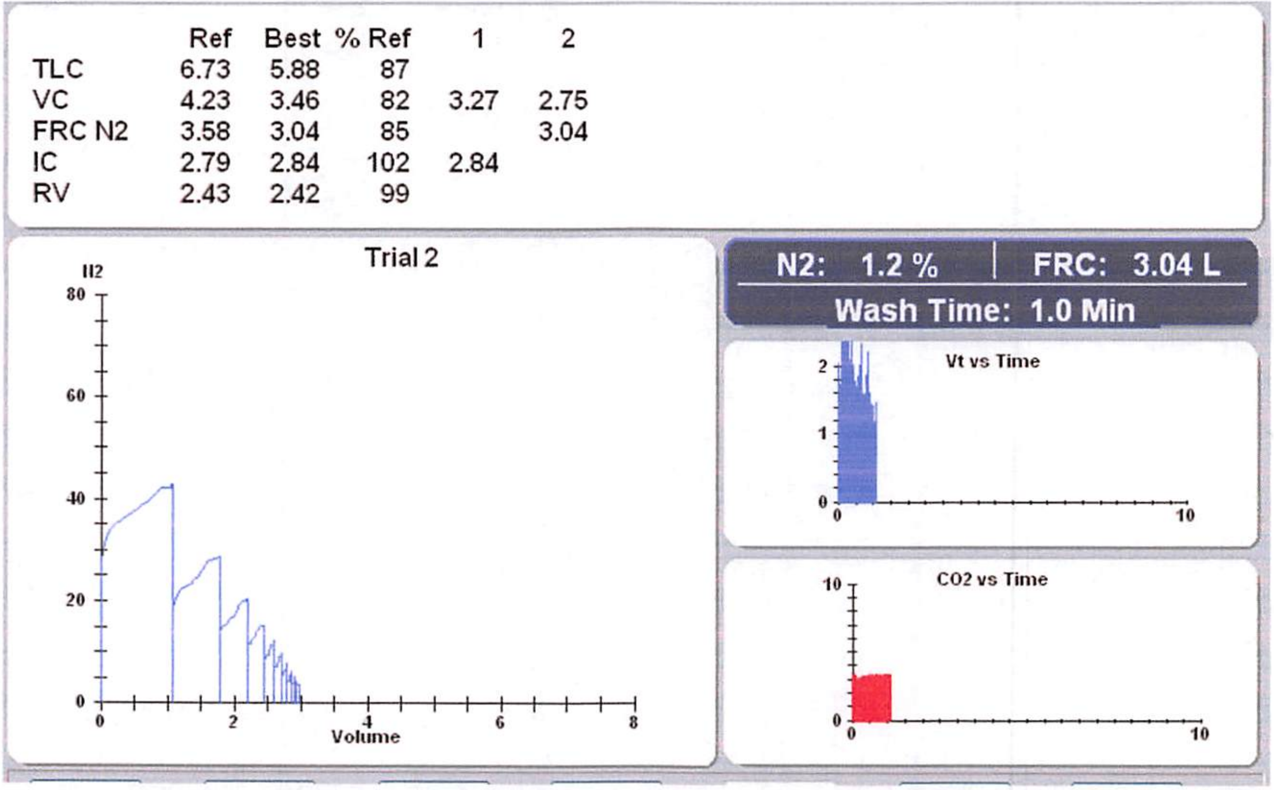
Lung Volumes — BURT, MILTON A. - BURMIL00

	Ref	Best	% Ref	1	2
TLC	6.73	5.88	87		
VC	4.23	3.46	82	3.27	2.75
FRC N2	3.58	3.04	85		3.04
IC	2.79	2.84	102	2.84	
ERV	1.40	0.43	30	0.43	
RV	2.43	2.42	99		
RV/TLC	37	41			
LCI		6.55			6.55
Wash Time		1.0			1.0
LVol ECode		010000		00	00
VE		15.8		15.8	
Vt		1.08		1.08	
f		15		15	
LVol Time		10:15		10:15	10:16
LVol Date		07/21		07/21	07/21

CHESNUTT PULMONARY SERVICE
AUSTIN, TX

Date: 07/21/19 **Pre**

Lung Volumes --- BURT, MILTON A. - BURMIL00

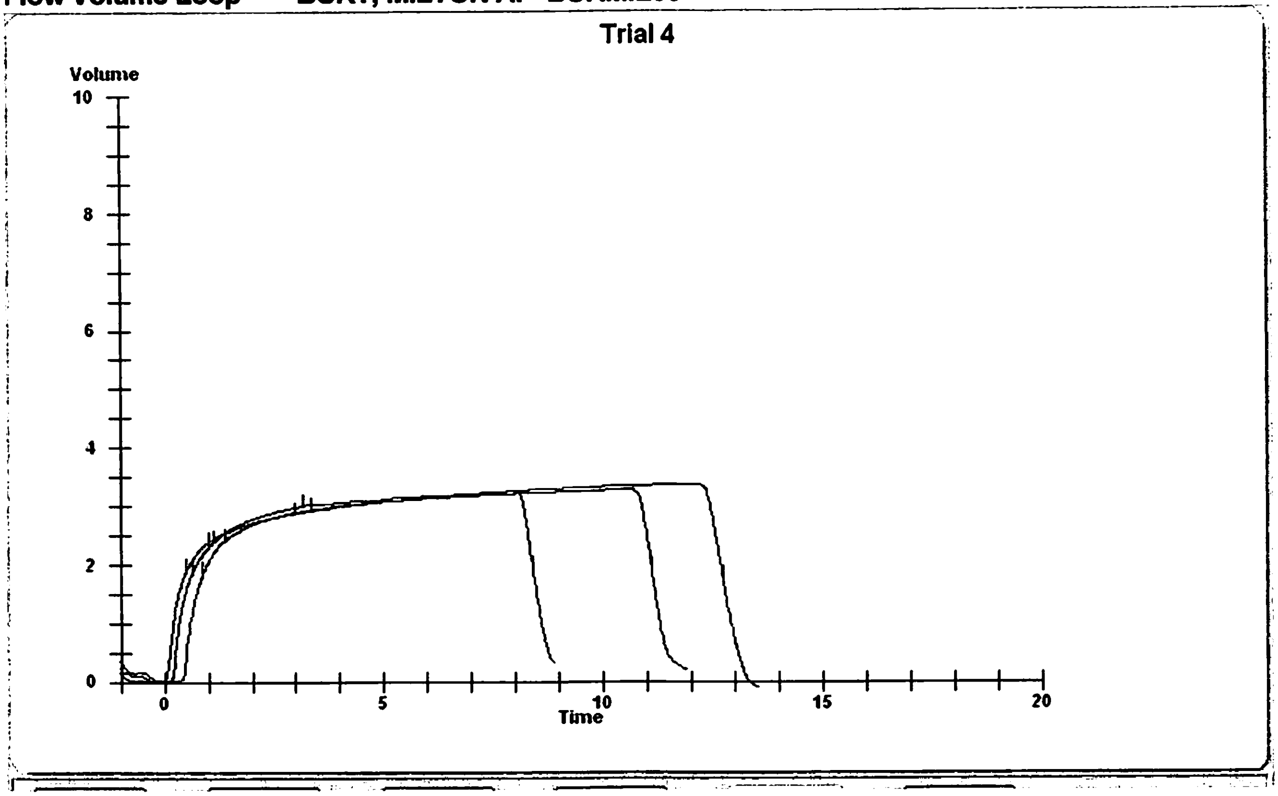


	Ref	Best	% Ref	1	2
TLC	6.73	5.88	87		
VC	4.23	3.46	82	3.27	2.75
FRC N2	3.58	3.04	85		3.04
IC	2.79	2.84	102	2.84	
RV	2.43	2.42	99		

N2: 1.2 % | FRC: 3.04 L
Wash Time: 1.0 Min

Date: 07/21/19 **Pre**

Flow Volume Loop — BURT, MILTON A. - BURMIL00

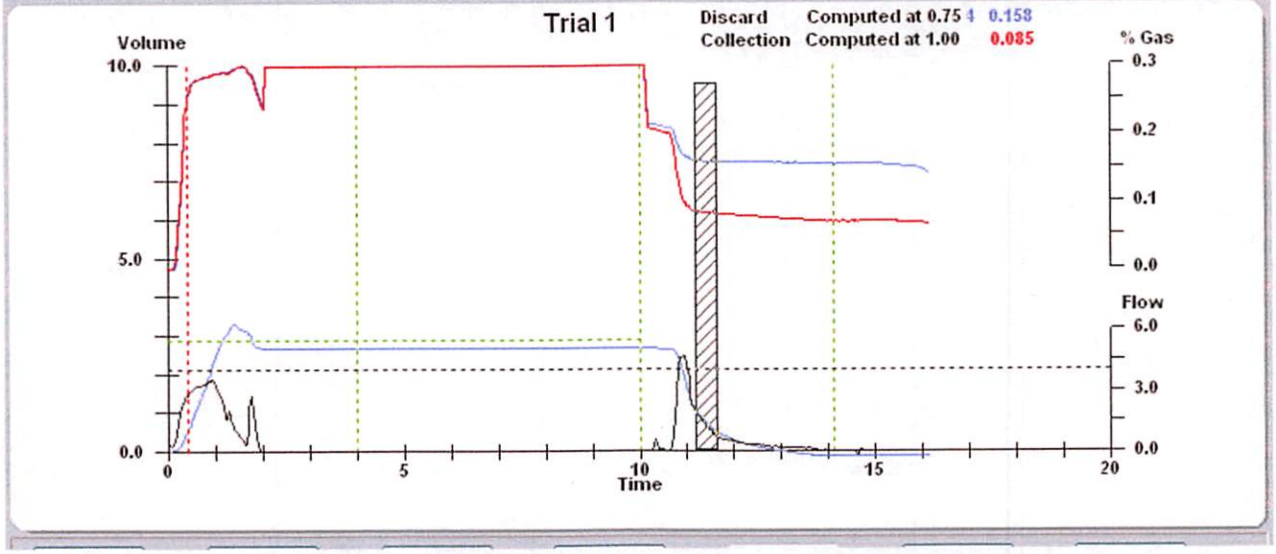


CHESNUTT PULMONARY SERVICE
AUSTIN, TX

Date: 07/21/19 **Pre**

Single Breath DLCO --- BURT, MILTON A. - BURMIL00

	Ref	Best	% Ref	1
DLCO	30.1	24.2	80	24.2
DL Adj	30.1	24.2	80	24.2
IVC		3.31		3.31
VA		5.86		5.86
DL/VA Adj		4.12		4.12



CHESNUTT PULMONARY SERVICE
AUSTIN, TX

Date: 07/21/19 **Pre**

Flow Volume Loop — BURT, MILTON A. - BURMIL00

	Ref	Best	% Ref	1	2	3	4
FVC	4.23	3.37	80	3.37	3.21	2.53	3.27
FEV1	3.23	2.43	75	2.38	2.41	2.25	2.43
FEV1/FVC	77	72		71	75	89	74
FEV3/FVC	91	85		85	93	100	90
FET100%		12.43		12.43	8.06	5.77	10.47
FEF25-75%	2.91	1.42	49	1.42	1.81	2.90	1.77
FEF25%		6.39		6.39	8.20	6.73	8.48
FEF50%		2.55		2.55	2.59	3.69	2.77
FEF75%		0.36		0.36	0.67	1.45	0.55
PEF		8.65		6.84	8.20	7.00	8.65
FVL ECode		000000		_000	_000	_011	_000
FIVC	4.23	3.46	82	3.46	2.91	0.01	3.08
PIF		4.84		4.84	5.46		5.55
FEF/FIF50		0.55		0.55	0.48		0.51

CHESNUTT PULMONARY SERVICE
AUSTIN, TX

Date: 07/21/19 **Pre**

Flow Volume Loop --- BURT, MILTON A. - BURMIL00

	Ref	Best	% Ref	1	2	3	4
FVC	4.23	3.37	80	3.37	3.21	2.53	3.27
FEV1	3.23	2.43	75	2.38	2.41	2.25	2.43
FEV1/FVC	77	72		71	75	89	74
FEF25-75%	2.91	1.42	49	1.42	1.81	2.90	1.77
PEF		8.65		6.84	8.20	7.00	8.65

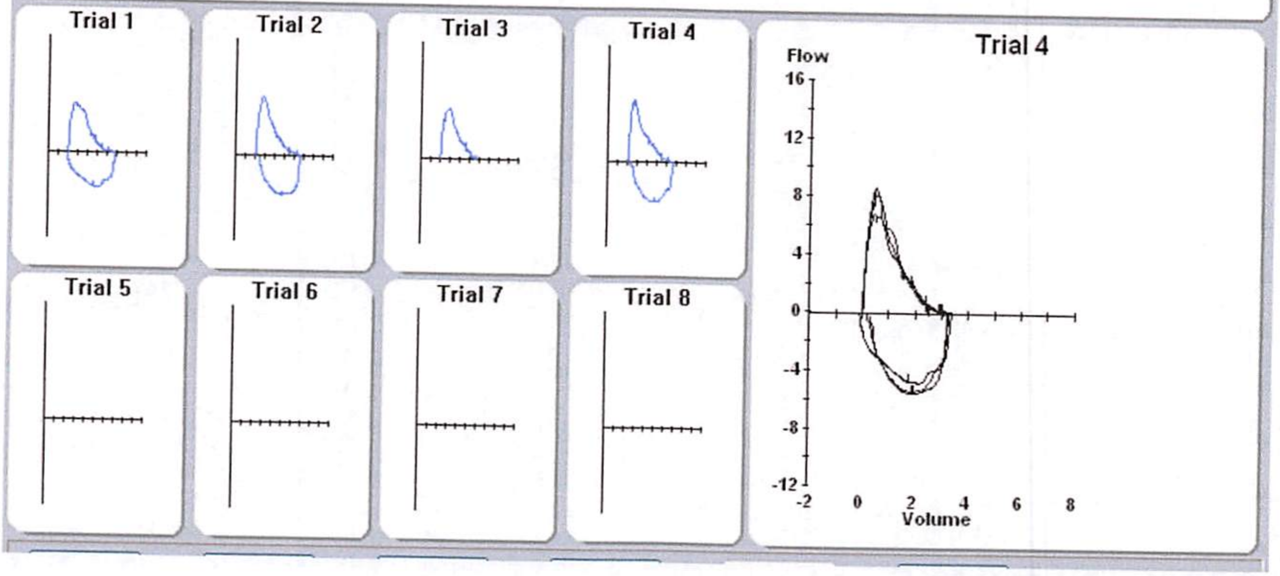


EXHIBIT 104

Itemized Statement of Earnings-
Milton Burt, 21-CV-548_BURT_000002 -
21-CV-548_BURT_000006

SSA-1826 ITEMIZED STATEMENT OF EARNINGS

SOCIAL SECURITY ADMINISTRATION
OFFICE OF CENTRAL OPERATIONS
6100 WABASH AVENUE
BALTIMORE MARYLAND 21215

Date: 11/19/2019

BURNS CHAREST LLP
365 CANAL ST STE 1170
NEW ORLEANS LA 70130-1118

We are sending the statement of earnings requested for:

Number Holder's Name: MILTON A BURT
Social Security Number: XXX-XX-[redacted]

Years Requested: 1960 THRU 2018

Control Number: 19297101605
SERS Order Number: 00000732930

Enclosure(s):
Earnings Statement

*0301WQYUF000102*NOTAFP.X3.EMI1826.AFP.R191118.PAM 000000000 0026010635641252184870130111895

SSA-1826 **ITEMIZED STATEMENT OF EARNINGS**

SOCIAL SECURITY ADMINISTRATION
EARNINGS RECORD INFORMATION

Date: 11/19/2019

Our records show the amount of earnings reported, not the amount of Social Security taxes that were paid.

Wages were first covered under Social Security in 1937. Therefore, 1937 is the first year for which earnings may be shown on our records. Employers were required to report earnings semi-annually in 1937, and on a quarterly basis for the years from 1938 through 1977. Beginning with 1978, employers are required to report earnings annually.

Our records do not show the exact date of employment (month and day) because we do not need this information to figure Social Security benefits. Employers do not give us this information.

Each year, there is a maximum amount of earnings that is subject to Social Security taxes and is used to compute benefits. If a person earns more than this maximum amount, the earnings statement will usually show the maximum rather than the total earnings. Maximum benefits can be found on the SSA website.
http://www.ssa.gov/OACT/COLA/cbb.html

Beginning in 1951, self-employed persons could also receive Social Security credit for their work. The maximum amounts of self-employment earnings that are subject to Social Security taxes and are used to compute benefits can also be found on the SSA website.
http://www.ssa.gov/OACT/COLA/cbb.html

If you have any questions, you should call, write, or visit any Social Security office. If you visit or call, please bring this letter. It will help us answer questions. The toll free number to call is 1-800-772-1213 (for the deaf or hard of hearing, call our TTY number, 1-800-325-0778).

SSA-1826 ITEMIZED STATEMENT OF EARNINGS

* * * FOR SSN XXX-XX-[redacted] * * *

FROM: SOCIAL SECURITY ADMINISTRATION
OFFICE OF CENTRAL OPERATIONS
6100 WABASH AVENUE
BALTIMORE MARYLAND 21215

NUMBER HOLDER NAME: MILTON A BURT
YEARS REQUESTED: 1960 THRU 2018

BURNS CHAREST LLP
365 CANAL ST STE 1170
NEW ORLEANS LA 70130

EMPLOYER NUMBER: 67-0252508
COMPAGNIE INDUSTRIELLE DE TRAVAUX
CITRA
PO BOX 11815
SANTURCE PR 00910-0000

YEAR	1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL
1967		906.00	1210.25	1407.47	$3,523.72
1968	1239.73	1468.83	1495.35	1080.63	$5,284.54
1969	1405.06	1418.83	1641.20	1614.00	$6,079.09
1970	579.84				$579.84

EMPLOYER NUMBER: 95-0816561
CA LEWISPORT LLC
500 W JEFFERSON ST STE 1900
LOUISVILLE KY 40202-2860

YEAR	1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL
1970	949.88	1637.79	1762.06	1887.60	$6,237.33
1971	2297.60	1795.15	1835.89	1794.96	$7,723.60
1972	2064.60	1909.75	2095.90	2532.86	$8,603.11
1973	2551.81	2600.56	2532.90	2384.20	$10,069.47
1974	3037.70	3422.76	4112.67	2626.87	$13,200.00
1975	4372.76	4510.38	3990.39	1226.47	$14,100.00
1976	4535.89	4679.52	5100.65	983.94	$15,300.00
1977	4111.29	4346.32	6585.98	1456.41	$16,500.00
1978					$17,700.00
1979					$22,900.00
1980					$25,900.00

ITEMIZED STATEMENT OF EARNINGS
* * * FOR SSN XXX-XX-[redacted] * * *

1981	$29,700.00
1982	$32,400.00
1983	$35,699.70
1984	$37,800.00

EMPLOYER NUMBER: 52-1195912
MARTIN MARIETTA ALUMINUM
PROPERTIES INC
6801 ROCKLEDGE DR
BETHESDA MD 20817-1803

YEAR	1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL
1985					$34,286.75

EMPLOYER NUMBER: 66-0403154
CAMINO DEL MAR INC
PO BOX 729
KINGSHILL VI 00851-0729

YEAR	1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL
1988					$2,520.00
1989					$35,637.33
1990					$30,686.00

EMPLOYER NUMBER: 66-0451934
VIRGIN ISLANDS ALUMINA INC
PO BOX 1525
ST CROIX VI 00851-0000

YEAR	1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL
1990					$32,000.61
1991					$55,489.28
1992					$70,489.97
1993					$65,780.69
1994					$66,872.01
1995					$38,117.59

EMPLOYER NUMBER: 25-1768826
ST CROIX ALUMINA L L C
% ALCOA AS AGENT
201 ISABELLA ST
PITTSBURGH PA 15212-5827

YEAR	1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL
1995					$24,235.00
1996					$60,743.19
1997					$60,837.59
1998					$65,212.48

SSA-1826 ITEMIZED STATEMENT OF EARNINGS

* * * FOR SSN XXX-XX-[redacted] * * *

1999	$68,142.08
2000	$67,274.77
2001	$23,213.00

EMPLOYER NUMBER: 66-0572837
JACOBS INDUSTRIAL MAINTENANCE
 COMPANY LLC
1111 S ARROYO PKWY PAYROLL TAX DEPT
PASADENA CA 91105-0000

YEAR	1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL
2001					$37,603.87
2002					$39,113.20

EMPLOYER NUMBER: 66-0605334
TURNER ST CROIX MAINTENANCE INC
% J W GUITREAU
8687 UNITED PLAZA BLVD
BATON ROUGE LA 70809-7009

YEAR	1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL
2002					$18,143.86
2003					$56,921.70
2004					$55,736.23
2005					$20,464.88

EMPLOYER NUMBER: 98-0191354
HOVENSA LLC
% A & M
540 W MADISON ST FL 18
CHICAGO IL 60661-7698

YEAR	1ST QTR	2ND QTR	3RD QTR	4TH QTR	TOTAL
2005					$42,525.50
2006					$64,500.03
2007					$65,763.81
2008					$78,071.96
2009					$70,413.22
2010					$90,784.90
2011					$87,336.41
2012					$69,676.75

****
********* THERE ARE NO OTHER EARNINGS RECORDED UNDER THIS *********
********* SOCIAL SECURITY NUMBER FOR YEAR(S) REQUESTED *********
****

EXHIBIT 105

Excerpts of Transcript of Deposition of
Miguel Velez, November 21, 2019

IN THE SUPERIOR COURT OF THE VIRGIN ISLANDS

DIVISION OF ST. CROIX

IN RE: BAUXITE CONTAINING SILICA	)	**MASTER CASE NO:**
	)	**SX-15-CV-098**
	)	
CHARLES LITIGATION SERIES	)	**COMPLEX LITIGATION**
	)	**DIVISION**

THE VIDEOTAPED ORAL DEPOSITION OF MIGUEL ANGEL VELEZ was taken on the 21st day of November, 2019, at the Law Offices of Hunter & Cole, 1138 King Street, Christiansted, St. Croix, U.S. Virgin Islands, between the hours of 12:55 p.m. and 5:12 p.m., pursuant to Notice and Federal Rules of Civil Procedure.

Reported by:

Susan C. Nissman RPR-RMR
Registered Merit Reporter
Caribbean Scribes, Inc.
2132 Company Street, Suite 3
Christiansted, St. Croix
U.S. Virgin Islands 00820
(340) 773-8161

A-P-P-E-A-R-A-N-C-E-S

For the Plaintiff:

Law Offices of
Thomas Alkon
2115 Queen Street
Christiansted, St. Croix
U.S. Virgin Islands 00820

By: Thomas Alkon

and

Law Offices of
Burns Charest, LLP
900 Jackson Street, Suite 500
Dallas, Texas 75202

By: Warren T. Burns

For the Defendant Glencore:

Law Offices of
Hunter & Cole
1138 King Street, Suite 301
Christiansted, St. Croix
U.S. Virgin Islands 00820

By: Richard H. Hunter

and

Law Offices of
Cutis, Mallet-Prevost, Colt & Mosie, LLP
101 Park Avenue
New York, New York 10178-0061

By: Sylvi Sareva
Hyuna Yong

APPEARANCES

For the Defendant Lockheed Martin:

Law Offices of Kevin Rames
2111 Company Street
Christiansted, St. Croix
U.S. Virgin Islands 00820

By: Semaj I. Johnson

and

Law Offices of Shook Hardy & Bacon
2555 Grand Boulevard
Kansas City, Missouri 64108

By: Gregory Wu

wear boots at the time, too?

A. Yes.

Q. Okay.

A. All the time.

Q. The next substance you have checked off is aluminum.

Do you see that?

A. Yeah, that's the -- the hydride.

Q. So tell me how you were exposed to alumina?

A. Okay. This -- this alumina is in a storage room, and we had to load it to the hopper. And in this -- in this particular job, you smell, you eat, and you get in your skin, because the machine we used to work is the loaders, and it was open loader, not closed.

Q. So tell me a little bit about -- let's back up just a bit, and tell me a little bit about what your job was at the refinery? At the plant?

A. I -- let me give you the whole starting, or you just want from this here?

Q. No, sure. We're taking a step back, so give it from the start, as you put it.

A. Okay. As from the beginning, I started to work as fully employee of Martin Marietta in '82. When I graduated, I went straight to Martin Marietta to work.

But before that, I had 2 years, which I work as a -- as a summer job. And that summer job as a student, they used to carry me around the unit, around the plant, to sweep bauxite, sweep hydrate, and we were exposed to dust. We were exposed to different chemical. And we do painting as student. We did a lot of painting around the unit and nobody never mentioned nothing to us at that time. That was in -- when I was in summer school.

Q. Well, let me -- let me stop you for a moment there. We're going to talk about the work history, right? In more detail later on, but what I want to know now is just what was your job when you started working full time at the refinery?

A. Maintenance man.

Q. Okay. So tell me what you did in that capacity?

A. As a maintenance man, I was in charge of breaking bolt, replacing valve, fixing pump. Everything that concern repair around the unit.

Q. Was there ever a time that you operated a bulldozer?

A. Then I get transfer, because that was my main goal, was work heavy equipment.

Q. Um-hum.

A. And then I worked for maintenance about 5 years, then I get transfer to heavy equipment. Heavy equipment, as heavy equipment operator, I was exposed to a dust at the bauxite, alumina, the white side, acid, as I mentioned, that job in the heavy equipment.

Q. And what year did you transfer to do -- working on heavy equipment?

A. That's about, I think, '87.

Q. Okay. And in 1982, who was your employer?

A. Ms. Eunice Clambert.

Q. More specifically, what company did you work for?

A. Martin Marietta.

Q. And in 1987, what company did you work for?

A. It was Martin Marietta. All my way, it was Martin Marietta. All the way to St. Croix Alumina.

Q. Okay.

A. I worked there. I never left there. Yes, at time they shut down, I go out, and I come back.

Q. What were your other responsibilities as a heavy equipment operator?

A. I worked various equipment, crane, forklift, and my duty was to transfer material, fill hopper, working the bauxite shed, pushing the bauxite into the hopper, into the hole, and sometime -- well, like I tell you, the acid, load the acid, all that drop on the equipment.

Q. When you say, "pushing the bauxite into the hole," how did you do that?

A. With a bulldozer.

Q. Okay. And in what context working in the bulldozer were you exposed to the alumina that you have here on this form?

A. Because this -- okay. The -- I forget to put the box inside here. I notice I didn't put it. But I work all around the plant. From 1 all the way to Unit 18, and then all the unit, I work. But the bulldozer was by the bauxite shed.

Q. Um-hum.

A. In the alumina was the loader. And that was in the hydrate shed. It's loading hopper to the kiln. To the kiln. So we also load, and it was a closed area.

Q. Okay. How did you how -- did you, personally, come in contact? Well, let me ask you this question: When you say alumina, are you talking about the dust?

A. The dust.

Q. Or are you talking about the final aluminum product?

A. The dust. The dust.

Q. The dust. Okay.

And what color was the dust?

A. White.

Q. Okay. And you were exposed to the white dust?

A. And the red.

Q. In what areas of the plant?

A. In Unit 9, 10, 8, 7.

Q. Now, were there some areas of the plant that were dustier than other areas?

A. No, the whole plant.

Q. So the whole plant was equally dusty?

A. Yeah, one side was white; the other one was red.

Q. And during this period that you were exposed to the -- this aluminum dust, or this dust, white and red dust as you put it, did you wear a mask?

A. All the time.

Q. Okay.

A. A dust mask, yeah. A paper dust mask.

Q. Did you ever wear a mask that were -- that had cartridges in them?

A. No.

Q. Okay. So the next thing you have listed here is Number N. So if you'd take a look at this document again.

A. Coal dust.

Q. Now, tell me about -- a little bit about how you were exposed to coal dust.

A. That was down to the dock. We used to load the hopper to feed the tank, and then the conveyor belt carried it all the way to powerhouse.

Q. How did you load the hopper?

A. With a loader. And it was a open area, but the correct?

A. It usually take a whole day.

Q. Okay. Or more than one day?

A. I can't recall, but I know about a whole day.

Q. All right. The second question, or the second statement that the safety training is, "Supervision will conduct planned Safety Meetings, either on group or individual basis at least once a month. Informal 'Five-Minute Safety Talks' will be conducted weekly by each Process and Maintenance Foreman."

A. You see, right now, it sounds like -- maybe I gonna say something spooky, but Martin Marietta only concern about getting the production done. Getting the job done. This bunch of thing they got here, if they follow it, maybe couple guys, but not everybody.

Q. When you said, "maybe couple guys followed it," are you talking about --

A. Well, I mean --

Q. Wait, you have to my (sic) finish --

A. Okay. Sorry. Sorry. Sorry. Sorry.

Q. Finishing answering my -- remember that rule?

A. Yes, sorry.

Q. All right. So, when you say, "a couple guys followed it," you're talking about the people who worked at the refinery?

Q. You mean --

A. The crane.

Q. Well, feet, approximately?

A. Yeah.

Q. How many feet, approximately?

A. About 10 to 15.

Q. Okay. Now, we talked about dust, right?

A. We talk a little bit about dust, but the red dust -- the red dust, even though you watch yourself.

Q. Um-hum.

A. That stays in your skin. And when you go home, your bed, when you lie down to sleep, you got the print of that red dust.

And the one issue that I want to put in this case is that I didn't even know how toxic it was for my kids, because when I reach from home and I hug my kid, I always had that clothes on.

Q. So catalyst, you have here that you were exposed to catalyst.

Do you know what catalyst is?

A. I don't know, but the catalysts that I know is the big digester them.

Q. Were you exposed to catalyst at the alumina refinery?

A. I work crane, so I had to take everything from the

A. 12 o'clock.

Q. Okay. For what, an hour?

A. It was half an hour at that time.

Q. Okay. Now, you mentioned that there were two different types of dust, red dust and white dust, correct?

A. That's in two area in the plant.

Q. Did you cough up dust after working in those areas?

A. All the time.

Q. And when you finished working in those dusty areas, would you not cough as much?

A. Cough all the time.

Q. Okay. Did you ever experience congestion or your tightness in your chest during working in those areas?

A. Can't recall.

Q. What about dust in your nasal passages?

A. Yeah, we have dust all over. Flying all over. Your cough, it stick to you, as I mention before. Stick to your skin.

Q. At the time, were you concerned about this at all?

A. I did not know.

Q. Well, were you concerned? Were you concerned that you were coughing?

A. Well, I cough because the dusty area. But like I said, I -- I needed a job.

A. Yes, safety-wise. Safety.

Q. And did anyone ever get in trouble for not wearing a dust mask?

A. Can't answer that one.

Q. Okay. Did anyone ever come around to check to make sure people were wearing dust masks?

A. Yeah, safety monitor. The safety man.

Q. Okay. And do you know why you were required to wear the dust masks?

A. For the dust.

Q. For the dust?

A. Yeah.

Q. But so why did you have to wear a mask instead of --

A. Because you will inhale it. It will -- the dust will get into your eyes.

Q. And so you didn't think that it was good for you to be breathing in the dust?

A. Well, no, nobody like to be breathing in dust.

Q. Were there signs -- strike that.

Do you remember seeing signs at the facility saying you have to wear a mask?

A. Actually, when I -- from the time I started to work, if they had sign, they were cover with red dust, because it stick. This is like a scale-like material.

Q. Um-hum.

A. So you couldn't visualize. See nothing.

Q. But you could see that there was a sign, but it was just covered because it was dusty?

A. Yeah. Mostly all the sign. Not -- not that one, particularly.

Q. Okay. Do you know what a materials safety data sheet is, or MSDS?

A. I heard it mention.

Q. Where -- when did you hear it mentioned?

A. Huh?

Q. When did you hear --

A. They usually mention it in MSHA class.

Q. In the MSHA training, they talked about MSDS?

A. Yeah.

Q. And what did they -- sorry.

A. But I never saw it.

Q. You never saw it?

What did they say about it at the MSHA training?

A. Well, they usually mention things, but they don't emphasize to -- to let you know.

Q. Did you ask them? Did you ask anyone at the plant about the MSDS?

A. No, I didn't had no time for that. You know, like

C-E-R-T-I-F-I-C-A-T-E

I, SUSAN C. NISSMAN, a Registered Merit Reporter and Notary Public for the U.S. Virgin Islands, Christiansted, St. Croix, do hereby certify that the above and named witness, **MIGUEL ANGEL VELEZ**, was first duly sworn to testify the truth; that said witness did thereupon testify as is set forth; that the answers of said witness to the oral interrogatories propounded by counsel were taken by me in stenotype and thereafter reduced to typewriting under my personal direction and supervision.

I further certify that the facts stated in the caption hereto are true; and that all of the proceedings in the course of the hearing of said deposition are correctly and accurately set forth herein.

I further certify that I am not counsel, attorney or relative of either party, nor financially or otherwise interested in the event of this suit.

IN WITNESS WHEREOF, I have hereunto set my hand as such Registered Merit Reporter on this the 23rd day of December, 2019, at Christiansted, St. Croix, United States Virgin Islands.

____

My Commission Expires: Susan C. Nissman, RPR-RMR
June 28, 2023 NP 234-19

EXHIBIT 106

Michael Chesnutt Expert Report,
2022-08-15, 21-CV-548_BURT_000045

CHESNUTT PULMONARY SERVICE

1801 MONTANA SKY DRIVE

AUSTIN, TX 78727

8/15/2022

Mr. Yelton,

Thank you for engaging me to provide this report regarding Mr. Milton Burt. I have been a certified respiratory therapist (CRT) since 1972 and a certified pulmonary function technologist (CPFT) since 1984. Over the last 53 years I have conducted thousands of pulmonary function test. (PFT'S)

In 1972 after leaving the Army I moved to Austin, Tx and developed the first Pulmonary function lab in Austin at Brackenridge Hospital. After leaving Brackenridge I had the privilege of putting together 4 other labs. I was also a Clinical instructor for Southwest Texas University in training respiratory therapy students in pulmonary function studies. For 52 out of 53 years in the field I have been doing pulmonary function studies.

In short, I am an expert in conducting PFT's. In 2019 I performed a PFT on Mr. Burt at the office of Dr Dante Galiber in Sunny Isle, St. Croix. I previously provided you my results in a 10-page document dated July 21, 2019. As detailed in that report Mr. Burt's DLCO is 21.0 mL/mmHg/min and this puts him in the 70 percentile of individuals of his age, height and weight.

I am confident that the results of Mr. Burt's PFT's are accurate demonstrated by the effort and reproducibility of those efforts.

Patients can attempt to fake the test but the data would demonstrate poor effort and lack of reproducibility. This would be easily visible to the Technologist who would document poor effort and reproducibility notifying the ordering MD. The fact of the matter is a patient can attempt to give you fake results but it is impossible.

I have not authored any publications in the previous 10 years.

I have not testified as an expert at trial or by deposition during the previous 4 years.

Sincerely,

Michael L. Chesnutt CPFT/CRT

EXHIBIT 107

Excerpts of Transcript of Deposition of Gabriel Ramos, November 20, 2019

IN THE SUPERIOR COURT OF THE VIRGIN ISLANDS

DIVISION OF ST. CROIX

IN RE: BAUXITE CONTAINING SILICA) MASTER CASE NO:
) SX-15-CV-098
)
CHARLES LITIGATION SERIES) COMPLEX LITIGATION
) DIVISION

THE VIDEOTAPED ORAL DEPOSITION OF GABRIEL RAMOS was taken on the 20th day of November, 2019, at the Law Offices of Hunter & Cole, 1138 King Street, Christiansted, St. Croix, U.S. Virgin Islands, between the hours of 9:15 a.m. and 3:48 p.m., pursuant to Notice and Federal Rules of Civil Procedure.

Reported by:

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By: Gregory Wu

Q. She prescribes you pain medication?

A. Yes, sir.

Q. Anything else?

A. No.

Q. Do the medications have any side effects, such as drowsiness?

A. Drowsy.

Q. Are you drowsy right now?

A. A little bit. Just a little bit.

Q. If, at any point, you need to take a break, let me know.

A. Sure.

Q. Does that drowsiness, is that affecting your ability to answer questions at all?

A. I don't think so.

Q. All right. Why did you file this lawsuit?

A. Why I what?

Q. Why did you file the lawsuit, this lawsuit we're here about today?

A. I'm pretty sure I was exposed to red dust, and they didn't warn we -- they didn't warn me about the danger of it.

Q. And what did the red dust -- you said red dust?

A. Red dust, yeah.

Q. What did the red dust do to you? How did that

Q. From around 19 -- late 1960s to 1985?

A. Well, I work until -- I work -- my last -- my last -- my last foot on the plant was in 1995. My last time that I work in the plant --

Q. Sure.

A. -- was 1995.

Q. Thank you. Sorry I messed up the time.

The plant closed for a while in 1985?

A. The first time the plant close, 1985.

Q. Right.

Martin Marietta sold the plant in 1985. Did you stop working at the plant at that time?

A. Well, at that time, yes. I stopped in 1975, yes.

MR. ALKON: No.

Q. **(Mr. Wu)** Counsel.

1985, you stopped working at the plant?

A. At that time. I start working again when they call me back in the plant.

Q. After a couple years, they called you back?

A. Yes, yes, they called me back again in 1989. They called me back in the plant.

Q. And then you worked there until 1995?

A. Until '95.

Q. From 1989 to 1995, you were also an instrument technician?

A. Yes, sir.

Q. Let's go back to when Martin Marietta and Harvey Alumina operated the plant?

A. Yes.

Q. Do you remember, I think you kind of said this already, but what were your specific job responsibilities as an instrument technician when you were hired by Harvey Alumina?

A. What was my responsibility?

Q. Yeah.

A. Well, my responsibility was to do the work. Do my job.

Q. Reviewing the gauges and instruments?

A. Calibrating the instrument and check, make sure, repairing.

Q. For what type of equipment were you an instrument technician?

A. Oh, pneumatic and electronic.

Q. Pneumatic and electronic?

A. Yes.

Q. For what type of devices?

A. Well, pressure transmitters. Describe it? Pressure transmitters, flow transmitters, level transmitters, temperature transmitters, control valve, weights, you know, weight. Weight scale. You know the weight scale you put in the conveyor to measure the weight of the -- of the bauxites. All of that.

Q. So all around the plant?

A. Well --

Q. Or was it confined to a particular part of the plant?

A. Well, that was -- that was -- the scale them. Well, the level transmitter and flow transmitter, that was 'round the whole plant. But the weight scale that I used to work was in the red mud, and then the white, white side.

MR. WU: Okay. Let me -- can we take a quick break?

A. Sure.

MR. WU: 'Cause I think -- let's just take a quick break off the record.

(Short recess taken.)

(Deposition Exhibit No. 3 was
marked for identification.)

Q. **(Mr. Wu)** Back on the record.

Mr. Ramos, thank you for your patience. I marked Exhibit 3 as a site location map of the St. Croix Alumina plant.

Can you kind of take a look at this?

A. Sure, sure.

Q. And the reason why I brought it out now is you had started to talk about your job responsibilities --

A. Um-hum.

Q. -- at the St. Croix Alumina Plant --

A. Um-hum.

Q. -- when you started as a instrument technician in 1972?

A. Yeah.

Q. Can you just confirm for me that you had that position from the early '70s to 1985?

A. I started -- as I told you before, they make me -- they make me a technician maybe later -- late in '67.

Q. Uh-huh.

A. So from there I worked -- worked through -- through 1969. 1969, I quit the plant. Why? The reason, they had -- when I was making a 12:00 to 8:00 shift in the morning, my relief never came. And I spent 4 days in the plant. So I tell my supervisor, Listen, this is enough for me. I gonna to resign or I gonna quit, and I ain't coming back. So I quit in '69. And I work outside for maybe a couple years. And then I came back. There was no job, so I came back in the plant. I call my boss and say, Hey, do you have anything? He said, Yes, come back. In 1972.

Q. As an instrument technician?

A. Yes, sir.

Q. So if I understand you correctly, you were also an instrument technician in the late '60s?

A. No, I say -- I say in -- from '67. In 1967, when I was start working with alumina plant, Harvey Alumina, this guy teach me the instrument and then he make me a technician during '67-'68 until I -- until -- until I -- if I don't need no work no more in the aluminum plant.

Q. Thank you.

Turning your attention to here.

A. Sure.

Q. You talked about your job responsibilities and where you would inspect the instruments, right? Or where you would work with instruments?

A. Well, when they had a -- when they had a problem in the control room, they give me a work order. Look, this is not working. So I check it out. I go out and check it out. And if it's -- if it cannot be corrected outside, I take the instrument, bring it to the -- to the instrument shop, check it out and if -- if it's okay. If it's okay to put back again. If I find a problem. Don't find a problem, put it back, yes.

Q. Thank you.

So I think you're leading to my next question.

A. Sure.

Q. What was your day to day like when you first arrived at the plant? Did you get a, you know, a printout or a sheet of instruments that needed checking?

A. No.

Q. How did -- how did your day go?

A. When I get to work -- when I go -- we started work. If I was -- if I was doing my shift, they have a table, put the work orders. Urgent, you know, not too urgent, most critical. More urgent. Used to go in the pickup. Goes in the control room. Make sure, put my tag in the instrument or whatever. Put it on manual control and I'm going to be working on this. Put a tag on it. Nobody touch it, 'cause I'm working on it. That's safety device. That's safety device. So I go out, check out the instrument, and if I see a problem, I try to correct it. If not, I take it out from there, bring it to the shop. If it cannot be repaired, replace it.

Q. You had mentioned -- strike that.

Why don't you show me on this map, if you can, you mentioned the instrument control room or --

A. The control room.

Q. Where you started your day where you picked up the work orders?

A. No, I started my day in our shop. We have a shop.

Q. Can you show me where that is on the map, if you can tell?

A. Very hard on this printout here.

Q. I understand.

A. Very hard in this printout here. I even -- but I know where the powerhouse is. I know everything if the plant was there, but seeing it in here for so many years. First I looking for --

MR. BURNS: Greg, you might want to orient him.

Q. **(Mr. Wu)** Oh, sure.

Here's the Caribbean.

A. Yeah. Where is south shore here? Where is south shore here?

MR. BURNS: So the south shore --

A. South shore -- this is south shore. This got to be the channel.

MR. BURNS: Channel right here.

A. Yeah, the bauxite crane somewhere around here. Maybe some are around here. The bauxite crane at the dock.

Q. **(Mr. Wu)** Here's the dock.

A. At the dock. The bauxite dock. So we was to work somewhere -- we used to be somewhere around here. Maybe here. Very hard for me to see -- to memorize in this model thing, but if it was a big thing, I could tell you, Right here.

Right here. But I been working around the whole plant. The last time I work in the plant was in the powerhouse. I looking for the powerhouse. The power distribution. Around here. They had the coal boil. They had the boiler, but they dismantled it. I can't find the coal boiler. Not here in the small thing. Somewhere around here.

Q. This is the -- this says fuel storage.

A. Fuel storage?

Q. That's what it says.

A. Okay. That's the two tank close to Hess, that side over there.

Q. Uh-huh.

A. Somewhere around here. These gates. Somewhere here, the gate. Somewhere around the powerhouse. Don't even say the power plant.

Q. Oh, this says boiler.

A. Boiler? Well, that's the power plant. Doesn't say power plant. That's what -- the last time I work in the power plant. Last time I work.

Q. Um-hum.

A. Yeah, that's where I worked, in the power powerhouse for the last time.

Q. I understand it's difficult to read, and thank you for bearing with me.

A. Sure.

Q. With the green marker that I've handed you.

A. Uh-huh.

Q. Can you mark where you think the -- the shop? In the shop?

A. The shop? Listen, that's what I have, glasses for reading. You know, I can hardly make it.

Q. I understand.

A. I can hardly make it with my -- where our shop was, because the main -- main building, we used to call it the main building where they have the office and everything, behind it was the shop, our instrument shop.

Q. Um-hum.

A. 'Cause we have two shop; one in the process. In the process. We call it process. And the other one in the powerhouse. We have another instrument shop in the powerhouse. But I can -- but really hard for me to mark, say, That's it here. I can't -- I can't make it up too clear. If you could, if you do, you could tell me, Look here, and I will mark it. Okay, that's where I been. But if you tell me this is storage for the -- the oil storage, this is two tank, two big tank. I don't know if it's still there, I don't know, because it's marked the whole plant. I don't know.

Q. Sure.

A. It's very hard for me to see small letter.

Q. Understand.

A. Okay.

Q. Why don't we back up?

You mentioned a red side and a white side, right?

A. Yes.

Q. Do you think you can mark the red side with --

A. Well, as I tell you, if you show -- if you could tell me, Look, where is the -- the red -- the dock, the bauxite dock.

Q. Right here. It says dock.

A. Oh, this is the dock here, right? This is the dock. Going up here. Tell me to mark what?

Q. You mentioned a red side --

A. Yeah.

Q. -- and a white side. Where are those?

A. Oh, from here. This is the red side. From here, this is the red side. I don't know if this is the silos. I don't know -- this look like the silos, coal silo. It looks like the coal silo. Streeting, because I think there's three of them.

Q. I believe it does say coal.

A. Yeah, I think that's the coal silo.

All of this, I want to know where the storage is? Bauxite storage. I think --

Q. This says bauxite stockpile storage barn.

A. Well, okay, that's the bauxite storage. Well, somewhere around here, they have a tunnel. Have a tunnel. Bulldozer push the -- the bauxite, and it drops through a big hole underneath. There's a conveyor. I used to go to work under that conveyor. Under that -- under that -- how you call it? The big hole. Have the conveyor belt coming from up there. We had a scale in there, we had to go and -- and check it, the scale.

Q. How often did you have to go underneath?

A. On the scale? Maybe two times a week, maybe. Maybe. Maybe.

Q. Will you outline that in pink so we can, for the record, know that that is where you had to go into the tunnel?

A. This is the bauxite barn, right?

Q. Bauxite stockpile storage barn.

A. I think from around here. Around here. Unit 2. Unit 2, it had a conveyor. I think this is the conveyor. Somewhere around here. I think. I think that was turning in there. I can't remember too good.

Q. I understand that your memory might not be perfect, but just for -- so people can understand, --

A. Uh-huh.

Q. -- the jury can understand, you know, what you're talking about or can get an impression of what you did.

A. Sure.

Q. If you could just circle, or, you know, mark where you believe where you were.

A. I believe I want to make sure.

Q. Yeah.

A. I want to make sure.

Q. I understand. I understand.

A. I want to make sure where -- what I'm marking in here, is my marking, I want to make sure what I'm saying.

As I tell you again, I can't cite that too well. But if this is the bauxite dock, I should say, agree with me, that -- that this is bauxite. I mark it that I know. I know that. And this got to be the coal silo. I mark those coal silo. Want me to mark those, too?

MR. JOHNSON: Different color?

A. Different color?

Q. **(Mr. Wu)** You can mark the coal silos in orange.

A. Okay. Very good. Coal silo right here. Coal silo. This is bauxite pile.

Q. Yes.

A. How should I mark that? In what color?

Q. Green.

A. Green. Very good.

Q. Yeah.

A. Okay. Green.

Q. And where did the conveyor belt -- you said there was a conveyor belt underneath?

A. The building was -- was -- the building was this way from east to west. That I can remember, from east to west, like this. And the conveyor was on this side here. When the bulldozer push it, it goes this one right here.

Was in the north side of the bauxite pile. On the north side. I'm pretty sure it's somewhere around here. Somewhere around here somebody used to bulldozer, push it somewhere. I can't remember too good.

Q. Can you mark it with blue where the bulldozer --

A. That's what I'm saying, I don't want to mark something that I don't know.

Q. I understand. This is -- this is very helpful and will be very helpful to the jury.

A. Where you go again? This here?

Q. That's where you think the conveyor belt --

A. I think.

Q. -- or the bulldozer --

A. I think the conveyor was in this building here. Pushing from around here. That will be here. Somewhere around here, 'cause this -- I could tell you this is Unit 4. Here, this is the Unit 4. I know this unit.

Q. What was in Unit 4?

A. Unit 4, that's where from Unit 2 they grind the bauxite and it goes through Unit 4. Goes to one big -- how you call it? Some big tank they call it digesters. They heat it up and they cook it up in there. And I took -- they tell you, the whole process, how to do the process, I can't tell you, because my feeling --

Q. You do not work directly with the bauxite in the processing?

A. Not direct, no, no. Didn't do the work, processing the bauxite, no. My job was instrumentation. Yes, I do get splash from bauxite, you know, on the -- on the ball mill, like a splash. But splash. Well, splash, when I mean splash, not -- but splash, you know, sometime when a pipe bust or something like that, or leaking, you know, that type of thing. But direct with the red mud or how you call -- we call it? Or bauxite. The bauxite. The how you call it?

Q. The white dust, or --

A. No, no, no, the mud, the red mud, mix up already. I didn't have no direct contact with that.

Q. You never had any contact with red mud?

A. Well, when I'm saying direct, I had to work direct for that, no, 'cause I'm not in operation or whatever in process. I'm instrument tech alone. That's all. 'Cause sometime I working on instrument, I have to flush, flush the -- flush the low pressure, you know, because it was plug, high-low pressure, sometime it plug, I have to flush it sometime.

Q. Where did you say the red mud was processed, in Unit 4?

A. It come from -- come from the tunnel, goes to the mill, to the ball mills. And from the ball mill, go to Unit 4. That's all I know. It doesn't go to another place. Storage, they're going to Unit 6. That, I know.

Q. But you did not work directly in that operation?

A. No, not me. No, I didn't work on that.

Q. Do you know where -- can you tell where Unit 6 is on this map?

A. Unit 6? Unit 6. I think, yeah, this is Unit 6 here. This is Unit 6.

Q. Where is Unit 4?

A. I think Unit 6. This one is Unit 6. This is Unit 4.

Q. Um-hum.

A. This is Unit 4.

Q. And what about Unit 2?

A. Unit 2? Unit 2 coming out from the conveyor belt, somewhere around here. That's Unit 2.

Q. Can you write, or do you feel comfortable writing a 2 and a 4 and a 6 where you believe --

A. I hope -- I hope I'm right.

Q. You want red?

A. I think this is the ball mill. I think, not too sure, 'cause seven ball mills. Fifteen of them. Then two more, but when I left the plant, the plant close down, they had seven. I don't see 7 here. This is a printout, you know.

Q. Understand your memory is not perfect.

A. No, my memory is perfect, --

Q. Yeah.

A. -- but pointing here, cannot, because it doesn't give me good picture. I doesn't view -- doesn't have a good picture. But my memory for everything, all the units there, I know. Yes. I'm 74, but my memory -- I think my memory's still good. You know, I forget some things, but sometime I remember everything else. Yes, sir.

Q. Let's talk about where you felt like you were exposed to --

A. Dust?

Q. -- dust, yes.

A. Unit 2. Unit 2, Number 1. Unit 2, Number 1.

Q. Underneath --

A. The tunnel?

Q. -- the tunnel?

A. I don't know if that's Unit 30. Unit 30 or what, but in the -- in the -- in the tunnel, Unit 2. Unit 4, because it was very dusty, dusty, dusty. Dusty, sometime you can hardly see. You got to put a mask. You know, have to wear mask all the time.

Unit 2, Unit -- the tunnel was number one. Unit 2, where they grind the ball mill. Where they have the scale them, that's number two. Unit 4, all around Number 4, the same thing; very dusty. Red dust. And goes to Unit 6. Goes to Unit 6, that is more likely what they have in there is stored -- they stored the mud, the red mud. They stored in Unit 6. That room was not a real dusty, dusty area. But it was dust coming from the east all the time. All the time. While they were in the ball mill grinding, dust coming down, so, yes.

Q. You said a lot of things, and I want to kind of take --

A. Sure.

Q. -- it one by one.

A. Okay. Okay.

Q. Unit 2, you said, was dusty because it was -- was it underneath the conveyor belt?

A. Well, that was in the tunnel, number one.

Q. Unit 2, Number 1?

A. No, Unit -- in the tunnel, I don't know. If that's part of Unit 30, I can't remember unit. If it's Unit

30, but the second of that is Unit 2 where they grind the ball mill. From there, they go through the ball mill.

Q. And how often were you required to go into Unit 2 to inspect?

A. Well, usually -- okay. I'm going to tell you how many times. Explain something first.

We had flow meters in Unit 2. We have temperature meters -- temperature transmitters for the ball mill. We had weight scale and we have level transmitters, too. So we go there maybe -- maybe two, three times, four times a week.

Q. How often -- when you were there, how often would you spend?

A. How long I spend?

Q. Yeah, how long would you spend there?

A. Listen, sometime we got -- get through with what I'm doing, maybe like 45 minutes, half an hour, hour, something. Sometime have to stay there 3-4 hours.

Q. Just depended on the type of job?

A. Yes. Like on the scale, on the weight scale, sometime we spend the whole day.

Q. Now, in the tunnel there, was there ventilation or a fan?

A. No ventilation.

Q. At any point -- at no point during your time that you worked there?

A. Just a door just to go down, and that's it, come out. Very, very dusty.

Q. Was it -- was it -- there was no A/C?

A. No, no, no A/C.

Q. No fan?

A. No fan, no nothing.

Q. You mentioned that -- also that you were required to wear a mask?

A. Yes.

Q. All right.

A. Well, dust mask. Paper mask.

Q. Starting from the time that you worked there?

A. Yes.

Q. Did you have to ask for that mask, or that was a rule that you had to wear the mask before you went to work there?

A. I can't say if it was the rule, but everybody know that it very dusty, so we wear it. Sometime we go to the warehouse with prescription and I have in my locker, maybe 10 -- 10 item. Sometime when I go to do that work, I put 4-5 of them in my pocket. And every 5 or 10 minutes, I have to throw it away because it's sweaty and so red, you can't do nothing with it, so you put another one.

Q. So you had a supply of paper masks available?

They would get dusty and you would change them out while you were working in that tunnel?

A. Yeah. If I don't have another one in my pocket, I put a rag in my, you know. Sometime I come prepared with rag to put on my face.

Q. How often would you say that you had to use a rag?

A. Any time I go -- any time I go to tunnel. Any time I go in the tube.

Q. At any point in time when you were employed by Harvey Alumina or Martin Marietta, did you have a respirator, like a cartridge respirator?

A. Only paper mask.

Q. Only paper mask?

A. Only paper respirator.

Q. When did you learn, or when did you -- was there a -- let me strike that.

Was there a rule that you had to wear a paper mask, or was there training to put on that paper mask before you went --

A. Well, you see, we had a lot of training on those plant, it had a lot of dust, yeah. They -- they was -- they would put mask, but not those big mask. You know, not those big one that I have seen many places. Just the mask alone.

In the plant -- in the plant used to work in the Martin Marietta or Harvey Alumina plant, they -- they --

they -- the foreman or the supervisor, they was only focusing on safety glasses. Only safety glasses. You go without safe glasses in a unit, they give you a warning or writing warning. You must wear safety glasses. Very. It's for safety glasses, that was very, very, very -- the plant was very concerned about, because in the picture that they showed, they -- they -- we see a lot of accident on eye and thing, but on respiration, not more. Not many.

Q. You don't recall receiving any training or any safety meetings about dust or -- or any other condition related to that?

A. I repeat it to you again, right? We had pictures. We used to go to safety pictures. Just safety picture. No supervisor is there to tell, Look, this is a rule. You must obey this rule. Didn't tell me nothing. The only thing that was really concerned was safety glasses. Most like almost all the time. Oh, safety shoes. Safety shoe. You must wear the company safety boots, rubber boots. That's all. The foremen, they didn't used to enforce what, safety. They didn't use to enforce that.

Q. Who was your foreman at the time --

A. My foreman.

Q. -- when you started?

A. Well, my, oh, boy. Sorry to hear. Mention his name. My foreman. My guy, guy who employ me, name Beebee.

He was a white guy. Very nice guy. He pass away, too.

Q. Do you remember, was he always your supervisor at the time?

A. No, he was -- he was the -- we call him Big Shot. He was the -- how you call it? The supervisor.

We had another general foreman, his name is Ed Adams. We used to get direct order from Ed Adams. I don't know if he die, but he goes to Florida to live.

Q. So Bill Beebee --

A. Beebee.

Q. -- was your immediate supervisor?

A. Yes, sir.

Q. And Ed Adams?

A. Ed Adams.

Q. Was the general superintendent?

A. Well, yeah, he was the one that give --

Q. I guess we don't have to stand up anymore. If we need to, we'll --

A. Come back -- coming back to this, right? If I see this in a big texture. I say, Okay. Look. This is Unit 2. Unit 6. 'Cause start from Unit 1. I don't know. Can't remember. I think Unit 1 is the bauxite -- bauxite dock. I think that's Unit 1. I don't know. I forget all those unit.

Q. Sure. And thanks for re-orienting us back to the map.

You talked about the conditions in Unit 2.

A. Yes.

Q. Other than Unit 2, were there any other areas where you had to inspect gauges that were enclosed or confined?

A. They had a unit that we used to call very regular. Was in Unit 6 tunnel. They had a tunnel down there. Let me describe that tunnel. Describe the tunnel. Let's say this room. And this room, they got a big hole. You know, a big hole with all the mud go down there in that hole. And they had pump. When that thing come -- comes to a high level, we had some switches that kick the pump and pump it down. Sometime the pump stuck or whatever happen that it pulling too much mud, call it the pit. Pit. We couldn't go in. Nobody could go in in the pit.

Q. That was -- the pit was in Unit 6?

A. Unit 6.

Q. And that's where they pumped out red mud?

A. Yes. Well, they pump out to the -- to the settle it. We call it settle it, Unit 6. But sometime when they have a spill or something, everything goes there.

Q. And that was an enclosed space?

A. Huh?

Q. That was an enclosed space, Unit 6, where you had to --

A. That was open atmosphere, but down there, down there had some tunnel that we had to go in there to --

Q. How often did you have to go into that enclosed space in Unit 6 to maintain those instruments?

A. Maybe twice a week, maybe.

Q. Were you exposed to dust in that, or was there not dust in there?

A. Dust is all over the place. Dust was all over the place in that unit, because that unit is in the west side of Unit 6 of the bauxite pipe. And everything goes down. But when we go down there, they don't have much down there. I can't say that. It was a lot of -- how you call it? Dust. I can tell you a lot of dust. Was always continuous in the plant.

Q. When you would come out of there, were your clothes -- did your clothes have dust on it?

A. Pretty sure they had, but I didn't paying attention to if my clothes have dust or not.

Q. You don't remember, when you would work in the Unit 6 tunnel, what color dust was on your clothes?

A. Well, when you go down there, you know what color, because you have -- you have red. You dealing with your hand. Can't work with gloves down there, you got to work with empty hand. Sometime you got, you know, touches and you got --

Q. Did you have to wear the dust mask inside?

A. Inside there, no, that wasn't required. I didn't use it, because, really, you didn't need it to be there. Didn't need. I don't think. I wasn't thinking to put it on when I go there. But I always in the plant, I always have my mask here or have it here. And usually put it on. That's in that area. (Indicating.)

Q. In that area?

A. Yeah.

Q. Are there any other areas in the plant where you were required to wear your mask?

A. Yes.

Q. Where? What areas were those?

A. In the hot end of the kiln. You know the kilns?

Q. The kiln where they fire --

A. Yeah.

Q. -- the ovens?

A. Dusty there, so you required to wear your safety -- your safety mask. Don't care if cheap mask, whatever. It was the same mask all the time. But that was a dusty, dusty area. That was aluminum. Alumina and dust all over the place.

Q. Where was the kiln located? Can you tell on the map?

very dusty. They used do it. I don't know what kind of material they used to use.

But when you have to go to that side for anything, we had -- like we had equipment over there. You know, stored it over there. We do storage over there for -- we need part, we go up there and pick it up, find it in the warehouse. Sometime when we go that side, it was very dusty. Of course, we wear our mask, you know. What we had. I wear what we had.

Q. Where was that sandblasting operation?

A. The sandblast was in the east side of the power plant.

Q. How often were you over there?

A. Very rare. Very rare. Yes, very rare, but I used to go over there.

Q. And -- but when you had to go over there, you wore your mask?

A. Oh, sure.

Q. Is there any other part of the plant that we haven't talked about where you felt that you had to wear your mask?

A. Well, yes. As I -- as I mentioned, I don't know who I mentioned it to, I used to work around the whole plant. We have instrument all over in the plant. I used to -- I used to had to go to repair the weight scale on the

A. When I start to wear my mask, I think the -- I think the company, the Harvey Alumina company, start processing alumina in the -- I think in the -- not too sure, late '60s, late '67-'68, then we used to wear mask.

Q. So as soon as Harvey -- even when Harvey Alumina was operating the plant, they provided masks for you?

A. Yeah, mostly, mostly, because it was too dusty.

Q. So do you ever remember a training or a orientation where they said you have to wear your mask in this area or --

A. No. A little while ago, I told you, the -- most the company supervisors was most concerned about safety glasses and rubber boots, that's all.

Q. Sure, but you understood from the beginning, or you were required from the beginning to wear a mask?

A. Well, the mask was there, you know. It's up to you if you want to wear it or not, but I used to wear the mask all the time. Even though it was a cheap mask, I used to wear it.

Q. Do you remember, at any point in time after that, where you were -- received training or had a safety meeting about the dust, and they told you to wear a mask?

(Power came back on.)

A. Tell you the truth, I can't recall. I can't recall, really.

that the company rule was safety. But the one who -- the supervisor outside, okay? The supervisor outside, it's foreman, general foreman, area foreman, whatever, they didn't care much about. I tell you. They didn't use -- they didn't use -- probably. I can't say. I can't tell you yes, but I don't think it was very concerned with our safety.

Q. Is there anybody in particular that you're thinking of that -- who you think wasn't concerned with safety?

A. Listen, they had a guy -- they had a guy that I know, that I know, that he used to harass people -- well, harass me -- any time I entering a unit without my glasses. That was very concerned. That was me. Some -- as I say, maybe the company was -- company used to say safety, but the people inside, the -- the people who supposed to enforce -- enforce it, they didn't care.

Q. I'm a little confused by your answer.

You said that there was a guy who harassed you about wearing safety glasses?

A. Yeah, he was -- he was a supervisor.

Q. Do you remember his name?

A. Or foreman.

Q. I'm sorry, I cut you off.

Do you remember his name?

A. I don't remember his name, really. Can't remember his name. Really can't remember. And I think he pass away, too.

Q. So are you saying that because he harassed you about glasses --

A. No, no, no, not me. Not me, alone in particular. He used to harass anybody coming in the unit without glasses. He was very concerned. Very concerned. Safety glasses.

Q. What about, do you know what a Materials Safety Data Sheet is?

A. Material Sheet? I think I have. I think I have seen it.

Q. Did you work with those at all, or did you --

A. No.

Q. -- have to work with those?

A. No, you don't walk with that document.

Q. Sorry.

A. I said you don't walk outside with that.

Q. Did you ever request a Material Safety Data Sheet with respect to anything that you might have worked with? Any equipment or chemicals?

A. Well, as I tell you, the scale that we used to do it, there was a nuclear scale. There was nuclear scale. And they used to talk to we about any -- if it have a leak or something, we have to wear some kind of glove while we're dealing with it, and a respirator. You know, a respirator, when we working with that. Because they say sometime it leaks. And the leak from the -- from that could kill you, you know. So we used to put a mask and glove, a rag one time, you know. We used to put that, a rag and a mask, protection on it. Any time you feel -- you met anything, leave the area as soon as possible. That's all.

Q. So you remember receiving that type of training or instruction for that?

A. Well, we didn't have no training. We had instruction from our supervisor on that. On that case.

Q. Are there any other areas where you had to wear protective equipment like that?

A. Well, I tell you -- I can point you at what point we had a scale. We had a scale in the alumina dock. One in the tunnel. That one in units -- Unit 28, we had another one. We had couple of them. Had a couple of them in the plant.

Q. Couple of the areas where you had to wear --

A. Yes.

Q. -- protective equipment?

A. Yeah, yeah.

Q. Have we talked about all those?

You mentioned the scale. What other areas were you required to wear some kind of protection, personal protection equipment?

A. That I can remember, that's -- that particular one talking to you about, I think that was in most -- most focus. The focus on. On this one, any time you working in this, and you smell something, you got to leave the area as soon as possible.

Q. I'm going to go back to a very general question.

A. Sure.

Q. When -- in the areas where you could wear personal protectional equipment, like a dust mask or gloves, safety glasses, did you always wear it when you did your job?

A. When I go there?

Q. Yeah. Or when you -- when you were doing any kind of work there?

A. I would say -- I would say for my safety, I do. Yeah, I think I do.

Q. Was there ever an option to obtain additional protective equipment that was above and beyond what was required?

A. Not that I can remember. Not that I can remember.

Q. Did you ever have any other job at the St. Croix Alumina plant, other than instrument technician?

A. That's the only job I doing in the area. In the plant.

Q. I think I asked this question, but I just want to make sure: Did you ever complain or raise an issue with your supervisor, or anybody else, about the working conditions at the St. Croix Alumina plant?

A. I can't remember. I can't really remember, really. I can't remember if I do. I can't really remember.

Q. Did you ever complain about the type or availability of protective equipment at the St. Croix Alumina plant?

A. I not too sure on that. I not too sure. I'm not too sure.

Q. Were you satisfied with the protective equipment that Martin Marietta, or the -- whoever owned or operated the plant, offered you during your job?

A. Well, tell you the truth, most likely the dust mask we used to use all the time, right? That was only -- the only mask that we used to get from the warehouse all the time, so it wasn't, let's say, a good mask. It was like, I would say, very -- I don't know if it was paper mask or a little cloth mask, but it was very thin. I don't know -- I don't know why the reason they used to give us that all the time. I don't know.

Q. Did you ever ask if other types of respirators or mask were available?

A. Well, I can't remember saying -- asking them for

A. I had nothing to do with the pipe. My job -- my position was instrumentation, that's all.

Q. I wasn't sure if they were related to the pipes, the instruments.

A. No, I didn't have nothing to do with that.

Q. All right. Thanks. We're done with this one.

A. Okay.

Q. Going back to the dusty areas in the plant and when you were exposed to dust, dusty conditions, did you ever experience dust in your mouth or eyes after working in those?

A. Tell you the truth, any time, you could feel it in your throat. When I -- when I get -- when I get direct thing. When I -- especially when I working in tunnel, sometime I had to (indicating) and when I spit out, I spitting red, you know. My saliva was red. And my nose, even though -- even though I have mask and gloves, I used to take water, soak through nose, and when I blow it, a lot -- a lot of red dust.

Q. Did you do that after every time you were working?

A. Every time that I work -- I work in the tunnel or work in Unit 2, I make sure that I blow -- clean my nose.

Q. Was that something the company told you to do or that was just something --

A. No, no, I do it myself.

C-E-R-T-I-F-I-C-A-T-E

I, SUSAN C. NISSMAN, a Registered Merit Reporter and Notary Public for the U.S. Virgin Islands, Christiansted, St. Croix, do hereby certify that the above and named witness, **GABRIEL ANGEL RAMOS**, was first duly sworn to testify the truth; that said witness did thereupon testify as is set forth; that the answers of said witness to the oral interrogatories propounded by counsel were taken by me in stenotype and thereafter reduced to typewriting under my personal direction and supervision.

I further certify that the facts stated in the caption hereto are true; and that all of the proceedings in the course of the hearing of said deposition are correctly and accurately set forth herein.

I further certify that I am not counsel, attorney or relative of either party, nor financially or otherwise interested in the event of this suit.

IN WITNESS WHEREOF, I have hereunto set my hand as such Registered Merit Reporter on this the 23rd day of December, 2019, at Christiansted, St. Croix, United States Virgin Islands.

My Commission Expires: Susan C. Nissman, RPR-RMR
June 28, 2023 NP 234-19

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REVIEWS AND COMMENTARIES

Biologic Plausibility in Causal Inference: Current Method and Practice

Douglas L. Weed[1] and Stephen D. Hursting[2]

The primary prevention of human cancer relies on the idea that reducing a population's exposure to a causal risk factor will result in decreased cancer incidence (1). Among the many examples (2–4), perhaps the most familiar is cigarette smoking and lung cancer (5), declared a causal association in 1964 and for years the focus of public health interventions (6). Not all associations, of course, are causal, and not all exposure-cancer pairs are statistically associated. Hundreds, perhaps thousands of exposures have been studied, including infectious agents, environmental and occupational exposures, lifestyle factors (including diet), medications, and medical technologies. Some are now considered causal risk factors, others remain controversial (7). Still other exposures are no longer studied due to empirical refutation, evidence judged to be insufficient, or changes in research funding priorities.

An important step along the path from research on potential cancer-causing exposures to successful application of preventive interventions is an assessment of available evidence, which typically takes place in review papers and editorials, and is often referred to as causal inference. Causal conclusions, or causal judgments, are one result of the qualitative criteria-based causal inference methods used in these assessments (8, 9). Two closely-related sets of criteria remain the foundation for the current practice of causal inference: those proposed by the Surgeon General's committee in 1964 (10) and those described by Austin Bradford Hill in 1965 (11).

Advances in the biologic sciences and their integration with public health science in molecular epidemiology (12–19) make one causal criterion, biologic plausibility (sometimes called biologic coherence), an increasingly important consideration in causal inference. Despite the growing influence of this criterion, there has been little systematic study of the concept of biologic plausibility and almost nothing published about how it is used in the practice of causal inference.

In this commentary, we review the role of biologic plausibility in causal inference as described in the methodological literature, and then review how biologic plausibility is used in practice, i.e., in review papers assessing evidence on specific associations (smoking and cervical cancer, and vasectomy and prostate cancer). These represent a small fraction of associations relevant to cancer prevention, yet in each case, considerable interest has been generated regarding the biologic plausibility of the underlying causal hypothesis.

Our purpose is primarily to describe how the concept of plausibility is currently used—and how methodologists recommend that it be used. This will serve as a first step toward more detailed inquiries into central unanswered questions (20, 21), such as: How does a *plausible* mechanism differ from a *known* mechanism? How much and what kinds of biologic evidence are important in judging the plausibility of an association? How will advances in measurement technology and in our understanding of the cellular pro-

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Abbreviations: CI, confidence interval; IARC, International Agency for Research on Cancer.

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cesses involved in initiation and tumor promotion change the way the criterion of biologic plausibility is interpreted and used? Because biologic plausibility is only one of several considerations important in making causal judgments, we are cautious not to make our own causal conclusions regarding the associations studied. We will, however, make some recommendations regarding the future role of biologic plausibility in the theory and practice of causal inference.

Background: biologic plausibility in theory and methodology

An account of the role of biology in causal inference could begin about a century and a half ago with the works of Jakob Henle and his student, Robert Koch (22). The "Henle-Koch" postulates were an early description of empirically-based conditions for causes of infectious diseases and later became the starting point for discussions of causation in chronic diseases. In epidemiology, these discussions began in earnest in the 1950s, and from them two papers emerged in the mid-1960s which have had a sustained impact on the practice of causal inference in cancer epidemiology (9). In 1964, a US Surgeon General's committee used a set of five criteria to judge that smoking cigarettes caused lung cancer (10). One year later, Bradford Hill expanded this list to nine criteria—he called them "aspects of associations"—important to disease causation (11).

Both early accounts included a role for biology in causal inference. Coherence was the criterion of the Surgeon General's committee that incorporated the related notions of biologic mechanism and biologic plausibility. The approach is succinctly described in the committee's own wording:

> "Coherence is clearly established when the actual mechanism of disease is defined. Coherence exists, nevertheless, although of a lesser magnitude, when there is enough evidence to support a plausible mechanism, but not a detailed understanding of each step in the chain of events by which a given etiologic agent produces disease" (10, p. 20).

Hill distinguished between coherence and plausibility, although his views on the latter have been more influential in cancer epidemiology (23). Hill wrote:

> "It will be helpful if the cause. . .is biologically plausible. . .but we cannot demand it. What is biologically plausible depends upon the biological knowledge of the day" (11, p. 298).

Hill's words are echoed in a recent *Lancet* commentary by Glynn:

> "The existence of a suggested mechanism by which a proposed cause of a disease exerts its effect is reassuring. However, this will depend on the biological knowledge of the disease at the time. . ." (24, p. 531).

Hill's and Glynn's papers (11, 24), and many others published between 1965 and 1994 (25–32), reveal a commonly-held viewpoint, that in a given case (i.e., for a single factor-cancer association) *a biologically plausible association is one for which a reasonable mechanism can be hypothesized, but for which no biologic evidence may exist.* As such, biologic plausibility becomes a dispensable consideration. In support of this view, Schlesselman argues that biologic plausibility "may occasionally impede acceptance of new facts" and is a "conservative" criterion, used "either to dismiss some unexpected finding or to support an association from a study based on suspect methods" (29, p. 201). The dispensability of biologic plausibility also figures in decisions to publish the results of epidemiologic studies in some journals. An editor of the *New England Journal of Medicine* recently wrote that publication may be warranted for large effects that "do not make biologic sense" (33, p. 824). Note, however, that the endpoint is publication (not causation), and that a condition has been placed on at least one other causal criterion—here, magnitude of the association—in order to justify dispensing with biologic plausibility.

The rapid progress made in the fields of molecular biology and molecular epidemiology since the late 1980s has underscored a second way to represent biologic plausibility in causal inference (19, 34–38). *Many authors have argued that simply suggesting a mechanism for a factor-cancer association is insufficient. Evidence supporting the proposed mechanism is also necessary.* The International Agency for Research on Cancer (IARC), in a 1990 monograph, categorizes types of biologically relevant evidence (35). Emphasized are biologic indicators of exposure, such as DNA adducts or protein adducts and animal model evidence. In a recent paper, McMichael (19) examines the current capacity of molecular epidemiologic techniques to identify the biologically effective dose at tissue targets (e.g., DNA adducts), early biologic effects (e.g., mutations), and variations in individual susceptibility. He argues that evidence of prospective links between molecular events, especially DNA adducts and cancer occurrence, are important in causal assessments yet are rarely available. With regard to animal evidence (e.g., long-term bioassays in rodents), the IARC monograph discusses the strengths and limitations of this type of evidence, particularly the interspecies differences in susceptibility to chemically induced cancer and the extent to which genetic heterogeneity and other factors can be controlled.

A third, more rigorous, notion of biologic plausibility has also been proposed: *an association is considered biologically plausible if there is sufficient evidence to show how the factor influences a known disease mechanism* (30, 37). This is the most stringent of the three approaches to biologic plausibility relative to the "evidence-free" or "evidence-supportive" notions discussed above because it requires that the mechanism be defined to the extent that it is possible to examine the influence of the putative factor on the inner workings of that mechanism.

These three approaches help to organize the methodological work to date and reveal vastly different opinions on what counts as a biologically plausible association. It remains unclear how much and what kinds of evidence will turn a "suggested" (24) or "hypothesized" (36) mechanism into a "coherent" mechanism (10), i.e., one that not only "makes sense" (33) but one "defined. . .by our detailed understanding of each step in the chain of events" (10, p. 20). Similarly, what does it take to claim that we "know" a mechanism (30, 37)? We continue our search for answers to these central questions on the role of biologic evidence in human cancer causation not by proposing more theory (39, 40), but, rather, by examining two well-known exposure-cancer associations. For each we describe the evolution of evidence and the ways in which investigators, specifically those publishing review papers, have approached the concepts of biologic evidence, plausibility, and mechanism in causal inference.

Materials and methods

The MEDLINE© database was searched from January 1977 through December 1996, using keywords, "causation," "causal inference," "biologic plausibility," "biologic mechanism," "smoking and cervical cancer," "and vasectomy and prostate cancer." Reviews, editorials, and methodological articles were also identified from reference lists of primary research studies and from chapters of general epidemiology, cancer epidemiology, and cancer prevention and control textbooks. In addition, tables of contents from major medical, public health, cancer, and epidemiology journals available at the National Institutes of Health were examined.

Smoking and cervical cancer

Thirty-six case-control and six cohort studies on smoking and cervical cancer were published from 1966 through 1995 (41–83). Ten reviews (84–93), 12 mini-reviews (94–105), two meta-analyses (106, 107), and several related letters and commentaries have also appeared (108–110). We examined the 10 reviews and two meta-analyses published between 1977 and 1991, divided into three groups: 1977–1984, 1985–1986, and 1989–1991. Next we examined the "mini-reviews " published from 1991 through 1995; these are brief reviews of the association included within reviews of cervical cancer epidemiology, risk factors for gynecologic tumors, or reviews of the impact of smoking on cancer.

Reviews of smoking and cervical cancer (1977–1984). Winkelstein (84) suggested a possible association between smoking and cervical cancer in 1977 (84). Two biologic hypotheses were proposed: First, cervix cancer is primarily a squamous cell disease and smoking causes squamous cell carcinomas in many sites, including lung. Second, smoking constituents (especially carcinogens) may be transported to distant sites (including the cervical epithelium) via the circulation. No evidence was cited for either hypothesis. In 1981, however, Winkelstein (108) noted in a letter written in response to a charge that the association was implausible, findings of nicotine in the breast fluid of nonlactating smokers (111). In 1982, the Surgeon General's office reviewed the smoking and cervical cancer literature, concluding that it was unclear if an association existed (85). The report ignored the issue of biologic plausibility. One year later, Austin's review (86) cited epidemiologic evidence along with two studies regarding biologic plausibility: the study showing nicotine in breast fluid (111) mentioned above, and a study showing that inhaled mutagens are concentrated in the urine of smokers (112). Austin argued that "these studies adequately illustrate that epithelial cells must be perfused with smoke carcinogens via the circulation" (86, p. 516) and he declared that cervical cancer was caused by smoking and that preventive measures were needed. Finally, in 1984, Winkelstein et al. published a review whose stated purpose was to "examine the reluctance to accept an etiologic interpretation of the. . .association" (87, p. 2). They added a study showing mutagenicity of smokers' nipple aspirates (113) and concluded that there was strong evidence to consider smoking a risk factor for cervical cancer.

It is reasonable to conclude that in these early reviews of the smoking and cervical cancer association, biologic plausibility was used (86, 87) as a criterion for which evidence directly testing the biologic hypothesis was unnecessary to make a causal claim, consistent with the "evidence-free" approach mentioned above. Winkelstein et al. (87) and Austin (86) claimed that smoking caused cervical cancer with no direct evidence that smoking constituents reach the cervical epithelium much less were responsible for carcinogenic changes.

Reviews of smoking and cervical cancer (1985–1986). Three reviews appeared during the years 1985–1986 (88–90). The IARC concluded—without reference to biologic plausibility—that "...the causal nature of the association...remains uncertain" (88, p. 298). The review also mentioned an alternative hypothesis, that "there is a specific causal agent—an infective agent transmitted sexually" (88, p. 298) so far unidentifed. The two reviews published in 1986 also mentioned this possibility, although both maintained that smoking was an independent causal factor (89, 90). With regard to biologic plausibility, both 1986 reviews cited evidence published a year earlier in the *New England Journal of Medicine* (114) showing concentrated nicotine and cotinine levels in the cervical mucus of smokers, thus providing the first direct biologic evidence of exposure to the cervix. In addition, Winkelstein (89) demonstrated that most cervical cancer is squamous, using Third National Cancer Survey data. Finally, the review by Singer and Tay (90 p. S89) argued that smoking may elicit a local immunosuppressive effect facilitating a persistent viral infection. They cited their own unpublished research and a paper describing reduced killer cell activity in male melanoma patients (115).

In terms of evidence-based biologic plausibility, the causal conclusions so strongly argued by Winkelstein (89) and by Singer and Tay (90) are based on a single study documenting that the target tissue is perfused with some chemicals arising from exposure to cigarette smoke. Interestingly, the IARC report mentioned this same biologic study in a separate section of its monograph, yet did not refer to it when concluding that causation was uncertain.

Reviews and meta-analyses of smoking and cervical cancer (1989–1991). By the time new reviews appeared in 1989 (91, 92), two major biologic hypotheses had emerged: that smoking causes cervical cancer by direct exposure of carcinogens to the cervical epithelium, and that smoking induces a local immunosuppressive effect facilitating a persistent viral infection. The Surgeon General's 1989 (91) review addressed only the direct exposure hypothesis, citing the 1985 *New England Journal of Medicine* study of nicotine and cotinine levels (114) and a study published 1 year later showing mutagenicity of cervical mucus in smokers (116). The report concluded that the association was consistent and plausible but did not claim causation. Later in 1989, Layde (92) also ignored the immunosuppression hypothesis, citing the now-familiar *New England Journal of Medicine* 1985 study (114) and a study confirming the finding that cervical mucus in smokers is mutagenic (117). Layde reviewed the IARC (88) and the Surgeon General's (91) decisions, claiming that confounding by an unknown yet likely viral factor was responsible for the cautious decisions found there. He concluded with a public health recommendation that women should stop smoking for many reasons (besides avoiding risk of cervical cancer).

Three papers appeared in 1990, a meta-analysis (106), a review (93), and a commentary on the review (109). The meta-analysis examined six case-control studies of histologically confirmed invasive cervical cancer. The summary odds ratio for current smokers was 1.81 (confidence interval (CI) 1.54–2.12) with no significantly elevated risk in former smokers. Without reference to biologic plausibility, the authors concluded that the "results provide additional rationale for health care professionals...to give antismoking messages to their patients" (109, p. 280).

Winkelstein's fourth review on this topic (93) featured a discussion of the 15 epidemiologic studies published since his 1986 review (89) and an extended discussion of biologic plausibility. Winkelstein reiterated three biologic hypotheses: that smoking-related cancers (including cervical cancer) are squamous, that carcinogenic chemicals in smoke reach the cervical epithelium, and that smoking may act as a cofactor with a viral agent. To buttress the first of these, Winkelstein added findings from a study done in 1962 (118) showing that smoking-related cancers occur as second primaries more frequently in women with primary cancer of the cervix than nonsmoking related cancers (87). Evidence of smoke constituents in cervical epithelium (117, 119) was included for the direct exposure hypothesis. Winkelstein's treatment of the immunosuppressive hypothesis included four studies from the late 1980s (120–123) including a study (123) showing reductions in Langerhans cells in smokers with normal cervical epithelium and in smokers positive for human papilloma virus infection. To these three hypotheses, Winkelstein added a fourth: that smokers' lower serum β-carotene levels, perhaps from a deficiency of dietary vitamin A, may increase susceptibility to carcinogens. He noted that the epidemiologic evidence regarding this hypothesis was "equivocal" and offered no biologic evidence. In his conclusion, Winkelstein argued that "cervical cancer should be added to the list of smoking-related diseases" (93, p. 955) and that disease control strategies should include considerations of the etiologic role of cigarette smoking. In response to Winkelstein's review, Brinton argued that causality was uncertain due to three issues: confounding (by the effects of human papillomavirus infection), effect modification (by dietary factors), and the lack of information regarding biologic mechanisms (109). Indeed, Brinton emphasized that "caution must be exercised with regard to biologic plausibility" (109, p. 959) although she acknowledged that the smoking effect could be due to direct exposure or to immunosuppression.

Finally, in 1991, Sood (107) published a meta-analysis of eight case-control studies; the overall odds of cervical cancer was 1.42 (CI 1.33–1.51). With two references to the direct exposure biologic hypothesis (114, 116), Sood concluded that "smoking cessation advice to reduce the risk of all cancer, including perhaps cervical cancer, seems justified" (107, p. 211).

It is reasonable to conclude that during 1989–1991 the authors of reviews and meta-analyses were highly selective in their choice of biologic hypotheses and the evidence cited to support them. Of the six papers examined, four (91, 92, 106, 107) completely ignored the so-called "immunosuppressive" hypothesis. Indeed, one reviewer made public health recommendations without considering any biologic hypothesis (106). Finally, in the 1990 review (93) and accompanying commentary (109), the authors made different causal judgments from the same set of biologic hypotheses and similar evidence, with Winkelstein advising action and Brinton caution.

Biologic evidence and mini-reviews (1992–1995). No full review was published on the smoking and cervical cancer association after 1990. Nevertheless, several studies examining biologic hypotheses (124–132) and several "mini-reviews" (98–103) appeared between 1990 and 1995. In this section, we describe how the "mini-reviews" handled the issue of biologic plausibility in the face of accumulating biologic evidence. Studies confirming elevated nicotine levels in smokers' and passive smokers' cervical mucus samples appeared in 1991 (124) and 1992 (126), respectively. Studies showing that smoking increases exfoliation of cervicovaginal epithelial cells, and a follow-up study showing that smoking was not related to mutagenicity of cervical mucus, were published in 1992 (125) and 1993 (128), respectively. Then, in 1993, two studies revealed elevated smoking-related DNA adducts in cervical epithelium (129, 130), evidence which an epidemiologic commentator (19) noted strengthened the biologic plausibility of the association.

Yet not one of the three mini-reviews published in 1995 cited the DNA adduct evidence. Daly et al. (103) cited two studies of cervical mutagenicity published in 1987 and 1988, respectively (regarding the direct exposure hypothesis), as well as one study regarding the immunosuppressive hypothesis (123). Bornstein et al. (104) cited three late 1980s studies of the direct exposure hypothesis (114, 116, 117). Shopland (105) cited no biologic evidence. Earlier mini-reviews (100–102), published too early to have the 1995 DNA adduct evidence available, cited, among them, exactly one study regarding biologic plausibility: the 1988 Hellberg et al. study showing mutagenicity of cervical mucus (117).

Summary findings. Overall, many reviewers ignored some or all of the biologic hypotheses (and the available biologic evidence). Reviewers apparently used different definitions of "biologic plausibility" in their assessments, although no reviewer stated up front how much evidence and what types "count" in making causal judgments. In terms of the three approaches to biologic plausibility discussed in the earlier methodology section of this commentary, many reviewers inferred causation without biologic evidence to support the hypothesis. At least one reviewer (109) appeared to have a more stringent definition for biologic plausibility. No reviewer mentioned, much less described, an underlying model of carcinogenesis and the way in which the biologic evidence cited related to various steps or processes within that model.

The extent to which these findings are generally representative of the use of the criterion of biologic plausibility in the practice of causal inference in epidemiology is an interesting question. To help answer it, we turn to another association, vasectomy and prostate cancer.

Vasectomy and prostate cancer

Studies of morbidity and mortality rates in vasectomized men appeared in the late 1970s and early 1980s (133–136), and three case-control studies (137–139) and a cohort study (140) had also been published in the 1980s. Of these, one case-control study (138) anticipated the concern about a possible relation between vasectomy and prostate cancer. That concern was fostered in 1990 after two positive case-control studies (141, 142) and an accompanying commentary (143) appeared in the *American Journal of Epidemiology.* The studies revealed statistically significant though modest evidence of an association. Soon thereafter, opinion papers appeared from the American Urological Association (144) and from a meeting of the World Health Organization (145) convened to examine the safety of vasectomy. Since 1991, five additional case-control studies have appeared (146–150) and seven reports from six separate cohort studies have been published (151–157). In addition, over 20 publications—editorials, reviews, mini-reviews, and papers specifically focussed on the issue of biologic mechanisms—have appeared (143, 145, 148–177).

The ways in which biologic plausibility and the closely related notion of biologic mechanisms were used in these publications published between 1990 and 1995 exactly parallel the situation in the smoking and cervical cancer literature with one important exception. As before, reviewers selectively examined biologic hypotheses and the biologic evidence available. Some reviewers, for example, mentioned only the possibility that vasectomy might raise testosterone levels. Others examined as many as four different biologic mechanisms: endocrine effects, antisperm antibodies, secretory flow effects, and growth factor inhibitors (167). For any given explanation (i.e., mechanism) the extent of evidence cited varied considerably. Furthermore, no reviewer discussed how he or she approached the concept of biologic plausibility nor described rules of inference for this important causal criterion. In contrast to the smoking and cervical cancer example, however, no reviewer of the vasectomy and prostate cancer association made a causal claim. Indeed, lack of convincing biologic evidence for any of several mechanisms was a common argument against assigning causality (or even risk factor status) to the surgical procedure regardless of the epidemiologic study results.

Discussion

These two examples, involving causal assessments of well publicized associations in peer-reviewed review papers, reveal a large variability in how much attention reviewers devote to existing biologic hypotheses and evidence. Nothing remotely resembling a coherent set of rules for judging biologic evidence appears. Certainly, no reviewer specified a rule for using biologic plausibility as a causal criterion beyond that which is implied from occasional references to Hill's early papers or other similarly nonspecific approaches. This lack of methodological specification mirrors the general practice of causal inference inasmuch as reviewers rarely (if ever) propose in advance what specific rules they use when judging causation (23). Part of the problem, of course, is that for biologic plausibility we suspect that no comprehensive set of rules have *ever* been proposed, in practice or in theory.

Careful consideration of several issues will be necessary to make progress in this important area. Improving the quality of literature reviews and meta-analyses (178, 179) is a first step. Comprehensively examining and summarizing the conclusions of existing reviews, including conclusions about biologic plausibility, is part of a high quality (i.e., systematic) review paper. All previously proposed potential biologic explanations (i.e., mechanisms) would be available to the reviewer. Of course, reviewers may wish to propose a new mechanism or may exclude one or another biologic hypothesis. In a systematic review, however, reasons for exclusions are made specific in the methods section, e.g., that a hypothesis is not considered because no evidence is available.

Another component of a high quality review is stating how (and with what criteria and evidentiary rules) causal assessments will be made, but we have already discussed the lack of specification of such rules in the methodological literature and in practice. Indeed, we recognize that making judgments about specific exposure-cancer associations may be partially dependent upon the specifics of the situation; an exposure-cancer association, for example, may have unique biologic characteristics requiring unique decisions. On the other hand, if cancer has core processes that are near universal (i.e., occurring with limited variation across many tumor types) then general rules may be possible and obviously useful. Such rules will likely emerge from our expanding understanding of the nature of cancer biology combined with general theories of scientific reasoning and methodology.

It is beyond the purview of this commentary to carefully explore the theoretical foundations of contemporary biologic science as a first step toward proposing new rules of inference for the criterion of biologic plausibility. Nevertheless, a discussion of biologic mechanism and its role in scientific explanation may pave the way for a more detailed inquiry into the ways in which evidence of key events in the development of cancer would make a causal conclusion highly defensible.

We begin with consideration of the term "biologic," which refers (rather arbitrarily) to events occurring within the individual organism; we reserve the terms "behavioral" and "social" to refer to events occurring to individuals or populations, respectively (180). A biologic mechanism, therefore, refers to a series of events within the individual that (from some combination of inherited and acquired factors and processes) produce a malignancy. Our current understanding of the organizational structure of scientific knowledge comprising human cancer biology, however, includes a vast number of explanatory levels that contribute to the mechanism. Put another way (and in the context of smoking and lung cancer), the act of smoking (a socially mediated behavioral phenomenon influenced by the biology of addiction) begins the "biologic mechanism," which can then be described in terms of many different levels of explanation including the physical exposure of epithelial surfaces to smoke, the physical movement of smoke constituents throughout the vascular system, metabolism in tissues and organs, absorption across cellular membranes and throughout intracellular spaces, and exposure to chromosomes, genes, and nucleic acids. At even deeper levels, there is the formation of DNA-adducts and subsequent alteration in electron and magnetic fields around the atoms making up the DNA molecules. What happens next, after the exposure (i.e., a specific chemical component of smoke or its metabolite) attaches itself to nucleic acid, is typically described in terms of DNA damage, which if not repaired can result in alterations in critical genes, such as tumor suppressor genes and oncogenes. In addition, a host of promoting factors (and competing prevention factors such as micronutrients and phytochemicals) interact with intracellular regulators of cell growth or apoptosis, which determine cell number homeostasis. Dysregulation of these cellular growth and death processes provides the opportunity for the clonal growth of a malignancy from a cell in a tissue in an organ which, eventually, signals to its host that something is amiss through a persistent cough, a dull ache in the chest, or due to an equally complex cascade of behaviorally and socially mediated events, a slight shadow on a radiograph.

Given this systems-oriented structural organization of "ecologic" knowledge (181), what constitutes a biologically plausible mechanism? If by "plausible" we mean "known," as in "fully described at all levels of scientific explanation," then a "known" biologic mechanism is orders of magnitude more complex than what was (inadequately) described in a single paragraph. Thus, the idea that an association is biologically plausible when the mechanism is "known," and sufficient evidence exists to show how the presumed causal factor affects it (30, 37), is too stringent (i.e., overdemanding) to be practically useful. Put another way, with the current lack of understanding of the complexity of cancer biology, no association can be declared plausible using an inferential rule that "each step" in the process, from first exposure to first clinical sign, must be defined.

Any judgment regarding biologic plausibility in the practice of causal inference in epidemiology will be made from evidence collected not only on a subset of the total number of events relevant to the occurrence of cancer, but also on a subset of the levels of explanation involved. Although others in molecular epidemiology have proposed ways to simplify the situation by combining various levels (18), two key concerns remain: at which levels is evidence relatively more important than others, and, at any given level, what is the best (i.e., strongest) type of evidence? In-depth discussions of these issues will require a look at the evolution of methodological technique in molecular and cellular biology and its relation to epidemiologic methodologies.

Conclusion

For that part of the theory and practice of causal inference referred to as "biologic plausibility," progress will likely be made along two broad fronts: by improving the quality of literature reviews such that all biologic hypotheses and accompanying evidence are considered when judgments are made, and by using our expanded understanding of the complex layering of interactive systems that make up the biology of cancer to propose new rules of evidence applicable to the wide range of biologic research results examined in causal assessments.

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Original Research

Evaluating biological plausibility in supporting evidence for action through systematic reviews in public health

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ABSTRACT

Objectives: The objective of this research was to develop and test methods for accessing and evaluating information on the biological plausibility of observed associations between exposures or interventions and outcomes to generate scientific evidence for action consistent with practice in systematic reviews.

Study design: To undertake this research, we used the example of the observed associations between antimicrobial use in food animals and increased risks of human exposures to antimicrobial-resistant pathogens of zoonotic origin.

Methods: We conducted a scoping search using terms related to biological plausibility or mechanism to identify key references. As recommended by these references, we also used expert consultation with researchers and a public health informationist. We used their recommendations, which included expert consultation, to identify mechanisms relevant to biological plausibility of the association we selected to test. We used the reviews conducted by the World Health Organization (WHO) Guidelines Development Group in support of reducing antimicrobial use in food animal production to populate our model for assessing biological plausibility.

Results: We were able to develop a transparent model for biological plausibility based on the adverse outcome pathway used in toxicology and ecology. We were also able to populate this model using the WHO reviews.

Conclusions: This analysis of biological plausibility used transparent and validated methods to assess the evidence used in systematic reviews based on the observational studies accessed through searches of the scientific literature. Given the importance of this topic in systematic reviews and evidence-based decision-making, further research is needed to define and test the methodological approaches to access and properly evaluate information from the scientific literature.

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Introduction

Evidence-based methods in medicine and other health-related fields have emphasized biological plausibility as an important element in assessing the strength of evidence since the work of Bradford Hill.[1,2] As noted in a recent review of cancer risks, information on biological plausibility is particularly important as a complement to associations observed in epidemiological studies.[3] For observational studies, the quality of evidence is often judged weaker than the evidence based on randomized controlled studies. These study designs, which are necessary, given the ethical ramifications of interventions in public health, are considered to be less able to eliminate the effects of residual bias. As a consequence, evaluating biological plausibility or mechanisms may be of particular value in assessing the strength of evidence from this literature. This has been recognized by several regulatory agencies, including the US Environmental Protection Agency and the European Food Safety Agency, as well as by the WHO and CODEX.[4,5]

However, despite the importance of the topic, there are no generally accepted methods for evaluating biological plausibility, and many reviews discussing these mechanisms include only general statements on relatively non-specific physiological events or target organs with no supporting references.

Our research question concerned the biological plausibility of observed associations between antimicrobial (AM) use in agriculture and increased risks of human exposures to drug-resistant zoonotic pathogens. There are many reviews of this topic, including two recent systematic reviews. One of these systematic reviews was undertaken by the WHO Guidelines Development Group to support its task to develop evidence-based recommendations and guidelines to reduce antimicrobial resistance related to agricultural use.[5] An additional systematic review was published independently.[6] The WHO systematic review used the Grades of Recommendation, Assessment, Development and Evaluation (GRADE) methodology to assess the quality of the evidence, and following the GRADE criteria, the evidence was rated of low confidence.[7] The other systematic review[6] used a modified GRADE approach for evaluating evidence in which the 'sufficient component' causal model proposed by Rothman was incorporated.[8]

Assessments using GRADE can cause confusion among users of guidance based on these reviews. A statement issued by the United States Department of Agriculture (USDA) shortly after the publication of the WHO guideline referred to this 'low-quality evidence' as effectively disqualifying any WHO recommendations, despite the surrounding analyses and expert opinion.[9] To provide additional support for this evidence, we undertook an assessment of the biological plausibility of the observed associations between antimicrobial use in food animal production and increased risks of human exposures to and infections by antimicrobial-resistant zoonotic pathogens.[10]

Methods

We used scoping reviews and expert consultation to identify two articles with general discussions of methods related to biological plausibility.[11,12] From these articles , we identified the following search terms 'methods'[Subheading] OR 'methods'[All Fields] OR 'methods'[MeSH Terms]) AND ('research design'[MeSH Terms] OR ('research'[All Fields] AND 'design'[All Fields]) OR 'research design'[All Fields] OR 'test'[All Fields]) AND ('biology'[MeSH Terms] OR 'biology'[All Fields] OR 'biological'[All Fields]) AND 'plausibility'[All Fields] to access articles from the biomedical literature with more detailed methods for defining causal pathways in terms of molecular and genetic mechanisms.[3,13,14] With further expert consultation, we further accessed articles from the toxicology and ecology literature that defined mechanisms as causal pathways in the context of adverse outcome analytic methods.[15–17] We used the adverse outcome pathway model as it more closely represents the research question we sought to investigate, that is, a series of discrete mechanistic events not as strictly limited to one molecular pathway as in Lewis et al.[3] This methodology uses schematics to represent pathways, as shown in an example in Fig. 1.

To apply this model, we used a scoping review approach, including reviews, to identify sources of information on the biological plausibility of observed associations between antimicrobial use in agriculture and increased risks of human exposure to and infection by antimicrobial-resistant pathogens from food animals. We developed and populated a similar structure for this review based on a conceptual structure that represents a sequence of mechanisms involved in the emergence and dissemination of antimicrobial resistance.[18–21] To this model, we added the routes that connect these events in agriculture to human exposure. Consistent with the WHO practice in guideline development, we sought a global sampling of articles.

Our conceptual model is shown in the following section (Fig. 2) (see Figs. 3 and 4).

In this model, antimicrobial pressure includes the following variables: volume of antimicrobial use, concentrations of antimicrobials encountered by pathogens in animal guts, duration of antimicrobial use, and use of >1 antimicrobial at a time. Selection for resistance includes both natural selection through evolutionary mechanisms and horizontal gene transfer (HGT) of one or multiple resistance genes. Resistance dissemination includes clonal expansion of resistant organisms and gene flow among organisms through HGT involving mobile genetic elements (MGEs), conjugation, and other mechanisms. Reservoirs include the resistome (defined as microbial resources of resistance genes) and the mobilome (defined as microbial resources for enabling intercellular transfers of resistance genes) that are available within microbiomes in hosts and the external environment.[22] We defined human exposure pathways to include direct and indirect animal:human contact; releases from animal confinement houses; waste disposal; and consumption of food products derived from animals.[23,24]

Results

STEP 1 *Antimicrobial pressure → selection for resistance*

Fundamental to our understanding of mechanisms involved in the emergence of antimicrobial resistance is the fact that

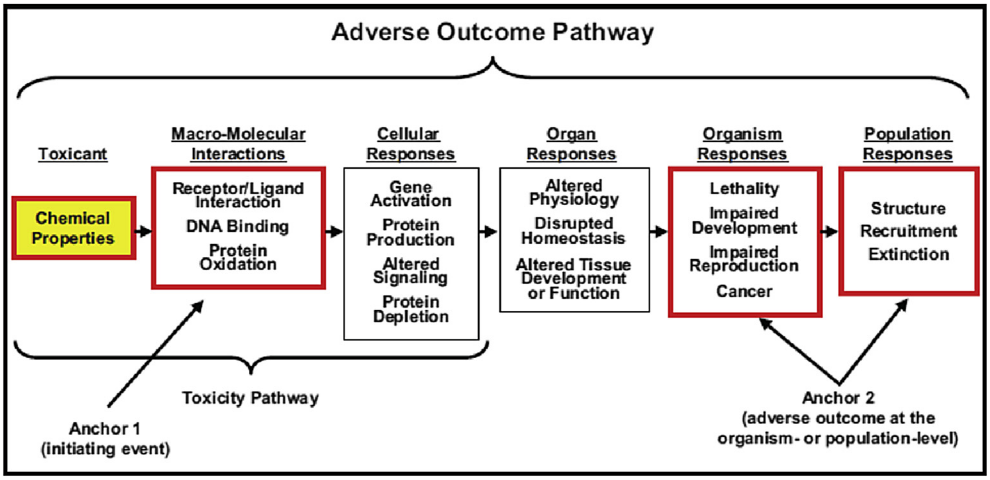


Fig. 1 – An adverse outcome pathway as used in toxicology to define events in a causal sequence connecting exposures to outcomes at the population level.[15]

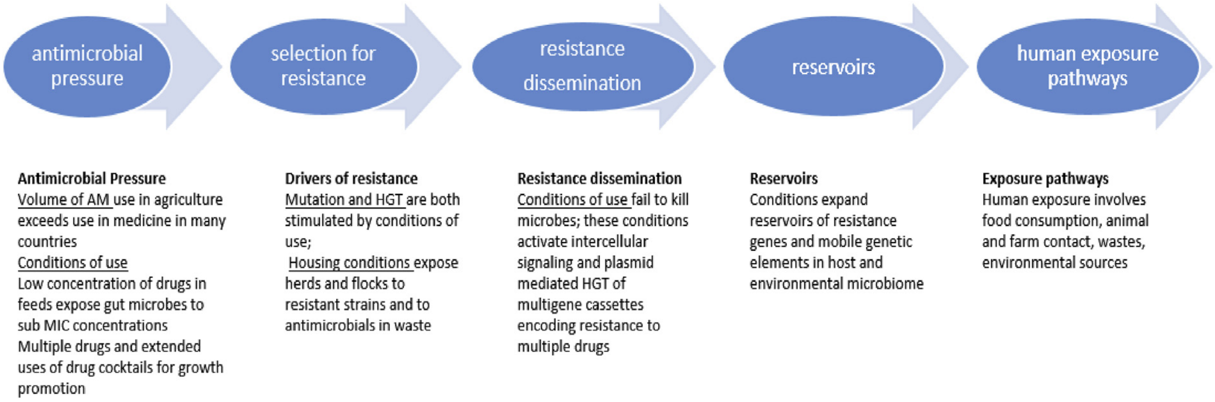
antimicrobial resistance is inherent within microbial populations. For billions of years, microbes have produced almost all currently used antimicrobial molecules in response to intensive competition for resources and survival within the microbiome.[25] In this context, antimicrobial resistance (AMR) evolved as an evolutionary mechanism by which microbes survived through natural selection by random gene mutation that encoded traits that conferred resistance to these natural biotoxins.

In contrast, human uses of antimicrobials are very recent, beginning in the early 1940s. Yet due to this prehistory, resistance mechanisms were already present within bacterial populations.[26] During the first years of experimentation by Fleming and others, resistance was recognized as a consequence of exposure. Evolutionary theory explained the emergence of antimicrobial resistance as a process of random genetic mutations that conferred biological resistance to drugs.[27] This theory also supported the assumption that each instance of resistance required either vertical transmission from the replication of a resistant organism or a separate evolutionary event. At first, little was known of the specific mutations or molecular mechanisms of AMR, but with the rapid development of molecular genetics, these altered proteins were identified.[28]

Evolutionary theory also supported the assumption that there was a cost of resistance involving a trade-off between resistance and the growth rate (the *r*K selection theory). Without this cost, bacteria would be equally likely to be resistant or susceptible in the absence of AM pressure, and with the removal of AM pressure, the prevalence of resistant strains would decrease. However, experimental observations contradicted theory, which was amended to include more complex evolutionary responses, such as 'bet hedging,' by which microbial populations under AM pressure could acquire additional mutations to compensate for the cost of resistance.[29]

Over the past 50 years, a substantial revolution has occurred in our understanding of the mechanisms by which AMR emerges and is disseminated. The current research now supports the hypothesis that HGT, rather than mutation, is the major mode by which bacteria (and other microbes) respond to antimicrobial pressure.[30] Horizontal or lateral gene transfer among live cells was observed, although not understood mechanistically, as early as 1928.[31] Bacteria use several mechanisms to share resistance genes, including conjugation or exchange through direct cell:cell contact, transformation or incorporation of naked DNA from disrupted organisms in the extracellular environment, and transduction involving transfer of genetic material by transposable genetic elements.[27,32] Later experiments demonstrated mechanisms by which donor cells initiate plasmid-mediated gene transfer and how antimicrobials stimulate intercellular signaling between susceptible and resistant bacterial strains to initiate events including gene transcription that facilitate HGT from chromosomal DNA within the donor cell and responses such as swarming within the susceptible recipient organisms.[32–34] The mechanisms by which resistance genes that are transferred among cells can be incorporated into the chromosomal genome of the recipient cell and expressed are also understood.[35]

Fig. 2 – A conceptual model of the mechanisms by which use of antimicrobials in food animal production increases the risks of antimicrobial resistance and exposure of human populations to pathogenic bacteria.



Antimicrobial Pressure
Volume of AM use in agriculture exceeds use in medicine in many countries
Conditions of use
Low concentration of drugs in feeds expose gut microbes to sub MIC concentrations
Multiple drugs and extended uses of drug cocktails for growth promotion

Drivers of resistance
Mutation and HGT are both stimulated by conditions of use;
Housing conditions expose herds and flocks to resistant strains and to antimicrobials in waste

Resistance dissemination
Conditions of use fail to kill microbes; these conditions activate intercellular signaling and plasmid mediated HGT of multigene cassettes encoding resistance to multiple drugs

Reservoirs
Conditions expand reservoirs of resistance genes and mobile genetic elements in host and environmental microbiome

Exposure pathways
Human exposure involves food consumption, animal and farm contact, wastes, environmental sources

Fig. 3 – Conceptual model with an explanatory text to describe the biological plausibility between agricultural AM use and risk to human population. MIC, minimum inhibitory concentration; HGT, horizontal gene transfer; AM, antimicrobial.

Concentrations of antimicrobials

The conditions of AM use also affect resistance emergence and dissemination. The most significant overall risk factor driving AMR emergence in any setting is the volume of drug use. Associations between overall drug use and prevalence of AMR have been shown by cross-sectional comparisons of national drug use data[36] and longitudinally after bans on the use of certain drugs in agriculture.[37] In addition, the concentrations of AMs to which microbes are exposed are also significant. Exposures to subtherapeutic concentrations of AMs (defined by bioassay at concentrations below the minimum inhibitory concentration [MIC]) are particularly effective as drivers of selection for AMR. This seemingly paradoxical observation reflects the Nietzschean aspects of bacteria that which does not kill them makes them strong. Higher concentrations of AMs (greater than or equal to the MIC) kill bacteria, whereas sublethal exposures stress but spare bacteria. As a consequence, these stressful but non-lethal conditions are particularly effective as drivers of selection for AMR through two mechanisms: increased growth and mutation rates and enhanced transfer of resistance plasmids and conjugative transposons.[38] The survivors acquire resistance through these mechanisms and increased incorporation of resistance genes into chromosomal DNA. Continuous or prolonged low-level AM use also expands the resistome and enhances the role of MGEs, including plasmids, in mediating the dissemination of resistance within the hosts and the environment within the microbiome.[22,39]

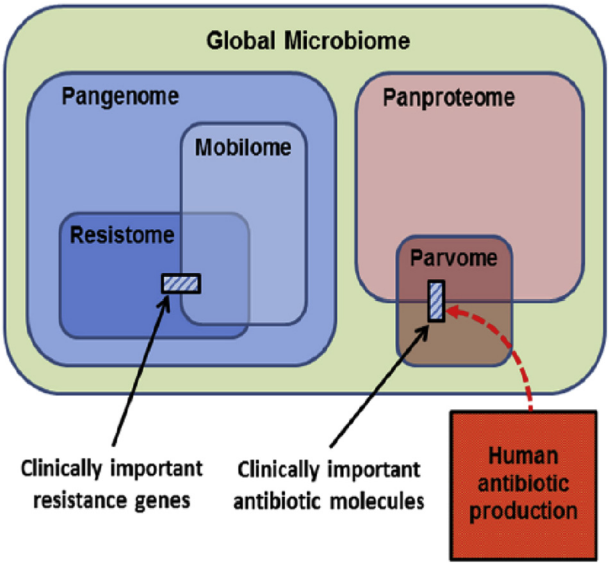


Fig. 4 – The relationships within the global microbiome and its pangenome including the resistome and the mobilome that support horizontal gene transfer in response to antimicrobial pressure including those genes encoding resistance to clinically important antimicrobials. The panproteome includes the gene products of the microbiome, including the parvome which includes clinically important antimicrobial molecules produced by humans.[22]

Use of multiple drugs

Repeated exposure to multiple AMs affects the emergence and dissemination of multidrug resistance through HGT of MGEs containing multiple resistance genes encoding resistance to several drugs. This results in both cross resistance and coselection. These mechanisms were first demonstrated in 1989, with experiments showing that cross resistance among antimicrobials can be selected by one drug represented in the multidrug-resistant cassette.[40] Through HGT, bacteria not only exchange individual resistance genes but also cassettes of multiple resistance genes, which encode for coresistance to multiple antimicrobials. In other words, both pathogenic and non-pathogenic bacteria can easily share an entire cookbook of avoidance tactics rather than a single recipe. In response to repeated exposures to multiple AMs, bacteria acquire ‘genetic capital’ in the form of sequential acquisition of resistance genes that can be transferred as a package through transposons within the mobilome.[41] These cassettes may be highly complex. *Salmonella* strain resistant to 13 antimicrobials was isolated from a child living on a farm who presented with ceftriaxone resistance; all but one of the genes encoding multidrug resistance was on the same plasmid.[42] These multigene cassettes can include metal resistance genes such that coselection and cross resistance can also be driven by metals such as copper, cadmium, nickel, mercury, arsenic, and zinc.[43,44]

These conditions—use of concentrations of antimicrobials that result in subtherapeutic microbial exposures and use of multiple drugs in feeds—are common in the use of antimicrobials in poultry and livestock production. Another agricultural use is the long duration of repeated exposures for so-called prophylaxis or metaphylaxis (preventive treatment in the expectation of but absence of diagnosed disease). This may also involve sublethal concentrations of antimicrobials.[45] These low dose and extended exposures to single or multiple antimicrobials condition networks of gene flow within the microbiome such that HGT is facilitated and the role of MGEs in mediating resistance gene flow is enhanced within the gut microbiomes in animal hosts and in the environment.[46]

STEP 2 Selection → Dissemination of resistance

HGT enables the rapid and efficient dissemination of resistance among bacteria (and other microbes) through highly efficient community signaling within the microbiome. This is in contrast to evolutionary mechanisms dependent on random mutation or clonal expansion. At low concentrations, horizontal transfers of resistance genes among microbes rather than vertical transmission or *de novo* mutations are now recognized as the most important mechanism and explanation for the rapid and far-ranging dissemination of resistance within and among microbial populations within hosts and the environment.[47] These mechanisms support highly efficient mobilization of community resources of resistance. As a consequence, these resources are available to microbial networks that can be geographically distant and phylogenetically distinct.

Within and among microbial communities, HGT moves individual resistance genes and cassettes of multiple genes that encode for coresistance and coselection of resistance.[22,30] These mechanisms underlie the complexities and underscore the facility with which bacteria respond to antimicrobial pressure with both emergence and dissemination. Once a new resistance trait and gene emerges, it spreads rapidly among microbial communities. This dissemination is further facilitated by movement of bacteria through air and water, changes in methods of food animal production, and human behavior including food consumption patterns, global travel, and international trade in animals and food.

These mechanisms of dissemination are exemplified by the rapidity and global range of resistance of β-lactams as evidenced in the emergence of extended β-lactamases in response to the introduction of new cephalosporins.[48,49] Since the isolation of the first of these drugs in 1948, there are now five generations of cephalosporins. Bacteria have rapidly responded to each generation of new cephalosporins with increasing numbers of distinct β-lactamase genes, now exceeding 1000.[48] Both resistant bacteria and resistance genes encoding extended-spectrum β-lactamase (ESBL) have spread rapidly and globally.[50] Moreover, ESBL resistance genes are frequently bundled with other resistance determinants in transposable gene cassettes.[51] Coselection has been suggested as the mechanisms for the rapidity of selection for resistance to novel cephalosporins such as carbapenem and colistin.[52]

STEP 3 Dissemination → Reservoirs of resistance

Resistance reservoirs include the resistome (defined as the biological resources for responding to antimicrobial pressure) and the mobilome (defined as all the biological resources for transferring genes in response to pressure).[22]

These reservoirs exist within microbes and as naked DNA within physiological niches such as the gut and ecological niches in the external environment. The increasing use of antimicrobials has enlarged the resistome and increased the activity of the mobilome.[22,53] Increases in antimicrobial resistance genes and class 1 integrons have been reported in animals fed antimicrobials and have been documented in studies of soils treated with animal wastes or veterinary antimicrobials.[47,54,55]

The environmental reservoirs of resistance may constitute the largest resources of these functions and are of specific concern in the context of agricultural uses through the release of untreated animal wastes containing resistance genes and antimicrobials that augment selection pressures within environmental microbiomes.[39]

The environmental resistome has been a source of resistance in pathogenic bacteria isolated from humans.[25] Because agriculture is situated directly within the physical and biotic environment, with numerous porosities from farm to fork, gene flow within and from food animal production contributes significantly to the environmental resistome.[56] This involves both the release of antimicrobials and resistance genes. Several studies have reported concentrations of antimicrobials in sediments impacted by aquaculture which are many fold greater than the minimal inhibitory concentrations for many drugs and pathogens.[57] In addition, multiple MGEs have also been measured in soils and sediments.[54] Empirical assessments of gene flow from agriculture into environmental microbiomes in soils and sediments have been published.[58]

STEP 4 Reservoirs → Exposure pathways

To evaluate the last step in this conceptual sequence, exposure of human populations to drug-resistant pathogens from food animal production, we considered the role of the mechanisms discussed previously within the conditions and context of food animal production. Many of the conditions in food animal production resemble those risk factors that are conducive to the mechanisms of AMR emergence and dissemination first identified in healthcare settings, and for which interventions and guidance programs have been developed and implemented in many countries.[59] They are exacerbated by animal stress and crowding during growth stages and transport.[60,61]

In Fig. 2, we summarize the evidence for the role of mechanisms listed in Fig. 1 within the context of antimicrobial use in food animal production. We also indicate evidence supporting routes of exposure to these zoonotic pathogens from food animal production to human populations.

The food supply is the most significant pathway for human exposure to AMR pathogens from agriculture in terms of numbers of persons exposed, followed by multiple pathways of release to the environment. These two pathways operate both separately and in combination. In addition to consumption of food products from animals, there is an underappreciated and overlooked pathway of food-borne dissemination from the environment to crops consumed by humans. This is of particular risk when crops are grown with animal wastes (as in organic production) or with irrigation by surface water sources contaminated by run off from land disposal of animal[62,63].

The food and environmental pathways of exposure blur distinctions between health care and agriculture. Common sources of food are eaten inside and outside of healthcare facilities, and hospitals are located in environments where ambient air and water may be contaminated by agricultural releases. Moreover, people—patients, visitors, and healthcare personnel—move in and out of healthcare settings.[64] For this reason, there are no real barriers between the presence of AMR in agriculture and the entrance of these same AMR pathogens into healthcare settings. These factors make it impossible to identify sources of resistance or to allocate burdens of disease between clinical and agricultural uses. This circularity is shown in Fig. 5.

Regardless of the original source of AMR, in most cases, it is not possible to separate agricultural and clinical sources of genetic determinants of resistance in pathogens isolated from human populations, because genes and pathogens originating in agriculture quickly become sources of exposures and infections in human communities and eventually move into healthcare settings, and strains in humans can be transferred to animal populations. This gene flow goes both ways. There is a well-annotated history of the cross transmission of so-called 'livestock' strains of MRSA (ST398) from humans to animals and from animals to humans.[65] Some studies of ESBL+genes in *Escherichia coli* isolates from animals, including carbapenemase, suggest that this may represent contamination of the agricultural environment by human wastes.[66]

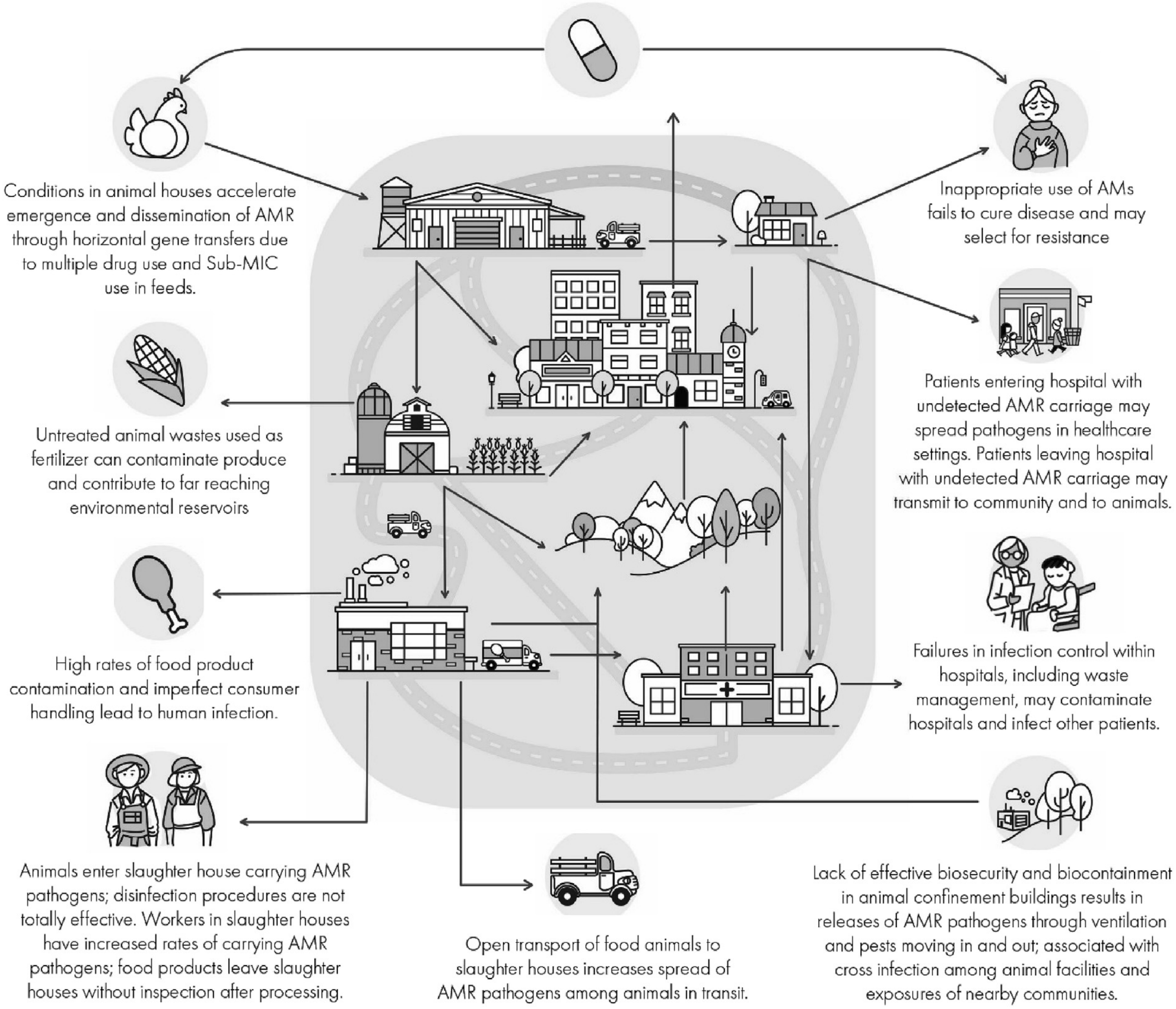


Fig. 5 – Illustration depicting complex relationships among and between multiple sources of AMR. AMR, antimicrobial resistance; MIC, minimum inhibitory concentration.

Discussion

We undertook this study to improve the evaluation of evidence related to biological plausibility of associations observed in non-RCT studies relevant to public health. The development of a transparent method for assessing the quality of these types of associations in observational studies is of high importance. The current assessment methods based on GRADE are not appropriate because of the inherent limitations of public health studies. Moreover, the use of GRADE, as in the systematic reviews conducted by the WHO, may lead to underestimation of important findings. The USDA issued a statement shortly after the publication of the WHO guideline, which referred to this 'low-quality evidence' as effectively disqualifying any WHO recommendations, despite the surrounding analyses and expert opinion.[9] We selected the adverse outcome pathway approach based on our interest in the application of these methods for supporting the evidence derived from observational studies.

With expert consultation, we accessed articles describing general and detailed methods for organizing structural models representing biological plausibility through mechanisms that link exposures to health outcomes. One of these methods uses a comprehensive information set based on the molecular biology of cancer (Lewis et al.),[3] and the other uses the more generalizable concept of adverse outcome pathways (Ankley et al.).[15] We selected this latter model because of its applicability to observational studies and the substantial record of use in toxicology and ecology to support evidence-based decisions related to risk assessment.[4,67,68] We populated our framework of adverse outcome pathway analysis, using the literature on mechanisms of antimicrobial resistance and assigned mechanistic evidence to a sequential pathway linking antimicrobial exposure of microbial communities to human exposure to drug-resistant pathogens.

We focused on mechanisms that drive microbial response to antimicrobial stress through the emergence and dissemination of resistance as well as accumulation of resistance genes and organisms in reservoirs. To this model, we added evidence on the major pathways of human exposure to AMR pathogens from agricultural sources. The conditions of agricultural use facilitate many of the mechanisms in AMR emergence and transmission, such as horizontal gene transmission and the frequency of multidrug-resistant phenotypes. By including a further focus on agricultural use, this assessment also supported the importance of the microbiome perspective. Moreover, it illustrated the role of agricultural use in expanding environmental repositories or resistomes through the direct contribution of agriculture to multiple pathways of release and from which AMR genes can be transferred to bacteria in human populations.

Conclusions

It is recognized that all uses of antimicrobials contribute to the emergence and dissemination of resistance.[69] In the context of increasing global threats of antimicrobial resistance, we need evidence to support effective interventions to control uses of antimicrobials in both health care and agriculture. The evidence has been summarized in recent systematic reviews,[5,6,70] which reported associations observed between agricultural use of antimicrobials for all purposes and increased risks of AMR exposure of human populations. This article adds an analysis in support of the biological plausibility of these observations, using published methods based on a mechanistic approach. We conclude that this approach may be applicable to evaluate the evidence for biological plausibility as part of an overall assessment of evidence for action-based systematic reviews on topics in which associations have been observed based on observational studies. This first application requires validation by application to other systematic reviews where the criterion of biological plausibility is of value.

Author statements

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Ethical approval and consent to participate

Not applicable.

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Competing interests

The authors declare that they have no competing interests.

Author contributions

E.K.S. and J.D. contributed equally to the conceptualization of this article and writing this manuscript. E.K.S. conducted literature searches and J.D. produced the original figures in the article. L.R. provided appropriate guidance on data collection and interpretation according to public health informationist standards and requirements. All authors read and approved the final manuscript.

Consent for publication

Not applicable.

Availability of data and material

Data sharing not applicable to this article as no data sets were generated or analyzed during the present study.

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EXHIBIT 110

Weed, "Environmental Epidemiology: Basics and proof of cause-effect," Toxicology 181-182 (2002) 401

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Environmental epidemiology
Basics and proof of cause–effect

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Abstract

Bringing epidemiology and toxicology together to better understand cause and effect relationships requires attention to several interconnected problems: problems of commitment, complexity, and of communication. The most fundamental of these is commitment as it is reflected in the basic purpose of environmental epidemiology. The purpose of epidemiology is *not* to prove cause–effect relationships, and not only because scientific proof is elusive. The purpose of epidemiology is to acquire knowledge about the determinants and distributions of disease and to apply that knowledge to improve public health. A key problem, therefore, is how much and what kinds of evidence are sufficient to warrant public health (typically preventive) actions? The assessment of available evidence lays the foundation for the problem of complexity: relevant evidence arrives from toxicologic and epidemiological investigations, and reflects the acquisition of knowledge from many levels of scientific understanding: molecular, cellular, tissue, organ systems, complete organisms (man and mouse), relationships between individuals, and on to social and political processes that may impact human health. How to combine evidence from several levels of understanding will require the effective communication of current methodological practices. The practice of causal inference in contemporary environmental epidemiology, for example, relies upon three largely qualitative methods: systematic narrative reviews, criteria-based inference methods, and (increasingly) meta-analysis. These methods are described as they are currently used in practice and several key problems in that practice are highlighted including the relevance to public health practice of toxicological evidence.

Keywords: Causal inference; Cause; Epidemiology; Toxicology

1. Introduction

Toxicology and epidemiology share a common goal of improving human health through disease prevention. Primary prevention in turn requires an assessment of evidence regarding the extent to which exposure factors are causal. Toxicologists and epidemiologists often work together to assess the available scientific evidence relating to potential environmental disease-causing hazards. The future is likely to bring an increase in these opportunities (Pappas et al., 1999; Kroes, 2000). This paper is written to facilitate future partnerships between toxicologists and epidemiologists.

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2. Specific purposes of the paper

1) To describe the basic commitment of epidemiology to disease prevention and to underscore the complexity of scientific evidence relevant to disease causation.
2) To briefly describe the methods used to make claims about disease causation from environmental exposures: the systematic narrative review, criteria-based methods, and meta-analysis. How these methods fit into the process of risk assessment is described.
3) To provide a list of problems suitable for future research inquiries that emerge from a description of these causal inference methods and their practice.

3. Epidemiology's basic commitment to prevention

Epidemiology's need for methods of causal inference stems from its commitment to disease prevention within the broader context of public health. Epidemiology is more than the scientific study of the distribution and determinants of disease in populations; it is also (and more importantly) the application of scientific knowledge gained to improve human health through disease prevention. Prevention is a core value of the profession (American College of Epidemiology, 2000) and brings to the fore the following key question: how much and what kinds of evidence warrant preventive action?

Answers to this question require considerations of causation and of the risks, costs, and benefits of intervention. Only the causal question will be discussed in this paper. This question evokes several component questions:

What types of scientific evidence are available for causal assessment?

What methods are available for these assessments?

How are these methods used in practice?

How can this practice be improved?

Three important omissions:

1) Nothing is said about 'proof' of cause and effect. This is an intentional omission. 'Proof' in the science of disease prevention is not an absolute nor even as clear-cut a concept as can be found in mathematics, logic, and in the courts. Recently, 'proof' has re-emerged in discussions of the Precautionary Principle. (See research problems at the end of this paper.)
2) Nothing is said here about the definition of 'cause.' This omission, again intentional, springs from the fact that in the current practice of causal inference, investigators do not define what they mean by 'cause' prior to applying methods of causal inference. (See research problems at the end of this paper.).
3) Nothing is said here about designing and carrying out an individual epidemiological study. For such information, see basic epidemiology texts.

4. Complexity of causal evidence

Evidence available for causal assessments is a complex matter. Although epidemiological evidence is often an important source, toxicology and other biological science disciplines provide their fair share of evidence. Although the focus here is on epidemiological and toxicologic evidence, it is important to remember that a search for preventable risks in a population-based approach can also involve causal factors acting at social or political levels. Social causation is beyond the scope of this paper.

The complexity of the evidence relevant to disease causation remains considerable. Consider, as a representative example, the evidence involved in considering whether electrical and magnetic fields are causes of cancer, reproductive and developmental disabilities, and neurobiologic dysfunction (e.g. learning and behavioral disabilities) as described in a recent report NRC report (1997).

Studies range along a continuum, starting at the level of atoms, simple molecules, larger molecules such as DNA including adducts and repair mechanisms, proteins and their synthesis, intracellular environments (e.g. calcium levels), cell-signaling pathways and other extracellular phenomena, tissues (cell cultures, bones, nerves, polyps and tumors), and on to the studies in intact individuals (e.g. mice) wherein toxicologists study tumor incidence in rodents and observational studies wherein epidemiologists study the relationship between field exposures and the incidence of diseases and disorders. Finally, there are the studies behavioral scientists perform to measure learning and other higher cognitive processes.

5. Methods of inference and interpretation

This section describes the methods used by epidemiologists and others when they interpret evidence for the purpose of making causal inferences. Although the primary focus of this description appears to be epidemiological evidence, current approaches to causal inference take into account the continuum of evidence described above.

6. Systematic narrative reviews of scientific evidence

The narrative review of scientific evidence is a familiar and valuable method. The purpose of a narrative review can be one or several of the following: (1) to summarize the available evidence; (2) to make research recommendations; (3) to make claims about the existence or nature of a biological mechanism; (4) to make causal conclusions about an environmental exposure; and (5) to make preventive recommendations about the need to remove (or reduce exposure to) an environmental exposure. The need for a careful and comprehensive approach to such a review may seem obvious, but recent empirical studies of the method as a method reveal that a large proportion of narrative reviews in epidemiology are of questionable quality, lacking a stated purpose, clear literature search criteria, inclusion and exclusion criteria for the studies (and previous reviews) summarized in the review, and clear descriptions of the causal criteria used to interpret (for example) epidemiological evidence (Breslow et al., 1998).

7. Criteria-based methods of causal inference

From an epidemiologist's perspective, the causal criteria are at the heart of the matter of causal inference, along with considerations of bias, confounding, and relative strength of study designs. Historically, there are either five (Surgeon General, 1964) or nine (Hill, 1965) such criteria. The use of these criteria involves 'applying' them to the evidence summarized within the systematic narrative review. The most commonly used criteria are: *strength of association*, *consistency*, *dose–response*, *biologic plausibility*, *and temporality.* Other criteria—*specificity*, *coherence*, *analogy*, *and experimentation* are used less frequently (Weed and Gorelic, 1996).

Selecting, prioritizing, and assigning specific rules of evidence to these criteria is more a matter of personal preference and customary practice than it is a matter of rigorous logic. That is not to say that a consensus about the utility of these criteria is absent. Causal criteria remain at the center of the epidemiologists' approach to causal inference.

8. The causal criterion of biologic plausibility

Biologic plausibility is particularly relevant to a discussion of toxicologic evidence in causal inference. A recent review of the role of biologic plausibility in cancer epidemiology (Weed and Hursting, 1998) revealed two important findings:

1) Definitions of this causal criterion in the methodological literature—textbooks and discussions of causal inference—and in the practice literature range along a broad continuum. Three increasingly stringent definitions are as follows:
2) A biologically plausible association is one for which a reasonable mechanism can be hypothesized, but for which no biologic evidence may exist.

3) A biologically plausible association must have some supporting evidence.
4) An association is considered biologically plausible if there is sufficient evidence to show how the factor influences a known disease mechanism.The existence of widely ranging definitions for the criterion of biologic plausibility is an excellent example of the highly subjective approach that investigators take when examining biologic evidence.
5) Authors of published peer-reviewed reviews often ignored some of the existing biologic hypotheses for a purported causal association.

8.1. Meta-analysis

A more recent addition to the collection of methods important to causal inference is meta-analysis. This technique provides better—meaning, more precise—estimates of the overall strength of association and dose-response characteristics of epidemiological evidence. Meta-analysis also provides, when possible, an improved technique for determining the extent to which the evidence is consistent. Meta-analysis alone is not sufficient for making causal claims (Weed, 2000).

9. Causal inference methods and risk assessment

Causal inference methods play a prominent role in risk assessment, although these methods are not unique to environmental hazards. They are typically applied to potential disease-causing factors from the environment, occupations, lifestyle choices, and include infectious and non-infectious agents. Nevertheless, the methods of causal inference as described above can be ‘fit’ into the well-known four step process of risk assessment (NRC, 1983). Causal inference methods are especially relevant to three of the four steps of risk assessment: hazard identification, dose–response assessment, and risk characterization.

10. Problems for the future

Here, problems suitable for future research inquiries are described. Although these are primarily methodological problems, they often also involve theory (and sometimes philosophical and ethical concerns). These are, in other words, challenging and ultimately worthy problems, whose solutions will hopefully lead to better judgments about cause and thus better public health decisions.

10.1. Lack of systematic approaches to narrative reviews of evidence

Studies of the quality of systematic review papers have been confined to medicine and epidemiology. The quality of narrative reviews of biological evidence is unknown.

10.2. Lack of evidentiary standards for the criterion of biologic plausibility

The importance of the criterion of biologic plausibility suggests that defining and examining the validity of its evidentiary standards should be an important priority.

10.3. Molecular epidemiology and biomarkers

How biomarkers will change the theory and practice of causal inference is an important question.

10.4. What is a cause?

Causal inference methods in practice have not been systematically linked with clear definitions of cause. It is not known whether if one were to define a cause and from that definition propose criteria for interpreting evidence, the current causal criteria (save for ‘temporality’) would emerge.

10.5. Subjectivity and values in the practice of causal inference

The lack of standardized definitions and rules of evidence for the familiar and widely used causal criteria is only one example of the powerful influence of subjectivity and values in the practice of causal inference.

10.6. Principles and practice

How the Precautionary Principle could impact the theory and practice of causal inference is an important research priority.

11. Final comment

Although toxicologists and epidemiologists have certainly sat together at the evidentiary table, they have not worked together much on theoretical and methodological research problems as described above. Perhaps this list of problems will entice us to work together in the complex yet vital arena of causal inference.

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Trends in Pneumoconiosis Deaths — United States, 1999–2018

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Pneumoconioses are preventable occupational lung diseases caused by inhaling dust particles such as coal dust or different types of mineral dusts (*1*). To assess recent trends in deaths associated with pneumoconiosis, CDC analyzed multiple cause-of-death data[*,†] for decedents aged ≥15 years for the years 1999–2018, and industry and occupation data collected from 26 states[§] for the years 1999, 2003, 2004, and 2007–2013. During 1999–2018, pneumoconiosis deaths decreased by 40.4%, with the exception of pneumoconiosis attributed to other inorganic dusts (e.g., aluminum, bauxite, beryllium, iron, and tin oxide), which increased significantly (p-value for time trend <0.05). The largest observed decreases in pneumoconiosis deaths were for those associated with coal workers' pneumoconiosis (69.6%) and silicosis (53.0%). Asbestosis was the most frequently reported pneumoconiosis and was associated with working in the construction industry. The ongoing occurrence of deaths associated with pneumoconiosis underscores the importance of occupational dust exposure reduction, early case detection, and continued surveillance to monitor trends.

The CDC National Vital Statistics System's multiple cause-of-death data for 1999–2018 were analyzed for decedents aged ≥15 years. For this analysis, decedents were identified using death certificates listing pneumoconiosis as the underlying[¶] or contributing cause of death and included deaths with the following *International Classification of Diseases, Tenth Revision* (ICD-10) codes: J60 (coal workers' pneumoconiosis), J61 (pneumoconiosis due to asbestos and other mineral fibers, [asbestosis]), J62 (pneumoconiosis due to dust containing silica, [silicosis]), J63 (pneumoconiosis due to other inorganic dust [applies to berylliosis, a disease caused by exposure to beryllium; pulmonary siderosis, a disease most common in workers exposed to metal fumes during welding; and other diseases]), J64 (unspecified pneumoconiosis), J65 (pneumoconiosis associated with tuberculosis), and J66 (airway disease due to specific organic dust [applies to byssinosis, a disease caused by prolonged inhalation of textile fiber dust]). Death

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[*] Each death record includes codes for up to 20 conditions derived from the "Cause of Death" section of the death certificate. https://www.cdc.gov/nchs/data/dvs/DEATH11-03final-acc.pdf.

[†] https://wonder.cdc.gov/wonder/help/mcd.html.

[§] Colorado, Florida, Georgia, Hawaii, Idaho, Indiana, Kansas, Kentucky, Louisiana, Michigan, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Rhode Island, South Carolina, Texas, Utah, Vermont, Washington, West Virginia, and Wisconsin. States are where the death took place, not necessarily where the decedent had resided.

[¶] Underlying cause of death is defined as "the disease or injury which initiated the chain of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury." https://wonder.cdc.gov/wonder/help/mcd.html#Source.

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rates per 1 million population were age-adjusted by applying age-specific death rates to the 2000 U.S. Census standard population.[**] Industry and occupation data were available from 26 states for 1999, 2003, 2004, and 2007–2013 and coded[††] in accordance with the U.S. Census 2000 Industry and Occupation Classification System.[§§] Cause-of-death data from the 26 states were compiled using CDC's National Occupational Respiratory Mortality Surveillance system.[¶¶] Data were processed using SAS software (version 9.4; SAS Institute), and Joinpoint regression software (version 4.8.0.1; National Cancer Institute) was used to analyze time trends in deaths and log transformed death rates.

During 1999–2018, a total of 43,366 decedents aged ≥15 years had pneumoconiosis listed on their death certificates, including 17,578 (40.5%) for whom pneumoconiosis was the underlying cause of death. Among all pneumoconiosis decedents, 17,797 (41.0%) were aged 75–84 years, and nearly all were male (41,777; 96.3%), white (41,029; 94.6%), and non-Hispanic (42,339; 97.6%). Asbestosis was associated with approximately three fifths of the deaths (26,059; 60.1%), followed by coal workers' pneumoconiosis (11,203; 25.8%), and unspecified pneumoconiosis (3,409; 7.9%) (Table 1).

During 1999–2018, the overall annual number of pneumoconiosis deaths decreased 40.4%; a significant decline began in 2002 (2,715 deaths) through 2018 (1,632) (p-value for time trend <0.05). Age-adjusted death rates (deaths per 1 million population) decreased from 12.8 in 1999 to 5.3 in 2018 (annual percent change = −0.88% during 1999–2001 and −5.22% during 2002–2018 [p-value for 2002–2018 time trend <0.05]).

Deaths decreased for all types of pneumoconiosis during the period studied, with the exception of those attributed to other inorganic dusts, which increased significantly from 12 deaths in 1999 to 25 in 2018 (108.3%; p<0.05). However, none of the distinct disease categories in this group increased significantly. The largest decreases over time were for deaths associated with coal workers' pneumoconiosis (69.6%), from 1,002 in 1999 to 305 in 2018 (p-value for time trend <0.05), and silicosis (53.0%), from 185 in 1999 to 87 in 2018 (p-value for 2018 time trend <0.05]) (Table 1).

Age-adjusted death rates varied across geographic locations for each pneumoconiosis type (Table 2). The highest age-adjusted death rates for the 20-year period were in West Virginia for coal workers' pneumoconiosis (59.8 per million population), Montana for asbestosis (20.0), Vermont for silicosis (2.3), and West Virginia for unspecified pneumoconiosis (24.1).

Industry and occupation data were available for 6,223 (96.7%) of 6,436 pneumoconiosis-associated deaths among persons aged ≥15 years from 26 states during 1999, 2003, 2004, and 2007–2013 (Table 3). Whereas the highest number

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[**] https://wonder.cdc.gov/wonder/help/mcd.html#Age-AdjustedRates.

[††] https://www.cdc.gov/niosh/topics/coding/.

[§§] https://www.census.gov/topics/employment/industry-occupation/data/tables.2000.html.

[¶¶] https://wonder.cdc.gov/wonder/help/mcd.html#Location.

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TABLE 1. Pneumoconiosis mortality time trends among decedents aged ≥15 years, by disease[*] and year — United States, 1999–2018

	No. of deaths (rate)[†]							
Year	Total	Coal workers' pneumoconiosis	Asbestosis	Silicosis	Pneumoconiosis attributed to other inorganic dusts	Unspecified pneumoconiosis	Pneumoconiosis associated with tuberculosis	Airway disease attributed to specific organic dust
1999	**2,738 (12.8)**	1,002 (4.7)	1,258 (5.8)	185 (0.9)	12 (—)[§]	284 (1.3)	5 (—)	7 (—)
2000	**2,859 (13.2)**	949 (4.4)	1,486 (6.8)	151 (0.7)	10 (—)	263 (1.2)	7 (—)	10 (—)
2001	**2,743 (12.4)**	886 (4.0)	1,449 (6.6)	163 (0.7)	10 (—)	233 (1.1)	7 (—)	10 (—)
2002	**2,715 (12.2)**	858 (3.8)	1,467 (6.6)	146 (0.6)	22 (0.1)	226 (1.0)	6 (—)	9 (—)
2003	**2,635 (11.6)**	772 (3.4)	1,464 (6.5)	177 (0.8)	12 (—)	210 (0.9)	6 (—)	8 (—)
2004	**2,524 (11.0)**	703 (3.1)	1,460 (6.4)	165 (0.7)	16 (—)	185 (0.8)	5 (—)	8 (—)
2005	**2,425[¶] (10.4)**	652 (2.8)	1,416 (6.1)	160 (0.7)	19 (—)	189 (0.8)	7 (—)	7 (—)
2006	**2,308 (9.7)**	654 (2.8)	1,340 (5.7)	126 (0.5)	23 (0.1)	176 (0.7)	0 (—)	7 (—)
2007	**2,189 (9.1)**	524 (2.2)	1,393 (5.8)	122 (0.5)	9 (—)	144 (0.6)	5 (—)	5 (—)
2008	**2,155 (8.8)**	470 (1.9)	1,341 (5.5)	146 (0.6)	18 (—)	191 (0.8)	4 (—)	2 (—)
2009	**1,993 (8.0)**	480 (1.9)	1,255 (5.1)	121 (0.5)	15 (—)	140 (0.5)	2 (—)	1 (—)
2010	**2,028 (8.0)**	486 (1.9)	1,308 (5.2)	101 (0.4)	12 (—)	131 (0.5)	2 (—)	1 (—)
2011	**1,890 (7.2)**	409 (1.6)	1,243 (4.8)	88 (0.3)	17 (—)	140 (0.5)	4 (—)	5 (—)
2012	**1,850 (6.8)**	399 (1.4)	1,208 (4.5)	103 (0.4)	14 (—)	136 (0.5)	1 (—)	2 (—)
2013	**1,859 (6.8)**	361 (1.3)	1,229 (4.5)	111 (0.4)	22 (0.1)	145 (0.5)	2 (—)	1 (—)
2014	**1,790 (6.4)**	363 (1.3)	1,218 (4.4)	84 (0.3)	17 (—)	115 (0.4)	0 (—)	2 (—)
2015	**1,735 (6.0)**	323 (1.1)	1,188 (4.1)	105 (0.4)	25 (0.1)	107 (0.4)	2 (—)	2 (—)
2016	**1,662 (5.6)**	300 (1.0)	1,142 (3.9)	73 (0.2)	16 (—)	140 (0.4)	2 (—)	3 (—)
2017	**1,636 (5.4)**	307 (1.0)	1,102 (3.7)	98 (0.3)	17 (—)	118 (0.4)	1 (—)	5 (—)
2018	**1,632 (5.3)**	305 (1.0)	1,092 (3.5)	87 (0.3)	25 (0.1)	136 (0.4)	2 (—)	2 (—)
Total	**43,366[**] (8.6)**	**11,203 (2.2)**	**26,059 (5.2)**	**2,512 (0.5)**	**331 (0.1)**	**3,409 (0.7)**	**70 (0.0)**	**95 (0.0)**
Time trends								
Slope[††]	1999–2002 = −19.96 2002–2009 = −102.51[§§] 2009–2018 = −45.83[§§]	1999–2008 = −58.29[§§] 2008–2018 = −20.63[§§]	1999–2001 = 102.49[§§] 2001–2018 = −23.90[§§]	1999–2018 = −5.04[§§]	1999–2018 = 0.43[§§]	1999–2007 = −15.13[§§] 2007–2018 = −3.09[§§]	1999–2018 = −0.18[§§]	1999–2009 = −0.96[§§] 2009–2018 = 0.13
APC[¶¶]	1999–2001 = −0.88 2002–2018 = −5.22[§§]	1999–2018 = −8.56[§§]	1999–2002 = 4.02 2001–2018 = −3.94[§§]	N/A[***]	N/A[***]	N/A[***]	N/A[***]	N/A[***]

Source: CDC WONDER multiple cause-of-death data. https://wonder.cdc.gov/mcd.html.

Abbreviations: APC = annual percent change; N/A = not available.

[*] *International Classification of Diseases, Tenth Revision* codes: J60 (coal workers' pneumoconiosis), J61 (pneumoconiosis due to asbestos and other mineral fibers, [asbestosis]), J62 (pneumoconiosis due to dust containing silica, [silicosis]), J63 (pneumoconiosis due to other inorganic dusts]), J64 (unspecified pneumoconiosis), J65 (pneumoconiosis associated with tuberculosis), and J66 (airway diseases due to specific organic dust).

[†] Death rates per 1 million population were age-adjusted by applying age-specific death rates to the 2000 U.S. Census standard population.

[§] Dashes indicate unreliable death rates because there were fewer than 20 deaths per year.

[¶] Data were compiled using CDC WONDER's record axis methodology, which differs from Healthy People 2020's entity axis methodology. Healthy People 2020's baseline total is 2,430. https://www.healthypeople.gov/node/5046/data_details.

[**] The sum of decedents is less than sum of disease-associated deaths because some decedents have more than one type of pneumoconiosis listed on their death certificate.

[††] Calculated using death counts; the slope characterizes the direction of the disease trend (negative slope indicates decrease in deaths over time).

[§§] $p<0.05$.

[¶¶] Calculated using age-adjusted death rates.

[***] APCs could not be calculated because of unreliable death rates or insufficient data to determine standard error.

of coal workers' pneumoconiosis–associated deaths occurred among workers in the coal mining industry (1,331; 74.2%), and among mining machine operators (1,203; 65.0%), the highest number of asbestosis-associated deaths occurred among workers in the construction industry (820; 25.0%) and among pipe layers, plumbers, pipefitters, and steamfitters (264; 8.0%). The highest number of silicosis-associated deaths occurred among workers in the construction industry (63; 18.9%) and among mining machine operators (41; 12.3%).

Discussion

CDC previously examined pneumoconiosis mortality for 1968–2000 and reported decreases in death trends in all pneumoconioses with the exception of asbestosis, for which an increase was observed (*2*). In this report, the annual number of deaths associated with pneumoconiosis have continued to decline during 1999–2018 for all pneumoconioses with the exception of pneumoconiosis attributed to other inorganic

TABLE 2. Number of coal workers' pneumoconiosis, asbestosis, silicosis, and unspecified pneumoconiosis-associated deaths[*] and age-adjusted death rates[†] among persons aged ≥15 years, by state — United States, 1999–2018

	No. of deaths (rate)[†]			
State	Coal workers' pneumoconiosis	Asbestosis	Silicosis	Unspecified
Alabama	120 (1.5)	818 (10.2)	41 (0.5)	51 (0.7)
Alaska	—[§]	39 (7.2)	—[§]	—[§]
Arizona	43 (0.4)	337 (3.2)	68 (0.6)	30 (0.3)
Arkansas	37 (0.7)	249 (4.8)	20 (0.4)	—[§]
California	155 (0.3)	1,844 (3.4)	105 (0.2)	48 (0.1)
Colorado	111 (1.6)	270 (4.1)	119 (1.8)	115 (1.7)
Connecticut	—[§]	327 (4.9)	13 (—)[¶]	—[§]
Delaware	—[§]	218 (14.2)	—[§]	—[§]
District of Columbia	—[§]	—[§]	—[§]	—[§]
Florida	184 (0.5)	1,667 (4.0)	68 (0.2)	49 (0.1)
Georgia	31 (0.3)	308 (2.5)	39 (0.3)	22 (0.2)
Hawaii	—[§]	56 (2.2)	—[§]	—[§]
Idaho	—[§]	177 (7.6)	27 (1.1)	11 (—)[¶]
Illinois	234 (1.1)	435 (2.1)	65 (0.3)	59 (0.3)
Indiana	133 (1.3)	216 (2.1)	53 (0.5)	35 (0.3)
Iowa	31 (0.5)	153 (2.6)	16 (—)[¶]	10 (—)[¶]
Kansas	12 (—)[¶]	134 (2.7)	11 (—)[¶]	—[§]
Kentucky	1,596 (22.1)	246 (3.5)	57 (0.8)	350 (4.9)
Louisiana	47 (0.7)	515 (7.4)	39 (0.5)	—[§]
Maine	—[§]	287 (10.8)	—[§]	—[§]
Maryland	34 (0.4)	728 (8.2)	26 (0.3)	23 (0.3)
Massachusetts	—[§]	641 (5.3)	19 (—)[¶]	—[§]
Michigan	79 (0.5)	687 (4.0)	80 (0.5)	35 (0.2)
Minnesota	13 (—)[¶]	502 (5.6)	59 (0.7)	—[§]
Mississippi	245 (5.3)	666 (14.0)	30 (0.6)	—[§]
Missouri	25 (0.2)	258 (2.5)	41 (0.4)	10 (—)[¶]
Montana	—[§]	363 (20.0)	19 (—)[¶]	—[§]
Nebraska	—[§]	102 (3.2)	—[§]	—[§]
Nevada	16 (—)[¶]	132 (3.7)	27 (0.7)	15 (—)[¶]
New Hampshire	—[§]	125 (5.6)	10 (—)[¶]	—[§]
New Jersey	34 (0.2)	1,318 (8.6)	40 (0.3)	30 (0.2)
New Mexico	75 (2.4)	96 (3.0)	51 (1.6)	113 (3.5)
New York	52 (0.2)	1,178 (3.5)	119 (0.4)	56 (0.2)
North Carolina	112 (0.7)	862 (5.8)	76 (0.5)	35 (0.2)
North Dakota	—[§]	56 (4.3)	—[§]	—[§]
Ohio	366 (1.8)	1045 (5.1)	204 (1.0)	139 (0.7)
Oklahoma	40 (0.7)	206 (3.3)	28 (0.4)	13 (—)[¶]
Oregon	—[§]	597 (8.8)	36 (0.5)	—[§]
Pennsylvania	3,258 (12.3)	1,553 (6.0)	268 (1.1)	636 (2.4)
Rhode Island	—[§]	122 (5.9)	14 (—)[¶]	—[§]
South Carolina	41 (0.5)	536 (7.2)	39 (0.5)	—[§]
South Dakota	—[§]	29 (1.8)	15 (—)[¶]	—[§]
Tennessee	273 (2.7)	515 (5.1)	52 (0.5)	59 (0.6)
Texas	107 (0.3)	2,106 (6.7)	157 (0.4)	52 (0.1)
Utah	89 (2.9)	112 (3.8)	45 (1.5)	63 (2.1)
Vermont	—[§]	61 (5.5)	27 (2.3)	—[§]
Virginia	1,300 (10.8)	894 (7.5)	44 (0.4)	326 (2.7)
Washington	19 (—)[¶]	1,322 (12.8)	36 (0.3)	12 (—)[¶]
West Virginia	2,191 (59.8)	516 (14.1)	58 (1.5)	887 (24.1)
Wisconsin	22 (0.2)	382 (3.8)	116 (1.2)	14 (—)[¶]
Wyoming	28 (3.3)	45 (5.3)	—[§]	35 (4.2)

Source: CDC WONDER multiple cause-of-death data. https://wonder.cdc.gov/mcd.html.

[*] Pneumoconiosis deaths attributed to other organic dusts or specific organic dust or associated with tuberculosis are not displayed because the numbers of cases were fewer than10 for each state.

[†] Death rates per 1 million population were age-adjusted by applying age-specific death rates to the 2000 U.S. Census standard population.

[§] Suppressed because there were fewer than 10 decedents.

[¶] Unreliable death rates because there were fewer than 20 deaths per state.

TABLE 3. Top three industries and occupations associated with pneumoconiosis[*] deaths among persons aged ≥15 years, by disease[†] — 26 states,[§] 1999, 2003, 2004, and 2007–2013

Disease	Characteristic	No. (%)[¶] of deaths
Coal workers' pneumoconiosis (n = 1,838)		
Industry	Coal mining	1,331 (74.2)
	Construction	75 (4.1)
	Nonpaid worker	52 (2.8)
Occupation	Mining machine operators	1,203 (65.0)
	Laborers and freight, stock, and material movers	43 (2.3)
	Homemakers	41 (2.2)
Asbestosis (n = 3,284)		
Industry	Construction	820 (25.0)
	Industrial/Miscellaneous chemicals	162 (5.0)
	Not specified manufacturing industries	148 (4.5)
Occupation	Pipe layers, plumbers, pipefitters, and steamfitters	264 (8.0)
	Electricians	145 (4.4)
	Carpenters	110 (3.4)
Silicosis (n = 333)		
Industry	Construction	63 (18.9)
	Coal mining	25 (7.5)
	Foundries	19 (5.7)
Occupation	Mining machine operators	41 (12.3)
	Laborers and freight, stock, and material movers	21 (6.3)
	Construction laborers	14 (4.2)
Unspecified pneumoconiosis (n = 792)		
Industry	Coal mining	508 (64.1)
	Metal ore mining	34 (4.3)
	Construction	32 (4.0)
Occupation	Mining machine operators	485 (61.2)
	Laborers and freight, stock, and material movers	17 (2.1)
	Electricians	15 (1.9)

Source: National Institute for Occupational Safety and Health, CDC. https://webappa.cdc.gov/ords/norms-io2000.html.

[*] Excludes the following *International Classification of Diseases, Tenth Revision* codes because five or fewer deaths occurred in available industries or occupations: J63 (pneumoconiosis due to other inorganic dusts), J65 (pneumoconiosis associated with tuberculosis), and J66 (airway diseases due to specific organic dust).

[†] *International Classification of Diseases, Tenth Revision* codes: J60 (coal workers' pneumoconiosis), J61 (pneumoconiosis due to asbestos and other mineral fibers, [asbestosis]), J62 (pneumoconiosis due to dust containing silica, [silicosis]), J64 (unspecified pneumoconiosis), J65 (pneumoconiosis associated with tuberculosis), and J66 (airway diseases due to specific organic dust [including byssinosis]).

[§] Colorado, Florida, Georgia, Hawaii, Idaho, Indiana, Kansas, Kentucky, Louisiana, Michigan, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Rhode Island, South Carolina, Texas, Utah, Vermont, Washington, West Virginia, and Wisconsin. States are where the death took place, not necessarily where the decedent had resided. Data were compiled using CDC's National Occupational Respiratory Mortality Surveillance (NORMS) system. https://wonder.cdc.gov/wonder/help/mcd.html#Location.

[¶] Percentage of total deaths associated with specific disease.

dusts, which increased. In this category, berylliosis and siderosis were the most frequently reported diseases; however, there was no evidence of a change in death rates attributed to these conditions.

Each decade, the Healthy People Initiative develops new goals and objectives to improve the health of all Americans.

Summary

What is already known about this topic?

Pneumoconioses are a group of occupational lung diseases caused by inhaling organic dust and inorganic mineral dust particles. From 1968 to 2000, death rates for all pneumoconioses decreased with the exception of those for asbestosis. Although preventable, deaths continue to occur.

What is added by this report?

Pneumoconiosis deaths decreased from 2,738 deaths in 1999 to 1,632 in 2018, and age-adjusted death rates decreased from 12.8 to 5.3 per million population. All pneumoconioses decreased with the exception of pneumoconiosis attributed to other inorganic dusts.

What are the implications for public health practice?

Pneumoconiosis-associated deaths continue to occur, underscoring the importance of occupational dust exposure reduction, early case detection, and continued surveillance to monitor trends, with an increased focus on pneumoconiosis attributable to other inorganic dusts.

The Healthy People 2020 Occupational Safety and Health Objective 4 set the goal of reducing pneumoconiosis deaths by 10% from the baseline of 2,430 deaths in 2005 to 2,187 deaths in 2020 (*3*). Results of this study indicate that the total number of pneumoconiosis deaths in 2018 was 1,632, a 32.8% decline from the baseline. If this trend continues, the goal will likely be surpassed in 2020.

The decline in overall pneumoconiosis mortality primarily reflects the decrease in coal workers' pneumoconiosis and silicosis deaths, which together accounted for nearly one third (31.6%) of all pneumoconiosis-associated deaths reported during 1999–2018. The decline in coal workers' pneumoconiosis–associated deaths likely reflects the reduction in the coal mining industry workforce (from 108,224 in 1999 to 98,505 in 2015)[***] and legislative actions. For example, the 1969 Federal Coal Mine Health and Safety Act[†††] required federal inspections of all coal mines, created enforceable safety measures, and added health protections and federal benefits for coal workers' pneumoconiosis. Several other historical statutes[§§§] have been enacted to improve miner safety and decrease disease mortality. Most recently, the 2014 final rule[¶¶¶] of the Mine Safety and Health Administration (MSHA) standard on respirable coal mine dust lowered existing exposure limits from 2.0 mg of dust per cubic meter of air (mg/m^3) to 1.5 mg/m^3 at underground and surface coal mines, expanded medical monitoring for coal mine dust lung diseases, and made changes in dust monitoring systems to include the use of continuous personal dust monitors. Because of the long latency of coal workers' pneumoconiosis, this new rule likely did not contribute to any decreases in mortality; however, adherence to this rule is expected to foster continued disease mortality reduction.

The decline in silicosis-associated deaths likely reflects the enactment of national compliance standards for silica dust exposure in 1971, implementation of disease prevention initiatives, and changes in industrial activity (*4*). The early standards, however, did not include measures such as medical surveillance requirements or employer and employee training about silica hazards. In 2016, the Occupational Safety and Health Administration (OSHA) published a final rule,[****] for crystalline silica, lowering the permissible exposure limit to 50 $\mu g/m^3$ of air in all industries covered by the rule and included requirements to further protect employees (e.g., including exposure control, respiratory protection, hazard communication, medical surveillance, and recordkeeping). The rule also issued two separate standards, one for general industry and maritime and the other for construction, to tailor requirements to the respective industries' hazards.

Asbestosis continues to be the most frequently reported cause of pneumoconiosis mortality, accounting for 60.1% of all pneumoconiosis deaths during 1999–2018. The number of annual asbestosis-associated deaths began to decline in 2001. This ongoing decrease likely reflects the cessation of asbestos mining, discontinued manufacturing of asbestos-containing products in the United States,[††††] adoption of standards intended to control emissions of asbestos into the environment (*5*), and adoption of lower permissible exposure limits (*6*). In 1971, OSHA established a permissible exposure limit for asbestos at 12.0 fibers per cubic centimeter (f/cc) of air as an 8-hour time-weighted average. This initial permissible exposure limit was subsequently reduced to 5.0 f/cc in 1972, to 2.0 f/cc in 1976, to 0.2 f/cc in 1986, and to 0.1 f/cc in 1994.

Despite the decline in mortality and updated regulatory actions addressing occupational exposures to hazardous dusts, pneumoconiosis-associated deaths continue to occur, underscoring the need for maintaining exposure prevention measures and continued surveillance. Recent reports indicate the re-emergence of progressive massive fibrosis (the most severe form of coal workers' pneumoconiosis) (*7*), new tasks and occupations (e.g., quartz countertop installation and hydraulic fracturing) that put workers at an increased risk for silicosis (*8*), continued importation of asbestos-containing materials for domestic consumption, and an increase in prevalence of other asbestos-associated diseases (e.g., malignant mesothelioma) (*9*).

[***] https://www.msha.gov/sites/default/files/Data_Reports/DEC_15_2016_Historical_MIWQ_Employment_and_Production.pdf.

[†††] https://www.msha.gov/45-years-federal-coal-mine-health-and-safety-act.

[§§§] https://www.msha.gov/regulations/laws.

[¶¶¶] https://www.govinfo.gov/content/pkg/FR-2014-05-01/pdf/2014-09084.pdf.

[****] https://www.federalregister.gov/documents/2016/03/25/2016-04800/occupational-exposure-to-respirable-crystalline-silica.

[††††] https://www.usgs.gov/centers/nmic/mineral-commodity-summaries.

In addition, a 2019 significant new use rule[§§§§] for asbestos, promulgated to ensure that any discontinued uses of asbestos cannot re-enter the marketplace without Environmental Protection Agency review, still permits importation of asbestos into the United States; use of asbestos in gaskets, brakes, and chemical manufacturing; and asbestos mining.

The findings in this report are subject to at least five limitations. First, death records were not validated by medical records; therefore, results might be subject to misclassification. Second, some silicosis-associated deaths might not be work-related. For example, pneumoconiosis attributable to talc dust (ICD-10 code J62.0) in some decedents has been associated with use of illicit drugs (*10*); however, these pneumoconiosis-associated deaths were considered in this study to maintain comparability with previous studies and the Healthy People 2020 methods. Third, the industries and occupations represent the usual[¶¶¶¶] industries and occupations entered on each death certificate, which might not be the industry and occupation in which the decedent's exposure occurred. Fourth, the age-adjusted mortality rates might not correctly project disease frequency. The rates were calculated using data on the general population that might include those who are not at an occupational risk for developing the disease. Finally, because of small death counts, trends in pneumoconiosis attributable to other inorganic dusts could not be evaluated by distinct disease categories.

The decrease in pneumoconiosis-associated deaths during 1999–2018 indicates that prevention strategies are effective. The findings underscore the importance of maintaining primary prevention strategies to reduce exposures to respirable dusts, secondary prevention through early disease detection, and surveillance to monitor trends over time, in particular focusing on pneumoconiosis attributable to other inorganic dusts. Prevention strategies are available at the websites of OSHA (https://www.osha.gov/), MSHA (https://www.msha.gov/), and CDC's National Institute for Occupational Safety and Health (https://www.cdc.gov/niosh/index.htm).

[§§§§] https://www.federalregister.gov/documents/2019/04/25/2019-08154/restrictions-on-discontinued-uses-of-asbestos-significant-new-use-rule.

[¶¶¶¶] https://www.cdc.gov/nchs/data/misc/hb_occup.pdf.

Acknowledgments

David Weissman, Brent Doney, Respiratory Health Division, National Institute for Occupational Safety and Health, CDC; vital statistics offices from the following 26 states providing industry and occupation information: Colorado, Florida, Georgia, Hawaii, Idaho, Indiana, Kansas, Kentucky, Louisiana, Michigan, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Rhode Island, South Carolina, Texas, Utah, Vermont, Washington, West Virginia, and Wisconsin

Corresponding author: Jessica L. Bell, onm0@cdc.gov, 304-285-5708.

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[1]Association of Schools and Programs of Public Health/CDC Public Health Fellowship Program; [2]Respiratory Health Division, National Institute for Occupational Safety and Health, CDC

All authors have completed and submitted the International Committee of Medical Journal Editors form for disclosure of potential conflicts of interest. No potential conflicts of interest were disclosed.

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EXHIBIT 112

Mackay Mem. (9/3/82),
LMC_Halliday_00006378-79

Interoffice Memo

MARTIN MARIETTA

ALUMINA

DATE: September 3, 1982

cc: Richard Cook

TO: Elliott Light

FROM: Rosie Mackay

SUBJECT: OSHA PROPOSED HAZARD NOTIFICATION RE: DATA SHEETS

Request for information was made to Ken Haines, who forwarded to me.

The Martin Marietta St. Croix facility is classified as a surface mine, and as such, falls under the MSHA jurisdiction, including contractors working at the site. Our ship-to-shore maritime operation is presently inspected by OSHA Puerto Rico, but we are in the process of requesting this also be assigned to MSHA.

A limited number of chemicals are used at this site, and MSD Sheets are available in print for these. The following is an attempt to provide the six pieces of information you requested.

1. To date, no MSDS's have been prepared at this site (to the best of my knowledge), but the Safety Department will accept the responsibility of making sure this is done if ever necessary.

2. A complete book of MSDS's is available (and highly visible) in the Safety office. This complete set was purchased from G.E., with a subscription service to update quarterly. Additionally, the NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards is available as well. Also MSDS's will be sent from some companies which supply chemicals. Those are filed also.

3. No MSDS's prepared locally to date.

4. All requests (very few) for MSDS's received at the Safety office were by people on this plant site, for informational purposes.

5. No MSDS's requested from other companies.

6. Access of MSDS's available to work force by request through Supervisory Personnel or directly to the Safety office. File is updated quarterly. Facility is relatively small, and few chemicals are employed outside the lab.

I trust this information is enough. If there are any questions, I would be happy to communicate.

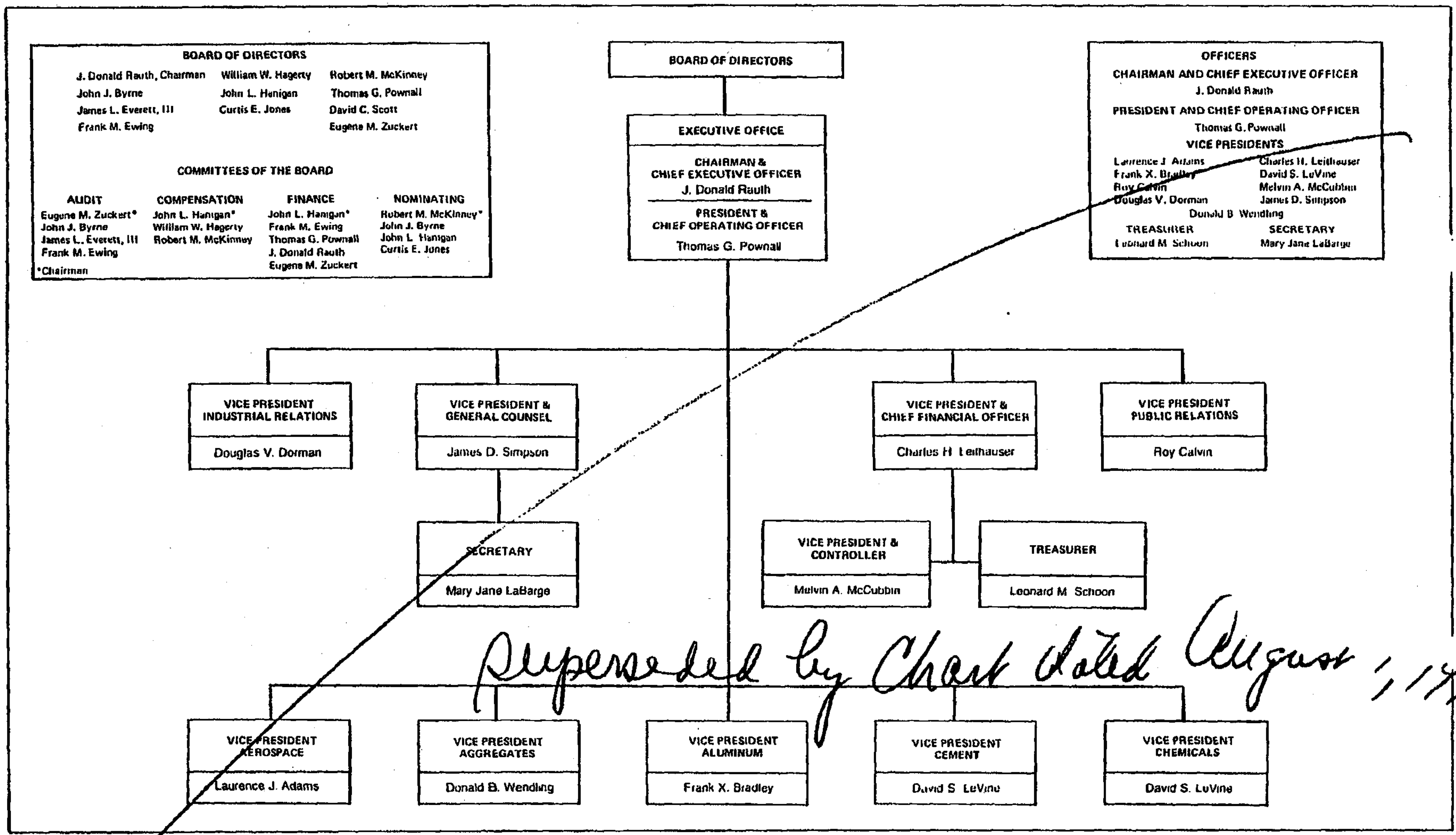
Mackay.

Rosie Mackay
Safety Engineer

rm/bmp

EXHIBIT 113

MMC 1979 Org. Chart,
LMC_Halliday_00001655



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Superseded by Chart dated August 1, 1979

APPROVED J Donald Rauth

ORGANIZATION CHART

MASTER

MARTIN MARIETTA CORPORATION

EFFECTIVE DATE April 26, 1979

MARTIN MARIETTA

SUBJECT Occupational Safety and Health

D. Send a member of the staff as soon as possible to the site of an occupational fatality to assist with the investigation.

E. Participate in selection of unit safety and health personnel.

V. Information relating to an accident or catastrophe will be disclosed in strict accordance with Martin Marietta's policy on public announcements and disclosure of information affecting the Corporate interest.

VI. The Corporate Vice President Personnel shall be responsible for coordinating the efforts of his department with those of company and division personnel in administering this policy.

J. Donald Rauth
Chairman

EXHIBIT 114

Excerpts of Transcript of Lockheed Martin's Manbodh 30(b)(6)Deposition of Jose R. Bou, October 30, 2000

IN THE TERRITORIAL COURT OF THE VIRGIN ISLANDS

DIVISION OF ST. CROIX AT KINGSHILL

IN RE:	KELVIN MANBODH ASBESTOS LITIGATION SERIES	) ASBESTOS DOCKET) MASTER DOCKET) NO. 324/1997

THE LOCKHEED MARTIN CORPORATION 30(b)(6) WITNESS, DEPOSITION OF JOSE R. BOU was taken as a witness on the 30th day of October 2000, at the Law Offices of The Tamarind Reef Hotel Conference Center, 5001 Tamarind Reef, Christiansted, St. Croix, U.S. Virgin Islands, between the hours of 9:35 a.m. and 3:00 p.m. pursuant to Notice and Federal Rules of Civil Procedure.

Reported by:

Cheryl L. Haase
Registered Professional Reporter
Caribbean Scribes, Inc.
2132 Company Street, Suite 3
Christiansted, St. Croix U.S.V.I.
(340) 773-8161

Q. Please go ahead.

A. The thing is that I wanted to clarify to you that when you ask me whether Martin Marietta Aluminum was providing any help on safety, I said no. Because the fact was that Martin Marietta Aluminum Corporation did not have a central safety department, but Martin Marietta Corporation on top of Martin Marietta Aluminum had safety departments and they came down here for inspections and audits.

Q. So is that the parent of the parent?

A. Yeah, the parent of the parent.

MR. DALEY: The grandparent.

Q. **(Mr. Meaney)** By that comment what I mean is based upon your explanation, Properties, Inc. was provided direction on safety matters on some occasions by Martin Marietta Corporation, which you knew to be the parent of Martin Marietta Aluminum, Inc., is that correct?

A. Correct.

Q. Well, let's go to one of those.

(Deposition Exhibit No. 3 was
marked for identification.)

Q. **(Mr. Meaney)** I'm going to hand you what I've marked as Exhibit 3, and going to ask you to start taking a look at that.

Here are three other copies to share with everyone.

Division, am I correct?

A. Yes.

Q. And is that your understanding, that it was the Martin Marietta Corporation that actually provided assistance with safety standards?

A. Yes.

Q. Did Martin Marietta Corporation tell Properties, Inc. that it needed to develop additional safety standards beyond those that were being sent?

A. They probably guided us in getting additional safety standards that related to the alumina plant.

Q. Can you ever remember there being an occasion where you sought guidance from them in that regard?

A. Yeah, I -- they were involved in safety in St. Croix.

Q. Tell me how that -- how were they involved?

A. Well, they visited about once a year, run audits on what we were doing.

Q. The last thing you said, they visited once a year and --

A. Run audits.

Q. Ran audits. You talking about safety audits?

A. Right.

Q. Sometimes were they done in conjunction with like insurance reviews?

A. Maybe with insurance review, but normally it was done just for the benefit of safety.

Q. All right. And as far as you recall, that was done by Martin Marietta Corporation?

A. Yes.

Q. Did Martin Marietta Aluminum, Inc., ever do that?

A. Run safety audits?

Q. Yes.

A. Martin Marietta Aluminum, Inc. We didn't have the personnel capable of doing that in headquarters.

Q. So it was the grandparent corporation we've joked around about that actually conducted the safety audit?

A. Yes. Yes.

Q. What do you recall -- well, let me ask you this: When was it that you recall these audits first taking place? I'm talking years.

A. Certainly after Martin Marietta got involved in it. Early seventies, I'd say.

Q. (Counsel indicating.)

A. Early seventies.

Q. Thank you.

And what is it that you recall about the safety audits? What was done during a safety audit by the Martin Marietta Corporation?

A. Complete walk-through of the plant.

Q. Walk-through?

A. Walk-through of the plant, inspection of safety records, inspection of some of the safety procedures.

Q. Did Martin Marietta Corporation take, as part of this audit, any safety standards that were put in effect for the alumina plant as part of their audit? By take, I mean take possession of them?

A. Let me understand the question.

Q. Yeah. You look a little confused. I guess I'm envisioning somebody from Martin Marietta Corporation who's conducting this safety audit saying, Okay, let's go over all your standards and so forth, and you guys generally operating Properties, Inc.'s alumina plant here say, Oh, and here's our safety manual for St. Croix.

A. (Witness nods head.)

Q. And them not only looking through it, but saying, Gee, as part of our audit we would like to make sure that we have that at the home office.

A. I'm sure we did.

Q. So it's possible if we ask the right people at Martin Marietta Corporation they may in fact have a copy of this more specialized safety procedure that you're talking about?

A. And there were safety reports written with copies to the safety department, Martin Marietta Corporation.

C-E-R-T-I-F-I-C-A-T-E

I, CHERYL L. HAASE, a Registered Professional Reporter and Notary Public for the U.S. Virgin Islands, Christiansted, St. Croix, do hereby certify that the above and named witness, Jose Bou, was first duly sworn to testify the truth; that said witness did thereupon testify as is set forth; that the answers of said witness to the oral interrogatories propounded by counsel were taken by me in Stenotype and thereafter reduced to typewriting under my personal direction and supervision.

I further certify that the facts stated in the caption hereto are true; and that all of the proceedings in the course of the hearing of said deposition are correctly and accurately set forth herein.

I further certify that I am not counsel, attorney or relative of either party, nor financially or otherwise interested in the event of this suit.

IN WITNESS WHEREOF, I have hereunto set my hand as such Certified Court Reporter on this the 13th day of December, 2000, at Christiansted, St. Croix, United States Virgin Islands.

CERTIFIED TRUE COPY

EXHIBIT 115

Frank Parker - Burt Report, 2022-08-15,
21-CV-548_BURT_000131 –
21-CV-548_BURT_000157

Caliche Ltd
Solid Solutions Seeking Sustainability

August 15, 2022

Mr. Rick Yelton
Bums Charest LLP
365Canal Street, S-1170
New Orleans, LA

Sub: Mr. Burt Re: 22-055

Dear Mr. Yelton,

I appreciate the opportunity to review this interesting case. My opinions are based on the information provided by your office, my telephone interviews of Mr. Burt, the scientific and other relevant information and my education, training and experience. I reserve the right to modify my opinions if significant new information is provided.

Retrospective Risk Assessment Methodology

A retrospective risk assessment utilizes scientific and other relevant information to estimate a worker's historic risk of incurring an occupational disease. Risk assessment has its roots in antiquity. Among the first recorded risk assessment efforts was in approximately 3,200 BCE among the Asipu in Mesopotamia.[1] Risk assessment's reliance on quantifiable data started emerging in the 17th century. Since then the advancement in science's ability to measure exposure concentrations and the use of mathematical data analysis has provided better tools for estimating both contemporary and historical risks. However, given the great biological diversity among human beings and the an almost limitless variation in a workers environment over a working lifetime, retrospective risk assessments are at best an approximation of the worker's actual historical risk.

Risk Assessment has been an integral part of the industrial hygiene profession since its founding in the early part of the last century. The ability to quantify airborne concentrations of hazardous materials and relate those exposure concentrations to incidence of occupational diseases constituted the basis for modern retrospective risk assessments. Today retrospective risk assessment has also found utility in attempting to estimate the risk an individual incurred as a result of historical exposure to hazardous materials.

The scientific methodology utilized here is that published by the The American Industrial Hygiene Association [AIHA] titled, "*Guideline on Occupational Exposure Reconstruction*".[2] Risk assessment is identified as one of the basic uses of this methodology.[3]

The AIHA's Guideline was peer reviewed and published by an organization recognized by the industrial hygiene profession as authoritative and reliable. The theories set forth by the AIHA's publication on occupational exposure reconstruction has widespread acceptance. It is routinely taught at AIHA's conferences and professional development courses and used by many practicing industrial hygienist and other scientist in this country and many other places in the world. The standards associated with this theory are maintained and published by the American Industrial Hygiene Association.

Trying to understand a worker's past asbestos exposures might have been, many years in the past, is difficult. Typically there exists no contemporary exposure documentation uniquely relating to the worker in question. In these cases, The AIHA's guideline states:

> "In developing exposure assessments for these situations, the IH must rely on exposure and other data in existence. However, because much of the needed data is often missing, exposures must be reconstructed from existing data, historical facility information, interviews with workers, and professional judgment."[4]

To evaluate health risks we usually have to rely on published scientific articles and other relevant information to help us understand the likely asbestos exposures for the tasks the worker historically conducted. In place of worker interviews we usually, but not always, have the sworn testimony of the worker and their coworkers describing their work tasks, working conditions, safety procedures, etc.

The AIHA methodology requires the industrial hygienist to compare the worker's occupational history and working conditions with the available relevant exposure information and decide whether or not the worker's exposures were occupational significant. If the distribution of the historical exposure data demonstrates a propensity for exposure concentrations to be in excess of contemporary standards, then the worker most likely was at significant risk for developing a related occupational disease.

The AIHA method takes a hierarchy approach to occupational exposure risk reconstruction based on the availability of applicable data and other relevant information:

- Ever/never exposed – no other exposure related data or information exists;
- Qualitatively exposure – exposure data and/or other necessary information insufficient for quantitative analysis;
- Quantitative exposure – Exposure data and/or information sufficient for quantitative analysis;

To implement the AIHA method the following steps were taken, based on information available:

- Determine Mr. Burt's work history at the bauxite/alumna plant;
- Review and evaluate the information available to establish the presence and extent of asbestos containing materials in Mr. Burt's work areas;
- Illicit evidence of Mr. Burt's occupational exposure to asbestos containing materials;
- Illicit evidence of personal protective equipment [respirators, clothing, etc.] provided and used by Mr. Burt;
- Illicit evidence of necessary warnings & training provided to Mr. Burt;
- Illicit evidence of personal asbestos exposure air monitoring as required by national standards, OSHA [29 CFR Part 1910] & MSHA [30 CFR Part 56];
- Review and evaluate the plant owners asbestos safety, industrial hygiene & medical programs as required by national standards, OSHA & MSHA;

- Review the applicable scientific and other relevant information available that is applicable to Mr. Burt's occupational asbestos exposures;
- Review the available medical scientific literature and other relevant information available that relates asbestos exposure to occupational disease;
- Based on available information, determine which AIHA method was appropriate;
- Analyze data and other relevant information;
- Draw conclusions; and
- Formulate opinions.

Mr. Milton Burt

Work History

Mr. Burt related to me his work history, while employed by various companies, at the bauxite plant as follows:

- 1967 [April]- Starts at the bauxite plant as a Lubricator lubricating the plant's rotating equipment;
- 1970 [Approximately] – Maintenance Man maintaining all the equipment in the plant;
- 1982 [Approximately] – Maintenance Foreman maintaining all the equipment in the plant; and
- 2001 – Leaves the bauxite plant.

Dr. John documented Mr. Burt's work history during his medical evaluation.[5] Mr. Burt told Dr. John that he worked for a variety of companies doing maintenance work throughout the bauxite/alumina plant on St. Croix from 1967 till 2001.

Mr. Burt's Social Security record confirms that he worked at the bauxite/alumina plant for at least the following times:

- 1985- Martin Marietta Aluminum;
- 1990-1995 Virgin Islands Alumina, Inc.; and
- 1995-2001 – St Croix Alumina, LLC [ALCOA].

Evidence of Occupational Asbestos Exposure

Mr. Burt told me that he handled and was exposed to the following asbestos containing materials [ACM]:

- Thermal System Insulation [TSI] - TSI include insulation materials for pipes and flat or complex surfaces. It also includes the asbestos "muds", cloth and mastics used during the installation and maintenance of the process related equipment.
    - Mr. Burt frequently removed asbestos containing TSI from various pipes and tanks in the plant and was a bystander to others who also removed and replaced asbestos insulation. He would also clean up the scrap TSI. The TSI would easily crumble, "in your hand".
    - Hurricanes Hugo [1989] and Marilyn [1995] caused significant damage to TSI and Mr. Burt spent a lot of time physically cleaning up the TSI debris;
    - Disturbing the TSI was a very dusty process. He could see the dust in the air and breathed it;
- Gaskets – The plant contained many asbestos gaskets on pipe, valve and pump flanges. He frequently [daily] had to remove and replace them. Many times he used scrapers, chisels, wire brushes and/or power wire brushes to clean the flange surfaces prior to replacing the

gasket. He also frequently cut gaskets for flanges and tank doors from asbestos sheet material. These processes created visible dust which he inhaled.

- Rope – Asbestos rope [2" wide] was used as gaskets on equipment used to transport the alumina. He would have to replace these gaskets several times a year. The process created visible dust which he inhaled.

According to Dr. John, Mr. Burt removed, repaired & replaced TSI on pipes usually more than once a week, which generated large amounts of asbestos dust. He was also a bystander to others disturbing the asbestos insulation.[6]

Mr. Joseph Daniel, who also worked maintaining the plant from 1989 to 2000, confirms Mr. Burt's recollection of the tasks and asbestos containing materials the mechanics disturbed and the dusty conditions created to which they were exposed. Hurricanes Hugo [1989] and Marilyn [1995] caused significant damage to TSI and they spent a lot of time physically cleaning up the TSI debris.[7]

Personal Protective Equipment [PPE]

Mr. Burt said he was never provide any respiratory protection while disturbing asbestos TSI, gaskets and/or rope. He wore a "paper mask" only while working in bauxite areas. There is no evidence that he was ever included in a respiratory protection program as required by national standards, OSHA and/or MSHA.

Dr. John reports that Mr. Burt did not have a respirator while he or others disturbed asbestos insulation. Mr. Daniel also testifies that respirators were not worn during the disturbance of asbestos insulation.

He was provided work clothing which he changed out daily for his street clothing.

Asbestos Training and Health Hazard Warnings

Mr. Burt said he was never provided any training on how to handle asbestos containing materials safely. He said he was never adequately warned concerning the hazards of exposure to asbestos. He only heard that asbestos was a "problem" when the plant started to hire contractors to abate some of the TSI.

Asbestos Exposure Monitoring

Mr. Burt's asbestos exposure concentrations were never determined as required by contemporary national standards, OSHA, and/or MSHA regulations.

Medical Program

To his knowledge, Mr. Burt was never part of an asbestos related medical program as required by national standards, OSHA and/or MSHA regulations.

Bauxite Plant, St. Croix, VI

History

The Bauxite plant was constructed by Harvey Aluminum Company and began production of alumina in 1967. It processed some 226,000 tons per year which increased to some 700,000 tons per year by 1982.[8] Martin Marietta acquired controlling interest in Harvey in 1968 and completed the purchase in 1972. Alumina production continued until

1985. The plant was closed until VIALCO opened it in 1987 and operated it until 1995. Alcoa reopened the plant in 1997.[9] Mr. Burt indicated that the bauxite plant shut down in 2001.

Asbestos containing Materials [ACM]

Substantially all large industrial plants designed and built in the 1960s installed large quantities of ACM. NIOSH has identified several thousand products containing asbestos. Those ACM that Mr. Burt describes handling include:

- Thermal System Insulation [TSI] - TSI include insulation materials for pipes and flat or complex surfaces. It also includes the asbestos "muds", cloth and mastics used during the installation and maintenance of the process related equipment;
- Gaskets - Asbestos containing gaskets are used to join sections of pipe, etc. together to prevent leaks;
- Cloth - Asbestos cloth was also frequently used to wrap TSI, instrument and steam tracing lines among other uses; and
- Rope – Asbestos rope was used as a gasket on doors and tank manways.

Mr. Jose Bou worked as a Process Engineer at this facility from 1966 till 1980.[10] He testifies that the insulation used in this plant contained asbestos. He also testifies to the use of asbestos gloves.[11]

Mr. Louis Principe, General Maintenance Foreman in the plant starting in 1974, reported that asbestos insulation was commonly used during all construction in the plant prior to 1977 and that some asbestos free insulation was used after 1977.[12] Mr. Bou confirms that asbestos was used as thermal insulation for all construction prior to 1977 and that non-asbestos containing insulation was used to replace damaged asbestos containing insulation since 1977.[13]

MHSA [1990] received a complaint from an anonymous source at the VIALCO plant concerning, "Employees removing asbestos containing insulation from tanks, hot water pipes and steam pipes are not provided adequate personal protective equipment. Employees are not provided information and training associated with the hazards of asbestos."[14] MSHA citations were issued for improper storage of asbestos waste and failure to barricade asbestos areas and failure to post warning signs.

The following is a summary of reports in this record suggesting the scope and the amount of ACM in this facility:

- Thermal System Insulation
  - Mr. Louis Principe, who worked at the plant starting in 1966, conducted a survey of asbestos TSI in the plant sometime after the plant started production. He identified some 1,375 ft^2 of block insulation, 767 ft^3 of cone insulation, 9,120 ft. of pipe insulation and 1,134 ft^3 of stripped pipe covering.[15]
  - In April 1989 McDonnell Gamble Environmental Services, Inc. conducted a survey of the then existing ACM in the facility.[16] They reported some 11,841 ft. of asbestos containing pipe TSI and some 26,225 ft^2 of block TSI;
  - In 1989 VIALCO started, via an asbestos abatement contractor, to abated

  - at least TSI. Hurricane Hugo apparently also damaged some TSI. According to a local news report, VIALCO collected some 15,000 bags of asbestos building materials with another 2,000 to 3,000 bags remaining to be abated.[17]
  - In 1993 RMT conducted an environmental audit of the VIALCO facilities.[18] They determined significant amounts of asbestos containing TSI still existed in the plant.[19]
  - In 1995, Induchem Environmental Services, Inc. conducted an asbestos inspection of the facility.[20] They did not report the quantities of TSI still present in the facility but estimated the cost of its abatement to be $4,687,244.
  - I have been provided a map of the facility locating the units reported to contain TSI.[21] It confirms the wide spread of TSI throughout the plant.
- Gaskets [Sheet & Rope]
  - Mr. Mackay [VIALCO 1984] prepared an inventory list of asbestos containing materials located in the warehouse. It listed numerous asbestos containing gaskets, packing, pads and wicks.[22]
  - Mr. Honore, [Martin Marietta 1983] provided a report that listed the repairs made on several units during a plant outage.[23] He reports changing out numerous valves, all of which most likely included disturbing at least one gasket. He also reports opening/closing mandoors which also most likely required replacement of gaskets. This activity required some four [4] supervisors and 28 Martin Marietta employees plus some 38 outside contractors.

Consequently, there is no question that this facility contained vast amounts of asbestos containing TSI. In addition it almost certainly contained large quantities of other ACM including gaskets, packing, cloth and rope.

Safety Programs

The record includes several safety standards:

- Welcome to Martin Marietta Alumina, St. Croix [1975].[24] This booklet contains a chapter on safety. It mentions respirators and indicates their use are required for protection where, "excessive dust is present" and when handling lime, bauxite and/or alumina.[25] No mention of asbestos is made.
- Martin Marietta Safety Standard [1976].[26] It specifies the use of asbestos materials for protection against heat.[27] The standard does not include any safety procedures for the safe handling of asbestos.[28] However, the restricted chemical safety standard actually lists asbestos as a Fully Restricted Chemical [Carcinogen].[29]
- Martin Marietta Welcomes You, St. Croix [1978]. No safety standards related to asbestos or respiratory protection programs are mentioned.[30]
- Safety Rules [1978]. These rules repeat the instructions found in the previous booklet and also asbestos is not addressed.[31]
- Martin Marietta Safety Manual, St. Croix [1981].[32] This standard includes the formation of a Safety Committee, requirements for job safety analysis, and safety training. It includes an Industrial Chemical Safety Standard which places the responsibility of, "Researching chemicals for toxicity and hazards" on the Safety Engineer.[33] It also includes a standard on cleaning respirators but nothing on the selection, fitting, medical qualification and training necessary for safe respirator use.

- Martin Marietta Respirator Program [Unknown Date].[34] Lays out the responsibilities of various organizations to implement the respiratory protection program. The industrial hygiene program includes identifying hazards, air monitoring, selecting respirators, training, fit testing, and medical monitoring. The index includes an appendix on Asbestos-Demolition [Appendix 5]. However, the actual appendix is not include in this document. There is no evidence that Mr. Burt was ever part of this program.

Industrial Hygiene Programs

This record contains no evidence that the plant ever had a formal industrial hygiene program including hazard warning, training, exposure monitoring, respiratory protection, and occupational medical surveillance as required by national standards, OSHA and/or MSHA.

The record also includes no documented effort to evaluate Mr. Burt's asbestos exposures as required by national standards, OSHA and/or MSHA.

The record does include two industrial hygiene survey reports:

- Dust Surveillance Report of the St, Croix bauxite operations.[35] Air sampling was restricted to employee exposures to silica only. No asbestos disturbance operations were evaluated. They documented one employee exposure in excess of the silica respirable Threshold Limit Value [TLV] and 11 employees' exposures in excess of the total dust TLV.
- Industrial Hygiene Survey and Program Review.[36] The survey sampled for bauxite, alumina, caustic mist and noise. Asbestos was not addressed.

Scientific and Other Relevant Information

Thermal System Insulation (TSI)

Introduction

Thermal system insulation is comprised of a variety of different products. These include:

1. Pipe and Block Insulation. These are the primary insulating materials. They vary in thickness and shape. Pipe insulation is usually preformed in to "half rounds" that fit the diameter of the pipe being insulated. They can be fastened to the pipe by a variety of methods, the most common being wired;
2. Muds. These materials look like Plaster of Paris when applied. They come to the work site in a dry form and are mixed with water onsite or they come already mixed with water. They are used as butt joints on pipe insulation (asbestos and others), to fill voids, for making pipe elbows and tees, and as a coating over the asbestos cloth or canvas exterior;
3. Mastics. Mastics, sometimes called glue, are usually made out of a tarry substance;
4. Cloth. All TSI requires an outer covering to protect the insulation materials. Many times this material was an asbestos cloth that was similar to canvas. It was wrapped around insulated pipe or was the final "skin" over large surface areas. Typically it would be covered with Mud and then painted; and
5. Rope. Rope was woven out of 100% long fiber asbestos and was used as gaskets on vessel/tank/furnace manways, duct work, valve stem packing, etc.

Pipe and Block Insulation

Pipe and block insulation, containing significant amounts of asbestos, have been used commercially since well before World War 2. Their intended use requires the cutting, fitting and sealing during installation; disturbance during repair and maintenance; demolition; cleanup; and disposal of waste ACM. All these activities result in the release of asbestos fibers.

Exposure levels have been reported in the literature since at least the 1940's that encompass the work tasks that insulators, and other tradesmen, conducted. Fleischer, et al, studied insulators in shipyards doing cement (mud) mixing and installation of insulation materials and reported exposure levels as high as 250 million particles per cubic foot (mppcf).[37]

In 1937, Standard Oil Company's Chief Safety Inspector, Roy Bonsib, investigated asbestos exposures to workers during insulation operations.[38] While insulating a 12" steam line he measured concentrations ranging from 12.6 to 23.8 mppcf; a cracking oil accumulator some 4.5 mppcf; acid suction line some 0.8 mppcf; hot oil lines 3.4 to 7.8 mppcf; removing old insulation 2.3 to 5.9 mppcf; and crushing scrap asbestos 10.2 to 27.5 mppcf.

Marr [1964] also studied asbestos exposures to workers in shipyards.[39] He reported concentrations ranging from a trace to 8 mppcf.

Warwick [1965] surveyed the cutting, application and cleanup of Kaylo insulation.[40] Concentrations reported were cutting and application 1.7 to 22.5 mppcf; application only, 0.1 to 13 mppcf; and cleanup with broom and shovel 0.1 to 2.5 mppcf.

In 1968 Balzar and Cooper reported exposure levels experienced by members of an insulators union working in a variety of locations in California and Nevada. They report exposure concentrations ranging from 0.2 to 26.3 f/cc (tearing out); 0.1 to 61.6 f/cc (application); 0.2 to 10.7 f/cc (mixing); and 0.1 to 22.9 f/cc (general).[41]

Harries [1971] studied exposure levels in Naval Dockyards including buildings and ships. He reported concentrations ranging from 2 f/cc to 78 f/cc [Ave. 30 f/cc] while workers were removing calcium silicate sections from their shipping boxes. He also reports concentrations ranging from 0.1 f/cc to 220 f/cc while workers were removing and installing thermal system insulation.[42].

Shell Oil Company conducted a survey of asbestos operations in 1972.[43] Exposure levels experienced by insulators removing asbestos insulation from a distilling unit charge pump were 2.21 and 2.27 f/cc (15 minute sample) and peak concentrations were 2.55 and 2.62 f/cc. Removing ACM from a distilling furnace transfer line resulted in exposure concentrations of 0.98 and 1.36 f/cc (25 minute period). A three hour area sample, collected 10 feet downwind of this work, averaged 0.03f/cc. Shell also measured exposure concentrations experienced by workers cleaning up scrap ACM. Over two work days they collected 10 samples and concentrations measured ranged from 0.32 to 4.53f/cc.

Venable, Exxon's Industrial Hygienist, collected nine samples during pipe insulation "Ripoff" in 1972. The concentrations ranged from 0 f/cc (sic) to 36 f/cc. The log normally distributed data set had geometric mean of 1.4 f/cc and a 95% of 179.3 f/c. When compared to the NIOSH REL (1971) of 2f/cc the exceedance level was 44.7%.

Venable collected three personal samples on insulators removing asbestos containing insulation during a unit turnaround in 1974.[44] He found concentrations of 15, 78, and 58 f/cc while removing insulation from an 8 inch hot oil line. He collected two additional samples while contract employees were removing insulation from the exterior of a reactor vessel. Concentrations were 203 f/cc and 255 f/cc. Combined the Mean=121 f/cc and the Geometric Mean= 81 f/cc.

Fontaine et al [1975] measured exposure levels to workers in a steam power plant during a routine maintenance outage.[45] Eight hour Time Weighted Average (TWA) exposures ranged from <0.1 f/cc to 5.9 f/cc for asbestos workers (insulators) and for laborers they ranged from <0.01 f/cc to 3.7 f/cc. Peak concentrations were as high as 24.6 f/cc for insulators and 21.5 f/cc for laborers.

Meyers [1976] collected short term [peak] air samples on two workers removing asbestos insulation from a refinery UDEX unit.[46] Results were 16.15 f/cc and 65.9 f/cc.

Salazar [1978] conducted a series of personal asbestos air samples during the demolition of asbestos containing block insulation on a boiler in an old Kraft paper mill.[47] He collected some 18 samples [13 personal & 5 area] the results of which ranged from 0.05 f/cc to 6.07 f/cc [personal].

In 1978 the 3M Corporation[48] collected some 9 samples during asbestos pipe covering demolition, removal and cleanup using the "Dry Method". Results ranged from 6.5 f/cc to 28.7 f/cc. They sampled the same activities that were using the "Wet Method". Results of the 6 samples ranged from <0.3 f/cc to 3 f/cc.

My review of this literature and my professional experience while abating insulating materials indicates that workers handling asbestos insulation, as well as those in the vicinity, are frequently exposed to high concentrations of airborne asbestos fibers if adequate control measures are not in place.

Mud

Insulation "mud" is a term applied to the cementitious materials typically applied to block, pipe and clothe as a wet "mud" to fill in cracks and holes as well as provide a hard exterior for the thermal system insulation (TSI). It is made by grinding up scrap block or pipe insulation or purchasing as a separate product from a TSI vendor. The dry "mud", with a consistency somewhat like Portland cement or flour, was traditionally poured into a bucket, on the floor, or in some other container and then mixed with water to the proper consistency. It was then typically trialed on or hand applied to the appropriate surface. Spillage was common which required sweeping or scraping to remove the residue.

Once the mud was in place and hardened it was subject to disturbance from equipment maintenance and vibration which released asbestos fibers into the work area. Eventually it has to be greatly disturbed during maintenance, rip out, and replacement of the TSI.

In the early to mid-1970's, after OSHA became effective, premixed mud, already containing water, was manufactured which while it reduced the dust created during mixing, it did nothing to reduce the dust during cleanup or removal.

Mud is very similar, and sometimes identical, to block and pipe insulation. Also, the exposure data associated with pipe and block insulation many times includes a contribution from the disturbed mud.

Cloth

The use of asbestos to make textile fabrics has a long history. Charlemagne supposedly had a table cloth made from asbestos and Benjamin Franklin sold an asbestos purse to raise money during his first visit to London in the early 1700's. Many of the first asbestos exposure studies were conducted in the textile industry here and abroad (See Mereweather[49] and Lanza[50]).

Typical uses of asbestos cloth include welding (fire) blankets, pipe (TSI) covering, pipe wrap, clothing, and tapes among others. The following is a summary of the literature and other information related to the use of these products.

Harries studied the asbestos fiber concentrations generated from asbestos cloth when shipyard workers fitted it over pipe lagging and ripping it. Concentrations ranged from some 0.3 to 43 f/cc.[51]

Samimi and Williams studied the exposure resulting from using asbestos gloves. They reported peak concentrations as high as 11 f/cc with Time Weighted Averages for workers conducting typical tasks in a well ventilated room ranged from 0.07 f/cc to 0.99 f/cc.[52]

In 1992, Millette reported on his experiments of workers wearing and using asbestos aprons and gloves. He found concentrations as high as 47.6 f/cc when a worker clapped asbestos gloves and 2.7 f/cc from a workers apron while moving material.[53]

The following tables summarize the reported exposure data:

Thermal System Insulation

Task	# Samples	Range [f/cc]	Average [f/cc]	Reference
Tearing Out	17	0.2 – 26.3	4.9	Balzer & Cooper[54]
Removal	12	0.16 – 2.62	1.6	Bell[55]
Removal	5	15 - 255	121.8	Venable[56]
Demolition	6	0.19 – 6.07	2.3	Salazar[57]
Demolition & Removal	3	6.5 – 7.7	7.0	3M[58]
		Weighted Average:	**17.4**	

Sweeping & Cleanup [TSI]

Task	# Samples	Range [f/cc]	Average [f/cc]	Reference
Sweeping	13	0.3 – 13.8	7.05*	Fountain[59]
Cleaning Debris	7	90 - 277	155⁺	Harries[60]
Cleaning Debris	16	0.1 – 22.9	4.8	Balzar[61]
Cleanup	4	0.72 – 2.32	1.4	Salazar[62]
Cleanup	10	0.32 – 4.53	1.54	Bell[63]
		Weighted Average:	**4.4**	

*Individual samples results not listed. Average is the average of the extreme values.

+ Reference only. Not included in Weighted Average

In conclusion, these data show that asbestos containing cloth and cloth products release substantial quantities of asbestos fiber when used as intended.

Asbestos Containing Gaskets and Packings Exposures

Merewether and Price, in their landmark study of asbestos workers published in 1930, recognized jointings (British term for gaskets) and packings as a distinct category of asbestos containing products.[64]

Millette and Brown examined the surface of asbestos containing gaskets materials using an electron microscope.[65] They concluded that "Not all asbestos fibers are bound in the organic matrix".

Millette also analyzed a sample of a Garlock 7228 gasket by PLM and electron microscopy.[66] They determined that the sample contained approximately 60% Chrysotile and 0.0009% amphibole (primarily tremolite asbestos). In addition that "uncoated" asbestos fibers protruded from the gasket surface and some fibers were released on to the hand during handling of the gasket material.

Liukonen, et al studied worker exposure levels to asbestos from gaskets during fabrication, installation and removal in a Naval Shipyard. They reported concentrations ranging from <0.03 to 5 fibers per cubic centimeter (f/cc.)[67]

Mangold conducted an experiment to determine the release of asbestos fibers from undisturbed Garlock gaskets.[68] He used new gasket, a used gasket removed from pipe flanges, and a gasket still in place between flanges. He reported concentrations ranging from 0.0f/cc (sic) to 0.008f/cc while environmental background concentrations ranged from 0.001 f/cc to 0.004 f/cc.

Millette, et al did several experiments with gaskets in a laboratory setting and reported concentrations up to 62 structures per cubic centimeter (s/cc) during gasket removal[69] and 4.2 f/cc during packing removal.[70]

McKinnery and Moore also studied asbestos fiber release during removal of gaskets and packing and report maximum concentrations of 75s/cc (gaskets) and 20s/cc (packing).[71]

Cheng and McDermott and reported concentrations ranging from 0.001 f/cc to 0.49 f/cc while cutting gaskets and from <0.05 f/cc to 1.4 f/cc while removing gaskets from pipe flanges in a petro-chemical plant.[72]

Longo, et al measured airborne concentrations of asbestos fibers that were released during the recreation of removal of asbestos-containing sheet gaskets from steam flanges.[73] The air samples were analyzed by light microscopy (PCM) as well as electron microscopy (TEM). In three studies the worker exposure concentrations ranged from 1.5 to 31 fibers per cubic centimeter (f/cc) by PCM and for samples analyzed by TEM the concentrations ranged from 29.9 to 1636.1 s/cc.

Mr. Matthew Carmel, in an unpublished study of asbestos exposures during simulated valve gasket cutting operations, reported average personnel exposure concentrations of 0.373 f/cc (PCM) and 5.294 s/cc (TEM).[74]

Airborne concentrations of asbestos were measured during the simulated removal and replacement of asbestos-containing gaskets and packings in industrial and maritime fittings by Boelter et al.[75] Personal exposure concentrations ranged from 0 f/cc (sic) to 0.052 f/cc (PCM).

Shell measured the airborne concentration of asbestos during the removal of a gasket from a 6 inch waterline using a power wire brush. The one personal sample collected documented 28.4 f/cc in the breathing zone over 24 minutes.[76] Two other related area samples were collected. The first was 4 feet from the pipefitter/welder during actual removal. The results indicate an airborne concentration of 16.1 f/cc.[77] The second area sample was collected also some 4 feet from the pipefitter/welder while he burned off a gasket. The results were 0.52 f/cc and the industrial hygienist who collected the sample, in his field notes, indicates that this sample "represents potential exposure of helper working nearby".[78]

Fowler studied potential worker exposure levels generated during sawing neoprene impregnated asbestos gasket material.[79] Results of personal sampling indicated exposure levels ranging from <0.11 f/cc to 4.9 f/cc.

Field studies, conducted by Spence and Rocchi, on workers removing sheet gasket material from flanges and equipment in a plant setting found asbestos exposure concentrations ranging from below detectable and 0.02 f/cc.[80]

DOW investigated the asbestos hazard presented by the cutting of asbestos containing gaskets.[81] Exposures to the worker cutting the gasket material ranged from 0.78 to 4.03 f/cc. One sample collected while a worker was "cleaning table off with a broom and picking up material off floor with a scoop" documented an exposure concentration of 3.08 f/cc.

Mangold et al conducted a series of studies on worker and bystander exposures to asbestos from activities associated with removing and installing asbestos containing gaskets and packing between 1982 and 1991.[82] They attempted to recreate the work Liukonen had conducted at an US Naval shipyard in the late 1970's. Their purpose was to separate exposure contribution from the gaskets and packing from any background that also might have existed in the work area. Only TWA values were reported and they were only for the specific activities described. Their studies document fiber release during the activities described. They concluded that "asbestos exposures to workers conducting removal and installation of asbestos-containing gasket and packing materials is below historical and current occupational exposure limits for asbestos". There are two exceptions. Their 1982 study recorded two 8 hour TWA results above the current 0.1 f/cc standard: Machine Punch (0.11 f/cc) and Nibbler Machine (0.14 f/cc).

Boelter conducted a recreation study of a worker using a ball peen hammer to cut out eight asbestos containing gaskets for pipe flanges ranging from 8" to 10 1/16" over an eight hour period. Two personal and eight area samples were collected. The average concentration for the personal samples was 0.045f/cc and for the area samples 0.04f/cc.[83]

In 2007 Madl, et al[84] reviewed the published and unpublished studies [1940-1985] on typical activities associated with asbestos containing gaskets and packing. They concluded:

- Gasket Formation [Workshop Tools]: Average Peak = 0.44 f/cc; Average TWA = 0.008 f/cc;
- Gasket Formation [Hand-held manual tools]: Average Peak = ~0.1 f/cc; Average TWA = ~0.01 f/cc;

- Gasket Removal [Hand tools]: Average Peak = 0.14 f/cc; Average TWA = 0.024 f/cc;
- Gasket Installation [No disturbance]: Average Peak =0.15 f/cc;
- Packing Removal & Installation: Average Peak = 0.4 f/cc; Average TWA = 0.01 f/c.

They concluded that workers working with gaskets and packings, "should not have been exposed to 8-h TWA airborne concentrations of chrysotile asbestos in excess of the OSHA PELs promulgated prior to 1986".

The following table summarizes the reported asbestos exposure concentrations:

Gaskets

Task	# Samples	Range [f/cc]	Average [f/cc]	Reference
Remove & Install	2	0.005	0.005	Mangold[85]
Scrape Flange	3	0.03	0.03	Mangold[86]
Remove	23	0.05-0.44	0.16	McKinnery[87]
Power Wire Brush	1	28.4	28.4	Shell[88]
Install	12	0.13-0.29	0.2	McKinnery[89]
Power Cut Gaskets	11	0.001-0.49	0.15	Cheng[90]
Remove & Clean Seating Surface	6	<0.05-1.4	<0.36	Cheng[91]

Review of this information demonstrates that asbestos fibers are released in significant quantities during the normal course of the installation and removal of asbestos gaskets and packing and that worker's exposures concentrations range from non-detect to some 28 f/cc.

Bystander Exposure

The knowledge that the inhalation of dusts into the lungs of workers predisposed them to occupational lung disease has been well known for several centuries. Ramazzini, in his famous 1713 book on occupational diseases, states:

> "Various and manifold is the harvest of diseases reaped by certain workers from crafts and trades that they pursue; all the profit that they get is fatal injury to their health. That crop germinates mostly, I think, from two causes. The first and most potent is the harmful character of the materials they handle, for these emit noxious vapors and very fine particles inimical to human beings and induce particular diseases;"[92]

At some level it is intuitively obvious that a person working with or in the vicinity of another who is disturbing a hazardous substance, such as asbestos containing materials, is also likely to be exposed to asbestos. It is so obvious that the early investigators of occupational disease did not differentiate between those actually performing the work and those in the immediate area. Oliver, in his 1902 textbook, Dangerous Trades, states:

> "...the fact remains that where an individual is working in the dusty atmosphere of a factory for several hours a day, week after week, particles of dust immediately find their way into the finer bronchi, and subsequently into the pulmonary tissue itself. It is the repeated working in a dusty atmosphere that causes the trouble." [93]

In NIOSH's 1995 report to the US Congress[94] they concluded, "...contamination of workers' homes is a worldwide problem, with incidents reported from 28 countries and from 36 States in the United States. Such incidents have resulted in a wide range of diseases and, in some cases, death among workers' families". NIOSH specifically addresses the issue of asbestos causing family exposure and disease.[95]

Specifically related to asbestos, in 1942 the US Department of Transportation required Contract Shipyards to "Segregate dusty work"[96] to prevent bystanders from being exposed to asbestos.

Grandjean and Bach reviewed the literature on bystander exposures, including asbestos, and concluded that "Indirect exposures may occur at work when adjacent workers are exposed to hazards originating from fellow workers' activities." [97]

In 1961, McClintock[98], Kaiser Aluminum & Chemical Corporation's Industrial Hygienist, conducted a series if air samples during the sawing and drilling of Marinite. He found 22.2 mppcf some 50' from the table saw that was the source of the asbestos emissions. He concludes, "Extremely high and hazardous dust concentrations are generated when Marinite is being cut on the table saw. The dust generated during this operation is distributed in hazardous concentrations throughout the room [Carpenter Shop]".

In 1968, Balzar and Cooper reported exposure concentrations experienced by members of an insulators union working in a variety of locations in California and Nevada. [99] In describing the complexity of insulator's work environment and its implications for quantifying exposures to discrete insulator tasks they recognized that, "Many times the materials he is exposed to result from the activities of other trades in the area." Balzar collected some 153 air samples during Prefabrication, Application, Finishing, Tearing Out, Mixing, and General. Sample times were from 30 minutes to 3 hours and, due to overloading problems, sample filters were changed out several times on each insulator. The average of the mean concentrations was 5.8 f/cc [range 0.1 f/cc to 61.6 f/cc] for those workers directly handling TSI. Several of the samples reported as General were actually personal samples collected on Balzar and thus are representative of a bystander. These General sample concentrations averaged 4.8 f/cc >5μ [range 0.1 f/cc to 22.9 f/cc].

Meyers [1976] collected air samples at various distances and directions from a refinery Vacuum Tower while asbestos insulation was being removed. He measured 12.1 f/cc at 35'; 5.1 f/cc at 70'; 1.6 f/cc at 150'; 2.7 f/cc at 200'; 1.6 f/cc at 175'; and 1.3 f/cc at 275'. He also did the same for asbestos removal from a UDEX unit. He measured 6.63 f/cc 30' downwind and 5.1 f/cc 60' downwind.[100]

Hickish conducted a field investigation at a Ford [Britain] dealer repair facility in 1968.[101] He measured airborne concentrations generated during brake servicing, including brake cleaning with compressed air. He collected 6 personal samples [BZ] whose concentrations ranged from 0.38 f/cc to 1.12 f/cc [Brake cleaning & repair]. He also collected air samples in the general area [GA] of the brake servicing operation. He found concentrations ranging from 1.12 to 3.62 f/cc [His Table 3]. In fact, a ratio of average GA to average BZ is 2.6 which indicate bystanders are exposed to an average concentration some 2.6 times than those directly disturbing the brakes.

Rohl, in his study of garage mechanic's exposure to asbestos from maintaining and manipulating brake shoes,[102] measured 0.1 f/cc of asbestos fibers 75 feet away from the area where a worker was using compressed air to clean a brake drum. He also measured 0.1 f/cc some 12 feet from and 3 minutes after a worker cleaned brake drums with a dry brush.

In 1976, Lorimer, et al measured peak concentrations experienced by maintenance workers using compressed air to clean out automobile brake drums.[103] The worker was exposed to 0.4 f/cc while the background concentration 65 feet away was 0.1 f/cc.

Kauppinen, et al studied asbestos exposures to brake mechanics in Finland.[104] They found background concentrations of 0.1 f/cc in the general area where automobile brakes were being manipulated.

P. G. Harries measured airborne concentrations of asbestos at various distances from a sprayed insulation removal operation on a ship.[105] He found 30 f/cc two decks away from the operation demonstrating the propensity for asbestos fibers to disperse throughout any structure.

Harries also measured asbestos concentrations during the removal and installation of pipe and machinery lagging [insulation] in engine and boiler rooms. He measured both general environmental (GA) and personal (BZ) asbestos concentrations. The GA samples are representative of concentrations others in the area most likely experienced. In this case, during the removal of pipe and machinery lagging in Boiler Rooms the GA concentration average was 171 f/cc [0.04 f/cc-1052 f/cc] and in Engine Rooms 88 f/cc [0.46 f/cc-3021f/cc]. During the application of pipe and machinery lagging in Boiler Rooms the GA concentration average was 22.4 f/cc [1f/cc-61f/cc] and for Engine Rooms 2.1 f/cc [0.1f/cc-14f/cc]. These data show that bystanders can also experience exposure concentrations in excess of contemporary exposure standards by just being in the area where others are disturbing asbestos. In addition, ratios of the GA to BZ samples range from 0.3 to 1.8 which demonstrates that bystander concentrations can exceed the concentrations experienced by those workers directly manipulating the ACM.

DOW measured asbestos concentrations 15 feet from a gasket cutting operation.[106] They collected two samples. They reported results of 5.44 f/cc and 0 f/cc. The 0 f/cc was collected on the second day after they had cleaned up the work area.

Mangold, et al [2006][107] summarized previous work in order to estimate bystander exposure concentrations from several activities relating to the handling of asbestos gaskets and packing. These studies were conducted in 1982, 1989, 1991 and 1993. The data presented in the various tables that listed results for both workers and bystanders showed that both groups received substantially the same exposures.

Donovan,et al [2011][108] reviewed published and unpublished data and attempted to develop a "Rule of Thumb" that would allow estimating exposure concentrations experienced by bystanders based on actual worker exposure [source] concentrations and the distance the bystander was from the worker [distance]. In fact, there are studies [Harries and Balzar] that demonstrate bystanders are exposed to higher concentrations than those experienced by the workers actually generating the asbestos fibers.

Selikoff, et al summarized the bystander issue when he recognized the importance of bystander exposures in his famous 1964 study of insulators when he said:

> "A particular variety of environmental exposure may be of even greater concern. Asbestos exposure in industry will not be limited to the particular craft that utilizes

the material. The floating fibers do not respect job classifications. Thus, for example, insulation workers undoubtedly share their exposure with their workmates in other trades; intimate contact with asbestos is possible for electricians, plumbers, sheet-metal workers, steamfitters, laborers, carpenters, boiler makers, and foremen; perhaps even the supervising architect should be included."[109]

The following table summarizes the reported asbestos exposure concentrations:

Bystander

Task	# Samples	Range [f/cc]	Average [f/cc]	Reference
Gaskets -Circular Cutter	8	0.002 – 0.006	0.003	Mangold[110]
TSI-Install & Tear Out	16	0.1-22.9	4.8	Balzar[111]
TSI-Tear Out	8	1.3-12.1	4.5	Meyers[112]
		Weighted Average:	**3.5**	

Consequently, bystanders are routinely exposed to asbestos as a result of simply being in a work area where others are disturbing asbestos containing materials. The fibers can simply migrate from the original source to the bystander or be released from another worker's contaminated clothing when it is disturbed in the immediate area of the bystander. Under some situations the exposure concentrations experienced by the bystander can be equal or greater than those of the workers creating the asbestos dust in their work area.

Occupational Exposure Standards

Throughout the modern industrial use of asbestos, society has attempted to minimize the risk from exposure by establishing occupational exposure standards. The airborne concentration of asbestos fibers to which a worker is exposed has been used as a predictor of health hazard since before the first half of the last century.

ASBESTOS OCCUPATIONAL EXPOSURE STANDARDS

Date	Promulgating Agency	MAC[a]	AL[b]	TWA[c]	STEL/C/EL[d]
1938	U.S. Public Health Service[113]	5 mppcf			
1939	State of California[114]	5 mppcf			
1942	U.S. Department of Labor[115]	5 mppcf			
1943	State of Louisiana[116]	5 mppcf			
1945	State of Oregon[117]	5 mppcf			
1946	American Conference of Governmental Industrial Hygienists[118]	5 mppcf			
1946	State of Ohio[119]			5 mppcf	
1951	U. S. Department of Labor[120]	5 mppcf			
1957	State of Texas[121]			5 mppcf	
1967	U. S. Bureau of Mines[122]			5 mppcf	
1968	American Conference of Governmental Industrial Hygienists[123]			12 f/ml > 5 µm [proposed]	
1969	United Kingdom[124] Chrysotile, Amosite, & Anthophyllite Crocidolite				2 f/cc > 5 µm [10 min]
1969	U.S. Department of Labor[125]			12 f/cc > 5 µm or 2 mppcf	

Date	Promulgating Agency	MAC [a]	AL [b]	TWA [c]	STEL/C/EL [d]
1969	U. S. Bureau of Mines[126]			2 mppcf or 12 f/cc >5 μm	
1971	American Conference of Governmental Industrial Hygienists[127]			5 f/ml > 5 μm [proposed]	
1971	Occupational Safety and Health Administration[128]			12 f/cc > 5 μm or 2 mppcf	
1971	Occupational Safety and Health Administration [Emergency Standard][129]			5 f/cc > 5 μm	
1972[g]	Occupational Safety and Health Administration[130]			5 f/cc > 5 μm	10 f/cc > 5 μm
1972	National Institute for Occupational Safety and Health[131]			2 f/cc > 5 μm	10 f/cc > 5 μm
1974	American Conference of Governmental Industrial Hygienists[132]			5 f/cc > 5 μm	10 f/cc > 5 μm
1974	U. S. Bureau of Mines[133]				
1975	Occupational Safety and Health Administration[134]			0.5 f/cc >5 μm [proposed]	5 f/cc > μm [proposed]
1976[g]	Occupational Safety and Health Administration[135]			2 f/cc > 5 μm	10 f/cc > 5 μm
1976	National Institute for Occupational Safety and Health[136]			0.1 f/cc > 5 μm	0.5 f/cc > 5 μm
1976	U. S. Bureau of Mines Coal Mining[137]			2 f/cc	
1978	U. S. Bureau of Mines Metal & Non-metal Mining[138]			2 f/cc >5 μm	10 f/cc >5 μm
1980	American Conference of Governmental Industrial Hygienists[139] Amosite [e] Chrysotile [e] Crocidolite [e] Other Forms [e]			0.5 f/cc > 5 μm 2 f/cc > 5 μm 0.2 f/cc > 5 μm 2 f/cc > 5 μm	1.5 f/cc > 5 μm 4 f/cc > 5 μm 0.6 f/cc > 5 μm 4 f/cc > 5 μm
1985	Mine Safety & Health Administration[140]			2	10
1986	Occupational Safety and Health Administration[141]		0.1 f/cc > 5 μm	0.2 f/cc > 5 μm	NA
1989	U. S. Bureau of Mines[142]			0.2 f/cc >5 μm [proposed]	
1994	Occupational Safety and Health Administration[143, f]			0.1 f/cc > 5 μm	1 f/cc > 5 μm
1998	American Conference of Governmental Industrial Hygienists[144, h]			0.1 f/cc > 5 μm	0.5 f/cc > 5 μm
2008	Mine Safety and Health Administration[145]			0.1 f/cc > 5 μm	1 f/cc > 5 μm

a - Maximum Allowable Concentration. b - Action Level. c - Time Weighted Average (8 hours). d - Short Term Exposure Limit / Ceiling Concentration /Excursion Limit. e - A1a (Human Carcinogen). f – For Brake Mechanics the effective PEL = 0.004 f/cc. h- A1 (Confirmed Human Carcinogen). g- The rule was actually promulgated in 1971. This date is the effective date.

Walsh-Healy and OSHA Standards

In addition to the exposure standards set out in the above table, regulations required additional steps be taken to protect the worker. Among these were:

1. Walsh – Healey, Basic Safety and Health Requirements [1942 – 1951][146]
    a. Special precautions to be taken in work places where toxic dusts are used;

   b. In quantities injurious to workers the contaminant shall be reduced or otherwise controlled at the point of origin by local exhaust;
   c. Where local exhaust is impracticable the work area shall be enclosed or isolated to prevent contamination of the work area;
   d. Workers or others required to enter the enclosed or isolated area are required to wear US Bureau of Mines approved respirators; and
   e. Workers who handle or are exposed to harmful materials in such a manner that contact of work clothes with street clothes will communicate to the latter harmful substances shall be provided with facilities to prevent contact between work clothes and street clothes.
2. Minimum Requirements for Safety and Industrial Health in Contract Shipyards [1943][147]
   a. Lists Asbestosis as one of eight common diseases found in shipyards;
   b. Jobs requiring respiratory protection [airline and/or dust respirator] included "Asbestos (as in covering pipes)";
   c. Quality of supplied air;
   d. Sterilizing respirators;
   e. Requirements for general and local ventilation; and
   f. Provision for safety training of shipyard employees.
3. Walsh – Healey, Safety and Health Standards [1951 - 1971][148]. The 1951 standards added the following requirements:
   a. Determine the workers exposure concentrations of asbestos and other hazardous materials;
   b. Substitute less hazardous materials;
   c. Provide engineering controls including enclosures, isolation, ventilation [dilution and local]; and
   d. Provide personal protective equipment such as respirators and impervious protective clothing.
4. Occupational Safety and Health Act [1971 – Present]
   a. Provide a work place free from recognized hazards;
   b. Conduct initial and periodic monitoring to determine worker exposure concentrations;
   c. Provide feasible engineering controls;
   d. Provide respirators;
   e. Special clothing, change rooms and lockers to separate work clothes from street clothes;
   f. Provide medical programs and controls;
   g. Labels and warnings; and
   h. Worker training programs.

Other National Standards Organizations

There were a series of governmental, national and trade associations that also addressed the occupational hazards associated with asbestos exposures to workers well before Walsh-Healey and OSHA. Some of the more prominent organizations include:

1. National Safety Council
   a. NSC is an industry supported consensus organization formed in 1913 to address common industrial safety issues; and
   b. Has produced a textbook on industrial hygiene and guidance on personal protective equipment including respirators.
2. Industrial Hygiene Foundation

   a. Founded in 1936 primarily to address silicosis, a serious and sometimes fatal lung disease;
   b. Developed into a resource for all occupational health issues for its members;
   c. Published a quarterly review of the medical literature including published articles on asbestos; and
   d. Provided industrial hygiene consulting services, including asbestos, to its members.
3. US Department of Commerce
   a. Published a Safety Code for Protection of Heads, Eyes, and Respiratory Organs in 1921.
4. US Bureau of Mines
   a. Founded well before WW II to address hazards associated with mining;
   b. It started the program of approving respiratory protective devices. This program was transferred to NIOSH in 1970.
5. American Conference of Governmental Industrial Hygienists
   a. Founded in the 1930s to study hazardous materials and recommend Threshold Limit Values (TLV);
   b. Its first TLV for asbestos was published in 1947; and
   c. Has also produced many guidance documents concerning occupational health issues including Biological Exposure Indices (BEI) and air sampling methodology.
6. American Industrial Hygiene Association
   a. Founded in the 1930s it published the first industrial hygiene journal in 1940; and
   b. The journal has published numerous articles on asbestos and respiratory protection.
7. American Society of Safety Engineers
   a. Founded in 1911, it is the oldest professional society devoted to safety in the work place; and
   b. It has published, or co-sponsored publication, many safety guidelines including respiratory protection over the years.
8. American National Standards Institute (ANSI)
   a. The successor to the American Standards Association which was formed in 1928;
   b. A industry supported consensus organization that produces national standards on many issues of common interest;
   c. Published a Safety Code for Protection of Heads, Eyes, and Respiratory Organs in 1921; and
   d. Has published many guidance documents on various occupational health issues including respiratory protection programs. and
9. National Institute for Occupational Safety and Health (NIOSH)
   a. Founded at the same time as OSHA (1970) for the purpose of scientific investigation of occupational stressors including asbestos. It has published many documents concerning asbestos including air sampling methods, maintenance and abatement guidance and work place evaluations; and
   b. Approves respiratory protective devices used for worker protection against hazardous materials including asbestos.

Worker Exposure Monitoring

In order to determine whether or not a worker's airborne asbestos exposure concentrations meet the occupational exposure limits [PEL, TLV, REL, Ceiling/Short Term] one must collect and analyze air samples representative of the worker's breathing zone. Scientific air sampling and analytical methods have existed since the early part of the last century.[149] These scientific methods have been adopted by government agencies including OSHA [29 CFR], MSHA [56 CFR], NIOSH [www.cdc.gov/niosh/asbestos] and many other organizations.

Warnings and Training

Conveying information to workers, including warnings, has been a part of the industrial workplace for many years. It has been well known that a worker needs to have some basic information in order to work safely with hazardous materials. One of the first published safety professionals in this country, Tolman, in his 1913 Safety textbook[150], stated:

> "Workers who handle poisons should be instructed with regard to the character and actions of these substances, the initial symptoms, and, particularly, all means and measures necessary for rendering first aid to their fellows. The best hygienic provisions, protective devices and measures are valueless when the worker does not use and follow them. [1]Not only should instruction be given with regard the object and use of devices, but workers should be urged and, if necessary compelled to use them."

In 1930 the National Safety Council issued a pamphlet on accident prevention signs which addressed such things as wordage, size and color.[151] Their Introduction states:

> "How much credit shall be given the use of warning signs for the reduction of accidents in various plants is impossible to determine, but that they are of considerable value as part of a well-organized safety campaign is generally acknowledged."

In our time OSHA has promulgated many regulations concerning Safety Training for workers handling hazardous materials.

In review of these articles, plus some 40 years of experience in communicating with workers, I have reduced the minimum requirements of warnings to their essential elements. These are:

1. The hazards resulting from exposure to the hazardous material. The warning should include the most devastating consequence of exposure such as cancer and death;
2. How the worker can recognize when they are at risk;
3. How the worker can protect himself, and others, from the hazards; and
4. What constitutes misuse of the hazardous material and the potential consequences of misuse?

Asbestos Exposure and Asbestosis

Asbestosis is defined as a lung disease consisting of, "diffuse interstitial fibrosis affecting lung parenchyma, induced by the inhalation and deposition of asbestos fibers".[152] The presence of

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the disease normally indicates the individual experienced significant exposures to relatively high asbestos concentrations over a period of years. Asbestosis was the first occupational lung diseases identified that was caused by asbestos.

Asbestos related diseases, including asbestosis, cancer and mesothelioma, have been studied for many years by many different investigators and government agencies in this country as well as the rest of the world. Scientific articles, learned thesis, books, and editorials started appearing in this country after the turn of the last century and peaked in the late 1970's. Several bibliographies have been developed by scholars as well as participants in the legal issues. Dr. Selikoff, in his book, lists some 810 individual references. Peters and Peters[153] produced a bibliography 162 pages long including approximately 2,000 references.

From a practitioner's point of view, however, I rely primarily on those publications that are comprehensive in nature and are published by recognized agencies or leading scientists. In my review of the literature, the landmarks listed in the following table summarized the development of medical knowledge in this issue since the 1930's.

MAJOR ASBESTOS DISEASE LANDMARKS

Date	Author & Title	Lung Disease	Asbestosis (fibrosis)	Lung Cancer	Mesothelioma	Other Cancers
1927	Cooke-Pulmonary Asbestosis[154]	Yes	Yes			
1930	Merewether-Report of Effects of Asbestos Dust on the Lungs [155]	Yes	Yes			
1931-35	Lanza-USPHS Reports- Effects of the Inhalation of Asbestos Dust[156]	Yes	Yes			
1942	Hueper – Occupational Tumors and Allied Diseases[157]	Yes	Yes	Yes		
1955	Hueper-Silicosis, Asbestosis, & Cancer of the Lung[158]	Yes	Yes	Yes		
1955	Doll-Mortality from Lung Cancer in Asbestos Workers[159]	Yes	Yes	Yes		
1960	Wagner-Diffuse Pleural Mesothelioma & Asbestos Exposure in NW Cape Province[160]	Yes	N/A	Yes	Yes	
1964	Selikoff-Relation Between Exposure to Asbestos and Mesothelioma[161]	Yes	N/A	Yes	Yes	
1975	Selikoff-Asbestos Disease in the United States[162]	Yes	Yes	Yes	Yes	Yes

Opinions

Based on my telephone interviews of Mr. Burt and the review of the information in this record describing Mr. Burt's occupational environment and activities, and based on my special training, knowledge and expertise as a Certified Industrial Hygienist, including review of numerous scientific peer reviewed articles, publications and other relevant information, including but not limited to those summarized above, I have formed the following opinions to a reasonable degree of scientific probability:

- Methodology :
    - Mr. Burt was occupationally exposed to airborne concentrations of respirable asbestos fibers which meets the Ever/Never Exposed methodology;
    - The lack of the required company generated asbestos exposure data and other necessary information relating to Mr. Burt's actual asbestos exposures dictates that Mr. Burt's retrospective risks be determined using the qualitative method;
- Mr. Burt's Qualitative Retrospective Risk/Exposure Assessment
    - Mr. Burt frequently [daily] worked with and was exposed to asbestos fibers from asbestos containing materials including thermal system insulation, gaskets and/or rope;
    - He was frequently exposed to airborne concentrations of respirable asbestos fibers which most likely frequently exceeded contemporary occupational exposure standards;
    - Mr. Burt's asbestos exposures took place over many years;
    - Mr. Burt was in close proximity to the source of airborne asbestos whenever he personal disturbed TSI, gaskets and/or rope or was a bystander to others disturbing TSI, gaskets and/or rope;
    - Mr. Burt was not timely, adequately and/or sufficiently protected as required by national standards, OSHA and/or MHSA regulations including, but not limited to:
        - Not being timely, adequately and/or sufficiently warned concerning the hazards of asbestos exposures including the risk of serious diseases including asbestosis, cancer and death;
        - Not being timely, adequately and/or sufficiently trained on how to protect himself from asbestos exposures;
        - Not being timely, adequately and/or sufficiently trained in the selection, use or fit testing of respirators; and
        - Not having his asbestos exposure concentrations monitored timely, adequately and/or sufficiently.
    - Mr. Burt's chronic occupational asbestos exposures put him at increased risk of developing asbestos related diseases including asbestosis, cancer and death.
- Martin Marietta and VIALCO knew, or should have known, that asbestos was hazardous throughout the time period Mr. Burt was employed at the plant and that they were required to protect Mr. Burt consistent with at least the contemporary regulations and national standards.

If you have any questions or if I can be of further service please let me know.

Sincerely,

Frank M Parker, III
CIH, CSP, PE, BCEE

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EXHIBIT 116

Johnson and Mills - LMC Financial Condition Report, 2022-08-30,
21-CV-548_BURT_000358 –
21-CV-548_BURT_000376

Robert W. Johnson & Associates
FORENSIC ECONOMISTS

August 30, 2022

Mr. Rick Yelton
Burns Charest LLP
365 Canal Street, Suite 1170
New Orleans, LA 70130

Re: Lockheed Martin Corporation (Milton Burt)
Financial Condition Report

Dear Mr. Yeltin:

Please find the following expert witness report.

1) Opinions:

My primary task was to frame, in economic terms, the financial condition of Lockheed Martin Corporation. The financial condition encompasses the areas of financial health, wealth and economic status. My presentation regarding this entity is attached. This economist reserves the right to amend this opinion based upon more current or relevant data and evidence admitted at the time of trial.

2) Data Considered:

My opinions are based in part on my experience, training and knowledge as a forensic economist. In forming these opinions, I have reviewed and relied upon the following documents:

REGARDING LOCKHEED MARTIN CORPORATION:

i. 2019 – 2021 Lockheed Martin Corporation 10-K Forms;
ii. 6/26/2022 Lockheed Martin Corporation 10-Q Report;
iii. 2022 Lockheed Martin Corporation Proxy Statement; and
iv. Market capitalization data from the Wall Street Journal.

Lockheed Martin Corporation

Lockheed Martin Corporation is a financially sound and growing company with $67 Billion in sales and $6.3 Billion in net earnings in 2021. Net earnings increased, on average, 33.2% per year from 2017 through 2021. The company has $1.8 Billion in cash on hand. Lockheed Martin Corporation was sufficiently profitable to pay its stockholders $2.9 Billion in dividends in 2021. In addition, the company was sufficiently profitable to pay its Chairman, President and CEO, James Taiclet, over $18 Million in total compensation in 2021.

1) Total Sales of $67 Billion in 2021
    a) Average Sales per day of over $183 Million in 2021
2) Net Earnings of $6.3 Billion in 2021
3) Net Worth of $11.4 Billion in 2022
4) Cash on Hand of $1.8 Billion in 2022
5) Stock Market Valuation of $113.9 Billion as of August 30, 2022

In addition, it is my understanding that financial discovery regarding additional defendants in this matter is continuing. Thus, I reserve my right to supplement this report upon receipt of new and/or additional information.

Sincerely,

ROBERT W. JOHNSON & ASSOCIATES

By: ______________________
Robert W. Johnson, President

____
James A. Mills, Sr. Economist

Enclosures

Punitive Damages:

Lockheed Martin Corporation

What financial documents did we review?

Lockheed Martin Corporation

- 2019 - 2021 10-K Reports
- 6/26/2022 10-Q Report
- 2022 Proxy Statement
- Stock data from the Wall Street Journal

What is Lockheed Martin Corporation's economic health?

Lockheed Martin Corporation

Net sales (2017 - 2021*)

2021: **$67.0 Billion**

2020: **$65.4 Billion**

2019: **$59.8 Billion**

2018: **$53.8 Billion**

2017: **$50.0 Billion**

Net sales per day in 2021: **$183.6 Million**

Source: * 2021 10-K Report

What is Lockheed Martin Corporation's economic health?

Lockheed Martin Corporation

Net earnings (2017 - 2021*)

2021: **$6.3 Billion**

2020: **$6.8 Billion**

2019: **$6.2 Billion**

2018: **$5.0 Billion**

2017: **$2.0 Billion**

Source: * 2021 10-K Report

What is Lockheed Martin Corporation's economic wealth?

Lockheed Martin Corporation

Net worth (2017 - 2022*)

2022: **$11.4 Billion**

2021: **$11.0 Billion**

2020: **$6.0 Billion**

2019: **$3.2 Billion**

2018: **$1.4 Billion**

2017: **($0.8) Billion**

Source: * 2021 10-K Report; 6/26/2022 10-Q Report

What is Lockheed Martin Corporation's economic wealth?

Lockheed Martin Corporation

Cash on hand[1] (2017 - 2022*)

2022: **$1.8 Billion**

2021: **$3.6 Billion**

2020: **$3.2 Billion**

2019: **$1.5 Billion**

2018: **$0.8 Billion**

2017: **$2.9 Billion**

[1] Cash and Cash Equivalents (Can be converted to cash in less than 90 Days)

Source: * 2021 10-K Report; 6/26/2022 10-Q Report

What is Lockheed Martin Corporation’s economic health?

Lockheed Martin Corporation

Cash flow[1] (2017 - 2021*)

2021: **$9.2 Billion**

2020: **$8.2 Billion**

2019: **$7.3 Billion**

2018: **$3.1 Billion**

2017: **$6.5 Billion**

Average cash flow last five years: **$6.9 Billion**

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[1] Net cash flows from operating activities

Source: * 2021 10-K Report

What is Lockheed Martin Corporation’s economic health?

Lockheed Martin Corporation

Capital Expenditures (2017 - 2021*)

2021: **$1.5 Billion**

2020: **$1.8 Billion**

2019: **$1.5 Billion**

2018: **$1.3 Billion**

2017: **$1.2 Billion**

Source: * 2019 - 2021 10-K Reports

What is Lockheed Martin Corporation’s economic health?

Lockheed Martin Corporation

Free Cash Flow (2017 - 2021*)

2021: **$7.7 Billion**

2020: **$6.4 Billion**

2019: **$5.8 Billion**

2018: **$1.8 Billion**

2017: **$5.3 Billion**

Source: * 2019 - 2021 10-K Reports

What is Lockheed Martin Corporation's economic wealth?

Lockheed Martin Corporation

Dividends Paid (2017 - 2022[*])

2022: **$1.5 Billion**[+]

2021: **$2.9 Billion**

2020: **$2.8 Billion**

2019: **$2.6 Billion**

2018: **$2.3 Billion**

2017: **$2.2 Billion**

[+] Through 2nd Quarter

Source: * 2019 - 2021 10-K Reports; 6/26/2022 10-Q Report

What is Lockheed Martin Corporation’s economic wealth?

Lockheed Martin Corporation

Stock Repurchases (2017 - 2022[*])

2022: **$2.4 Billion**[+]

2021: **$4.1 Billion**

2020: **$1.1 Billion**

2019: **$1.2 Billion**

2018: **$1.5 Billion**

2017: **$2.0 Billion**

[+] Through 2nd Quarter

Source: * 2019 - 2021 10-K Reports; 6/26/2022 10-Q Report

What is Lockheed Martin Corporation's economic wealth?

Lockheed Martin Corporation

R&D expenditures (2017 - 2021*)

2021: **$1.5 Billion**

2020: **$1.3 Billion**

2019: **$1.3 Billion**

2018: **$1.3 Billion**

2017: **$1.2 Billion**

Source: * 2019 - 2021 10-K Reports

What is Lockheed Martin Corporation's economic status?

Lockheed Martin Corporation

Available Line of Credit*

$3.0 Billion – 2022

Sources: * 6/26/2022 10-Q Report

What is Lockheed Martin Corporation's economic health?

Lockheed Martin Corporation

Audit fees*

$23.5 Million – 2021

$23.5 Million – 2020

Sources: * 2022 Lockheed Martin Corporation Proxy Statement

What is Lockheed Martin Corporation's economic status?

Lockheed Martin Corporation

Stock market valuation*

8/30/2022

$113.9 Billion

Source: * 8/30/2022 Quote from WSJ.com

What is Lockheed Martin Corporation's economic wealth?

Lockheed Martin Corporation

James D. Taiclet, Chairman, President and CEO*

2021 Compensation Package

Salary	$ 1,742,173
Stock Awards	$ 10,783,715
Non-Equity Incentive Plan	$ 4,049,200
All Other Compensation	$ 1,536,123
Total Compensation	**$18,111,211**

Source: * 2022 Lockheed Martin Corporation Proxy Statement

What is Lockheed Martin Corporation’s economic wealth?

Lockheed Martin Corporation

James D. Taiclet, Chairman, President and CEO*

Change in Control / Termination Payments

Change in Control:

$31,136,711

Layoff:

$17,680,988

Source: * 2022 Lockheed Martin Corporation Proxy Statement

EXHIBIT 117

Dr. John - Milton Burt Expert Report, 2022-07-20, 21-CV-548_BURT_000035 - 21-CV-548_BURT_000038

SOUTHWEST PULMONARY ASSOCIATES
CHRISTOPHER LEIGH JOHN, M.D.
M.B.B.CH., M.R.C.P. (UK), F.R.C.P.C., F.C.C.P.
PULMONOLOGY, INTERNAL MEDICINE, ALLERGIC DISEASES
11321 INTERSTATE 30, SUITE 306
LITTLE ROCK, ARKANSAS 72209

TEL (501) 407-0200 FAX (501) 407-0220

July 20, 2022

Burns Charest LLP
365 Canal Street, Suite 1170
New Orleans, LA 70130

Re: Milton A. Burt
SS: 580-09-9234
DOB: [redacted]
DOS: [redacted]

This pleasant seventy-six year old gentleman was exposed to asbestos working at the Bauxite facility in St. Croix from 1967 through 2001. He did at times have periods of time off work, usually no more than one to two weeks at a time for yearly holidays. He worked for a variety of companies that serviced the alumina plant in a maintenance capacity, working throughout the plant. The plant and his work took him into contact with asbestos insulating materials. Due to the heat involved in the process of producing alumina the plant was covered with asbestos insulation piping, which on occasion had to be removed to either repair the pipe or replace it. Removing the asbestos insulation on pipes was frequent, occurring usually more than once a week and required the removal of the asbestos covering, repairing the pipe or replacing it and then recovering it with asbestos. This process generated large amounts of asbestos dust and the patient did not have a safety mask or respiratory equipment provided.

Further, he worked throughout the plant and was exposed to bauxite dust as it was unloaded from ships onto conveyer belts. It was transported to storage tanks and then ultimately was transported on several conveyer belts to a grinding process, which was extremely dusty. Mr. Burt described the whole “red side” of the plant as being covered with layers of red bauxite dust and said the “white side” of the plant was covered in white dust. And that in the course of his daily work he would be covered in red and white dusts in his clothing, hair, ears, etc. Mr. Burt inhaled these dusts on a daily basis and did not receive adequate respiratory protection. After crushing, the bauxite was then turned into a semi-liquid slurry, which was mixed with the caustic liquids and lime and then pumped into digesters, which were essentially large pressure cookers that had asbestos coated heating pipes. These digesters would malfunction or get blocked and required repair and replacement. This was dusty work.

Mr. Burt was therefore, exposed to asbestos, bauxite, and alumina dusts throughout the entire plant no matter where he was working. He was involved in removing asbestos insulation around pipes, replacing the pipes and replacing the asbestos materials. Other workers around him did similar processes.

He has noted shortness of breath for the last ten years and can walk less than one mile. He does cough and produces clear mucous, but no blood. He denies any history of TB, asthma or pneumonia. He has no history of animal or bird exposure. He denies any recent foreign travel and is unaware of any other industrial exposure such as sandblasting, welding or metal grinding.

He is a lifetime nonsmoker. He has no history of cancer in any form.

PAST MEDICAL HISTORY: Reveals hypertension and Hyperlipidemia.

OPERATIVE HISTORY: Nil.

MEDICATIONS: Unknown.

ALLERGIES: None documented.

SYSTEMIC REVIEW:
CARDIAC INQUIRY: Revealed exertional dyspnea, but no chest pain, PND or orthopnea. He has no history of cardiac disease.
RESPIRATORY INQUIRY: Reveals no history of TB, asthma. He does have a cough, which is intermittent and has been present for many years. It is occasionally productive of light green to light yellow mucous, but no blood. He has noted exertional dyspnea for at least the last ten years. It has been slowly progressive and he feels that he can walk about a mile on the flat, but has difficulty climbing stairs and is unable to sing in church, as he previously had, as he runs out of breath. He is a lifetime non-smoker. He denies any second hand smoke exposure. He has no history of sleep apnea. His only other known industrial exposure apart from asbestos and bauxite were the fumes from the bauxite cooker and metal grinding from pipes.
GASTROINTESTINAL INQUIRY: Revealed occasional constipation.
UROGENITAL INQUIRY: Negative.
NEUROLOGICAL INQUIRY: Negative.
MUSCULOSKELETAL INQUIRY: Revealed age related osteoarthritis.
DERMATOLOGICAL INQUIRY: Negative.
PSYCHIATRIC INQUIRY: Negative.

FAMILY AND SOCIAL HISTORY: He is married with three children and had fourteen siblings. He drinks alcohol rarely, does not smoke, take street drugs or have a history of foreign travel. There is a family history of hypertension.

PHYSICAL EXAM: Height 68 inches, weight 205 pounds, blood pressure is 140/80, pulse 98, respirations 16, temperature is 98.2 and O2 Sat is 97% on room air. He is peripherally, but not centrally cyanosed. He has mild arcus senilis. He is not clubbed and there is no anemia, jaundice or lymphadenopathy. Thyroid and breast are normal.

CARDIAC EXAM: Reveals normal heart sounds with no murmurs. There is no peripheral edema or elevation of the JVP. No carotid bruits.

RESPIRATORY EXAM: Trachea is midline. Auscultation revealed a few bibasilar crackles posteriorly. No bronchial breathing, wheezing or pleural rubs.

ABDOMINAL EXAM: Soft and non-tender with no visceromegaly or masses.

CENTRAL NERVOUS SYSTEM: Intact.

SKIN EXAM: No rash.

PSYCHIATRIC EXAM: He is appropriate in time, space and person.

INVESTIGATIONS:

- Pulmonary function test completed 7/21/2019 shows borderline restriction, moderate small airways obstruction and reduced DLCO at 70% of predicted. I am a pulmonologist who is board-certified by the Royal College of Physicians and Surgeons of Canada as a specialist in Internal Medicine. I have reviewed the pulmonary function test performed for this patient. I hereby certify that this pulmonary function test was performed in material compliance with all ATS standards for quality on a machine that was in material compliance for ATS standards for technical quality and calibration.
- Chest x-ray, dated 2/28/2019, read 2/28/2019, by myself shows bilateral parenchymal changes diagnostic of pneumoconiosis.

IMPRESSION: Asbestos is an inorganic mineral that cannot be broken down or processed by the body like most organic living organisms. Asbestos is highly dangerous because at the microscopic level asbestos fibers are shaped like needles, because they are so small they are inhaled deeply into the lungs, more so in the lower regions, where the asbestos fibers irritate the tissues of the lungs. Every breath in and out causes the fibers to cause microscopic penetrating damage - and over the course of millions of breaths (over 10 to 30 years, latency period) this stabbing creates scarring / fibrosis throughout the lungs. There is no safe level of asbestos exposure.

In addition, bauxite contains silica, iron oxide, titanium oxide, alumina, and other constituents. These are all known toxic substances that cause lung injury.

Mr. Burt had an extensive industrial history of asbestos, bauxite, and alumina dust exposure during his work at the Alumina plant. Based on that exposure, his abnormal chest x-ray showing lung scarring/fibrosis, abnormal pulmonary function test showing decreased lung function and appropriate latency period, he has evidence of bilateral parenchymal fibrosis diagnostic of mixed dust pneumoconiosis to include asbestosis.

Due to these toxic dust exposures, he is at an increased risk of contracting future cancers (including mesothelioma, lung cancer, colon cancer, throat cancer). Further, due to the fibrotic scarring of his lungs he is at an increased risk of death and disability from pulmonary hypertension (where the damaged lungs forces the heart to compensate by working harder) which significantly increased the risk of heart attack, heart failure, pulmonary embolism and stroke. Further, Mr. Burt is more susceptible to death or serious injury from otherwise minor respiratory injuries such as the common cold, flu, COVID, or pneumonia, as his injured lungs can be more easily overwhelmed by fluid build-up from a respiratory infection. Low oxygen levels cause hypoxia as oxygen is not available in sufficient amounts at the tissue level to maintain adequate homeostasis, as oxygen is necessary to "feed" the body's cells, tissues, organs and the brain, resulting in cellular tissue death, organ failure and brain damage.

Sincerely yours,

Christopher L. John, M. D.
M.B.B.CH., M.R.C.P. (UK), F.R.C.P.C., F.C.C.P.

CLJ/kw

EXHIBIT 118

Rachael Jones - Burt Report, 2022-08-15,
21-CV-548_BURT_000278 –
21-CV-548_BURT_000288

Dust Exposures and Occupational Health Experience of Mr. Milton Burt

Rachael M. Jones, PhD, CIH

August 15, 2022

1 Scope

On April 21, 2020 I prepared a report, *Dust Exposures and Occupational Health Practices at the St. Croix Alumina Plant*, that 1) evaluated the occupational exposures of seven bellwether Plaintiffs and workers in general at the St. Croix Alumina Plant to bauxite, alumina, silica and other dusts, 2) opine as to whether the Plaintiffs were warned about the hazards these dusts, and 3) opine as to whether the Defendants took appropriate and reasonable actions to prevent occupational exposures of the Plaintiffs to dusts. I was deposed regarding this report on August 11, 2020.

I have been asked by Plaintiffs' attorneys to perform the same analysis for Mr. Milton Burt, who worked at the St. Croix Alumina Plant. To do so, I interviewed Mr. Burt on July 19, 2022 and reviewed Mr. Burt's earnings statement from the Social Security Administration. I received no other materials from Plaintiffs' attorneys specific to Mr. Burt. Since my August 11, 2020 deposition, I received three other documents from Plaintiffs' attorneys: 1) transcript of the deposition of Mr. Wilfred Luciana taken May 28, 1997, 2) transcript of the deposition of Mr. Andrew Bentley taken May 22, 1996, and 3) a copy of the 1993 Environmental Audit of VIALCO conducted by RMT, Inc (404 pages)

Based on my interview with Mr. Burt, I concluded that the opinions I articulated in my report of April 21, 2020 are relevant to his case. As a result, I incorporate my April 21, 2020 report herein, I restate the opinions from April 21, 2020 report, and provide additional content specific to Mr. Burt.

2 Qualifications

I am a Professor and Chair of the Department of Environmental Health Sciences in the Fielding School of Public Health at the University of California, Los Angeles. I am a Certified Industrial Hygienist. I received a Master of Public Health degree and a Doctor of Philosophy degree in Environmental Health Science, with a focus on industrial hygiene, from the University of California at Berkeley. I have published more than 80 articles in the peer-reviewed literature about topics related to industrial hygiene and exposure science. My research has been funded by the National Institute of Occupational Safety and Health, the Department of Labor (passed through Eastern Research Group), the Centers for Disease Control and Prevention, the Department of Defense, and other federal agencies. I am Chief Editor of the *Annals of Work Exposures and Health*, the journal of the British Occupational Hygiene Society published by Oxford University Press. I am a member of the American Conference of Governmental Industrial Hygienists (ACIGH) Threshold Limit Value (TLV®) Committee for Chemical Substances, which sets occupational exposure limits used globally. I am a member of the National Academies Standing Committee on Personal Protective Equipment for Workplace Safety and Health, which provides consultation to the National Institute for Occupational Safety and Health National Personal Protective Technology Laboratory.

3 Opinions

Based on my knowledge, education, and experience and the materials that I have reviewed, I have formed the following opinions, though I reserve the right to amend these opinions if other information becomes available:

1. *Mr. Burt was exposed to bauxite, alumina, silica and other dusts while working at the St. Croix Alumina Plant*.

   Existing information is inadequate to quantify Mr. Burt's exposures. The description of the intensity, frequency and duration of exposures provided by Mr. Burt is consistent with that of other Plaintiffs, and consistent with other documents I have reviewed: These materials clearly demonstrate that Mr. Burt breathed in bauxite, alumina, silica or other dusts on a routine, if not daily basis. Workers used terms like *clouds*, *snow*, *sandstorm,* and *tornado* to describe dust in the air at the Plant. Workers reported places in the Plant being so dusty they couldn't see. Workers, including Mr. Burt, tied rags around their noses and mouths to protect themselves from dust because dust masks were inadequate or unavailable. Workers, including Mr. Burt, were covered in dust at the end of the work shift.

   Personal exposure monitoring conducted at the Plant in 1976 (Table 3 of my prior report) and 1981, and by MSHA between 1998 and 2000 (Table 4 of my prior report) indicate that dusts, including silica-containing dusts, were present in the breathing zones of workers. The 1981 industrial hygiene survey of the Plant recommended implementation of a program involving periodic exposure sampling for air contaminants, and that necessary equipment be purchased (VIALCO-CMP 40081-40082), which affirms that Martin Marietta Alumina did not have an ongoing industrial hygiene program at the Plant at the time. I have not seen documents that indicate these recommendations were implemented.

   There were job tasks and conditions identified by Martin Marietta Alumina and VIALCO for which respiratory protection should have been worn (VIALCO-CMP 6746, 74370). Workers reported, however, that they were frequently exposed to dust, that dust exposures could be intense, and that they did not have respiratory protection (see Section 11 of my prior report). Some workers reported that they wore dust masks, but that these quickly became wet and unusable from sweat; some wore cloth on their face (see Section 11 of my prior report). Mr. Burt told me that he put cloth on his face because respirators were not available until the 1980s.

2. *Mr. Burt was not warned of the health hazards of their occupational exposures to bauxite, alumina, silica and other dust at the St. Croix Alumina Plant.*

   Mr. Burt told me that he was not told about the hazards of bauxite, alumina, silica, asbestos or other dusts at the facility. Similarly, none of the bellwether Plaintiffs in the Halliday and Charles series cases reported they were warned of the health hazards associated with breathing in bauxite, silica, alumina and other dusts, though there is a clear duty to warn from the MSHA Hazard Communication regulations (30 CFR 47.1), and individual and business ethics.

There were opportunities to warn Mr. Burt of the health hazards of dusts at the Plant, including through MSHA-required training for miners, new employee orientation and regularly scheduled safety meetings, but these were not taken. Mr. Burt told me that he attended safety meetings, but the topics were about handling tools, working on heights, proper clothing, and working around equipment; not about the impact of dust on health. Mr. Burt told me that he was not familiar with Material Safety Data Sheets – neither the term, nor with documents with information about the hazards of chemicals and dusts. Other workers that I interviewed reported that MSDSs and the hazards of dusts were not topics at safety meetings, and only two workers interviewed reported that they knew about MSDSs at the Plant (see Section 11 or my prior report). MSDSs, in general, existed at the Plant and could be accessed by workers when it was operated by VIALCO (VIALCO-CMP 6569, 6576), but I have not seen documents indicating MSDSs for bauxite or alumina were available. As of 1982, the Plant had not undertaken to prepare any MSDSs (LMC Halliday 6378-6379).

3. *Glencore, as supplier of bauxite to the St. Croix Alumina Plant, knew or should have known that bauxite, as used at the Plant, was unlikely to be reasonably safe for the Plaintiffs.*

   Glencore produced a Clarendon-branded MSDS for bauxite prepared in 1985 and 1989 that clearly states the silica is present in bauxite as quartz, that silica may cause fibrotic lung disease, and was classified as a Group 2A carcinogen by the International Agency for Research on Cancer (Glen Charles Group 199-200). This MSDS includes a number of misrepresentations that downplay the hazards of bauxite, including the basis of OSHA Permissible Exposure Limits and the statement from International Agency for Research.

   The hazards of exposures to dusts, including within the mining industry, have been accumulating since the early 1900s (Harrington and Davenport, 1935; Sayers, 1925; Perry, 1947). Further, the presence of silica in bauxite had been known since the late 1800s (Branner, 1897; McCalley, 1894; US Bureau of Mines, 1953), with exposures to silica in bauxite dust documented in alumina refineries at least as early as 1971 (Ramos et al., 1971).

   Glencore should have and could have known of the dusty conditions at the Plant. Glencore/Clarendon, obtained access to the Plant on January 25, 1989 to conduct various activities related to the purchase of the Plant and was aware of environmental permitting requirements at the Plant later that year (VIACLO-CMP 23168-23173, 79621-79625). Workers' descriptions of the Plant and other documents that I reviewed, indicate that dust was omnipresent in the Plant, and would have been readily apparent to anyone who visited the Plant. Concerns raised by Clarendon halted at planned addition and renovation to the bauxite storage building at the Plant intended, in part, for dust control (VIALCO-CMP 38508). Mr. Warren Pedersen, manager of the Plant, reported to Craig Davis, who worked for Glencore in Zug, Switzerland (Pedersen Dep., p. 19, 24-25).

   Glencore had extensive experience with bauxite mining and processing through its complex, global business interests in the aluminum industry. Through this experience Glencore should have known the hazards of bauxite dust exposures, and could have communicated this information to the owners, operators and workers at the Plant.

4. *Martin Marietta Aluminum Corp., Martin Marietta Alumina Corp. and Martin Marietta Corp. (Martin Marietta), as owners and operators of the St. Croix Alumina Plant, knew or should have known that bauxite, as used the Plant, was unlikely to be reasonably safe for the Plaintiffs.*

Descriptions of the St. Croix Alumina Plant reported by workers indicate that dust was omnipresent in the Plant, and readily apparent to anyone who visited the Plant. Workers used terms like *clouds*, *snow*, *sandstorm,* and *tornado* to describe dust in the air at the Plant. Workers reported places in the Plant being so dusty they couldn't see. Workers tied rags around their noses and mouths to protect themselves from dust because dust masks were inadequate or unavailable. Workers were covered in dust at the end of the work shift, and their skin was so dirty that their shower water ran red and they stained their bedsheets. These conditions are disgusting and appalling to humankind. Thus, Martin Marietta had reason to know that bauxite, as used at the Plant, was unlikely to be reasonably safe for the Plaintiffs.

The hazards of dust exposures, including within the mining industry, have been accumulating since the early 1900s (Harrington and Davenport, 1935; Sayers, 1925; Perry, 1947). Further, the presence of silica in bauxite had been known since the late 1800s (Branner, 1897; McCalley, 1894; US Bureau of Mines, 1953), with exposures to silica in bauxite dust documented in alumina refineries at least as early as 1971 (Ramos et al., 1971). Martin Marietta should have been aware of this general knowledge about the hazards of dust in bauxite refining.

Organizations within Martin Marietta documented exposures to dusts and silica exceeding the Threshold Limit Value® (LMC Halliday 5697-5706, 5684-5696), and expressed concern about pneumoconiosis at the Plant in 1976 (LMC Halliday 5677-5683). An industrial hygiene survey in 1981 did not document dust exposures above the Permissible Exposure Limit, but involved only four samples and recommended institution of periodic exposure assessment (VIALCO-CMP 40081-40082, 40085-40086); and I have not seen documents describing implementation of these recommendations. The *Dust Control Handbook* by employees of Martin Marietta (Mody and Jankene, 1988) stated that dust can cause health hazards, including pneumoconiosis, and dust sampling is a central part of the occupational health program in minerals processing operations. Further, this handbook describes some of these hazards, and identifies a three-step approach to control dust exposures in mineral processing operations (Mody and Jankene, 1988). These documents indicate that Martin Marietta was aware of hazardous exposures to dusts, including silica, at the Plant, and had the capability of assessing and controlling these exposures

5. *Glencore, as supplier of bauxite to the St. Croix Alumina plant, failed to exercise reasonable care to make the bauxite safe for use at the Plant.*

Glencore/Clarendon supplied Guyana or Trombetas bauxite to the Plant (Glen Charles Group 95-104). The bauxite from Guyana was reported as being dustier than other bauxites processed at the Plant, and was not contained by existing wet dust suppression methods (VIALCO-CMP 72456). In 1990, Guyana bauxite unloading was identified as one of the "most serious" dust problems at the Plant (VIALCO-CMP 74831-74833). Some efforts were made by VIALCO to test a dust suppressant (Nalco 9831 Bauxite Handling Aid) with shipments from the Aroamia Bauxite Company: The dust suppressant reduced dustiness at the dock hoppers, but not in the bauxite storage building at the Plan (VIALCO-CMP 72456, 77678, 77680, 77681, 77683, 77685). Ultimately, the use of the bauxite from Guyana at the Plant was reduced (VIALCO-CMP 50359). I have not seen documents describing the involvement of Glencore in activities to reduce the dustiness of bauxite used at the Plant.

6. *Glencore, as supplier of bauxite to the St. Croix Alumina Plant, had a duty to warn the Plaintiffs of the hazard of bauxite.*

   The duty to warn and communicate hazards arises from the MSHA Hazard Communication regulation, which requires suppliers of products to provide accurate and sufficient MSDS for all hazardous chemicals upon request (30 CFR 47.51; MSHA, 2002). The Clarendon-branded MSDS for bauxite that I reviewed (Glen Charles Group 199-200) included multiple inaccuracies that served to minimize the hazard posed by bauxite.

   Ethics also creates a duty of a supplier to warn of the hazards, particularly as it is common for employers to lack the expertise to recognize and comprehend hazard information provided by suppliers (Lowry and Lowry, 1987). The supplier has an ethical duty to provide assistance to the customer to understand the ramifications of the hazard information, so that the product is used in a reasonably safe way. Glencore is a sophisticated, vertically integrated company involved in mineral extraction and processing globally, among other activities; and through this experience Glencore has the expertise to communicate the hazard of bauxite to the Plaintiffs and the operators of the Plant.

7. *Martin Marietta, as owner and operator of the St. Croix Alumina Plant, had a duty to warn the Plaintiffs of the hazard of bauxite.*

   The duty to warn and communicate hazards arises from the MSHA Hazard Communication regulation, which requires suppliers of products to provide accurate MSDS for all hazardous chemicals upon request (30 CFR 47.51; MSHA, 2002), and employers to train employees in hazard communication and provide access to MSDSs (30 CFR 47.32). I have not seen any MSDSs for bauxite from Martin Marietta Alumina Corp. or Martin Marietta Alumina that were present in the Plant and available to the Plaintiffs. New employee training was being standardized at the Plant in 1974, and was planned to include some content about chemicals on the job and their hazards (LMC Halliday 5709). However, a legacy of training deficiency was identified by VIALCO. As described by Dr. Blank, "the Plant staff has many bad habits to overcome since people have work in the Plant since the 1960s, and need to be more environmentally aware" (VIACLO-CMP 79299).

   Ethics also creates a duty of a supplier to warn of the hazards of the products sold, particularly as it is common for employers to lack the expertise to recognize and comprehend hazard information provided by suppliers (Lowry and Lowry, 1987). The supplier has an ethical duty to provide assistance to the customer to understand the ramifications of the hazard information, so that the product is used in a reasonably safe way.

8. *Glencore and Martin Marietta, as suppliers as supplier of bauxite to the St. Croix Alumina Plant, failed to exercise reasonable care to inform the Plaintiffs of the hazards of bauxite.*

   I have not seen any documents that describe actions by Glencore or Martin Marietta to educate personnel on-site at the Plant about the hazards of bauxite, alumina, silica or other dusts, or to encourage implementation of control strategies to reduce or eliminate exposures to bauxite, alumina, silica or other dusts, though both of these organizations had the experience and access to do so.

   Glencore had access to the Plant beginning in January 1989 (VIACLO-CMP 23168-23173, 79621-79625), and the Plant manager, Mr. Pedersen, reported to a Glencore employee in Zug, Switzerland (Pedersen Dep., p. 19, 24-25). Through its other global operations and bauxite supply lines (Pedersen. Dep., p. 36-37, 39-40), Glencore had experience to recognize and communicate the hazards of bauxite to the Plaintiffs.

Martin Marietta was involved in the development of bauxite mining in the Boké region of Guinea, Africa (Swindell, 1969; Essack, 1970; VIALCO-CMP 30580-30581). As a result, they had the ability to communicate the hazards of bauxite to the Plant. Further, as owner of the Plant, they had the ability to be on-site to communicate the hazards of bauxite to Martin Marietta Alumina and the Plaintiffs. Martin Marietta was aware of the hazards of dusts, and of control strategies to reduce dust exposures at Plant: Martin Marietta had written a handbook on this topic, titled The *Dust Control Handbook*, on contract to the Bureau of mines (Mody and Jankene, 1988; Martin Marietta, 1987).

MSDSs are one way hazards are communicated to workers. Glencore has produced a Clarendon-branded 1989 MSDS for bauxite (Glen Charles Group 199-200), but this MSDS has a number of deficiencies. I have not seen any documents the describe the presence and availability of this or other MSDSs for bauxite at the Plant.

4 Mr. Burt's Experiences

4.1 Work History

Mr. Burt's employment history based on his Social Security Administration earnings statement is shown in Table 1. Mr. Burt had multiple employers for which he worked in the St. Croix Alumina Plant and in the St. Croix oil refinery. Prior to taking the position with Citra, Mr. Burt told me that he worked in construction in St. Kitts. Mr. Burt told me that he took the job at the alumina plant because he needed employment, and the job was available; he was 21 years old. Mr. Burt told me that he did not attend any technical or trade schools.

Table 1. Mr. Burt's employment history.

Year	Employer	Location of Work
1967-1970	Citra	St. Croix Alumina Plant
1970-1984	CA Lewisport LLC AKA Martin Marietta Aluminum Corp	
1985	Martin Marietta Aluminum Properties Inc.	
1988-1990	Camino Del Mar Inc.	
1990-1995	Virgin Islands Alumina Inc.	
1995-2001	St. Croix Alumina LLC	
2001-2002	Jacobs Industrial Maintenance	St. Croix Oil Refinery
2002-2005	JW Guitreau	
2005-2012	Hovensa LLC	

4.2 Work Activities and Experiences at the St. Croix Alumina Refinery

The information below was obtained from Mr. Burt during my interview with him on July 19, 2022.

- When Mr. Burt was employed by Citra, his job was to lubricate equipment. He mostly worked on the red side of the Plant, in all process units. As needed, typically on weekends, he worked on the white side of the Plant. Mr. Burt said the job involved checking the equipment to make sure it had sufficient oil, topping up the oil if needed, and changing the oil on a schedule.

- Around 1970, Mr. Burt began to do maintenance work, which involved repairing equipment and pipefitting. He mostly worked on the red side of the Plant, in all process units, but sometimes worked on the white side of the Plant.

- Mr. Burt said that in the early days, the Plant "wasn't too good" and that safety wasn't a priority. He said that workers had to provide whatever safety was necessary, such as putting a cloth over your nose or face, or in your ear because of the noise. He said the Plant was very dusty and "nasty".

- Mr. Burt said that dust came from piles of materials, was blown into the equipment, and that movement of equipment created dust. He said the dust was white and light brown. Mr. Burt repaired equipment that was next to operating equipment, exposing him to dust. Mr. Burt said bauxite was dropped from one conveyor to another when moving it between equipment, and this created dust. Mr. Burt did not work in the bauxite storage area, but depending on the wind, dust blew from that area.

- Mr. Burt shoveled bauxite, including when the equipment was covered with bauxite and he had to service the equipment. He said this occurred when he had to service the rollers.

- Mr. Burt said that he worked in hot mud and hot tunnels. He said he occasionally worked in the tunnel under the bauxite storage facility. Mr. Burt said worked in the tunnels under the tanks in the process units that were very congested and hot, and he had to walk in hot mud. He wore rubber boots when in the hot mud.

- Mr. Burt said that in the late 1980s the Plant got more serious about providing safety equipment, and he got respirators and dust masks from the warehouse. He said he sometimes wore a respirator, and described it as an "ordinary cloth" respirator (e.g., a white cup) and that sometimes it had 1 strap and other times it had 2 straps. Mr. Burt said he did not have a fit test for a respirator, nor did he have a health examination about his lungs or hearing.

- Mr. Burt said he often encountered insulation. He said that the insulation was white, and that some insulation was a pad in the shape of the pipe. He had to break open both types of insulation with a hammer, which generated a lot of dust. Mr. Burt said he had to remove insulation because it was too close to a flange that he had to access, or because he to access a pipe that needed repair. He had to remove whole sections of insulation around a pipe so that he could beat the pipe with a hammer to remove the scale that was blocking the pipe. Mr. Burt said that sometimes insulation would fall off the "settlers" and spread all over the place, and he would have to shovel the insulation up. He said the insulation had a "cotton" look with some shiny stuff in it. Mr. Burt did not repair insulation.

- Mr. Burt said that he wore coveralls, rubber boots, safety glasses, goggles and a hard at work, and sometimes wore a respirator.

- Mr. Burt said that the end of the day, his skin and clothing was dirty from working in dusty and muddy areas. Depending on the work task, he was dusty or muddy. Very often he was so dirty that he had to change his clothes before going home.

- Mr. Burt said that he was also exposed to lime (caustic), flour and starch. He said flour and starch were used in the settling process. Lime, flour and starch were stored in a covered shed, and the wind blew the material out the shed. Mr. Burt had to repair equipment that had flour and starch in it and on it.

- Mr. Burt said he had no idea that bauxite, alumina, other dusts and asbestos at the Plant might impact his health. He had no idea what asbestos looked like, and had no training about asbestos. He had no idea that insulation was dangerous, and he said he should have been educated more about the danger of insulation.

4.3 Work Activities at the St. Croix Oil Refinery

The information below was obtained from Mr. Burt during my interview with him on July 19, 2022.

- Mr. Burt worked as a compressor mechanic at the oil refinery, and he also did work on engines. Mr. Burt did the same work for all of his employers at this site.

- Mr. Burt said that his work at the refinery did not involve insulation, dust or welding.

5 Environmental Audit

The Environmental Audit of Virgin Island Alumina Corporation Facilities prepared by RMT in March 1993 addressed environmental management policies and procedures, environmental management systems, environmental management equipment and facilities, documentation and communication, and acts of others (SS081747). The report details a legacy of facilities and operational challenges that impact occupational health, some examples related to the emission of bauxite and alumina dusts include:

- “General observation of the generator area shows that it has to deal with problems from fugitive emissions generated on-site. The generator building floors and the generator covers themselves were covered with a fine powder. Operators indicate that this material comes from the dock loading of alumina and unloading of bauxite and also from the calcining area, which is adjacent. Presence of this material has resulted in increased maintenance frequency and equipment failure within the generator room. Despite this fact, during observation the doors were kept open to the outside area. Bauxite and alumina dust infiltrating into the building and blowing in through the open doors contaminate lubricants and electrical connectors.” (SC081782).

- “Concerning potential loses to the channel, comments made previously in discussing coal handling are even more applicable to the handling of bauxite. The amount of material lost to the dock is considerably greater than when coal is handled and the fines are very readily lost to the channel if some type of containment isn’t provided. Concerning the clam shell that is used to remove the bauxite from the hold, there is a clearly visible loss along the vertical sides where the clam shell comes together and some loss along the bottom of the clam shell through the overlapping plates. This loss is worst when handling Guiana bauxite, but also produces a visible emission when handling Trombedos bauxite." (SC081784)

- "During unloading, the permit calls for a spray system to be operated with water and wetting agents during the period when the bucket dumps. Spray heads are in place, but are not operating. The old nozzle system reportedly did not work effectively, and a repair program has been started. However, unloading continues without repairs being complete." (SS081785)

- "The first major transfer point for the conveyor system after the dock has no particulate control for the bauxite system except for a shroud over the transfer point and the building itself. However, the building, which could constitute a level of secondary containment, is ineffective as the doors are left open during operation. There is a significant accumulation of bauxite on the floors of the building, which apparently are not cleaned up until after the vessel leaves. There is also a point source discharge on the roof the building, which appears to be passive. There is a vertical belt extending below the containment structure that sheds considerable fugitives." (SS081785)

- At the bauxite storage shed, "[t]he spray nozzles associated with conveyor and drop system within the building were not operating during unloading operations. The vertical drop for placement within the building was coming from a height that produced considerable fugitives within the structure. Further, the ability of the building to serve as a fugitive control device was compromised by the way the flexible vertical strips were installed around the building." (SC081786)

- "In the mill system area, covers on the transfer point from the ball mills, where it appeared the caustic and bauxite were being fed together were left open. Fugitives were being emitted from the open covers. There was a considerable accumulation of fine powder around the covers on adjacent machinery and falling through the gratings beneath this transfer point. Covers were being left off of the transfer point because building in the shute occurs when the liquid hits the powder" (SS081787)

- "The alumina calcination area has two kilns and related facilities subject to specific permit conditions. An extensive loss of fines was observed at the rotary kilns associated with the system of multi-clones feeding the ESPs. Both the collection system to the control system and the collection of the material from the control systems produces wind-blow fugitives." (SS081789)

- "On the hot alumina side, a baghouse collection system is used. Collected material is discharged back to the conveyor system where it is moved with the alumina product to storage for shipment. The system is not working well. Collected alumina overflows the collecting shroud at the conveyor system and is lost the ground. It becomes airborne both from the ground and around the shroud. […] We found no documentation of upset conditions in the files." (SS081789)

- "To add to the material on the ground, frequent upsets from the kilns result in spillage. This material ends up on the ground along with collected material from the control systems that is not being adequately handled. These all contribute to fugitive losses. There is one belt from both kilns to the storage silos and capacity is not enough to keep

> up with the generation rate from the kilns. […] Present operating practices for handling this material produce fugitives. General area is cleaned up with a vacuum truck, but there is only one available and it is spread very thin as it operates in other parts of the facility" (SS081790)

6 Conclusions

The materials that I have reviewed have led me to conclude Mr. Burt was exposed to bauxite, silica, alumina and other dust, and was not warned of the hazards of bauxite dust, alumina dust or asbestos. The dusty conditions at the Plant, which were described by workers using the terms *clouds*, *snow*, *sandstorm,* and *tornado*, indicate that dust exposures could be intense and frequent at the Plant; and occurred for a long duration, representing ongoing failure to implement effective dust control strategies. Dusty conditions and failures or absence of control technologies were documented throughout the 1993 Environmental Audit by RMT, Inc. My specific opinions are presented in Section 3 of this report.

I reserve the right to amend or supplement my opinions if more information becomes available.

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Rachael M. Jones, PhD, CIH

7 References

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EXHIBIT 119

Glencore's Responses and Objections to Plaintiffs' Amended Third Set of Discovery, 05-26-2021

IN THE SUPERIOR COURT OF THE VIRGIN ISLANDS
DIVISION OF ST. CROIX

IN RE: BAUXITE CONTAINING SILICA HALLIDAY LITIGATION SERIES	**SX-15-CV-097** **COMPLEX CASE DESIGNATION** **JURY TRIAL DEMANDED**
IN RE: BAUXITE CONTAINING SILICA CHARLES LITIGATION SERIES	**SX-15-CV-098** **COMPLEX CASE DESIGNATION** **JURY TRIAL DEMANDED**

DEFENDANT GLENCORE LTD.'S RESPONSES AND OBJECTIONS TO PLAINTIFFS' AMENDED THIRD SET OF DISCOVERY

Pursuant to Rules 33, 34, and 36 of the Virgin Islands Rule of Civil Procedure, (the "Applicable Rules"), Glencore Ltd. ("Glencore,"), f/k/a Clarendon Ltd. ("Clarendon"), submits these responses and objections (the "Response") to Plaintiffs' Third Set of Discovery to defendant Glencore Ltd., dated April 21, 2021 (the "Requests") in the above-captioned actions (the "Actions").

GENERAL OBJECTIONS

The following general responses and objections (the "General Objections") are incorporated into each of Glencore's responses and objections to the Requests as if set forth fully therein. These General Objections shall be deemed continuous throughout the Response, and apply to the specific responses and objections to each Request identified, even if such objections are not specifically referenced therein. The fact that an objection is not listed herein does not constitute a waiver of that objection or otherwise preclude Glencore from raising that objection at a later time.

1. Glencore objects to the Requests to the extent that they seek to impose discovery obligations that differ from or exceed the discovery obligations imposed by the Applicable Rules or by court order.

2. Glencore objects to each of the Requests to the extent that they call for documents or information that is public, already in plaintiffs' possession, or otherwise obtainable from other sources that are more convenient, less burdensome, and/or less expensive.

3. Glencore objects to each Request to the extent that it uses the terms "any and all" or "any" or "all" as overly broad, unduly burdensome, unduly expensive, oppressive, immaterial, irrelevant, ambiguous, unclear, confusing, duplicative, and/or not reasonably calculated to lead to the discovery of admissible evidence.

4. Glencore objects to the Requests as unduly burdensome. To comply with these Requests, counsel for Glencore would have to search for a third time through more than 100 boxes of hard copy documents, many of which date as far back as the 1980s, and which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging requests set forth in Plaintiffs' First and Second Sets of Discovery Requests (the "2019 Requests"), counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included their current Requests in their 2019 Requests, Glencore could have looked for responsive documents and information in parallel with efforts already underway. These newest Requests therefore seek to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to

conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019.

5. Glencore has a document retention policy of seven years. Since the inception of these cases in 2011, Glencore has had a litigation hold in place for relevant documents. However, prior to 2011, documents were routinely deleted pursuant to the retention policy. As a result, documents from the Relevant Time Period 1989-1995 are largely unavailable.

6. The Requests call for information and documents that are not relevant to any party's claim or defense, and to the extent possibly relevant at all, are not proportional to the needs of the case, considering the importance of the issues at stake in the action, the amount in controversy, the parties' relative access to relevant information, the parties' resources, the importance of the discovery in resolving the issues, and whether the burden or expense of the proposed discovery outweighs its likely benefit.

7. Glencore objects to the Requests insofar as they call for information protected by the attorney-client or other privilege, or which is otherwise immune or protected from disclosure. Glencore also objects to Plaintiffs' Requests insofar as they call for information prepared in anticipation of litigation and/or trial preparation materials. Glencore also objects to Plaintiffs' Requests insofar as they call for information reflecting attorneys' work product, including, without limitation, any information reflecting the mental impressions, conclusions, opinions, and/or legal theories of any attorneys for Glencore or their consultants. Glencore will not produce documents or information that is privileged or otherwise objectionable or immune from disclosure.

8. In addition, Glencore objects to any Request that is overly broad, unduly burdensome, vague and/or ambiguous.

9. Glencore objects to the Requests to the extent they seek documents or information from outside of the time period relevant to these proceedings as regards Glencore—specifically, 1989 through 1995 (the "Relevant Time Period").

10. Glencore objects to the Requests to the extent that they improperly assume the existence of incorrect facts or the occurrence of events that did not take place. By responding to Plaintiffs' Requests, Glencore does not acknowledge or concede the truth or accuracy of any characterization, allegation or statement made in such Requests, and Glencore objects generally to such characterizations, allegations or statements.

11. By objecting to any Request, Glencore is not conceding that responsive information or documents exist in its possession, custody, or control, or indeed exist at all.

12. Glencore reserves the right at any time to revise, correct, amend clarify, or supplement any response set forth below.

REQUESTS FOR ADMISSION

RFA 1. Admit that the document attached hereto as Exhibit A, entitled "St. Croix Alumina Refinery Report to Clarendon Ltd.", is the "due diligence report" referenced in the supplemental response to Plaintiffs' Interrogatory No. 10 which Glencore, Ltd. served on April 26, 2020.

> **Response:** In addition to the General Objections set forth above, Glencore objects to RFA No. 1 on the ground that it calls for information that is not relevant to any party's claim or defense. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Exhibit A is the due diligence report referenced in the supplemental Reponses. Glencore does not know whether Exhibit A encompasses the entirety of the due diligence report.

RFA 2. Admit that the document attached hereto as Exhibit B, entitled "Environmental Site Assessment; Martin Marietta Alumina Facility, St. Croix, U.S. Virgin Islands", is not the "due diligence report" referred to in the supplemental response to Plaintiffs' Interrogatory No. 10 which Glencore, Ltd. served on April 26, 2020.

Response: In addition to the General Objections set forth above, Glencore objects to RFA No. 2 on the ground that it calls for information that is not relevant to any party's claim or defense. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Admitted.

RFA 3. Admit that, from its inception in 1989 to 1995, Virgin Islands Aluminum Corporation ("VIALCO") was a wholly owned subsidiary of VIALCO Holdings, Ltd. ("VIALCO Holdings").

Response: In addition to the General Objections set forth above, Glencore objects to RFA No. 3 on the grounds that it calls for information that is not relevant to any party's claim or defense. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Admitted.

RFA 4. Admit that, from 1989 to 1995, VIALCO Holdings was a wholly owned subsidiary of Clarendon Holdings, Ltd. ("Clarendon Holdings").

Response: In addition to the General Objections set forth above, Glencore objects to RFA No. 4 on the grounds that it calls for information that is not relevant to any party's claim or defense. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Admitted.

RFA 5. Admit that, between 1989 through 1995, Clarendon, Ltd./Glencore, Ltd. owned one hundred percent of Clarendon Holdings.

Response: In addition to the General Objections set forth above, Glencore objects to RFA No. 5 on the grounds that it calls for information that is not relevant to any party's claim or defense. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Admitted.

RFA 6. Admit that Willy Strothotte was the president of VIALCO in 1989.

Response: Glencore admits that at certain times, Mr. Strothotte was president of VIALCO but, despite reasonable inquiry, does not know specifically when, although the production reflects he was president in 1990. *See* VIALCO-CMP_0039305.

RFA 7. Admit that Willy Strothotte was the president of VIALCO in 1990.

Response: Admitted.

RFA 8. Admit that Willy Strothotte was the president of VIALCO in 1991.

Response: Glencore admits that at certain times, Mr. Strothotte was president of VIALCO but, despite reasonable inquiry, does not know specifically when, although the production reflects he was president in 1990. *See* VIALCO-CMP_0039305.

RFA 9. Admit that Willy Strothotte was the president of VIALCO in 1992.

Response: Glencore admits that at certain times, Mr. Strothotte was president of VIALCO but, despite reasonable inquiry, does not know specifically when, although the production reflects he was president in 1990. *See* VIALCO-CMP_0039305.

RFA 10. Admit that Willy Strothotte was the president of VIALCO in 1993.

Response: Glencore admits that at certain times, Mr. Strothotte was president of VIALCO but, despite reasonable inquiry, does not know specifically when, although the production reflects he was president in 1990. *See* VIALCO-CMP_0039305.

RFA 11. Admit that Willy Strothotte was the president of VIALCO in 1994.

Response: Glencore admits that at certain times, Mr. Strothotte was president of VIALCO but, despite reasonable inquiry, does not know specifically when, although the production reflects he was president in 1990. *See* VIALCO-CMP_0039305.

RFA 12. Admit that Willy Strothotte was the president of VIALCO in 1995.

Response: Glencore admits that at certain times, Mr. Strothotte was president of VIALCO but, despite reasonable inquiry, does not know specifically when, although the production reflects he was president in 1990. *See* VIALCO-CMP_0039305.

RFA 13. Admit that Willy Strothotte was the president of VIALCO Holdings in 1989.

Response: In addition to the General Objections set forth above, Glencore objects to RFA No. 13 on the ground that it calls for information that is not relevant to any party's claim or defense. The identity of the officers of VIALCO Holdings, which is not a defendant to this action, has no bearing on any party's claim or defense. Plaintiffs have amended their complaints four times, and in none of those complaints did they allege any factual allegations to which this information is relevant. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Glencore, despite reasonable inquiry, does not know if Mr. Strothotte was president of VIALCO Holdings at any time during the Relevant Time Period.

RFA 14. Admit that Willy Strothotte was the president of VIALCO Holdings in 1990.

Response: The Response to RFA 13 is incorporated by reference, as if fully set out here.

RFA 15. Admit that Willy Strothotte was the president of VIALCO Holdings in 1991.

Response: The Response to RFA 13 is incorporated by reference, as if fully set out here.

RFA 16. Admit that Willy Strothotte was the president of VIALCO Holdings in 1992.

Response: The Response to RFA 13 is incorporated by reference, as if fully set out here.

RFA 17. Admit that Willy Strothotte was the president of VIALCO Holdings in 1993.

Response: The Response to RFA 13 is incorporated by reference, as if fully set out here.

RFA 18. Admit that Willy Strothotte was the president of VIALCO Holdings in 1994.

Response: The Response to RFA 13 is incorporated by reference, as if fully set out here.

RFA 19. Admit that Willy Strothotte was the president of VIALCO Holdings in 1995.

Response: The Response to RFA 13 is incorporated by reference, as if fully set out here.

RFA 20. Admit that Willy Strothotte was the president of Clarendon, Ltd. in 1989.

Response: Glencore admits that at certain times, Mr. Strothotte was president of Clarendon, Ltd., but, despite reasonable inquiry, does not know the specific time period, although Glencore admits he was president during 1990-1993. As previously stated to Plaintiffs, Glencore Ltd. has a seven-year retention policy, and the information Plaintiffs seek concern records from more than 25 years ago.

RFA 21. Admit that Willy Strothotte was the president of Clarendon, Ltd. in 1990.

Response: Admitted.

RFA 22. Admit that Willy Strothotte was the president of Clarendon, Ltd. in 1991.

Response: Admitted.

RFA 23. Admit that Willy Strothotte was the president of Clarendon, Ltd. in 1992.

Response: Admitted.

RFA 24. Admit that Willy Strothotte was the president of Clarendon, Ltd. in 1993.

Response: Admitted.

RFA 25. Admit that Willy Strothotte was the president of Clarendon, Ltd. in 1994 until the name of the entity changed.

__Response__: The Response to RFA 20 is incorporated by reference, as if fully set out here.

RFA 26. Admit that Willy Strothotte was the president of Glencore, Ltd. from the time when the entity became named Glencore, Ltd. until the end of 1994.

__Response__: The Response to RFA 20 is incorporated by reference, as if fully set out here.

RFA 27. Admit that Willy Strothotte was the president of Glencore, Ltd. in 1995.

__Response__: The Response to RFA 20 is incorporated by reference, as if fully set out here.

RFA 28. Admit that Craig Davis was employed by Clarendon, Ltd. in 1989.

__Response__: Denied.

RFA 29. Admit that Craig Davis was employed by Clarendon, Ltd. in 1990.

__Response__: Denied.

RFA 30. Admit that Craig Davis was employed by Clarendon, Ltd. in 1991.

__Response__: Denied.

RFA 31. Admit that Craig Davis was employed by Clarendon, Ltd. in 1992.

__Response__: Denied.

RFA 32. Admit that Craig Davis was employed by Clarendon, Ltd. in 1993.

__Response__: Denied.

RFA 33. Admit that Craig Davis was employed Clarendon, Ltd. in 1994 until the name of the entity changed.

__Response__: Denied.

RFA 34. Admit that Craig Davis was employed by Glencore, Ltd. from the time when the entity became named Glencore, Ltd. until the end of 1994.

Response: Denied.

RFA 35. Admit that Craig Davis was employed by Glencore, Ltd. in 1995.

Response: Denied.

RFA 36. Admit that Craig Davis was employed by Marc Rich & Co. in 1989.

Response: In addition to the General Objections set forth above, Glencore objects to RFA No. 36 on the ground that it calls for information that is not relevant to any party's claim or defense. Glencore is not aware of any entity named "Marc Rich & Co." Regardless, whether or not Mr. Davis was employed at any time by an entity with a similar sounding name has no bearing on any party's claim or defense. Plaintiffs have amended their complaints four times, and in none of those complaints did they allege any factual allegations to which this information is relevant. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Glencore, despite reasonable inquiry, lacks knowledge sufficient to admit or deny.

RFA 37. Admit that Craig Davis was employed by Marc Rich & Co. in 1990.

Response: The Response to RFA 36 is incorporated by reference, as if fully set out here.

RFA 38. Admit that Craig Davis was employed by Marc Rich & Co. in 1991.

Response: The Response to RFA 36 is incorporated by reference, as if fully set out here.

RFA 39. Admit that Craig Davis was employed by Marc Rich & Co. in 1992.

Response: The Response to RFA 36 is incorporated by reference, as if fully set out here.

RFA 40. Admit that Craig Davis was employed by Marc Rich & Co. in 1993.

Response: The Response to RFA 36 is incorporated by reference, as if fully set out here.

RFA 41. Admit that Craig Davis was employed by Marc Rich & Co. in 1994.

Response: The Response to RFA 36 is incorporated by reference, as if fully set out here.

RFA 42. Admit that Craig Davis was employed by Marc Rich & Co. in 1995

Response: The Response to RFA 36 is incorporated by reference, as if fully set out here.

RFA 43. Admit that Craig Davis was employed by Glencore International AG in 1989.

Response: In addition to the General Objections set forth above, Glencore objects to RFA No. 43 on the ground that it calls for information that is not relevant to any party's claim or defense. Whether or not Mr. Davis was employed at any time by Glencore International AG has no bearing on any party's claim or defense. Plaintiffs have amended their complaints four times, and in none of those complaints did they allege any factual allegations to which this information is relevant. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Glencore, despite reasonable inquiry, lacks knowledge sufficient to admit or deny.

RFA 44. Admit that Craig Davis was employed by Glencore International AG in 1990.

Response: The Response to RFA 43 is incorporated by reference, as if fully set out here.

RFA 45. Admit that Craig Davis was employed by Glencore International AG in 1991.

Response: The Response to RFA 43 is incorporated by reference, as if fully set out here.

RFA 46. Admit that Craig Davis was employed by Glencore International AG in 1992.

Response: The Response to RFA 43 is incorporated by reference, as if fully set out here.

RFA 47. Admit that Craig Davis was employed by Glencore International AG in 1993.

Response: The Response to RFA 43 is incorporated by reference, as if fully set out here.

RFA 48. Admit that Craig Davis was employed by Glencore International AG in 1994.

Response: The Response to RFA 43 is incorporated by reference, as if fully set out here.

RFA 49. Admit that Craig Davis was employed by Glencore International AG in 1995.

Response: The Response to RFA 43 is incorporated by reference, as if fully set out here.

RFA 50. Admit that Glencore Ltd., Glencore AG, and Glencore SA are all names for the same corporate entity, which maintains its registered office in Baar, Switzerland.

Response: Denied as stated, but admitted in part. Glencore admits these are names of the same corporate entity. Although the entity presently maintains its registered office in Baar, Switzerland, during the Relevant Time Period, it maintained its registered office in Zug, Switzerland.

RFA 51. Admit that Clarendon, Ltd./Glencore Ltd. and Glencore AG were names for the same corporate entity during the following years: 1989-1995.

Response: Denied as stated, but admitted in part. Glencore admits that during the years 1989-1995, Clarendon Ltd., later known as Glencore Ltd., was the same corporate entity as Glencore AG.

RFA 52. Admit that Clarendon, Ltd. had an ownership interest in Ormet Corp. prior to 1992.

Response: Denied.

RFA 53. Admit that Clarendon, Ltd. had an ownership interest in Oralco Management Services, Inc. prior to 1992.

Response: Denied.

RFA 54. Admit that Clarendon, Ltd. had an ownership interest in Ohio River Associates, Inc. prior to 1992.

Response: Denied.

Interrogatories

Interrogatory 16. Describe the relationship between Clarendon, Ltd./Glencore, Ltd. and all other Glencore-affiliated entities, including Marc Rich & Co., Marc Rich & Co. AG, Glencore

AG, Glencore plc, Glencore International, Glencore SA, Glencore International AG, Glencore Canada, Inc., Glencore Minera AG, Glencore Gastroservice AG, Glencore Xstrata plc, and Xstrata. As part of Your response, please identify if and when Glencore Ltd., Glencore AG, and Glencore SA became names for the same corporate entity and whether Clarendon, Ltd./Glencore Ltd. and Glencore AG were the names for the same corporate entity during the following years: 1989-1995. As part of the response, please identify which Glencore-affiliated entities are parent companies and which are subsidiaries.

> **Response:** In addition to the General Objections set forth above, Glencore objects to Interrogatory No. 16 on the grounds that it is overbroad and calls for information that is not relevant to any party's claim or defense. The corporate relationship between Glencore "and all other Glencore-affiliated entities" has no bearing on any party's claim or defense. Plaintiffs have amended their complaints four times, and in none of those complaints did they allege any factual allegations to which this information is relevant. Glencore further objects to this Request as unduly burdensome. Plaintiffs can obtain this information from other sources that are more convenient, less burdensome, and/or less expensive. Glencore is a subsidiary of Glencore plc, a publicly traded company on the London Stock Exchange and the Johannesburg Stock Exchange. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Plaintiffs are referred to the Annual Report 2020 of Glencore plc, https://www.glencore.com/investors/reports-results/2020-annual-report, specifically pages 215-217.

Interrogatory 17. Identify the name of the Glencore-affiliated entity or entities that employed Craig Davis from 1989 to 1995. To the extent relevant, please include employment by Clarendon, Ltd., Glencore, Ltd., Marc Rich & Co., Marc Rich & Co. AG, Glencore AG, Glencore plc, Glencore International, Glencore International AG, Glencore Canada, Inc., Glencore Minera AG, Glencore Gastroservice AG, Glencore Xstrata plc, or Xstrata, and any other Glencore-affiliated entity that employed Mr. Davis. If Mr. Davis was employed by more than one Glencore-affiliated entity, please identify all of his Glencore-affiliated employers and the years of such employment. As part of Your response, please identify all job titles Craig Davis had in connection with his employment by any Glencore-affiliated employer and identify the time periods during which he held those positions.

> **Response:** In addition to the General Objections set forth above, Glencore objects to Interrogatory No. 17 on the ground that it calls for information that is not relevant to any party's claim or defense to the extent it seeks employment information as to Mr. Davis with respect to entities other than Glencore Ltd. and VIALCO. Mr. Davis's employment by any other Glencore-affiliated entities, if any, is not relevant to any party's claim or defense. Plaintiffs have amended their complaints four times, and in none of those complaints did they allege any factual allegations to which this information is relevant. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Mr. Davis was not employed by Clarendon Ltd. or Glencore Ltd. from 1989 to 1995. As to the other Glencore-affiliated entities, Glencore lacks knowledge sufficient to respond. Glencore lacks access to documents sufficient to identify the employment history of Mr. Davis with other Glencore-affiliated entities during the Relevant Time Period.

Interrogatory 18. Describe the nature and extent of the relationship between You and Ormet Corp. ("Ormet"), Oralco, Inc. ("Oralco"), Oralco Management Services, Inc. ("OMS"), Ohio

River Associates, Inc. ("ORA"), and Ormet Primary Aluminum Corporation (collectively, the "Ormet Entities") related to the reopening of the Alumina Refinery. As part of this response, please identify who from Clarendon, Ltd./Glencore, Ltd. communicated with the Ormet Entities regarding (a) the document the entitled "St. Croix Alumina Refinery Report to Clarendon Ltd." (Exhibit A), and (b) the management of the Alumina Refinery upon its reopening in 1989/1990.

Response: In addition to the General Objections set forth above, Glencore objects to Interrogatory No. 18 on the ground that it is unduly burdensome. To respond to this Interrogatory, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included this Interrogatory in their 2019 Requests, Glencore could have looked for responsive information in parallel with efforts already underway. This Interrogatory therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Ormet was retained as an interim management company to run day-to-day operations. *See* Glencore's Supp. Resps. & Objs. to Pls.' Second Set of Interrogs., dated April 26, 2020, at No. 10; Dep. of Warren Pedersen Day 1, dated February 17, 2021, at 45:10-13; 147:10-148:25. It was retained specifically to restart the plant after it was acquired from Martin Marietta Alumina Corp. *See* Dep. of Craig Davis, dated April 14, 2021, at 105:14-19; 113:15-17.

Interrogatory 19. Identify the prior depositions of VIALCO and the Ormet Entities of which You are aware, including the depositions of any of the entities' respective employees or agents, and note whether You have the transcripts of any such depositions, and if so which one(s).

Response: In addition to the General Objections set forth above, Glencore objects to Interrogatory No. 19 on the ground that it is unduly burdensome. To respond to this Interrogatory, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included this Interrogatory in their 2019 Requests, Glencore could have looked for responsive information in parallel with efforts already underway. This Interrogatory therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Glencore is aware that VIALCO produced transcripts of depositions responsive to this Interrogatory. *See, e.g.*, Eric Black, VIALCO-CMP_0076309; Paul

Bledsoe, VIALCO-CMP_0075869; Jimmy D. Moore, VIALCO-CMP_0075959; Paul Arnold, VIALCO-CMP_0076014; Warren Pedersen, VIALCO-CMP_0076041; Celistino Helder, VIALCO-CMP_0076120; George St. Rose, VIALCO-CMP_0076239; Dudley Fearon, VIALCO-CMP_0076282; Wilfred Luciana, VIALCO-CMP_0075802.

Interrogatory 20. Have You or any of Your employees, officers, agents, or directors been deposed in any legal action arising out of events related to the Alumina Refinery? If so, identify the witness, whether the witness was a Rule 30(b)(6) designee, the date of the deposition, the case caption, the name of the court reporter, and the subject matter of the legal action.

Response: In addition to the General Objections set forth above, Glencore objects to Interrogatory No. 20 on the ground that it is unduly burdensome. To respond to this Interrogatory, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included this Interrogatory in their 2019 Requests, Glencore could have looked for responsive information in parallel with efforts already underway. This Interrogatory therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Glencore is aware that VIALCO produced transcripts of depositions responsive to this Interrogatory. *See, e.g.*, Eric Black, VIALCO-CMP_0076309; Paul Bledsoe, VIALCO-CMP_0075869; Jimmy D. Moore, VIALCO-CMP_0075959; Paul Arnold, VIALCO-CMP_0076014; Warren Pedersen, VIALCO-CMP_0076041; Celistino Helder, VIALCO-CMP_0076120; George St. Rose, VIALCO-CMP_0076239; Dudley Fearon, VIALCO-CMP_0076282; Wilfred Luciana, VIALCO-CMP_0075802. Andrew Bentley was deposed as a 30(b)(6) witness on May 22, 1996, in the matter captioned *Paul v. Glencore Ltd. et al.*, Civil No. 1994/0003 (D.V.I.). Robert Prusak was deposed as a 30(b)(6) witness on February 22, 2002, in the matter captioned *Henry et al. v. St. Croix Alumina, LLC, et al.*, Civil No. 0036/99 (D.V.I.).

Interrogatory 21. Identify by name, address, and contact information all Clarendon, Ltd./Glencore, Ltd. employees, officers, directors, agents, and representatives who participated in the decision to retain any of the Ormet Entities for services provided at or for the Alumina Refinery, including services related to the "St. Croix Alumina Refinery Report to Clarendon Ltd." (Exhibit A) and management of the Alumina Refinery.

Response: In addition to the General Objections set forth above, Glencore objects to Interrogatory No. 21 on the ground that it is unduly burdensome. To respond to this Interrogatory, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly.

Had Plaintiffs included this Interrogatory in their 2019 Requests, Glencore could have looked for responsive information in parallel with efforts already underway. This Interrogatory therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: No one currently employed by Glencore has responsive information. As previously stated to Plaintiffs, Glencore Ltd. has a seven-year retention policy, and the information Plaintiffs seek concern events and records from more than 25 years ago.

Interrogatory 22. Identify by name, address, and contact information all Clarendon, Ltd./Glencore, Ltd. employees, officers, directors, agents, and representatives who received a copy of the "St. Croix Alumina Refinery Report to Clarendon Ltd." (Exhibit A).

Response: In addition to the General Objections set forth above, Glencore objects to Interrogatory No. 22 on the ground that it calls for information that is not relevant to any party's claim or defense. Which person at Glencore received the referenced report is of no relevance to any party's claim or defense. Glencore further objects on the ground that it is unduly burdensome. To respond to this Interrogatory, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included this Interrogatory in their 2019 Requests, Glencore could have looked for responsive information in parallel with efforts already underway. This Interrogatory therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: No one currently employed by Glencore has responsive information. Also, as previously stated to Plaintiffs, Glencore Ltd. has a seven-year retention policy, and the information Plaintiffs seek concern events and records from more than 25 years ago.

Interrogatory 23. Identify by name, address, and contact information all Clarendon, Ltd./Glencore, Ltd. employees, officers, directors, agents, and representatives who participated in the decision to assign Craig Davis responsibilities related to the Alumina Refinery.

Response: In addition to the General Objections set forth above, Glencore objects to Interrogatory No. 23 on the ground it is unduly burdensome. To respond to this Interrogatory, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly.

Had Plaintiffs included this Interrogatory in their 2019 Requests, Glencore could have looked for responsive information in parallel with efforts already underway. This Interrogatory therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: No one currently employed by Glencore has responsive information. Also, as previously stated to Plaintiffs, Glencore Ltd. has a seven-year retention policy, and the information Plaintiffs seek concern events and records from more than 25 years ago.

Interrogatory 24. Identify when Craig Davis first became involved with the operations of the Alumina Refinery and describe his role and responsibilities with respect to the Alumina Refinery.

Response: In addition to the General Objections set forth above, Glencore objects to Interrogatory No. 24 on the ground that it presupposes that Craig Davis became involved with the operations. As Mr. Davis testified during his deposition, he never became involved in the operations of the Alumina Refinery. He was the president of VIALCO beginning in 1992. He was involved in the financial aspects of the company, not the operations. *See* Dep. of Craig Davis, dated April 14, 2021, at 87:8–14. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Craig Davis became president of VIALCO in 1992, and, as he testified at his deposition, he was involved in the "broad financial situation . . . to try to determine and ensure that VIALCO was a viable economic plant." *Id.*

Interrogatory 25. Identify the Glencore-affiliated entity or entities that employed the following individuals from 1988 to 1995: Willy Strothotte, Simon Trinca, Andrew Bentley, Ian Perkins, and Ed Preswick. As part of Your response, please identify the official job title held by each individual and the time period that each individual held the job title. As part of Your response, please provide the contact information for all five individuals.

Response: In addition to the General Objections set forth above, Glencore objects to Interrogatory No. 25 on the ground that it calls for information that is not relevant to any party's claim or defense. The identity of the employer of individuals not employed by Glencore has no bearing on any party's claim or defense. Plaintiffs have amended their complaints four times, and in none of those complaints did they allege any factual allegations to which this information is relevant. Glencore also objects to Interrogatory No. 25 on the ground that it is unduly burdensome. To respond to this Interrogatory, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included this Interrogatory in their 2019 Requests, Glencore could have looked for responsive information in parallel with efforts already underway. This Interrogatory therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Willy Strothotte was president of Clarendon Ltd. at least during 1990-1993. Simon Trinca was employed by Clarendon Ltd. from 1988 to September 1, 1994, and by Glencore Ltd. from September 1, 1994 through 1995. Andrew Bentley was employed by Clarendon Ltd. from 1988 to September 1, 1994, and by Glencore Ltd. from September 1, 1994 through 1995. Glencore is presuming that "Ed Preswick" refers to "Ed Creswick. Based on this presumption, no one currently employed by Glencore has responsive information regarding Ed Creswick. Glencore did not generally give "titles" to employees. As to the remaining information sought by the Interrogatory, no one currently employed by Glencore has responsive information. As previously stated to Plaintiffs, Glencore Ltd. has a seven-year retention policy, and the information Plaintiffs seek concern events and records from more than 25 years ago.

Interrogatory 26. Explain the reason that the material safety data sheet ("MSDS"), attached hereto as Exhibit C, contains the word "ALCOA." As part of Your response, please: a) state whether You spoke with anyone from Alcoa or any Alcoa-affiliated entity about a MSDS sheet for bauxite; b) state whether a representative, employee, or agent of Alcoa or any Alcoa-affiliated entity provided You with a MSDS form for bauxite; c) identify by name, address, and contact information all Clarendon, Ltd./Glencore, Ltd. employees, officers, directors, agents, and representatives who communicated with Alcoa or any Alcoa-affiliated entity about a MSDS for bauxite; and d) identify by name, address, and contact information all employees, officers, directors, agents, and representatives of any Alcoa-affiliated entity with whom You spoke regarding a MSDS for bauxite.

Response: In addition to the General Objections set forth above, Glencore objects to Interrogatory No. 26 on the ground that it is unduly burdensome. To respond to this Interrogatory, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included this Interrogatory in their 2019 Requests, Glencore could have looked for responsive information in parallel with efforts already underway. This Interrogatory therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: No one currently employed by Glencore has responsive information. Also, as previously stated to Plaintiffs, Glencore Ltd. has a seven-year retention policy, and the information Plaintiffs seek concern events and records from more than 25 years ago.

Interrogatory 27. Identify by name, address, and contact information all Clarendon, Ltd./Glencore, Ltd. employees, officers, directors, agents, and representatives who a) participated in the drafting of the MSDS attached hereto as Exhibit C, and b) participated in the decision to send the MSDS attached hereto as Exhibit C to VIALCO.

Response: In addition to the General Objections set forth above, Glencore objects to Interrogatory No. 27 on the ground that it is unduly burdensome. To respond to this Interrogatory, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included this Interrogatory in their 2019 Requests, Glencore could have looked for responsive information in parallel with efforts already underway. This Interrogatory therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: No one currently employed by Glencore has responsive information. Also, as previously stated to Plaintiffs, Glencore Ltd. has a seven-year retention policy, and the information Plaintiffs seek concern events and records from more than 25 years ago.

Interrogatory 28. Please state whether Willy Strothotte is currently employed by, receives residual income from, or is on the board of directors (or equivalent) of any Glencore-affiliated entities, including Clarendon, Ltd., Glencore, Ltd., Marc Rich & Co., Marc Rich & Co. AG, Glencore AG, Glencore plc, Glencore International, Glencore International AG, Glencore Canada, Inc., Glencore Minera AG, Glencore Gastroservice AG, Glencore Xstrata plc, or Xstrata.

Response: In addition to the General Objections set forth above, Glencore objects to Interrogatory No. 28 on the ground that it calls for information that is not relevant to any party's claim or defense. Plaintiffs have amended their complaints four times, and in none of those complaints did they allege any factual allegations to which this information is relevant. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Willy Strothotte is not currently employed by, does not receive residual income from, and is not on the board of directors (or equivalent) of Glencore Ltd. or VIALCO. As to any other Glencore-affiliated entities, Glencore lacks knowledge sufficient to respond.

Interrogatory 29. Please provide the last known contact information You have for Willy Strothotte, including his physical address, email address, and phone number. In the event that Willy Strothotte has multiple homes, please include in Your response the addresses for all the homes.

Response: In addition to the General Objections set forth above, Glencore objects to Interrogatory No. 29 on the ground that it calls for information that is not relevant to any party's claim or defense Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Counsel has previously provided one physical address and the email address of Mr. Strothotte. Glencore lacks knowledge as to the phone number for Mr. Strothotte. Neither Glencore nor its counsel has knowledge of the physical address of any other homes.

Requests for Production

Produce for inspection and copying any and all Documents regarding the following:

RFP 42. Any of the Ormet Entities, including: (a) the agreement(s) under which any of the Ormet Entities performed any services at or for the Alumina Refinery; (b) the scope of any such services; (c) any due diligence conducted by You in selecting any of the Ormet Entities to provide services at the Alumina Refinery; (d) correspondences between the Ormet Entities and You or VIALCO regarding the Ormet Entities' services; (e) documents reflecting Your ownership interest in any of the Ormet Entities; (f) correspondences between You and any of the Ormet Entities regarding the Ormet Entities' business in locations other than the Alumina Refinery; and (g) correspondences between Willy Strothotte and R. Emmett Boyle related to any of the Ormet Entities. The time period for this request is 1985 through 1995.

Response: In addition to the General Objections set forth above, Glencore objects to RFP No. 42 on the ground that it is unduly burdensome. To respond to this Request, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included this Request in their 2019 Requests, Glencore could have looked for responsive information in parallel with efforts already underway. This Request therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Glencore further objects on the ground that it is irrelevant as it requests information from 1985-1988, which is outside the Relevant Time Period. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Glencore is aware that VIALCO produced documents responsive to this Request. *See, e.g.*, VIALCO-CMP_0072665.

RFP 43. Correspondences reflecting Your understanding of the Ormet Entities' industrial health programs, occupational medicine programs, or knowledge of industrial health or occupational medicine. This request specifically includes correspondences involving You and Your employees, directors, officers, and agents and also includes communications with any of the Ormet Entities. This request also specifically includes correspondences involving Willy Strothotte and correspondences involving R. Emmett Boyle. The time period for this request is 1985 through 1995.

Response: In addition to the General Objections set forth above, Glencore objects to RFP No. 43 on the ground that it is unduly burdensome. To respond to this Request, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included this Request in their 2019 Requests, Glencore could have looked for responsive information in parallel with efforts already underway. This Request therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Glencore further objects on the ground that it is irrelevant as it requests information from 1985-1988 which is outside the Relevant Time Period. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Glencore has previously produced the documents responsive to this Request of which it is aware.

RFP 44. Willy Strothotte's purchase or ownership of an interest in any of the Ormet Entities. This request includes: (a) all correspondences involving Thomas J. McGinty, R. Emmett Boyle, Charles E. Bradley, John G. Pool, or Lawrence A. Siebert related to any of the Ormet Entities; (b) documents relating to or referencing Stanwich Partners; and (c) documents relating to or referencing Rinoman Investment, B.V; and (d) any non-privileged correspondences involving Michael J. O'Brien. The time period for this request is 1985 through 1995.

Response: In addition to the General Objections set forth above, Glencore objects to RFP No. 44 on the ground that it is irrelevant to any party's claim or defense, and is also irrelevant to the extent it requests information from 1985-1988, which is outside the Relevant Time Period. Glencore further objects on the ground that it is unduly burdensome. To respond to this Request, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included this Request in their 2019 Requests, Glencore could have looked for responsive information in parallel with efforts already underway. This Request therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Glencore is not aware of any documents responsive to the Request.

RFP 45. Transcripts (and all attendant exhibits) of prior depositions taken of (a) VIALCO and its employees, agents, or representatives, including Erick Black and Paul Bledsoe; (b) all employees, agents, investors, directors, officers, or representatives of any of the Ormet Entities; (c) Willy Strothotte, Ian Perkins, Simon Trinca, Mr. Insukoh, Edward Creswick, Roman Bninski, Charles E. Bradley, R. Emmett Boyle, Craig Davis, and (d) all corporate depositions taken of You arising out of or related to the Alumina Refinery.

Response: In addition to the General Objections set forth above, Glencore objects to RFP No. 45 on the ground that it calls for information that is not relevant to any party's claim or defense. Glencore is being sued only in its capacity as a supplier of bauxite. Glencore further objects on the ground that it is irrelevant to the extent it requests information outside the Relevant Time Period. Glencore further objects on the ground that it is unduly burdensome. To respond to this Request, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included this Request in their 2019 Requests, Glencore could have looked for responsive information in parallel with efforts already underway. This Request therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Glencore has already produced, or will shortly produce, the deposition transcripts it has in its custody, control, and possession of which it is aware. Further, Glencore is aware that VIALCO previously produced deposition transcripts of the following individuals, bearing the following Bates stamps: Eric Black, VIALCO-CMP_0076309; Paul Bledsoe, VIALCO-CMP_0075869; Jimmy D. Moore, VIALCO-CMP_0075959; Paul Arnold, VIALCO-CMP_0076014; Warren Pedersen, VIALCO-CMP_0076041; Celistino Helder, VIALCO-CMP_0076120; George St. Rose, VIALCO-CMP_0076239; Dudley Fearon, VIALCO-CMP_0076282; Wilfred Luciana, VIALCO-CMP_0075802.

RFP 46. Correspondences with governmental entities, including the Virgin Islands Department of Planning and Natural Resources ("DPNR"), the Coastal Zone Management Commission ("CZM"), Occupational Safety and Health Association ("OSHA"), and Mine Safety and Health Association ("MSHA"), regarding the Alumina Refinery, and including documents related to permit applications, site visits, staff recommendations, disciplinary or regulatory actions, or communications with the DPNR, CZM, OSHA, and MSHA. This request specifically includes all internal correspondences between You and your employees, directors, officers, and agents related to DPNR, CZM, OSHA, and MSHA and also includes communications between You and any representative or employee of DPNR, CZM, OSHA, and MSHA. The time period for this request is 1989 through 1995.

Response: In addition to the General Objections set forth above, Glencore objects to RFP No. 46 on the ground that it calls for documents that are not relevant to any party's claim or defense. Glencore further objects on the ground that it is unduly burdensome. To respond to this Request, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included this Request in their 2019 Requests, Glencore could have looked for responsive information in parallel with efforts already underway. This Request therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over

100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Glencore is not aware of any documents responsive to the Request, *i.e.*, any communications directly with Glencore Ltd. related to DPNR, CZM, OSHA, or MSHA concerning the Alumina Refinery. As previously stated to Plaintiffs, Glencore Ltd. has a seven-year retention policy, and the information Plaintiffs seek concern events and records from more than 25 years ago.

RFP 47. Correspondences related to any labor union representing workers at the Alumina Refinery – whether VIALCO employees or otherwise – and You or VIALCO. This request specifically includes all internal correspondences between You and your employees, directors, officers, and agents and also includes communications with You and any representatives of any labor union representing workers at the Alumina Refinery. The time period for this request is 1989 through 1995.

Response: In addition to the General Objections set forth above, Glencore objects to RFP No. 47 on the ground that it is unduly burdensome. To respond to this Request, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included this Request in their 2019 Requests, Glencore could have looked for responsive

information in parallel with efforts already underway. This Request therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Glencore is not aware of any documents responsive to the Request. As previously stated to Plaintiffs, Glencore Ltd. has a seven-year retention policy, and the information Plaintiffs seek concern events and records from more than 25 years ago.

RFP 48. The audit of the Alumina Refinery conducted by RMT Inc. in 1993. This request specifically includes all internal correspondences between You and your employees, directors, officers, and agents and also includes communications between You and VIALCO. This request also includes copies of all correspondences, including audit reports, received by You or any of Your employees, officers, employees, or directors.

Response: In addition to the General Objections set forth above, Glencore objects to RFP No. 48 on the ground that it is unduly burdensome. To respond to this Request, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included this Request in their 2019 Requests, Glencore could have looked for responsive

information in parallel with efforts already underway. This Request therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Glencore is not aware of any documents responsive to this Request. As previously stated to Plaintiffs, Glencore Ltd. has a seven-year retention policy, and the information Plaintiffs seek concern events and records from more than 25 years ago. Furthermore, Glencore is aware that certain of the requested documents have already been produced by VIALCO with the Bates stamp VIALCO-CMP_0035085–VIALCO-CMP_0036928.

RFP 49. VIALCO's articles of incorporation, bylaws that governed at any time between 1989 through 1995, and documentation sufficient to identify VIALCO's officers and board of directors from 1989 through 1995.

Response: In addition to the General Objections set forth above, Glencore objects to RFP No. 49 on the ground that it is unduly burdensome. To respond to this Request, counsel for Glencore would have to search a third time through more than 100 boxes of hard copy documents, which are not catalogued nor electronically searchable. In 2019, in response to comprehensive and wide-ranging discovery requests set forth in the 2019 Requests, counsel for Glencore searched twice through more than 100 boxes of hard copy documents, provided responses, and made production. That effort in response to the 2019 Requests was labor-intensive, time consuming, and costly. Had Plaintiffs included this Request in their 2019 Requests, Glencore could have looked for responsive

information in parallel with efforts already underway. This Request therefore seeks to impose an unreasonable and unnecessary burden on Glencore, by forcing Glencore's counsel to conduct a de novo review of over 100 boxes of hard copy documents that had been reviewed twice in 2019. The burden of searching for responsive information is disproportional to any possible relevance and to the needs of the case. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Glencore is not aware of any documents responsive to this Request. As previously stated to Plaintiffs, Glencore Ltd. has a seven-year retention policy, and the information Plaintiffs seek concern events and records from more than 25 years ago. Furthermore, Glencore is aware that certain of the requested documents have already been produced by VIALCO in documents with the Bates stamps VIALCO-CMP_0038558, VIALCO-CMP_0047281, VIALCO-CMP_0064365, VIALCO-CMP_0077480.

RFP 50. The relationship between Clarendon, Ltd./Glencore, Ltd. and all other Glencore-affiliated entities, including Marc Rich & Co., Marc Rich & Co. AG, Glencore AG, Glencore plc, Glencore International, Glencore SA, and Glencore International AG, Glencore Canada, Inc., Glencore Minera AG, Glencore Gastroservice AG, Glencore Xstrata plc, and Xstrata. This request specifically includes all contracts and service agreements between all Glencore-affiliated entities and all business organizational charts sufficient to identify parent and subsidiary relationships.

Response: In addition to the General Objections set forth above, Glencore objects to RFP No. 50 on the grounds that it is overbroad and calls for documents that are not relevant to any party's claim or defense. Plaintiffs have amended their complaints four times, and in none of those complaints did they allege any factual allegations to which the requested documents are relevant. Glencore further objects to this request as unduly burdensome. Plaintiffs can obtain this information from other sources that are more convenient, less burdensome, and/or less expensive. Glencore is a subsidiary of Glencore plc, a publicly traded company on the London Stock Exchange and the Johannesburg Stock Exchange. Notwithstanding and without waiving the foregoing objections, Glencore responds as follows: Plaintiffs are referred to the Annual Report 2020 of Glencore plc, https://www.glencore.com/investors/reports-results/2020-annual-report, specifically pages 215-217.

As to objections,

HUNTER & COLE
Counsel for Defendant Glencore Ltd.

Dated: May 26, 2021

By: /s/ Richard H. Hunter
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CERTIFICATE OF SERVICE

I HEREBY CERTIFY this 26th day of May, 2021, I caused a true and correct copy of the foregoing Responses and Objections to Plaintiffs' Amended Third Set of Discovery Requests to be served via electronic mail on:

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/s/ Richard H. Hunter
Richard Hunter, Esq.

VERIFICATION

I, Cheryl Driscoll, declare under penalty of perjury that I have read the foregoing Responses to Plaintiffs' Amended Third Set of Discovery, and that the Responses are true and correct to the best of my knowledge, information, and belief.

5/25/2021
Date

Sworn to before me this
25th day of May, 2021

Cynthia Medina
Notary Public

CYNTHIA MEDINA
Notary Public, State of New York
Registration #01ME6247830
Qualified In Nassau County
Commission Expires Sept. 6, 2023

EXHIBIT 120

Excerpts of Transcript of Deposition of Dale Prime, July 25, 2019

EXHIBIT 39

Excerpts of Transcript of Deposition of Dale Prime, July 25, 2019

IN THE SUPERIOR COURT OF THE VIRGIN ISLANDS

DIVISION OF ST. CROIX

SX-11-CV-264
ACTION FOR DAMAGES
JURY TRIAL DEMANDED

DALE PRIME,

Plaintiff,

v.

GLENCORE, LTD.
F/K/A CLARENDON LTD.
GENERAL ENGINEERING
CORPORATION,

Defendant.

Video Deposition of
DALE B. PRIME
Thursday, July 25, 2019
9:58 a.m.

GOLKOW LITIGATION SERVICES, INC.
877.370.3377 ph | 917.591.5672 fax
deps@golkow.com

Hess?

A. It was very short. It was a turnaround-type job. So it was maybe about three or six weeks -- three to six weeks long.

Q. Okay. And then after you left Hess, where did you go next?

A. VIALCO.

Q. VIALCO?

A. Yes.

Q. Okay. So that would have been -- if you went to Hess in around 1993, did you also start at VIALCO in 1993?

A. Yeah, I think it was '93 when I started there. Probably late in the year.

Q. And how long were you at VIALCO?

A. Oh, I would say couple of months.

Q. Okay.

A. About six months.

Q. Okay. And after you left VIALCO, where did you go?

A. Let's see. I went back to -- I didn't really go anywhere. I didn't do anything, yeah, I didn't do anything.

Q. Okay. And so did you have any

Q. And what about when you went to work for Pinnacle Services in 2006?

A. Yeah, you had to do an application, yes.

Q. So now I'm going to go back to 1993 when you were working at VIALCO. What was your role at the refinery from January 1993 to June 1994?

A. Assistant operator for Unit 9.

Q. And what were your responsibilities as an assistant operator?

A. A lot. Okay. We would make sure -- there's a filter floor. There's two big filters. The alumina comes in from the red side, it comes over, it's washed with caustic. If there's too much caustic on the first floor, we would have to have a big -- like a fire hose, but it's caustic that's coming out of it. And we would wash the floor down because they don't want water in the process. And we basically went floor to floor. It's a multilevel unit. Sometimes you would go in and there would be -- a belt would be broken.

Q. Mm-hmm.

A. And all the stuff would be on the floor, all the hydrate, and I would have to shovel -- sometimes whole shift, shoveling back on the belt. Sometimes on a different floor. And there was a storage building under the unit where they kept bulk of the hydrate, and there was a belt in there that always broke. And they would always leave it for me. So I'm the one that's shoveling it, shoveling all the time.

Q. Okay. So when you said that -- the alumina would come in from the red side?

A. Mm-hmm (affirmative).

Q. When you refer to "the red side," can you describe what you were referring to as the red side.

A. The bauxite -- where the bauxite would come in. And then they would process it over there and turn it into like a slurry, and it's pumped over -- I can't give you the logistics of it, but it's pumped over to the white side, and then it's washed.

Q. Okay. So the unit you were at was on the white side?

A. Yes.

Q. And when you described the hydrate that you would be shoveling, can you describe what that looked like, what was its texture, its --

A. Powder.

Q. Powder?

A. It's like white powder, yeah. Sometimes a little cream because it still has high content of caustic in it. So -- but general appearance is white.

Q. And you would shovel it, and where would you shovel it --

A. Back onto the belt.

Q. Okay.

A. Or back onto the filter.

Q. And when the alumina arrived from the red side, in what form was the alumina -- what form did it take when you received it? Was it in that powder form?

A. No. It became powder after we washed it on the filter.

Q. Okay. So what form was it in when it arrived from the red side?

A. It's coming as a liquid.

Q. Okay.

A. Yeah.

Q. And what color was the liquid?

A. Red.

Q. So it would come as a red liquid, and then you would wash it?

A. Not me personally.

Q. Not you?

A. The filter -- there's a filter with pipes and there's caustic coming out, and the caustic washes all the bauxite out and then it turns white.

Q. And what happens to the bauxite that's washed out?

A. It goes to Unit 10, and it goes into a kiln and it's baked, and then it really becomes alumina.

Q. Okay.

A. And that's kind of grayish color, very fine.

Q. So did you ever have direct contact with the bauxite -- or the alumina as it was coming from the red unit, or were you mostly shoveling the white powder as it fell off the belt?

A. As it fell off the -- I'm in

Unit 9. So I don't have, you know -- but it's coming across.

Q. Okay.

A. And it's...

MS. SAREVA: So I'm going to mark Exhibit 3.

(Deposition Exhibit Number 3 marked for identification by the stenographer.)

BY MS. SAREVA:

Q. So these are your -- this document is titled, "Plaintiff Dale Prime's Second Supplemental Responses to Defendant Glencore's First Set of Master Interrogatories."

A. Mm-hmm (affirmative).

Q. So if you could turn to Page 6.

A. (Complies.)

Q. So this is just sort of similar to what you just said, that "Unit 9 received slurry from the red side, and" --

A. Yeah.

Q. -- "washed and filtered the alumina hydrate out of the slurry before it was sent to the kiln in Unit 10."

A. Yes.

Q. If you look at Page 7, the bottom paragraph, it states, "Plaintiff states that there was a lot of Alumina hydrate dust on the upper six to seven floors of the unit. These floors had conveyor belts and it was always dusty where the belts are."

A. Oh, yeah.

Q. Can you describe the dust that you came in contact with on the upper six to seven floors of the unit.

A. It's the same hydrate. It's being -- after it's washed, it goes on belts.

Q. Mm-hmm.

A. And that's how it gets to Unit 10. So it's just there. There's no covering. So if it's a windy day, we're going to be very dusty.

Q. Okay. And how fine was the dust?

A. Like powder. Like a powder.

Q. Did it obstruct your view?

A. Like flour -- yeah, sometimes it did, yeah.

Q. And did it get inside your nose and mouth?

A. Oh, yeah.

Q. How much?

A. Quite a bit, where you'd have to blow your nose.

Q. Okay. And did the dust get on your clothes as well?

A. Oh, yeah.

Q. And so when you say the dust was like flour, was it -- you mentioned earlier that sometimes with caustic it would turn -- when you sprayed it with the caustic, it would change texture; is that correct?

A. To white, yeah.

Q. And so the color of the dust was white?

A. Yes.

Q. Okay. And do you remember the names of your colleagues at Unit 9?

A. I can remember two. I can remember Keith Bruce; he worked with me as the operator and I'm always the assistant. And I can remember Sean Gibson. And from time to time they would take other -- from different units. So Julian Peters would often work with me.

Q. And did you ever go to any other units?

A. Yeah.

Q. What other units did you work?

A. 10, 8, 7, on the top floor.

Q. And, I mean, going unit by unit, what was your function at each of those units?

A. Unit 10 is where the kiln is. We just go help them out if there was a clog or something. And that's the really fine stuff coming out of the kiln.

Q. Mm-hmm.

A. Unit 8 were red, red mud. Sometimes you'd go help them clear stuff. On the 7th floor on top, it's where it's being turned into that slurry. So very steamy, very hot. We could hardly see out there.

Q. Okay. So starting with 10 where the kiln was --

A. Yes.

Q. -- would you say that was on the red side or the white side?

A. No, that's the white side.

Q. That's the white side?

A. Yes.

Q. And were you exposed to dust while in Unit 10?

A. Yes, most definitely.

Q. And is it the same white dust that you had --

A. No, that's the very fine stuff.

Q. Okay. But what color was that dust in --

A. It's kind of gray.

Q. Gray? Okay.

A. Yeah.

Q. And were you working directly with the dust, or was it just in the air as you were in the unit?

A. We were working with it. Sometimes we would have to take a pole and pull it out of the kiln.

Q. Okay.

A. And then it's in the air because it's so fine.

Q. And then I think you said Unit 8 was the one with the red --

A. Red.

Q. -- with the red mud slur?

A. Yes.

Q. The red mud?

A. Yes.

Q. And what was your function while in Unit 8?

A. Just helping out. If there's a clog or anything, we'd clear it or shovel or...

Q. And was that on the red side or the white side?

A. It's red, yeah.

Q. And what was the texture of the red mud that you were shoveling there?

A. Red mud. It was just red, yeah.

Q. So it was mud?

A. We call it mud, yeah. It's like dirt that's wet, so it's like mud.

Q. Okay. And was there --

A. But it's red.

Q. And was there dust in that unit as well?

A. Not that much.

Q. Okay. And then Unit 7, can you describe what you did there again?

A. Unit 7, it's up on the top floor,

and it's boiling the stuff --

Q. Right. Okay.

A. -- really kind of boiling. So just monitoring, just up there with the operator of the unit.

Q. And is that on the red side or the white side?

A. That's the white side as well.

Q. And was there dust up there or was it --

A. Yeah, there was dust, but a lot of steam and -- mixed up with it.

Q. Okay. And did you ever have any accidents while you were employed at the facility?

A. No.

Q. So when you started working at the facility, did they provide you with any sort of training to teach you how to use the various units that you worked in?

A. No. Just got orientation.

Q. And what happened during that orientation?

A. They asked about your spouse, and you fill out insurance information and beneficiary stuff. They give you basic knowledge of the plant.

Q. Okay.

A. But then while in the actual unit, it's like a on-the-job training type thing.

Q. And do you remember who was training you when you were doing this on-the-job training?

A. Sean Gibson and Keith Bruce.

Q. And do you remember what their titles were?

A. Operator.

Q. Okay. So on your first day at the facility, was your first job task in Unit 9?

A. Yes.

Q. Okay. And so the two operators who were working there, they basically walked you through what you're supposed to do and --

A. Yes.

Q. -- what your responsibilities will be?

A. Yes.

Q. Okay. And did they provide you with any sort of safety tips at the time that they were training you what to -- telling you

what to do?

A. Just watch out for pipes and trip hazards, is what they were mostly concerned with.

Q. Okay. And did you receive any sort of formal safety training when you first started at the facility?

A. We had safety meetings, we would call them talks --

Q. Okay.

A. -- maybe once or twice a month.

Q. And who held those talks?

A. The supervisor.

Q. Do you remember his name?

A. Archibald. Just -- I don't remember his first name.

Q. And what happened during those safety meetings?

A. Well, they would just tell you, "Oh, we have no recordables for this month" and "Just be safe. Watch out for trip hazards. Just remember where the saltwater is." Because if you got caustic on your skin, the only way it washes off is with saltwater.

Q. When you say "recordables," what did you mean by that?

A. If someone had an accident, then we would lose days, like so much days without an accident.

Q. Okay. And so do you remember Archibald, was he -- what was his job title at the facility?

A. He was our supervisor --

Q. Okay.

A. -- on that side.

Q. And did you interact with him every day?

A. Some -- not every, every day, but you would see him.

Q. And so can you just give any more detail about the types of precautions that they gave you during these safety meetings.

A. Just basically it. Just look out for trip hazards.

Q. Okay.

A. And...

MS. SAREVA: I'm going to mark Exhibit 4.

(Deposition Exhibit Number 4

it's right there on the wall.

Q. So it's posted on the wall?

A. It's a book -- books you could read.

Q. It's a book?

A. Yeah. It's right there.

Q. And so how big was the book approximately?

A. Almost like what you have there (indicating).

Q. This booklet?

A. Yes.

Q. So maybe half an inch?

A. Yeah, there's different books for different chemicals.

Q. And so when you went and looked through it, was there one copy?

A. No.

Q. There were multiple copies of the books?

A. There was different copies. It's like a binder --

Q. Mm-hmm.

A. -- type thing.

Q. Okay. And how often did you go

look at the MSDS?

A. I didn't need to. I wasn't dealing with any new chemicals.

Q. So you looked at it when you first started --

A. If you were dealing with something new that you weren't sure of, you would go look at it, yes.

Q. And did your supervisors and your supervisor's supervisor encourage you to look at this at every safety talk that you had before your shift?

A. No.

Q. Okay. And do you recall which MSDS sheets you saw?

A. Caustic.

Q. Caustic.

Do you remember seeing one for bauxite?

A. No.

Q. Were you looking for one for bauxite or were you specifically --

A. I wasn't really looking for bauxite, but -- yeah.

Q. Did you ever discuss the MSDS

sheets with your colleagues at the facility?

A. No.

Q. So were these safety talks that you attended at the beginning of each shift mandatory?

A. Oh, yeah.

Q. And during the safety talks, did they provide you with any sort of protective gear in advance of your shift?

A. You would have to ask for it.

Q. Did they let you know that if you wanted safety gear, you could ask for it, during the meetings?

A. Yes, but it was frowned upon to ask for it.

Q. In what way?

A. Well, that same guy, Archibald, he would said, "Listen" -- you know, he writes requisitions to the warehouse for this stuff. So if he gave you a glove today and the glove got caustic in it, he would say, "Go wash it with saltwater, because I don't want to give you a new glove."

Q. So what kind of protective gear was supplied if you asked for it?

A. Rubber gloves, goggles, dust mask, and that's about it. Your rubber boots, you would get -- you would have to get a separate requisition for that.

Q. And how readily available were these materials if you asked for them, even if it was frowned upon?

A. Sometimes he didn't have any.

Q. Didn't have any what?

A. Sometimes he didn't have any equipment there. So that's why it was frowned upon. Because then he would have to write a requisition and go get it, and he didn't like doing that too much.

Q. And was there any other place you could have gone to ask for it other than him, if it wasn't available to you?

A. No.

Q. Okay. And if it wasn't available, were you still required to go work?

A. Yeah, you would have to wash your glove.

Q. Okay. And how readily -- you mentioned that they provided you with dust masks. How readily available were those dust

A. No.

Q. And were you aware of any sort of new technology coming out while you were at the facility regarding problems that might require respiratory assistance?

A. No.

Q. Did anyone ever tell you that you could get a respirator if you wanted one?

A. No.

Q. Did you ever discuss respirators with your colleagues?

A. No.

Q. Did you receive a copy of an employee handbook while you were at the facility?

A. I believe I did in the beginning orientation.

Q. And do you still have a copy of that?

A. Oh, no.

Q. Okay. I'm going to turn back to the first exhibit, which is Exhibit 1, the first one I gave you, which should be the questionnaire. And if you could just turn to Page 5 in that document, which is Bates

STENOGRAPHER'S CERTIFICATE

I, Myrina A. Kleinschmidt, hereby certify that I reported this deposition as noted on the first page, and that the witness was first duly sworn to tell the whole truth;

That the testimony was transcribed under my direction and is a true record of the testimony of the witness;

That I am not a relative or employee or attorney or counsel of any of the parties or a relative or employee of such attorney or counsel;

That I am not financially interested in the action and have no contract with the parties, attorneys, or persons with an interest in the action that affects or has a substantial tendency to affect my impartiality;

That the right to read and sign the deposition by the witness was reserved;

WITNESS MY HAND AND SEAL this 31st day of July 2019.

Myrina A. Kleinschmidt

Myrina A. Kleinschmidt
Registered Merit Reporter
Certified Realtime Reporter

EXHIBIT 121

Excerpts of Transcript of Deposition of
Joseph Daniel, August 8, 1998

JOSEPH A. DANIEL,

Called as a witness, having been first duly sworn,

Testified on his oath as follows:

DIRECT EXAMINATION

BY MR. FOWLER:

Q. Good morning. Could you please state your full name?

A. My name is Joseph A. Daniel, Joseph Ashford Daniel.

Q. Sir, where were you born?

THE WITNESS: I have to stand?

MR. MEANEY: No, no, no. Just wanted to scootch you up.

A. I was born in the island of Dominica.

Q. Dominican Republic?

A. Commonwealth of Dominica.

Q. How far is that from here?

A. Well, I would say approximately a hundred, a hundred miles from here approximately.

Q. How long have you lived in St. Croix?

A. I live in St. Croix over thirty, thirty years.

Q. Thirty years or so?

A. Thirty years or so.

Q. Where did you go to school? Where did you go to grade school?

was giving asbestos screenings?

A. I know that he was giving asbestos screenings because being after the hurricane.

Q. Marilyn?

A. Marilyn.

Q. Okay.

A. You had asbestos been flowing all over the place.

Q. Yes, sir?

A. So we was instructed to go and take a checkup.

Q. By who? Who instructed you to go and take a checkup?

A. Our senator.

Q. The senator from St. Croix?

A. St. Croix senator advised us that we should go and take a checkup.

Q. And who paid for you to go and have a checkup by Dr. Galiber, if you know?

A. Government I --

Q. The government, as far as you know?

A. I don't know. I cannot --

Q. You don't know, but it wasn't you, I take it?

A. No.

Q. What senator would that have been?

A. Senator Chucky Hansen.

Q. Senator Hansen?

C-E-R-T-I-F-I-C-A-T-E

I, CHERYL L. HAASE, CERTIFIED SHORTHAND REPORTER, Christiansted, St. Croix, U.S. Virgin Islands, do hereby certify that the above and named witness, Joseph Daniel, was first duly sworn to testify the truth; that said witness did thereupon testify as is set forth; that the answers of said witness to the oral interrogatories propounded by counsel were taken by me in Stenotype and thereafter reduced to typewriting under my personal direction and supervision.

I further certify that the facts stated in the caption hereto are true; and that all of the proceedings in the course of the hearing of said deposition are correctly and accurately set forth herein.

I further certify that I am not counsel, attorney or relative of either party, nor financially or otherwise interested in the event of this suit.

IN WITNESS WHEREOF, I have hereunto set my hand as such Certified Court Reporter on this the 20th day of August, 1998, at Christiansted, St. Croix, United States Virgin Islands.

CERTIFIED TRUE COPY

Cheryl L. Haase

Cheryl L. Haase, RPR

EXHIBIT 122

Thomas Dydek Report - Milton Burt, 2022-08-15, 21-CV-548_BURT_000066 - 21-CV-548_BURT_000130

EXPERT TOXICOLOGY REPORT

Milton A. Burt v. Lockheed Martin Corp., Glencore Ltd., and Cosmogony II, Inc.
Case Number SX-2021-CV-00
Complex Litigation Division
In the Superior Court of the Virgin Islands
Division of St. Croix

A. Introduction:

This is my expert report on the above-referenced matter. In this report, I will first provide a statement of my qualifications, identify the data and other information I have considered in the preparation of this report, give my findings of fact, and provide a statement of my opinions and the bases for those opinions. I have provided a copy of my current *curriculum vitae* as Attachment A to this report and a list of the testimony I have given in the past four years as Attachment B. My base billing rate for this project is $400 per hour. I charge $600 per hour for testimony time and $200 per hour for travel time.

B. General Qualifications as an Expert:

I am a Board-Certified Toxicologist (Diplomate of the American Board of Toxicology, D.A.B.T.) and a Licensed Professional Engineer (P.E.) specializing in the areas of environmental toxicology and environmental engineering. My undergraduate and Master's degrees are in Mechanical Engineering and Environmental Science and Engineering respectively from Rice University in Houston, Texas, and my Doctorate is in Environmental Science and Engineering from the School of Public Health at the University of North Carolina. I have also done a Post-Doctoral Fellowship in Toxicology at the University of Texas at Austin College of Pharmacy. I am knowledgeable in the assessment of the human health risks of exposures to potentially toxic chemicals and microbial agents.

In the past, I have worked for the U.S. Fish and Wildlife Service, the U.S. Environmental Protection Agency, the Texas Air Control Board, and the consulting firm of Jones and Neuse, Inc. I have also taught at St. Edward's University in Austin, Texas and was an Adjunct Professor at the University of Texas School of Public Health in San Antonio, Texas from 1987 to 2000. I served as the toxicologist on the World Trade Center Health Program's Scientific/Technical Advisory Committee from 2019 to 2021.

I have owned and operated my own environmental toxicology and engineering consulting firm in Austin, Texas since 1994. I have more than 35 years of continuous experience in the environmental field.

C. Specific Qualifications as an Expert for the Case:

Bauxite is an ore which consists of various amounts of aluminum oxide, silicon oxides, iron oxide, and titanium dioxide. In my career, I have often evaluated the toxicity and the human health effects of exposure to the constituent components of this material. This includes my education, training, and job experience I have had over the years. In my PhD program at the University of North Carolina School of Public Health, I studied the toxicity of particulate matter containing metals such as aluminum, iron, and titanium and that of silica. I have gained additional expertise in the toxicity of those chemical constituents in the numerous technical and scientific conferences, seminars, and other meetings I have attended.

In my work with the U.S. Environmental Protection Agency (USEPA) in Research Triangle Park, North Carolina, I did an extensive study of the human health risks of metal and metal oxides emitted from electric power generating facilities and other large combustion sources. While in my teaching position at St. Edward's University, I lectured undergraduate students about the toxicity of metal compounds and silica, in the Toxicology, Environmental Sciences, and the Industrial Hygiene classes I taught at that college.

During my tenure at the Texas Air Control Board (TACB), one of my responsibilities was the evaluation of the impact that community exposures to aluminum oxide, silica, iron oxide, and titanium oxide would have on public health and welfare. In my review of more than 1,000 air quality permit applications, my evaluation of data from the State of Texas's air quality monitoring networks, and my evaluation of air emission from industrial accidents and accidental releases of chemicals, I had the opportunity to assess the health risks of those chemicals.

In my consulting practice, have worked as an expert in two toxic tort cases, six air quality permit application projects, and one toxicological investigation concerning the toxicity and human health risks of crystalline silica exposure. In a separate consulting project, I toured an alumina refinery in Jamaica, participated in the collection of air quality data there, and did an evaluation of worker's health risks at that facility.

The methodology I have followed in this report is the same as one I have used during my job with the USEPA research group, taught about in my teaching tenure, used in my work at the TACB, and which I have used in my consulting practice for many years. This human health risk assessment methodology is that originated by and used for that purpose by the USEPA (USEPA, 2022).

D. Issues in This Matter:

The Plaintiff in this matter, Milton Burt, is a former worker at the St. Croix bauxite refinery/alumina production plant. Mr. Burt is claiming that he suffered injuries related to exposures he had while working at the St. Croix facility. Specifically, Mr. Burt has been diagnosed with a mixed-dust pneumoconiosis including asbestosis.

I have been retained in this matter to explain the toxicological mechanisms by which the types of dusts inhaled by the Plaintiff in this case cause damage to the human respiratory tract, including mixed-dust pneumoconiosis and asbestosis. I will be giving an opinion about whether exposure to those dusts can in general can cause those diseases, not whether Mr. Burt's specific exposure experience caused his diseases.

E. Information Considered in the Preparation of this Report:

I have reviewed the following documents which were provided to me:

- Mr. Burt's impression from Dr. Christopher John, dated February 28, 2019.
- Mr. Burt's medical report from Dr. John, dated July 20, 2022.
- Mr. Burt's Social Security records for the years 1970 through 2012.
- The Complaint for this case.
- Plaintiff's Responses to Defendant Glencore's First Set of Master Interrogatories.
- Various certificates of analysis for raw bauxite received at the St. Croix refinery.
- Production data for the St. Croix plant (VIALCO-CMP_0003085 to 0003091).
- Chemical composition data for red mud at the St. Croix facility (VIALCO-CMP_0009510 to 0009511; VIALCO-CMP_0079984 to 0080078).
- "Notes from Interviews with Workers at the St. Croix Alumina Plant", by Dr. Rachael Jones, PhD, CIH based on interviews she conducted in the summer of 2019.

I have also done a thorough review of the available literature on the toxicity of bauxite, alumina (aluminum oxide), silica, iron oxide, titanium dioxide, asbestos, and the waste product from alumina production ("red mud"). In addition, I personally interviewed Mr. Burt by phone on July 29, 2022.

F. Findings in the Matter:

Because of the voluminous nature of this report and the multitude of literature citations (approximately 100 articles are referenced here), I have decided to structure this report in a manner which I hope will make it more easily understandable. In this section concerning my findings, I will address the various issues in general terms without going into the details of how I came to those findings. The supporting information will be included at the end of this report in a series of appendices. I trust this will make my work more "digestible" without sacrificing the scientific rigor with which this report was prepared.

1. Aluminum-containing minerals and ores (chiefly bauxite) are very abundant in the earth's crust. Aluminum metal, an important material that has many industrial and commercial uses, can be manufactured from those ores. This is accomplished by the processing of bauxite into alumina and the subsequent production of aluminum from the alumina (see Appendix A for details).

2. The St. Croix facility was a bauxite refinery at which calcined alumina was produced. Aluminum was not manufactured there. At that facility, raw bauxite from various sources was unloaded from ships, dumped onto the ground and then moved to conveyor belts by which the material was conveyed to crushing and grinding equipment. The Bayer process was used to produce hydrated alumina, which was then calcined to make the final product. That product was loaded onto ships to be sent to aluminum foundries elsewhere. The St. Croix plant also had asbestos-containing materials to which the workers were exposed. Waste material ("red mud") produced at the St. Croix facility was routed to on-site lagoons where it would be left to dry.

Workers at the St. Croix plant were exposed to a variety of materials including bauxite dust, sodium hydroxide mist, fumes and dust of alumina, iron oxide, titanium oxide, and silica, and the dust of dried red mud. There were several processes at the plant that were conducted at elevated temperatures, requiring a significant amount of asbestos insulation to be used there. This fact was confirmed in the industrial hygiene survey which was done at the St. Croix plant in 1976 and in the interview I had with Mr. Burt. He and other maintenance personnel would often have to remove the asbestos-containing insulation to repair the piping and then install new insulation after the repairs were complete. This task would cause asbestos dust exposures. Details of the operations at the St. Croix plant, including the limited data on worker exposures can be found in Appendix B.

3. A pneumoconiosis is a lung disease caused by the inhalation of dusts or fibers. Pneumoconioses start when the inhaled material elicits an inflammatory response. Inflammation-recruited macrophages, lymphocytes, and epithelial cells release mediator chemicals which stimulate fibroblasts to engulf the inhaled particles. This leads to the formation of granulomatous lesions and fibrosis (DeLight and Sachs, 2021). When the dust contains multiple chemical compounds as well as silica, the disease caused by the dust exposure is termed a mixed-dust pneumoconiosis (MDP). A recent review has concluded that this disease is not as rare as it was once considered and that MDP should be included in the International Classification of Disease (ICD) listings (Baur, et al., 2019).

4. Results of experimental animal exposure studies have elucidated the probable toxicological mechanisms by which exposures to dusts such as those which took place at the St. Croix facility can cause respiratory tract damage that can progress to mixed-dust pneumoconiosis. Rats, mice, hamsters, and guinea pigs are mammals, as are humans. Because of similarities in physiology, the responses seen in these animals can be used reliably to assess the risks to humans.

In general, when dust exposures are large (in terms of the intensity, frequency, and duration), the protective abilities of the animal's or human's respiratory tract macrophages can be overwhelmed. This causes the accumulation of dust particles in the lung and chronic inflammation, which leads to fibrosis. This is the hallmark of mixed-dust pneumoconiosis. Details of these studies and the toxic mode of action of these dusts can be found in Appendix C.

5. Bauxite is not a chemical compound. It is an ore. It is thus important from a toxicological viewpoint to consider the toxicity of the components of this material. Bauxite processed at the St. Croix facility was chiefly made up of aluminum oxide, silicon dioxide (both crystalline and amorphous silica), iron oxide, and titanium dioxide. Each of these constituent compounds, as well as bauxite dust and other poorly soluble dusts in general, have been shown to cause lung inflammation, fibrosis, and pneumoconioses in experimental animals and in humans.

6. The scientific literature contains the results of many epidemiological studies done to assess the health effects of exposure to the materials just enumerated. Some of these evaluated the health of alumina production workers, while others investigated the health of workers in other industries in which workers were exposed to the same types of chemicals.
The results of those studies are variable. It is clear from those studies that workers exposed to higher levels of dust were more at risk for pneumoconiosis. Some data from human volunteer exposure studies are also available. More information on these studies and some possible explanations for the discrepancies in the results from different studies can be found in Appendix D.

7. In addition to these studies done in the workplace, there is a wealth of information from laboratory studies of experimental animal exposures, at least for alumina (aluminum oxide), silica, titanium dioxide, and iron oxide, which are the principal components of the dusts to which the St. Croix workers were exposed. Animal studies are crucial in this analysis because they provide vital information concerning the types of effects possible in humans, dose-response relationships, and the toxic mechanisms of action.

Rats, mice, guinea pigs, hamsters, and other species have been the subject of these experimental studies. These works have shown that exposure to mineral dusts in general and to alumina, silica, titanium dioxide, and iron oxide specifically, causes persistent inflammation, granulosis, and lung fibrosis. Of these species, the rat is the most sensitive. Descriptions of these studies can be found in Appendix E.

8. Based on interview responses from Mr. Burt and his co-workers, there is ample evidence that the conditions at the St. Croix facility were very dusty. Furthermore, there was a lack of attention to dust control and to worker's respiratory protection at that plant. Neither were these workers advised of the dangers of exposure to the dusts in the air, including asbestos-containing dust. A particularly hazardous situation existed in the "tunnel" below the bauxite conveyor belts. In this confined space, airborne dust levels would have been extremely high.

Based on these descriptions and the industrial hygiene data that are available, dust exposure levels at the St. Croix plant exceeded occupational exposure standards. Thus, the intensity of the worker's exposures was great. In addition, Mr. Burt worked at the St. Croix plant for almost 30 years. His prolonged dust exposures were probably of the type that have been shown to cause the lung dust overload condition just described and which lead to the development of mixed-dust pneumoconioses. A transcription of my phone interview with Mr. Burt and a summary of the worker's experiences with dust at the St. Croix facility is given in Appendix F.

9. Dr. John diagnosed Mr. Burt with mixed-dust pneumoconiosis to include asbestosis. Mr. Burt currently suffers from shortness of breath, fatigue, and productive cough. He had no pre-existing diseases or conditions that would explain his current disease status. Neither did he have any occupational exposures outside of those he had at the St. Croix facility. He did not have a history of smoking cigarettes, which is important since cigarette smoking is a concomitant risk factor for the development of adverse effects on the lungs.

G. Human Health Risk Assessment Methodology:

The human health risk assessment method of the USEPA is widely used and accepted in the scientific community. There is no question that this is a relevant and reliable methodology for examining human health risks of exposure to chemical substances. This methodology can be either qualitative or quantitative, depending on the availability of data. This method consists of four main steps:

- Step 1: Hazard Identification. In this step, the human health problems that can be caused to over-exposure to a chemical substance are identified.
- Step 2: Dose-Response Relationship. In this step, the health problems that can occur at various doses (that is, exposure levels) are identified or qualitatively estimated.
- Step 3: Exposure Assessment. In this step, the magnitude, frequency, and duration of human exposure to an agent in the environment is measured or estimated.
- Step 4: Risk Characterization. In this step, the information gathered in the three preceding steps is summarized and integrated to synthesize an overall conclusion about the human health risks of exposure to a given material.

1.Hazard identification. It is clear from this report that exposure to bauxite dust and its constituents can cause respiratory problems in humans, including mixed dust pneumoconioses. Epidemiological studies and human and animal toxicity experiments have demonstrated this fact. In other words, this information indicates that, in general, over-exposure to bauxite and its constituents and to asbestos can cause the mixed-dust pneumoconioses from which Mr. Burt and the other workers at the St. Croix plant have suffered (see the information provided in Appendices B, C, and D).

2. Dose-Response. As in the case of most human health risk assessments, dose-response data are largely lacking for human subjects such as the workers at the St. Croix facility. In the case of bauxite dust exposure and/or exposure studies of the constituents of bauxite, there is epidemiological data and data from a limited number of controlled human exposure studies that show humans exposed to elevated levels of these materials exhibit more adverse health effects compared to others exposed to lower levels. Data from animal exposure studies confirm these findings. Most toxicity studies for the types of dusts to which the St. Croix facility workers were exposed show a monotonically increasing dose-response curve; that is, higher doses cause more extensive and/or more serious health impacts.

3. There is a gradation of adverse effects when mineral dusts are inhaled. As the dusts continue to deposit and accumulate over time, the lung damage increases. The normal protective mechanisms that remove particles from the human respiratory tract can be overwhelmed and when that happens the accumulation of dust particles increases dramatically. Thus, some of the effects of exposure to particulate matter in bauxite dust and its constituents may exhibit a toxicological threshold. When this threshold (the "lung dust overload" level) is exceeded by the intensity, frequency, and duration of dust exposure, however, more serious adverse health effects such as mixed-dust pneumoconioses will occur (see the information contained in Appendices C, D, and E).

4. Exposure Assessment. According to the USEPA methodology, exposures can be measured directly or estimated indirectly from measured levels in the environment and/or estimates of human exposure over time. A limited amount of industrial hygiene data is available for consideration. That data (see Appendix B) showed elevated levels of bauxite and alumina dust in the St. Croix facility. Estimates of human exposure can also be made based on statements made by Mr. Burt and other workers at that plant (see Appendix F).

5. Risk Characterization. In this last step of the human health risk assessment process, the proceeding steps are summarized and integrated into a final statement about that risk. The scope of this assessment was to determine whether the dust exposures of workers at the St. Croix bauxite processing facility could have caused the cellular responses that lead to mixed-dust pneumoconioses with which they have been diagnosed. This conclusion is based on the following summary of evidence from the first three steps in the risk assessment process.

a. It is clear from the hazard identification discussions in this report that over-exposure to multiple types of dust, including bauxite and its constituents, have been shown to cause pneumoconioses of the type seen in the St. Croix workers. No significant assumptions or alternative explanations exist in the hazard identification I prepared for this risk assessment. The strength of this step in the process is considerable.

b. The strength of the dose-response step is also substantial. Published papers in the scientific literature show that bauxite workers with lower exposures (Australian studies) to these dusts do not show major respiratory effects. Workers with greater dust exposures (Arkansas studies) do show serious effects (see Appendix C). Both the exposure level and the years of exposure were seen to be important in the evaluation of the health of bauxite workers. As the total dose of dust (milligrams of dust per cubic meter of air times the years of exposure to those dusts, mg/m^3-years) increased, so did the incidence of adverse effects (Townsend, et al., 1988). The results from experimental animal exposure studies showed the same dose-response patterns. The fact that increased health impacts were seen at higher exposures (doses) is in keeping with basic toxicological principles. Both types of studies were published in peer-reviewed journals.

c. The strength of the exposure assessment step is somewhat less than that for the first two steps of this process, but still significant. The quantitative data which are available for the St. Croix workers indicate that their exposure experience was more like those workers in Arkansas than those in Australia. The Arkansas and Australian exposure data should be accurate since those data were contained in peer-reviewed journal articles. I assumed exposure data from St. Croix (if there had been more of it) would also have shown similar exposure levels at that plant. One alternative explanation for the pneumonoconiosis seen in the St. Croix workers was that it was caused purely by silica exposure. While there was crystalline silica present in the dusts at the St. Croix plant, the types of lesions seen in the lungs of the workers there did not have the typical morphology seen in silicosis.

d. Overall, the data provide compelling evidence for mixed-dust pneumoconiosis, like those suffered by Mr. Burt, to have been caused by the dust exposures that took place at the St. Croix bauxite facility.

H. Summary and Conclusions:

The opinions I express in this report are rendered with a reasonable degree of scientific certainty. Based on my education, training, and experience in the field of toxicology, my review of the pertinent information for this matter, and my independent research into the human health effects of exposures to bauxite, silica, alumina, iron oxide, titanium dioxide, and red mud dusts, I have come to the following conclusion in this matter:

It is toxicologically plausible that the dust exposures such as those that occurred at the St. Croix bauxite refinery were of sufficient intensity, frequency, and duration to have caused mixed-dust pneumoconioses and asbestosis. Mr. Burt's diagnosis is consistent with this general finding.

This conclusion is based on the following:

1. Animal and human studies have shown that when individuals are exposed to elevated levels of otherwise low-toxicity dusts like bauxite, alumina, silica, titanium dioxide, and iron oxide, they will develop chronic inflammation and lung fibrosis consistent with mixed-dust pneumoconiosis. This occurs when the dust exposures exceed the body's ability to clear inhaled particles from the respiratory tract.

2. Animal studies have shown that the respiratory effects caused by aluminum oxide and titanium dioxide exposure continued after the experimental exposures were terminated. The same response is expected to occur in humans. Thus, Mr. Burt is expected to continue to be adversely affected even after he left employment at the St. Croix facility.

3. Epidemiological studies of workers in alumina refineries in which higher dust levels were prevalent have shown that the workers suffered adverse respiratory effects including pneumoconioses. Exposure to bauxite dust alone can also cause pneumoconiosis.

4. The deficient dust control, lack of adequate and efficient respiratory protection, inadequate health and safety programs, and general dustiness of the St. Croix plant make it clear that the workers there were exposed to elevated levels of dust. Many also worked significant numbers of overtime hours for years, increasing the total dose of dust they had while working there.

I reserve the right to supplement this report should more information become available for my review and consideration.

Respectfully submitted:

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Appendix A.

Background Findings in the Matter

1. Aluminum is the most common metallic element found in the earth's crust, making up about 8% of the total amount of material found there. Naturally occurring aluminum and its compounds are present in silicates, cryolite, and bauxite. Aluminum is an important metal used in the transportation industry, for building materials, in electronics manufacture, in paints and pigments, and for other uses (Krewski, et al., 2007).

2. Bauxite ore is the most important raw material used in the production of aluminum. Bauxite is composed of hydrated aluminum oxides, aluminosilicates, iron oxides, silica, titanium oxide, and traces of other elements. Data from 2014 indicate approximately 165 million tonnes (about 150 million tons) per year of bauxite were mined worldwide (Donoghue, et al., 2014).

3. The manufacture of aluminum consists of several steps. The first is the mining of bauxite. Second, the bauxite ore is crushed and ground up. Alumina (aluminum oxide: Al_2O_3) is then extracted from the bauxite almost exclusively via the Bayer process, which was used at the plant in St. Croix.

4. Solid waste materials are removed by clarification and solid hydrated alumina is recovered via precipitation. The waste materials are referred to as "red mud" which takes its color from its high iron content. Typical composition of red mud is 30 to 60% iron oxide, 10 to 20% aluminum oxide, and 3 to 20% silica (Pattajoshi, 2006). Red mud also contains levels of heavy metals (arsenic, lead, mercury, cadmium, chromium, manganese, and nickel).

Radioactive elements occur naturally in bauxite and tend to concentrate in the waste material. Uranium, radium, and thorium have been found in some red muds at levels less than 100 parts per million (Wang and Liu, 2012; Gu and Wang, 2013). Red mud is often routed to lagoons or ponds to dry in the sun (Gu and Wang, 2013; Ranveer, et al., 2015).

5. The last step in the alumina production process is calcination, in which the hydrated alumina is heated to elevated temperatures to drive off the water, producing dry calcined alumina (Wesdock and Arnold, 2014). Calcined alumina is then used to produce pure aluminum via the Hall-Héroult process (Authier-Martin, et al., 2001).

Appendix B.

Findings Concerning the St. Croix Facility

1. The St. Croix facility was a bauxite refinery at which calcined alumina was produced. Aluminum was not manufactured there. At that facility, raw bauxite was unloaded from ships, dumped onto the ground and then transported via conveyor belts to crushing and grinding equipment. They used the Bayer process to produce hydrated alumina and then calcined that material to make the final product of calcined alumina. Red mud produced at St. Croix was routed to on-site lagoons where it would dry. Dust from the red mud lagoons was free to blow about in the wind.

2. Construction of this facility began in the early 1960s. When the plant went into operation in the mid-1960s, it produced about 230,000 tons of alumina per year. Production increased over the next 20 years, reaching a maximum of almost 700,000 tons per year in 1982. The facility was shut down from 1985 to 1989. When it reopened in 1990, the production was 600,000 tons per year. Since approximately one ton of red mud is generated per ton of alumina produced, the amount of red mud generated at this plant from 1962 to 1992 was approximately 10 million tons.

3. The raw bauxite refined at the St. Croix facility came from many countries. At various times, these included: Barbados, Guyana, Brazil, Guinea, and Australia. The compositions of the various bauxites differed from each other. For example, analyses of the bauxite from the Aroaima Bauxite Company, Ltd. in Barbados, West Indies showed the following approximate chemical composition of that material:

- Aluminum oxide (Al_2O_3), available...............50 to 60%
- Silicon dioxide (SiO_2), total............................1 to 5.5%
- Silicon dioxide (SiO_2), reactive......................1 to 5.3%
- Ferric Oxide (Fe_2O_3)...1 to 3%
- Titanium Dioxide (TiO_2)....................................2 to 3%

Note that in these analyses, "reactive silica" is a term of mineralogical art. In this context, reactive silica refers to the amorphous form of that material, not to crystalline silica, which is reactive in a toxicological sense.

The bauxite processed at the St. Croix plant that came from Guyana Mining Enterprise Limited showed the following approximate chemical composition of that material:

- Aluminum oxide (Al_2O_3), available...............50 to 60%
- Silicon dioxide (SiO_2), total..........................5 to 10.0%
- Silicon dioxide (SiO_2), reactive......................4 to 7.3%
- Ferric Oxide (Fe_2O_3)...1 to 6%
- Titanium Dioxide (TiO_2)......................................2 to 3%

Analyses of the bauxite processed at the St. Croix plant from Minerção Rio del Norte in Brazil the following approximate chemical composition of that material:

- Aluminum oxide (Al_2O_3), available...............48 to 50%
- Silicon dioxide (SiO_2), total.............................3 to 4.9%
- Silicon dioxide (SiO_2), reactive.......................3 to 4.1%
- Ferric Oxide (Fe_2O_3).......................................10 to 15%
- Titanium Dioxide (TiO_2)...................................1 to 1.5%

4. Information Concerning Red Mud Dust Toxicity:

a. At various bauxite refineries, between one and two tons of red mud is produced for every ton of alumina, thus a great quantity of this material is present at bauxite refineries like the one in St. Croix.

b. Samples taken of the red mud at the St. Croix facility showed the following chemical composition ranges (from VIALCO-CMP_0079984 to 0080078):

- Aluminum oxide (Al_2O_3).....................26 to 33%
- Silicon dioxide (SiO_2)...............................5 to 16%
- Ferric Oxide (Fe_2O_3)............................26 to 45%
- Titanium Dioxide (TiO_2)........................9 to 20%
- Calcium oxide (CaO)............................0.2 to 5%
- Sodium oxide (Na_2O)...........................0.6 to 3%

The St. Croix red mud also contained trace levels of other metals. Those present in the greatest concentrations were zirconium (about 2,200 parts per million), vanadium (about 600 ppm), and chromium (about 600 ppm).

c. The typical particle size of red mud dust is less than 10 microns, making this dust respirable (Ranveer, et al., 2015). Analyses of the St. Croix red mud showed an average particle size of 3 microns. Since it is a product of the Bayer process which uses sodium hydroxide, red mud an extremely alkaline substance (Hind, et al., 1999; Ranveer, et al., 2015). Inhalation of the highly alkaline red mud dust can cause irritation and corrosion of the tissues of the respiratory tract. Long-term exposures, even to low levels of alkaline materials, can result in permanent damage to the respiratory tract (Nash, et al., 1988; Hansen and Isager, 1991; Rubin, et al., 1992; Pierce, 1993).

5. St. Croix Facility Worker Exposure Studies:

There is a lack of quantitative exposure information for the workers at the St. Croix plant. What little is available is from industrial hygiene sampling done in 1976. Data from the 1976 industrial hygiene survey at the St. Croix facility are given in terms total dust exposure and respirable dust exposures as well as crystalline silica exposure data for 26 workers. An analysis of the job duties of each worker allows an estimate of whether the dusts encountered was likely to be bauxite, alumina, lime, or a mixture.

a. Total and respirable alumina, bauxite, lime, and various dusts:

- Five workers were mostly exposed to alumina dust. These were those who worked as kiln operators or dock workers. The total alumina dust exposures ranged from 1.35 to 13.64 mg/m^3, with an average of 5.02 mg/m^3. The respirable alumina dust exposures ranged from 0.66 to 1.44 mg/m^3, with an average of 0.91 mg/m^3.

- Sixteen workers were mostly exposed to bauxite dust. These were men shoveling material at the ships, operating bulldozers or tractors to move the bauxite, doing other bauxite transfer activities, and working on Units 2 and 6. The total bauxite dust exposures ranged from 0.49 to 32.60 mg/m^3, with an average of 10.90 mg/m^3. The respirable bauxite dust exposures ranged from 0.03 to 2.01 mg/m^3, with an average of 0.71 mg/m^3.

- Two workers were sampled for lime dust exposure. The total lime dust exposures ranged from 2.56 to 24.23 mg/m^3, with an average of 12.08 mg/m^3. The respirable lime dust exposures ranged from 0.19 to 1.47 mg/m^3, with an average of 0.94 mg/m^3.

- A maintenance worker, who presumably was exposed to a variety of dusts at the St. Croix plant, had his workplace air sampled twice. In one sample, there was a total dust exposure of 66.85 mg/m^{3}and a respirable dust exposure of 14.69 mg/m^3. The other sample had a total dust exposure of 5.30 mg/m^3 and a respirable dust exposure of 1.13 mg/m^3.

b. Crystalline silica data:

The crystalline silica content of both total and respirable dusts was assessed in the 1976 report for the St. Croix refinery. The more important data is for the percentages of respirable crystalline silica. In that 1976 report, only one of the worker's samples was reported to contain crystalline silica. In that one man's sample, the percentage of crystalline silica was 1.011%. The results for all other 25 workers were reported as "zero". These data should have been reported as "below the minimum detection limit (MDL)", however, and that minimum detection limit for the weight of crystalline silica in each sample was given as 10 micrograms.

There are four approaches to handling data below the minimum detection limit. One is to set all those less than MDL values equal to the MDL, but this approach would give results which were biased high. The second approach would be to set all less than MDL values equal to 0.0. This approach can only be used if the presence of the chemical being measured is not expected and none of the samples had detectable levels in them. Otherwise, this approach would give results which are biased low.

The third approach is to set all less than MDL values at one-half of the MDL. This approach is used when it is known that the chemical in question is likely to be present in the samples. The fourth approach is to use a more sophisticated statistical method, but this can only be used if more than 50% of the samples had detectable levels of the chemical (USEPA, 1991).

Of these four approaches, the one that should be used in the St. Croix respirable silica sampling data analysis is the third one above. Using the MDL for all less than MDL values would give biased results. It is known that crystalline silica was present in one sample and would be expected to be present at some level in all of them. There is not enough data to use the statistical analysis of approach number four above.

If the amount of crystalline silica in each sample of respirable dust is assumed to be 5 micrograms (one-half of the MDL level for crystalline silica weight given in the 1976 report) per USEPA guidance summarized above, the average and the median crystalline silica contents of respirable dusts for the 26 men sampled were 2.2% and 1.0%, respectively. This supports the findings of a mixed-dust pneumoconiosis in Mr. Burt since, by definition, a low level of silica needs to be present in the dust to which he was exposed to make it be termed a “mixed dust”.

Appendix C.

Findings Related to the Mechanisms of Toxicity of Dust Exposure:

1. Pneumoconiosis (a type of interstitial lung disease) is a disease of the lung caused by inhalation of dusts, including inorganic dusts. The most common forms of this disease are associated with exposure to asbestos (asbestosis), crystalline silica (silicosis), and coal dust (coal-worker's pneumoconiosis). Pneumoconioses can also be caused by inhaling less toxic dusts such as those present at the St. Croix facility (NIOSH, 2020). Those dusts contained compounds of aluminum, iron, and titanium as well as amorphous silica. Such less toxic dusts are also variously referred to as "nuisance dusts", "benign dusts", "inert dusts", or "particulates not otherwise regulated". The terms "nuisance", "benign", and "inert" give the false impression that there is no health risk associated with exposure to those dusts. This is not true. "Low toxicity" or "less toxic" dusts would be a more accurate way to describe these materials.

The disease resulting from concurrent over-exposure to less toxic dusts which also contain some silica is termed a "mixed-dust pneumoconiosis" or MDP (Honma, et al., 2004). Asbestosis is also a pneumoconiosis. The main symptoms of mixed-dust pneumoconioses and asbestosis are shortness of breath, chest tightness, and a dry or a productive cough. Pulmonary function tests can be normal or may show obstructive, restrictive, or mixed patterns (Honma, et al., 2004; ALA, 2020). Along with asbestosis, MDP is one of the diseases with which Mr. Burt was diagnosed. He exhibits the above symptoms of those diseases.

2. Less toxic dusts are defined as those containing less than 1% silica (NIOSH,1998). Even though these dusts have this low a level of silica, when excessive amounts are deposited in and persistently retained in the lungs, the resultant effects are like those observed following exposure to dusts that are highly toxic to the lungs such as silica or asbestos. Acute-, intermediate-, and chronic-duration animal studies have reported respiratory effects including increases in alveolar macrophages, granulomatous lesions in the lungs and peribronchial lymph nodes, and increases in lung weight (ATSDR, 2008). Long-term, high-level exposure to such dusts, even to substances thought to have relatively low toxicity, can result in inflammation, fibrosis, and even lung cancer in experimental animals (Morrow, 1988; Morrow, et al., 1996; Warheit, et al., 1997; Bermudez, et al., 2002; Borm, et al., 2004; Warheit, et al., 2016; Kawasaki, 2017).

3. Mixed-dust pneumoconioses are caused by over-exposure to dust in a toxicological process known as "lung dust overload" (ATSDR, 2008; Oberdörster, 1994; Dinman, 1988). In their Toxicological Profile for aluminum, the Agency for Toxic Substance and Disease Registry stated, "The lung effects seen in humans and animals are suggestive of *dust overload*." [emphasis mine] In Oberdörster's paper, he states, "Evidence in humans suggests that *particle-overloaded* [emphasis mine] lungs, e.g., in coal workers, responds with fibrosis…."

While Dinman does not use the term "overload", he is talking about a non-specific chronic industrial bronchitis and his choice of words is that this disease can be caused by an "…excessive, protracted nuisance dust exposure…". A non-specific effect from significantly large exposures to "nuisance" dusts is the hallmark of the phenomenon of lung overload which leads to pneumoconiosis.

4. The current scientific consensus is that the mechanisms of toxicity are similar for all types of poorly soluble particulates (ILSI, 2000; Fishwick and Barber, 2012; Cherrie, et al., 2013). This would include aluminum oxide, silica, titanium oxide, and iron oxide dusts to which the St. Croix workers were exposed. The current thinking concerning the toxic mode of action is that over-exposure to inorganic dusts causes an overwhelming of one of the protective measures present in the human respiratory tract. These effects begin to be felt at the cellular level when dust is deposited. The damage accumulates with continuing exposure and continuing accumulation of dust in the lungs. More serious effects occur at the point of lung dust overload. This could be considered a threshold effect, although many other adverse biological processes precede the effects seen after this threshold dose is achieved.

5. Humans have evolved various defenses by which the respiratory tract is protected against the adverse effects of inhalation of potentially toxic particulate matter and bacteria. One of the most essential elements of these defense mechanisms is the macrophage. Macrophages are scavenging cellular organisms found in the respiratory tract. They can engulf and kill bacteria and engulf and dissolve dust particles or clear them from the lung. This process is called phagocytosis. The bactericidal and dissolution effects are accomplished by various enzymes that are secreted by macrophages such as lysozymes, proteases, and hydrolases (Gee and Lwebuga-Mukasa, 1984). Despite the normally protective function of macrophages, there are instances in which they can induce lung damage and disease. For example, in the process of phagocytosis, macrophages can release reactive oxygen free radicals, initiate and prolong inflammatory response, and stimulate fibrosis (Nemery, 1990; Brain, 1992; Driscoll, et al., 1997; Fishwick and Barber, 2012; Hiraiwa and van Eeden, 2013).

6. It has also been found that lung dust overload occurs to some extent in all experimental animal species that have been tested, although this effect is seen to a greater extent in rats (Oberdörster, 1995; Warheit, et al., 1997). Dust lung overload conditions are not confined to animals (ATSDR, 2008). The lung effects observed in both animals and humans suggest dust overload has occurred alumina workers (Dinman, 1988) and in coal miners (Oberdörster, 1995). Oberdörster calculated (see Table 4 in his paper) the respirable dust exposure level above which particle overload conditions could occur in humans. For bauxite, which has a density of 1.28 grams per cubic centimeter, he calculates that this would be an eight-hour exposure of approximately 1.0 mg/m^3. For alumina with a density of 3.95 grams per cubic centimeter, the corresponding 8-hour exposure level leading to lung overload would be 3.2 mg/m^3. For longer work shifts (like those many of the St. Croix workers worked), these levels leading to lung overload would be even smaller. The St. Croix worker's exposure levels measured in the 1976 industrial hygiene survey were greater than these overload levels (see Appendix B).

7. One group of investigators (Cherrie, et al.) has reported that there is no human equivalent to rodent lung overload. Despite this statement, however, the authors cite several epidemiological studies which showed adverse respiratory effects in workers exposed to low-toxicity dusts. They concluded in the same paper that the overall object of their publication is to alert the occupational health community that the so-called "nuisance dusts" should be more highly regulated than they are. The very first sentence of their abstract states, "Exposure to low-toxicity dusts, which have previously been viewed as "nuisance dusts", can cause chronic obstructive pulmonary disease or other nonmalignant respiratory disease", some of which can have "devastating health consequences". These investigators propose a lower occupational exposure limit of 1 mg/m^3 for respirable low toxicity dusts, a level in concordance with that proposed by Oberdörster.

8. The amount of crystalline silica needed to be present in a dust containing other materials need not be excessive for exposure to that dust to cause significant respiratory tract damage. As stated above, mixed-dust pneumoconioses have occurred in workers exposed to so-called "nuisance dusts" which by definition contain less than 1% crystalline silica. The studies of animals exposed to alumina (which has a low silica content) have also shown these effects (see Appendix D). Animals exposed to dusts containing 1% silica also showed the same type of dust lung overload and pneumoconiotic changes in their lungs (Klosterkötter, 1960).

9. In the case of some mixed-dust pneumoconioses, like those suffered by coal miners, the percentage of crystalline silica in the dust is in the range of 5 to 10%. This level of silica is not a "minimum" number or threshold that must be exceeded before the dust can be considered hazardous. Because of inter-individual variability, some workers will be affected at lower doses of crystalline silica than others, whether in the case of coal-miner's pneumoconiosis or in other workers exposed to elevated levels of so-called "inert" particulates. This data concerning coal dust does not necessarily apply to other types of pneumoconioses. As noted above, pneumoconioses can occur after exposure to dusts containing less than 1% silica.

In any case, what is more important is the total dose an individual gets over a working lifetime since these dusts accumulate in the lung. Although analyses of the silica content of incoming ore at the St. Croix facility showed generally low levels of crystalline silica, it is the total cumulative content of the dusts to which the workers are exposed which will determine their health risk.

10. Coal dust is toxicologically comparable to bauxite dust and red mud dust. All three are mixtures of low toxicity materials (elemental carbon in coal and aluminum oxide and iron oxide in bauxite and red mud) and crystalline silica. Therefore, it is instructive to mention the known consequences of coal mine dust exposure. Over-exposure to coal dust causes a pneumoconiosis characterized by loss of lung function, fibrosis, emphysema, and chronic obstructive pulmonary disease (COPD). Coal workers can suffer from life-threatening progressive massive fibrosis (Coggin and Taylor, 1998; Zosky, et al., 2016). Coal worker's pneumoconiosis is a well-recognized and studied occupational disease.

11. One obvious reason for the findings of pneumoconiosis in coal mine workers but not in titanium dioxide, carbon black, and toner material workers is the presence of silica in coal dust. More than 66,700 samples of airborne coal dust in United States underground coal mines showed a median silica content of approximately 5% (Cauda, et al., 2014).

12. Levels of respirable coal dust in U.S. mines were much higher in the past. Typical U.S. levels from 1968 to 1989 were in the range of 3.0 to 8.4 mg/m^3, depending on the job duties of the miners (IARC, 1997). While dust levels in U.S. coal mines have on average been less than 1 milligram per cubic meter since about 1980, the incidence of coal worker's pneumoconiosis increased from 2000 to 2010 (NIOSH, 2011). As recently as 2016, there was a resurgence of massive pulmonary fibrosis among coal workers in this country (Almberg, et al., 2018).

While part of the increase in the latter disease may be attributable to increased working hours and/or changes in mining operations, it calls into question the protectiveness of the current OSHA exposure standard of 2.4 mg/m^3 (NIOSH, 2007). Similarly, other organizations and authors have proposed that the current occupational exposure limits for low-toxicity dusts in general (which would include bauxite, alumina, and red mud dust) are not protective of worker's health (IOM, 2011; Cherrie, et al., 2013).

13. Since the bauxite and red mud processed at the St. Croix facility also contained amounts of crystalline silica approximately equal to that in coal dust, those two materials should also be classified as mixed dusts capable of causing mixed-dust pneumoconioses.

14. Mr. Burt has also been diagnosed with asbestosis. Unlike the other dusts to which he was exposed, asbestos is not a "benign" material. It has been known for many years as a toxicologically active material. Asbestos is a known human carcinogen. Around the turn of the 20th century, medical case histories increasingly raised concerns about a connection between exposure to asbestos and lung diseases (Bartrip, 2004; Sporn and Roggli, 2014). In the mid-1920s, the term "asbestosis" was first used to describe the debilitating lung diseases seen in asbestos workers (Cooke, 1924; Cooke, 1927; McDonald, 1927).

More evidence linking asbestosis with exposure to asbestos became available in the 1930s (JAMA, 1930; Wood and Gloyde, 1931; Merewether, 1933). This term is still used today to describe the effects of long-term inhalation of asbestos-containing dust. Like other asbestos exposure related diseases, asbestosis has a latency period measured in decades. In most cases, the latency period is between 15 and 45 years, but it can be shorter than 15 years, if the exposure levels are very great (Bang, et al., 2008; Sporn and Roggli, 2014). Finally, persons with asbestosis are at increased risk of later developing lung cancer and other diseases (Bartrip, 2004).

This is also what Dr. John concluded about Mr. Burt's future health risks. He said that Mr. Burt is at increased risk of lung cancer, mesothelioma, colon cancer, throat cancer, pulmonary hypertension, pulmonary embolism, stroke, heart failure, and heart attack. Because of the damage he suffered while working at the St. Croix facility, Mr. Burt is also more susceptible to more serious effects from the common cold, influenza, COVID-19, pneumonia, and other respiratory infections.

Appendix D.

Worker Exposure and Health Studies

1. Workers in the alumina production industry, like those at the St. Croix plant, are exposed to a variety of physical and chemical hazards. This report will concentrate on the latter challenges to worker's health. These exposures include bauxite dust and its chemical constituents in the mining, crushing, and handling of this material, sodium hydroxide mist in the Bayer process stage, fumes of alumina and silica from the calcination process, the dust of the calcined alumina product, and the dust of and the radioactivity contained in dried red mud (Benke, et al.,1998; Fritschi, et al., 2001; Pattajoshi, 2006; Gu and Wang, 2013; Dennekamp, et al., 2015; Ranveer, et al., 2015).

2. The scientific literature contains many articles describing studies done to assess the human health effects of exposure to the materials just enumerated. These studies have looked to not only the health of alumina production workers, but also workers in industries in which workers were exposed to the same types of chemicals.

3. Worker's health studies (case reports and epidemiological studies) have been conducted around the world. These include studies of the health of workers exposed to:

- alumina dust in the manufacture of abrasives (Shaver and Riddell, 1947; Jephcott, 1948; Jephcott, et al., 1948; Shaver, 1948a; Shaver, 1948b; Riddell, 1948; Wyatt and Riddell, 1948; Gärtner, 1952; Jederlinic, et al., 1990).
- alumina dust in the English pottery industry (IPDC, 1936; Sutherland, et al., 1937; Meiklejohn and Posner, 1957; Meiklejohn, 1963; Posner and Kennedy, 1967).
- alumina dust from its use in dental practice (Kerr, et al., 1957).
- bauxite and alumina dust in alumina production (Townsend, et al., 1985; Townsend, et al., 1988; Musk, et al., 2000; Fritschi, et al., 2001; Friesen, et al., 2009).
- bauxite dust and silica in bauxite mining (Beach, et al., 2001; de Kom, et al., 1997; Friesen, et al., 2009; Dennekamp, et al., 2015).
- bauxite and silica dust in bauxite crushing and other bauxite handling operations (Bellot, et al., 1984; Musk, et al., 2000).
- caustic mist (sodium hydroxide) during Bayer process phase of alumina production (Musk, et al., 2000; Fritschi, et al., 2001).
- caustic mist from wood treatment (Hansen and Isager, 1991) and in cleaning operations (Nash, et al., 1988; Rubin, et al., 1992).
- red mud (chiefly iron oxide) dust including radioactive materials (Hind, et al., 1999; Pattajoshi, 2006; Wang and Liu, 2012; Gu and Wang, 2013; Sun, et al., 2019).

4. Studies of Bauxite Refining/Alumina Production Workers

a. Various reviews of alumina production worker's health have also been published (Doig, 1949; Dinman, 1988; Morgan and Dinman, 1989; Benke, et al., 1998; Akira, 2006; Krewski, et al., 2007; Sjögren, et al., 2007; ATSDR, 2008; Donoghue, et al., 2014; Smolkova and Nakladalova, 2014; Taiwo, 2014; Wesdock and Arnold, 2014; Willhite, et al., 2014).

b. It is not the purpose of this report to fully review and evaluate all the referenced epidemiological studies of the health risks alumina production workers face. Suffice it to say that the results from those studies are variable. Some have shown effects such as pulmonary fibrosis (pneumoconiosis), respiratory symptoms, or decrements in lung function, while others have not. Some possible explanations for the discrepancies in the results from different studies are that the following factors are not always well-characterized or even specified:

- differences in type of worker exposures (i.e., to bauxite dust, to sodium hydroxide mist, to alumina dust, iron oxide, titanium dioxide, red mud dust, or some combination of exposures).
- differences in the amount of worker exposure (job responsibilities, frequency and duration of exposure, presence or absence of respiratory protection, etc.).
- differences in the strength, enforcement, and compliance with occupational health guidelines and standards in different countries.
- differences in silica content of the bauxite processed.
- differences in the size of particles to which the workers were exposed.
- differences in the chemical and physical variants of the alumina are not always specified in the published studies.

c. Studies have shown little or no adverse health effects from worker's exposure to bauxite in mining operations (Beach, et al., 2001; de Kom, et al., Friesen, et al., 2009; Dennekamp, et al., 2015). Mining did not occur at the St. Croix site, however, and Mr. Burt was not a miner of bauxite.

d. For the purposes of this report, it is my opinion that it is instructive to compare the data from published articles concerning bauxite refining/alumina production worker's exposure to diverse types of dust to the measurements of dust exposure at the St. Croix facility and to compare the health effects those exposures had. There are two ways in which worker exposure to dust is reported in these studies. One way is just to report the measured level of dust in the air, usually expressed as milligrams of dust per cubic meter of air (mg/m^3) in the workplace. Since pneumoconioses are caused by an accumulation of dust in the lung over time, some investigators have expressed worker exposure levels in term of the exposure level (in mg/m^3) times the number of years a worker was exposed to that level. In this case, the units of worker exposure would be mg/m^3-years. Tables 1 and 2 below contain data from the two distinct types of exposure measures.

e. Table 1 compares worker exposure levels reported in a bauxite refining operation in Australia (Musk, et al., 2000) to the measured levels of exposure at the St. Croix plant (from the 1976 industrial hygiene survey done there). The units in that table are mg/m^3.

Table 1. Comparison of inhalable bauxite and alumina dust (mg/m3) in Australian and St. Croix bauxite refineries

Refinery Location	Greatest Geometric Mean bauxite exposure (mg/m^3)	Greatest Maximum Bauxite Exposure (mg/m^3)	Greatest Geometric Mean alumina exposure (mg/m^3)	Greatest Maximum Alumina Exposure (mg/m^3)
Australia	4.0*	17.4	2.18*	41.6
St. Croix	18.8**	66.8	3.47**	13.6

* Maximum Geometric means for different operations in three bauxite refineries (4-hr samples)
** Maximum Geometric means for different operations at the St. Croix plant (7-hr samples)

f. Other comparisons require an assumption to be made about the St. Croix worker's exposures. The 1976 industrial hygiene survey at St. Croix only contains exposures expressed in terms of mg/m^3 dust exposure. To be able to express those exposures in terms of mg/m^3-years, one would have to know the number of years workers worked there. I am assuming an average working lifetime of 10 years for workers at the St. Croix plant and a maximum working lifetime of 30 years (this is how long Mr. Burt worked there).

g. Table 2 shows a comparison of data from two studies in Australia (Australia 1: Fritschi, et al., 2001; Australia 2: Friesen, et al., 2009), the data from an Arkansas study (Townsend, et al., 1985), and that for the St. Croix bauxite refining workers (see Appendix B). These data were given as median values for exposure in units of mg/m^3-years.

Table 2. Comparison of inhalable bauxite and alumina dust (mg/m3-years) in Australian and St. Croix bauxite refineries

Refinery Location	Median bauxite exposure (mg/m^3-yrs)	Median alumina exposure (mg/m^3-yrs)	Median Total dust exposure (mg/m^3-yrs)
Australia 1	1.1	1.6	2.7
Australia 2	5.7	2.8	8.5
Arkansas	---	---	50
St. Croix*	86.2	29.4	116

* Median based on 10 years working lifetime

h. Neither of the Australian studies reported adverse respiratory effects beyond rhinitis and wheeze, but the authors of the Arkansas study found more serious effects on the lungs of the workers there. The key difference is in the level of exposures. The total dust exposure at the Arkansas refinery were much higher than those at the Australian refineries. The Arkansas workers with higher total cumulative exposure levels suffered higher incidences of radiographic opacities and decreases in ventilatory function consistent with a condition of industrial bronchitis and pneumoconiosis. This showed a positive dose-response relationship. Smokers had about a three-fold excess risk of decreased ventilatory function compared to non-smokers. Ex-smokers had an intermediate risk of this effect (Townsend, et al., 1985; Townsend, et al., 1988). The respiratory changes seen in these studies are characteristic of lung particle (dust) overload (Taiwo, 2014).

i. The workers at the St. Croix facility (see Appendix B for details of these data) had even greater dust exposures than the workers at the Arkansas plant, and exposures much higher than the experiences of the Australian workers. This explains why the health effects seen in the St. Croix workers are like (and even greater than) those reported in the Townsend, et al. studies and why they are more pronounced than the health effects seen in the Australian studies.

j. The Arkansas and the St. Croix bauxite refining facilities are similar in that they both process the incoming bauxite: from the mine at Arkansas and from ships at St. Croix. Thus, in both cases the raw bauxite is moved to the crushing stations where the bauxite is crushed. Workers moving the bauxite in the two facilities should have similar dust exposures. Both facilities crush the bauxite, and this would also result in similar worker exposures. Both facilities use the Bayer process to produce alumina from the crushed bauxite, again resulting in similar worker exposures.

It is true that the Arkansas facility has a mine and sintering operations, neither of which the St. Croix facility has. What is important from a worker's health risk perspective, however, is how much of the materials and their component chemicals are in the air, irrespective of the way those airborne exposures were generated. The Townsend, et al. study reported total dust exposures which included those from mining and sintering, but these operations resulted in much lower dust exposures than the bauxite and alumina processing and handling exposures.

5. Studies of Amorphous Silica Exposure

While the effects of crystalline silica exposure on human health have been well studied, the possibility that exposure to the amorphous form of this compound has often been overlooked. Worker exposure to raw diatomaceous earth, which contains little crystalline silica, can produce fibrotic responses in humans. When this material is calcined, significant portions of crystalline silica are formed and the fibrosis can be progressive (Merget, et al., 2002). Pumice is an amorphous mineral consisting of silicon dioxide and oxides of aluminum, iron, titanium, manganese, sodium, and potassium. Workers exposed to this material have suffered a pneumoconiosis characterized by pleural lesions and fibrotic changes in their lungs (Mazziotti, et al., 2004).

6. Studies of Iron Oxide Exposure

The pneumoconiosis caused by over-exposure to iron oxide-containing dusts is called siderosis. Early studies demonstrated fibrotic effects in iron ore miners, foundry workers, silver polishers who used pure ferric oxide, and welders. These effects were seen even though little or no crystalline silica was present in those dusts (Faulds, 1957); Nagelschmidt, 1960). Some published articles and texts have since considered siderosis as a benign condition. More recent investigations, however, have shown that more serious respiratory effects occur (Kellerher, et al., 2000).

7. Studies of Titanium Dioxide Exposure

a. There have been a limited number of epidemiological studies of titanium dioxide workers. One cross-sectional study of 209 workers showed pleural diseases with plaques and pleural thickening, but many of the workers had prior asbestos exposure and exposure to titanium compounds other than titanium dioxide. Of these 209 individuals, there were 78 workers who did not have a history of asbestos exposure. In that latter group, the risk of pleural disease in those who had worked at that site for 10 years was 3.8 times greater than those who had worked five years (Garabrant, et al., 1987).

b. Of 52 exposed workers in a titanium oxide paint factory, 28 reported chest pain and 26 had persistent cough. Fifteen of those workers had previous exposures to cotton dust for an average of 4.7 years. Pulmonary function testing showed restrictive lung impairment in 28 of the workers and 20 of those exhibited airway symptoms as well (Oleru, 1987).

8. Case History Studies of Titanium Dioxide Exposure

The health risk literature contains several case studies of workers who had significant titanium dioxide exposure. No industrial hygiene measurements of airborne titanium dioxide levels were available in those case studies. Some of the findings from these case studies included lung fibrosis and the presence of titanium dioxide in macrophages and in lung granulomas of the exposed workers. In some studies, titanium dioxide particles were found in the worker's lungs years after their exposure ended (IARC, 2010).

9. Human Controlled Exposure Studies

a. Three volunteers with no welding fume exposure and six welders were exposed to an 8-hour average of 2.4 mg/m^3 (range of 0.3 to 10.2 mg/m^3) of welding fumes containing 39% aluminum oxide for one to five days. Urinary excretion of aluminum was elevated after the first day of exposure but returned to normal within a day or two after that. These results showed that aluminum was absorbed into the worker's bloodstreams. No evaluation of the respiratory tract was undertaken in that study, however (Sjögren, et al., 1985).

b. Human volunteers were exposed to ferric oxide particles by a one-time instillation of that material into the subject's distal airways and alveoli using a canula and bronchoscope. The estimated number of particles instilled into each volunteer was 3 x 10^8. The total numbers of neutrophils and macrophages in lung fluid were significantly increased one day post-instillation but returned to normal levels by day 2 and stayed in the normal range for up to 91 days after instillation. The authors concluded that iron oxide exposure caused a transient inflammatory response in these individuals (Lay, et al., 1999).

The exposure in this experiment was a one-time event. Mr. Burt was exposed repeatedly to iron oxide at the St. Croix plant. Prolonged and continual exposures like his lead to chronic inflammation in the respiratory tract. Chronic inflammation is known to cause fibrosis in the lungs.

Appendix E.

Findings Relating to Toxicity Studies in Animals

In addition to the above-referenced human health studies, animal exposure studies have also been undertaken to assess the toxicity of the kinds of dust present at an alumina production facility such as the one in St. Croix. Animal studies provide valuable information concerning the types of effects possible in humans and the toxic mechanisms of action. In animal studies, the exposure levels and the dust composition are much better characterized than they are in human case reports and epidemiological studies.

1. Use of Animal Test Data for Human Health Risk Evaluations:

a. Direct reliable human toxicity data is difficult to obtain. For example, it is not ethical to perform human toxicity testing except for a very few chemicals under very tightly controlled conditions.. Requests to conduct human exposure studies are subject to rigorous evaluation and pre-approval by ethical committees. If approved, these studies must then be conducted under very strictly controlled exposure conditions to ensure the safety of the volunteers.

b. Epidemiological studies can be a source of relevant and reliable human data, but such studies are subject to a range of methodological challenges and limitations in study design, statistical treatment and power, exposure measurements, biases, and confounding factors. Furthermore, even the best epidemiological studies are limited to showing that a chemical exposure is associated with an adverse health outcome, and not that the exposure caused the effect. This general limitation of epidemiological studies is acknowledged in both scientific treatises (Hill, 1965; Fedek, et al., 2015) and in the Reference Manual on Scientific Evidence (Green, et al., 2011).

c. Toxicity testing in animals is another source of useful information which complements and augments epidemiological data. Both types of data provide important inputs to human health risk assessments. Using the results of animal testing as a part of human health risk evaluations is a well-recognized scientific principle. Toxic effects produced when laboratory animals are exposed to a chemical (with proper qualifications) are applicable to humans (Eaton and Green, 2013). This principle is also recognized in the Reference Manual on Scientific Evidence. Concerning the differences between epidemiological studies, *in vivo* experimental animal studies, and *in vitro* ("cell") studies, the authors (Goldstein and Henifin, 2011) state:

> *"In contrast* [to epidemiological studies], *because animal studies and cell studies permit researchers to isolate the effects of exposure to a single chemical or to known mixtures, toxicological findings offer unique information concerning dose-response relationships, mechanisms of action, specificity of response, and other information relevant to the assessment of causation."*

d. The results of experimental animal studies have been widely used in the setting of occupational exposure limits. Less than one-half of the Threshold Limit Values set by the American Conference of Governmental Industrial Hygienists (which in turn have been adopted by the U.S. Occupational Safety and Health Administration) are based on human data. Most of the remainder are based on the results of toxicological studies using animals (Roach and Rappaport, 1990). This confirms the fact that animal testing data is central to the evaluation of the health risks faced by workers.

2. Inhalation Versus Instillation Animal Exposure Methodologies:

a. There has been some concern about the use of data from animal exposure studies in which intratracheal instillation was used to assess the respiratory effects of dust exposure. If inhalation is used, there could be some deposition of dust in the nose, mouth, and upper airways. Not all the inhaled material will reach the lung where it can do the most damage. Intratracheal instillation bypasses these areas of the upper respiratory tract. The only significant difference between this approach and inhalation studies, however, is the dose of dust delivered to the lungs.

b. Depending on the physical and chemical properties of the dust, the dosages of a given dust needed to provoke an adverse effect will in the general case be lower in instillation studies compared to inhalation studies. This does not mean adverse effects will not occur via inhalation, however. It only means that the amount of exposure via inhalation will have to be somewhat greater to elicit those effects. The results from both instillation and inhalation experiments were similar. The animals showed lung inflammation and fibrotic effects regardless of the exposure route used in the two diverse types of studies. In any case, I have relied not only on the instillation studies but also on animal studies which used the inhalation route of exposure (Gardner, 1944; Pauluhn, 2012; Sotiriou, et al., 2012; Li, et al., 2017; Kim, et al., 2018). I have relied on the results of both animal inhalation and instillation experimental results to form my opinions in this matter.

c. Experimental animals have been exposed to the components of bauxite dust via both inhalation and intratracheal instillation. There are differences and similarities to these two types of exposure methodologies. In inhalation studies, known concentrations of dust are generated inside the exposure chambers in which the animals are kept. In instillation studies, known amounts of dust are injected via hypodermic needles into the tracheas of the animals.

d. As in most scientific studies, there are advantages and disadvantages associated with using different methodologies. This is true in the case of these two methods used to determine the toxicity of inhaled materials. The use of intratracheal instillation to study inhalation toxicity, has advantages, especially when effects on the lungs are of paramount interest. For example, instillation has an advantage because the dose delivered to the lung is well-characterized. This is not always the case in inhalation exposures. It also has the advantage of being able to study a variety of doses in a much more efficient manner than is possible in inhalation studies. This method of introducing a study compound into the animal's body avoids issues of skin or pelt contamination that can occur in inhalation studies (Driscoll, et al., 2000).

e. Inhalation studies have the advantage of more closely resembling the inhalation exposure pathway since they account for particle deposition in the upper airways and give a more accurate picture of the distribution of particles and the clearance of those particles within the lung itself. For toxic materials that act locally on lung tissue, however, the differences in particle deposition distribution and lung clearance of particles which may exist between instillation and inhalation exposure methods are not critically important. Thus, when the object of the study is to elucidate toxic modes of action, this is not a significant difference between the two modes of exposure.

f. In summary, it is appropriate to base causation opinions on data from animal studies in which dust exposure was great enough to cause "lung dust overload". Many animal species exposed to elevated levels of alumina, silica, iron oxide, and other mineral dusts have shown fibrotic effects in their lungs. These data are directly applicable to the risk assessment for humans, including Mr. Burt. Those individuals have also been exposed to levels of bauxite, alumina, and iron oxide dusts at the St. Croix plant which were of great intensity, frequency, and duration. This exposure caused them to suffer the lung fibroses which are associated with a condition of mixed-dust pneumoconiosis.

3. Information Concerning Toxicity of Dusts at the St. Croix Facility:

a. Bauxite Dust Inhalation Toxicity:

A thorough review of the relevant literature did not reveal any studies that specifically addressed the toxicity of bauxite dust exposure in animals. There have been many studies of the respiratory toxicity of the major components of bauxite, however. These include aluminum oxide (alumina), silicon dioxide (silica), iron oxide, and titanium dioxide.

b. Alumina Dust Inhalation Toxicity:

1) The study of alumina (aluminum oxide) toxicity in animals dates to before the year 1950. In one such study, groups of guinea pigs were exposed via inhalation to between 0.59 and 0.93 milligrams per cubic meter (mg/m^3) of alumina eight hours a day, six days a week, for 14 months. Pulmonary air spaces were observed to contain phagocytes filled with alumina particles and there was lymphocytic infiltration in adjacent alveolar walls. While aluminum levels in the guinea pig lungs were elevated, no overt adverse effects on the animals were seen in these experiments (Gardner, et al., 1944).

2) Rats were instilled intratracheally one time with 100 milligrams of corundum fume (heat-treated calcined alumina) and then followed for up to one year. Animals that died starting on day 10 of observation displayed various levels of lung fibrosis (King, et al., 1955). Similar experiments by the same group showed that both the ɣ-alumina and α-alumina caused fibrosis in rats (Stacy, et al., 1959).

3) Rats exposed both via intratracheal instillation and via inhalation to a powder containing more than 95% ɣ-alumina and less than 1% silica showed lung dust accumulation, inflammation, and fibrosis. The rats were exposed one time for five hours. Exposure levels were extremely high, approximately 33,000 mg/m^3 (Klosterkötter, 1960). Under these conditions, lung particle overload no doubt occurred.

4) Hamsters were exposed to 0, 0.2, 2.0, 5.0, or 20.0 milligrams of alumina per week via intratracheal instillation for 16 months. In this study, there was a statistically significant dose-dependent increase in inflammation and alveolar fibrosis, becoming greatest in the two highest exposure groups (Renne, et al., 1985).

5) Rats exposed by intratracheal instillation of 50 milligrams of five distinct types of alumina used in the production of aluminum had increased levels of lactate dehydrogenase activity, higher protein levels in lavage fluid, and higher numbers of polynuclear leukocytes in lung tissue compared to control animals. These are markers of inflammation and tissue damage. No fibrosis was observed in this study (Ess, et al., 1993).

6) Six months after a one-time intratracheal instillation of 50 mg of Bayer process ɣ-alumina, rats thus exposed showed areas of granulomatous inflammation and fibrosis in the lungs as well as alveolar proteinosis and influxes of alveolar macrophages and neutrophils. The authors likened these effects to foreign body reactions in these animals (Dalbey and Pulkowski, 2000).

7) Rats given a one-time intratracheal instillation of 20 milligrams of alumina were followed for 3, 6 and 9 months afterwards. After three months, there were increases in granulomas (indicators of inflammation) in rat lungs. After six months observation, increases in granulomas and macrophages and granulocytes surrounding dust particles were seen. After nine months, granulomas persisted and more macrophages and granulocytes around dust particles were seen. An influx of inflammatory cells, chiefly polymorphonuclear leucocytes, was seen six and nine months after exposure (Halatek, et al., 2005).

8) Mice that inhaled 0, 0.4 or 2.0 mg/m^3 of alumina nanoparticles for seven days showed a dose-dependent increase in airway resistance, indicating a reduction in the animal’s ability to move air in and out of the lungs. The mice also showed increased airway inflammation at increasing dosages and durations of alumina exposure. Bronchial-alveolar lavage fluid samples showed a dose-dependent increase in inflammatory mediators (IL-6 and IL-33), apoptosis (cell death), and dose-dependent increases in total cell count, number of monocytic cells, and neutrophils in the exposed animals.

IL-6 is a cytokine associated with decrements in lung function and IL-33 is an inflammatory cytokine. Increases in total cell numbers, monocytic cells, and neutrophils are indicative of increased levels of inflammation in mice lungs after alumina exposure. Lung pathology indicated the development of emphysema, a form of chronic obstructive pulmonary disease (COPD) in these animals although the exposure was for only seven days at a relatively low exposure level (Li, et al., 2017).

9) In another recent study, rats were exposed via inhalation to 0, 0.2, 1.0 or 5.0 mg/m^3 of alumina nanoparticles five days per week for four weeks followed by a 28-day recovery period during which no alumina exposure occurred. The results showed that animals exposed to the highest exposure group had increased lung weights. Alveolar macrophage accumulation was seen in 25% of the rats exposed to 5 mg/m^3.

An additional 25% of those animals developed this infiltration in the 28-day recovery period, indicating that tissue response continued after the exposure had stopped.

Total cell content and numbers of neutrophils in bronchoalveolar lavage fluid (BALF) were significantly elevated in animals exposed to 1.0 and 5.0 mg/m^3 of alumina after the 28-day exposure period. The elevated neutrophil levels were also seen after the recovery period in the 5.0 mg/m^3 exposure group. The animals in the highest exposure group also showed elevated amounts of lactate dehydrogenase, IL-6, and tumor necrosis factor in the BALF. Lactate dehydrogenase and IL-6 levels remained high after the recovery period as well. These substances are biomarkers of inflammation and tissue damage (Kim, et al., 2018).

c. Crystalline Silica Dust Inhalation Toxicity:

1) As mentioned above, the raw bauxite which was the starting material at the St. Croix facility contained crystalline silica. Thus, workers engaged in the handling and crushing of the bauxite were also exposed to crystalline silica. The scientific literature is replete with information concerning the effects of silica exposure on the respiratory tract. No attempt will be made here to fully enumerate and evaluate all those studies.

2) Reviews of the human health effects of silica exposures are also numerous. It is incontrovertible that over-exposure to crystalline silica causes silicosis, a chronic, progressive, debilitating fibrotic disease of the lungs. The mechanism of action of silica toxicity includes the following steps (Schlueter, 1994):

- inhaled silica particles are ingested by macrophages
- lysosomal enzymes interacting with the silica-containing macrophages leads to cell death and the release of silica particles
- these silica particles are then ingested again by phagocytes, leading to a cycle of cell destruction in the lung tissue
- this on-going process causes inflammation and fibroblast recruitment leading to the development of lung fibrosis consisting of “silicotic” nodules

d. Amorphous Silica Dust Toxicity:

The results of animal studies of the toxicity of amorphous silica have been variable. The presence of some level of crystalline silica can complicate the interpretation of experimental animal studies. There are studies, however, in experimental animals that over-exposure to amorphous silica with little crystalline contamination can cause the aggregation of macrophages and leukocytes, the formation of granulomatous lesion, and fibrosis (Reuzel, et al., 1991; McLaughlin, et al., 1997). It should be noted that the airborne dusts to which Mr. Burt was exposed at the St. Croix facility contained both forms of silica.

e. Iron Oxide Inhalation Toxicity:

1) In one study, rats were exposed to 0, 4.7, 16.6, or 52.1 mg/m^3 of iron oxide via inhalation for 13 weeks. Elevated numbers of neutrophils were observed in these animals along with increased lymph node weights, pulmonary inflammation, and fibrosis (Pauluhn, 2012).

2) Rats exposed to between 0.1 and 0.2 mg/m3 of ferric oxide nanoparticles for five hours had a 60-fold increase in reactive oxygen species compared to that in control animals (Sotiriou, et al., 2012). Increases in reactive oxygen species levels indicate increase oxidative stress and inflammation is occurring.

3) Groups of adult male rats were exposed via intratracheal instillation to ferric oxide nanoparticles at two different dose levels (20 milligrams per kilogram and 40 milligrams per kilogram) for either 7 or 14 days out of a 28-day period. There was a dose-dependent increase in reactive oxygen species with increasing dose of ferric oxide particles in this study (Sadeghi, et al., 2015).

4) Mice given a one-time Intratracheal instillation of iron oxide nanoparticles were followed for 1, 2, and 7 days post-exposure. Increased numbers of neutrophils, eosinophils, and lymphocytes were found in the murine airways. This is an indication that oxidative stress and inflammation was occurring in these animals (Gustafsson, et al., 2015).

5) Recent reviews of the toxicology of iron oxide particles and nanoparticles concluded that iron oxide exposure causes oxidative stress, cellular injury, and inflammation in animal's respiratory tracts. A fibrotic effect was seen in some studies, especially when the exposure was chronic versus acute. Iron oxide exposure has been shown to cause cancer in rats, but this is thought to be specific to rats and occurs because of lung particle overload rather than to any intrinsic carcinogenicity of iron oxide itself (Pease, et al., 2016; Morgan, et al., 2020).

f) Titanium Dioxide Inhalation Toxicity:

Over-exposure to titanium dioxide-containing dusts causes neutrophilic inflammation, increased lymph node accumulation of dust particles, and epithelial cell hyperplasia (Kawasaki, 2017). Mice, rats, and hamsters chronically exposed to titanium dioxide dust showed chronic active inflammation, and fibrotic lesions in all three species. Rats exposed for four weeks showed effects including pulmonary inflammation, impairment of particle clearance mechanisms, macrophage accumulation, and fibrosis (Warheit, et al., 1997). Rats exposed chronically (6 hours per day, 5 days a week, for 2 years) showed Type II pneumocyte hyperplasia, alveolar proteinosis, granulomas, and fibrosis (Lee, et al., 1985). These adverse fibrotic events were progressive and continued to be seen when the animals were observed for months after the cessation of exposure (Bermudez, et al., 2002; Warheit, et al. 1997).

Appendix F.

Observations on Worker Dust Exposure at the St. Croix Alumina Refinery

1. My personal interview of Mr. Burt:

On July 29, 2022 I conducted a telephone interview of Mr. Milton Burt, The Plaintiff in this case. We spoke for about 30 minutes. He told me he started working at the St. Croix bauxite processing plant in April of 1967. Except for the times the plant was shut down, he worked there up until 2001. He worked for several different companies doing maintenance work at that plant. He told me he usually worked eight or more hours in a day for six and sometimes seven days a week. The work was hot and there was a lot of red and white dust in the air of the plant.

Mr. Burt said he was a maintenance worker, so he did not have a set place of work within the St. Croix plant. He went wherever he was told to repair piping or machinery that had broken down throughout the plant. He would typically wear jeans, long-sleeved shirts, and work boots on the job. He was provided hard hats and googles, but when he first worked there they didn’t give him any respiratory protection equipment. His work environment became dustier when the plant began processing raw bauxite from Guyana, which contained more dust than bauxite from other sources. At that time, he was issued nothing more sophisticated than blue paper masks to protect his respiratory tract.

Mr. Burt told me that safety meetings were held at the plant, but they didn’t mention the hazards of dust inhalation at the facility. They talked about physical hazards, but not the chemical hazards of that workplace. He said he was never aware of the availability of Safety Data Sheets that could have alerted him to the personal health dangers he faced.

He said that he was exposed to asbestos-containing materials at the St. Croix plant. Since some of the processing equipment (tanks, digesters, and heaters) and piping there was operated at elevated temperatures, asbestos insulation was used on equipment and pipes in high-temperature service. If a pipe needed repairs or replacement, the old asbestos insulation would have to be replaced. Often, this meant cutting or scraping off the asbestos insulation to gain access to the piping needing repairs. He told me this was dusty work.

Mr. Burt told me that he has been suffering shortness of breath and fatigue for more than 10 years now. He at first thought he just had a bad cold, but once the respiratory problems started, they did not go away like a cold or the flu would go away. He used to walk five miles for exercise before work, then do a work shift, but now he struggles to walk a mile. He has a persistent cough and a lot of trouble breathing. He worked at other jobs after he quit working at the St. Croix plant in 2001. He denied any asbestos or significant dust exposure in those other jobs. He retired in about 2012 and now he doesn’t do much of anything.

Mr. Burt expressed sadness that some of the friends he had at the St. Croix plant had died, some at relatively young ages. He thought their loss of life was because of the chemical exposures they had there.

2. The following information comes from personal interviews which were conducted in 2019 by Dr. Rachael Jones with some of Mr. Burt's co-workers:

a. Mr. Gary Jarvis:

Mr. Jarvis said he worked at the St. Croix plant from about 1990 to 1997 or 1998. During that time, he continually worked six or seven days a week, sometimes up to 12 or 16 hours per day because there was a lot of overtime work available to him. His job duties included cleaning up spills of bauxite, including in the "tunnel" area underneath the conveyor belts that brought the raw bauxite to the crushing and grinding mills. This tunnel was about 20 feet deep and had no ventilation. Cleanups in this area sometimes took as long as three or four days to complete.

Mr. Jarvis stated that when he was doing cleanups like this, the air was thick and dusty with bauxite dust, so dusty that it was difficult to see. He also worked in the red mud area and would get dust exposure there, shoveling the dried red mud. By the end of his shift, he was covered with dust. When he took a shower at home after work the water would be colored red from the dust. Even after showering, his bedclothes would be stained red after he slept there.

He said that the plant did not have any dust suppression measures, either in terms of mechanical devices or water sprays. Initially, he wore a small paper mask from time to time. When Vialco took over the plant, he was told to use a more sophisticated cartridge-type respirator. Mr. Jarvis did not recall being warned about the health dangers of exposure to the dusts of bauxite, alumina, or red mud either by his supervisors or from any signage about the hazards present in the plant.

b. Mr. Charles Fontaine:

Mr. Fontaine reported that he worked at the St. Croix plant from 1989-1995 and from 1997-2001. He worked overtime almost every day there for 10 hours or more sometimes for seven days a week. In his jobs there, he cleaned up bauxite and alumina by shoveling the dust. He was provided with a paper mask, but after 15 or 20 minutes it would get wet from sweat, and he would have to discard it and put a cloth over his face. He said he was never given a cartridge-type respirator.

When there was a power outage at the plant, the process units would "back up", and bauxite would shoot up into the air. Mr. Fontaine said that it looked like a "tornado" when this happened. He said dust was everywhere, scattered all over the plant. Like Mr. Jarvis, he would go home covered in red dust after his work shift. While he was warned about the hazards of caustic materials in the St. Croix plant, he was never informed that bauxite dust could be harmful.

c. Mr. Miguel Velez:

Mr. Velez said he worked at the plant from 1982 to 2011 when the plant was in operation during those years. He drove a bulldozer to move the raw bauxite to the conveyor belts, a job he said was very dusty. There was no dust control in those areas and the wind would blow the dust all around. He reported he was also tasked with cleaning up the bauxite which had spilled into the tunnel area. He would get covered with red dust doing these jobs.

Mr. Velez said he also worked in the alumina part of the plant, loading the alumina into a hopper there. He said by the end of his shift there, he was covered with white dust. Some days he would work in both the bauxite and the alumina areas and get covered with both red and white dust by the end of the day.

He said he was not told about the potential dangers of exposure to bauxite and alumina dust. He maintains the company did not do much in the way of protecting workers, their emphasis was only on production.

d. Mr. Ronald Boston:

Mr. Boston said he started working at the St. Croix plant in 1966. In 1968 he left to take another job, but then returned to the alumina refinery. He was a boiler operator and worked at the power plant. From his vantage point, he said he could see the docks where bauxite came in and alumina was shipped out. There was always some spillage of these materials, and the wind would blow the dust all over the place. Dust would also continually blow off conveyor bests and get into the power plant. He described the dust as a "snow" which came into his working area. He would have to clean up those dusts constantly with a broom and shovel.

He reported that he was never warned about the dangers of being exposed to bauxite and alumina dust, even in safety meetings held at the plant. He heard indirectly that there was a hazard there, so he said he wore paper masks and later in his time there he was furnished with a respirator-type mask.

e. Mr. Gabriel Ramos:

Mr. Ramos said he worked as a construction contractor at the St. Croix plant from 1964-1966. He then worked at the plant from when it opened for operation in 1966 to 1969. He quit in 1969, but then returned to the alumina plant and worked there from 1972 to 1985. After some time away, he returned to the plant and worked there from approximately 1990 to 1995. He said he worked a lot of overtime hours, sometimes pulling a double shift.

He reported that he was an instrument technician and as such had to travel to all areas of the plant servicing various instruments. At some point he was assigned to a job in the power plant. He worked around areas containing asbestos insulation. He said that there was always dust emitted from loading operations at the hoppers and milling machines and the dust was blowing around everywhere. He said no one warned him about the dangers of dust exposure. He had paper masks, but after five or ten minutes they would get wet, and he had to take them off. He estimated that he only wore the paper masks a few hours per day.

f. Mr. Rodney Felix:

Mr. Felix reported he worked as a welder, helping to build the plant and then continued working there until the plant closed for the last time (when it was operated by Alcoa). In his welding work, he was sometimes in areas where there was asbestos insulation. He said he never saw any signs warning about asbestos hazards.

Mr. Felix said he was never informed about the dangers of exposure to bauxite or alumina. He would sometimes wear a paper mask, but they "didn't last long" and he would then wear a rag over his face when the air was exceptionally dusty. He also worked in the caustic area. He said there was nothing there to control the caustic fumes coming off the process unit. He was not furnished a respirator while working there.

He reported that when he was exposed to the bauxite dust, it would cause him to cough. At the end of the day his clothes would be covered in red dust. Even after taking a shower at home, the red dust remaining on his body would stain the sheets in his bed. He was also exposed to lime dust in the lime unit. There were piles of lime on the ground and the wind blew the lime dust around.

g. Ms. Dale Prime:

It wasn't clear from the interview notes exactly how long Ms. Prime worked at the St. Croix plant. The notes say she "worked at the alumina plant in 1994 and then in 1998 for a couple of months". She said she was an operator assistant the whole time she worked there. When there were power outages at the plant, the red mud would back up into the process area and she would have to clean up the area by spraying it with caustic.

She had a paper mask at times, but she said she was never furnished a respirator-type mask. She also had to clean up spills of alumina and she did this with a shovel. She recalled that both red and white dust would blow into her area from other process units. There was so much dust on the ground that she sometimes had to move it out of the way just to be able to open a door. At the end of her work shift, she would be covered with dust. She said she observed other workers also covered with dust. She reported about the dust that "you couldn't escape it at the plant".

Ms. Prime said she did have access to dust masks, but her supervisor was not likely to give out any personal protective equipment (PPE) easily or often. She said he was more concerned about keeping the inventory of PPE high than with protecting her or the workers at the St. Croix plant.

3. Statements from Other Co-workers:

Dr. Jones also conducted interviews with 14 other former St. Croix alumina refinery workers that corroborate what the above seven individuals have reported. Here are some comments from those other workers.

Regarding typical numbers of work hours for these other workers:

- 12 hours a day for six or seven days a week was typical
- 50 to 60 hours per week most weeks
- 12-hour shifts when one or more workers were out sick, 16 hours a day if relief workers did not come into work
- As much as 16 hours per day for 365 days a year

Regarding the amounts of dust in the St. Croix plant:

- There was so much dust blowing around in the plant it looked “like a sandstorm”
- All areas of the plant were “sloppy”. Dust was blowing around everywhere.
- When cleanups were performed there was so much dust the air got “cloudy”.
- There were “clouds of dust” blowing around at the plant.
- When bauxite was unloaded from the ships the “whole plant looked like snow”.
- When shoveling the bauxite, it was so dusty “you couldn’t see yourself”.
- Coal dust and bauxite dust were “in the air everywhere”.
- In the tunnel under the bauxite conveyor belt, “you couldn’t even see properly because it is dusty, smelly, and hot, very hot”.
- The wind would cause small “tornadoes” that would pick up the bauxite dust and lift it up into the air.
- Bulldozer operators sometimes couldn’t see what they were pushing because the bauxite dust would get up into the cabs.

Appendix G.

Summary of Health Effects Claimed by St. Croix Workers

The following table lists the adverse health effects Mr. Burt and his co-workers are claiming:

Plaintiff	Pre-existing conditions	MDP diagnosis	Asbestosis diagnosis	Shortness of Breath	Easily Fatigued	Other health problems	Smoking habit
Milton Burt	none	Yes	Yes	yes	yes	cough	none
Dale Prime	none	Yes	No	yes	no	wheeze, cough	none
Gabriel Ramos	none	Yes	No	yes	no	none mentioned	1968-1989
Ronald Boston	none	Yes	No	yes	yes	none mentioned	none
Charles Fontaine	none	Yes	No	yes	yes	none mentioned	none
Miguel Velez	none	Yes	No	yes	no	cardiac problems, arthritis, stroke	1978-2012
Rodney Felix	none	Yes	No	yes	no	cardiac problems, headache, eye irritation	none
Gary Jarvis	none	Yes	No	yes	no	none mentioned	none

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Willhite, C.C., et al., "Systematic review of the potential health risks posed by pharmaceutical, occupational and consumer exposures to metallic and nanoscale aluminum, aluminum oxides, aluminum hydroxide and its soluble salts", Critical Reviews in Toxicology 44(54):1-80 (2014).

Wood, W.B. and S.R. Gloyde, "Pulmonary Asbestosis", Lancet 1383 (1931).

Wyatt, J.P. and A.C.R. Riddell, "The Morphology of Bauxite-Fume Pneumoconiosis", American Journal of Pathology 30:447-465 (1948).

Zosky, G.R., et al., "Coal workers pneumoconiosis: an Australian perspective", Medical Journal of Australia 204(11):414-418e2 (2016).

Attachment A.

Current Curriculum Vitae

for

Dr. S. Thomas Dydek, Ph.D., D.A.B.T., P.E.

CURRICULUM VITAE
Dr. S. Thomas Dydek, Ph.D., D.A.B.T., P.E.
Board-Certified Toxicologist and Licensed Professional Engineer

Dydek Toxicology Consulting, L.L.C. ***Phone: (512) 280-5477***
5208 Avenue H ***Mobile: (512) 663-7836***
Austin, Texas 78751
E-mail: dydek@tox-expert.com
Web Page: http://www.tox-expert.com

I. AREAS OF EXPERTISE:

Evaluating the potential adverse human health effects associated with exposure to toxic chemicals such as arsenic; asbestos; benzene; carbon monoxide; lead and other metals; pesticides and herbicides; petroleum products; oil and gas fracking emissions; silica; solvents such as methylene chloride, toluene, and xylene; toxic gases including ammonia, chlorine, formaldehyde, hydrogen sulfide, and sulfur dioxide; and many other chemicals in occupational and community settings.

Evaluating the potential for adverse health effects of implanted medical devices; the use of consumer products such as art materials, talc and talcum powder products; and tobacco smoking.

Evaluating the potential for odor nuisance conditions caused by airborne emissions of industrial chemicals.

Investigating indoor air quality including projects involving exposure to molds and/or bacteria,

Preparing Baseline Risk Assessments, establishing clean-up guidelines or standards, conducting state of the science toxicity reviews, and doing chemical exposure assessments, and

Providing litigation support as an expert witness in toxic tort cases, criminal proceedings, Worker's Compensation matters, Federal Employers Liability Act (FELA), and administrative hearings before environmental agencies.

II. EDUCATION:

A. Rice University, Houston, Texas. Bachelor of Arts degree in Mechanical Engineering. Major subjects were engineering, chemistry, physics, and mathematics.

B. Rice University, Houston, Texas. Master of Science degree in Environmental Science and Engineering. Major subjects were water and wastewater engineering and biology.

C. University of North Carolina School of Public Health. Doctorate in Environmental Science and Engineering, majoring in toxicology and minoring in epidemiology and biostatistics. Other major subjects were air pollution engineering and chemistry, aerosol science, biochemistry, and industrial hygiene.

D. University of Texas at Austin. Post-doctoral research fellowship in toxicology in the UT School of Pharmacy. Chief area of research was the effects of drugs and environmental contaminants on the respiratory systems of experimental animals.

III. WORK EXPERIENCE:

A. Dydek Toxicology Consulting, L.L.C., Austin, Texas. Dr. Dydek operates his own environmental consulting firm that specializes in toxicology and human health risk assessment. His work includes health risk analyses for site remediations, health effects evaluations for air and hazardous waste permitting, product safety evaluations, and other toxicological evaluations. He is familiar with the quantitative risk assessment methodologies and with other methods for assessing the potential for adverse effects from exposure to environmental and occupational contaminants. Dr. Dydek has also served as an expert witness in more than 300 toxic tort cases, regulatory agency public hearings, Worker's Compensation cases, and other legal proceedings.

B. Jones and Neuse, Inc., Austin, Texas. Dr. Dydek was employed as Senior Toxicologist and Project Engineer for this environmental consulting firm for three and one-half years. This job entailed performing health risk assessments, air emissions calculations, writing proposals, doing cost estimates and other functions associated with assisting clients in obtaining necessary permits and other authorizations to operate within the existing framework of environmental regulations in this country and abroad. This included work on Superfund and other remediation activities using the Risk Reduction Rules, air quality permitting, Resource and Recovery Act (RCRA) activities, preparing No-Migration Petitions, and providing expert testimony in public hearings as well as in toxic tort and other legal cases.

C. Texas Air Control Board, Austin, Texas. Dr. Dydek was employed for seven years as the Senior Staff Toxicologist in the Health Effects Division. His major duty in this job was to assess the potential for adverse public health and welfare effects from emissions of air pollutants. He conducted extensive independent evaluations of the impacts of potentially toxic air contaminants on human health and welfare. He participated in public meetings and testified as an expert witness in public hearings concerning air pollution hazards. He also monitored the scientific literature, attended workshops and conferences, and kept the agency's health effects computerized databases current.

D. Private Environmental Consulting Work, Austin, Texas. Dr. Dydek worked on several human health risk analysis projects on his own time when he was with the Texas Air Control Board. These included two reports on the potential human health effects of exposures to ambient levels of air pollutants in the Mexico City area, and an analysis of sulfur dioxide levels in an industrial area in Hong Kong.

E. Saint Edward's University, Austin, Texas. Dr. Dydek taught several undergraduate courses in the Environmental Studies Program in the Department of Physical and Biological Sciences. These courses included Environmental Studies, Toxicology, Industrial Hygiene, and Urban Planning.

F. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina. Dr. Dydek worked as a research scientist in the planning, implementation, and evaluation of air pollution control research projects, either as principal investigator or as project officer.

G. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina. Dr. Dydek held several 20-hour per week appointments in various EPA research laboratories during his doctoral program at the University of North Carolina School of Public Health. This work was in the areas of air quality data analysis and in air pollution exposure experiments using human volunteers at the EPA Clinical Studies Branch.

III. WORK EXPERIENCE (Continued):

H. U.S. Environmental Protection Agency, Dallas, Texas. Dr. Dydek worked as an environmental engineer in the water pollution control section, writing water pollution (National Pollutant Discharge Elimination System) permits and compliance schedules for major industrial and Federal facilities.

I. U.S. Fish and Wildlife Service, Albuquerque, New Mexico. Dr. Dydek oversaw the planning, designing, and inspecting facilities for water supply, wastewater pollution control, and solid waste management at Federal fish hatcheries and wildlife refuges in an eight-state area.

IV. CERTIFICATIONS, LICENSES, AFFILIATIONS, AND PROFESSIONAL ACTIVITIES:

A. Board Certified Toxicologist as a Diplomate of the American Board of Toxicology (D.A.B.T.). First certified in 1995, re-certified in 2000, 2005, 2010, 2015, and 2020.

B. Licensed to practice as a Professional Engineer in Texas (License No. 71831), 1992 to present.

C. Member of the Scientific/Technical Advisory Committee for the World Trade Center Health Program, National Institute for Occupational Safety and Health (2019 to 2021).

D. Adjunct Professor of Environmental Health at the University of Texas School of Public Health at San Antonio, Texas (1987-2000).

E. Current member of the Society of Toxicology, the American College of Toxicology, the Roundtable of Toxicology Consultants, the American Conference of Governmental Industrial Hygienists, and the Air and Waste Management Association (former Vice-Chair of the Air Toxics Committee, International AWMA; Treasurer of Central Texas Chapter of AWMA; Membership Chair of Central Texas AWMA).

F. Professional Activities at Local Level: Former member of the Citizen's Advisory Task Force on Solid Waste Management. Former member of an ad hoc committee on air quality issues in Austin. Member of a steering committee which aided the City in working with the local mass transit authority (Cap Metro) on environmental compliance issues.

G. Professional Activities at State Level: Former member of the Human Health Workgroup in the State of Texas Environmental Priorities Project (STEPP). This was the comparative risk project for Texas. Also provided comments for Sunset Review of Texas Natural Resource Conservation Commission (now the TCEQ).

H. Technical Advisor for television shows "CSI: Las Vegas" and "Bones" (2009 to present).

I. Peer reviewer for U.S. Environmental Protection Agency "Provisional Toxicity Value" documents and books on toxicology (2011 to present).

V. HONORS AND AWARDS:

Dean's List, Rice University.
Special Achievement Award, U.S. Fish and Wildlife Service, Albuquerque, New Mexico.
Special Achievement Award, U.S. Environmental Protection Agency, Dallas, Texas.
Certificate of Appreciation, City of Austin (for work on the Solid Waste Management Task Force).
Outstanding Employee Award, Texas Air Control Board, Austin, Texas.
Austin City Council Award (for work on Clean Air committee).

VI. EXTRACURRICULAR ACTIVITIES:

Member, National Championship Soccer Team (Veteran's Cup, Over-50's Division), 2000.
Member, National Championship Soccer Team (Veteran's Cup, Over-60's Division), 2007, 2008, 2009, 2010.
Member, National Championship Soccer Team (Adult Soccer Fest, Over-70s Division), 2021.
Member of Austin City League Championship Soccer Team (Over 50's Division), 2007, 2010, 2011.
Neighborhood Association "Keeper of the Green" 2014-present.

VII. PUBLICATIONS:

"Spring Creek: Water Resource Planning for Local Development" Dydek, T., et al., Environmental Sciences and Engineering Report No. 1, Rice University, Houston, Texas, 1971.
"Effects of Chlorination on Bacterial Polysaccharide Material," Master's Thesis, Rice University, 1972.
"The Influence of Carbon-Nitrogen Ratio on the Chlorination of Microbial Aggregates," W.G. Characklis and S.T. Dydek, Water Research 10:515-522, 1976.
"Neutralization and Size Changes of Sulfuric Acid Mist Particles," Ph.D. Dissertation, University of North Carolina School of Public Health, 1981.
"Analysis of Pulmonary Collagen Production by HPLC Separation of Radiolabled Hydroxyproline and Proline," Proceedings of the Western Pharmacology Society 27:319, 1984.
"Effects of Sodium Chloride on the HPLC Separation of Hydroxyproline and Proline," Liquid Chromatography 2:536, 1984.
"Effects Evaluation of Accidental Releases of Air Toxics: A Case Study of a Vinyl Chloride/Hydrogen Chloride Release," in Toxics, CAER, and Title III, Proceedings of the APCA Southwest Section Technical Meeting, ed. J. Shields, Corpus Christi, Texas, 1988.
"Use of Odor Thresholds for Predicting Off-Property Odor Impacts," Willhite, M.T. and S.T. Dydek, in Recent Developments and Current Practices in Odor Regulations, Controls and Technology, International Specialty Conference, Detroit, Michigan, Derenzo, D.R. and A. Gnyp, eds., Air & Waste Management Association, Pittsburgh, Pennsylvania, 1989, pp. 235-245.
"TNRCC's New Approach to Air Quality Permits," Texas Lawyer Environmental Law Issue, pp. 30-34, 1995.
"Health Risk Analysis Methods and the Law," The Texas Law Reporter, Volume 2, Issue 7, 1996.
"A Review of 'Microbial Toxins. Molecular and Cellular Biology'," International Journal of Toxicology 25:433-434, 2006.
"Investigating Carbon Monoxide Poisonings," book chapter in Carbon Monoxide Poisonings, 3rd Edition, D. Penney, ed., CRC Press, Taylor & Francis Group, Boca Raton, Florida, 2008.
"Shale Oil Toxicity," book chapter in the Encyclopedia of Toxicology, 3rd Edition, Elsevier Publishing Company, Waltham, Massachusetts, 2014.
"Shale Oil Toxicity," book chapter in the Encyclopedia of Toxicology, 4th Edition, Elsevier Publishing Company, Waltham, Massachusetts, in press.

VIII. TECHNICAL AND BUSINESS-RELATED PRESENTATIONS:

"Effects of Dynamic Operating Parameters on the Calibration Stability of CHAMP Aerometric Sensors," Air Pollution Control Association Annual Meeting, Toronto, Canada (1977).
"Neutralization and Size Changes of Sulfuric Acid Mist Particles in a Model of the Human Upper Airways," American Association for Aerosol Research Annual Meeting; Santa Monica, California (1982).
"Industrial Hygiene and Occupational Safety," guest lecture at the University of Texas School of Public Health,
San Antonio, Texas (1982).
"Studies of the Behavior of Sulfuric Acid Mist in a Model of the Human Upper Airways," Sixth World Congress on Air Quality, Paris, France (1983).
"Health Hazard Evaluation for Airborne Trace Elements in Texas," Air Pollution Control Agency Annual Meeting; San Francisco, California (1984).
"Ozone Health Effects," Ozone-Its Environmental and Economic Impact on Southeast Texas; Environmental Quality Council of Southeast Texas; Beaumont, Texas (1984).
"Risk Assessment in Health Effects Review of Air Permits in Texas," Air Pollution Control Association Annual Meeting; Detroit, Michigan (1985).
"New Source Review in Texas for Noncriteria Air Contaminant Impacts," Air Pollution Control Association Annual Meeting, Detroit, Michigan (1985).
"Evaluation of Non-Criteria Air Contaminant Impact on Texas," Air & Waste Management Annual Meeting, Minneapolis, Minnesota (1986).
"Effects Evaluation of Non-Criteria Air Pollutant Emissions from Hazardous Waste Management Facilities in Texas," Control of Air Pollution from Hazardous/Solid Waste Management Facilities; Austin, Texas (1986).
"Texas Procedure for Assessing Air Toxics," Setting Air Toxics Standards; Society for Risk Analysis," Houston, Texas (1987).
"Texas Procedure for Assessing Air Toxics," Solid and Hazardous Waste Management Symposium; Texas Water Pollution Control Association; Houston, Texas (1987).
"Effects Evaluation of Hazardous Waste Handling Facilities," Annual Technical Meeting of the Southwest Section of the Air Pollution Control Association; Irving, Texas (1987).
"Air Toxics Regulation- Federal and State," Meeting of the North Texas Chapter of the Air Pollution Control Association; Dallas, Texas (1987).
"Effects Evaluation of Accidental Releases of Air Toxics: A Case Study of a Vinyl Chloride Release," Southwest Section of the APCA Annual Meeting; Corpus Christi, Texas (1988).
"Risk Communication in Air Permitting in Texas," Poster at APCA Annual Meeting; Dallas, Texas (1988).
"Air Toxics," Texas Environmental Super Conference; Austin, Texas (1988).
"Update on the Gulf Coast Community Exposure Study," Community Leader/News Media Briefing; Port Arthur, Texas (1988).
"Air Toxics Review," Air Quality Permits Workshop, Texas Air Control Board, Austin, Texas (1988).
"Texas Air Control Board Programs Concerning Air Toxics," North Texas Council of Governments, Dallas, Texas (1989).
"Comparison of Health Risk Assessment Approaches for Carcinogenic Air Pollutants," APCA Annual Meeting Anaheim, California (1989) and Haztech International Conference; Houston, Texas (1990).
"Essentials of Qualitative Risk Assessment," Solid and Hazardous Waste Management Conference, Lafayette, Louisiana (1993).
"Epidemiology: The Discipline and Its Uses," Sixth Annual Environmental Law Symposium, South Texas College of Law, Houston, Texas (1995).

VIII. TECHNICAL AND BUSINESS-RELATED PRESENTATIONS (continued):

"Introduction to Risk Assessment and Risk Reduction," Alamo Chapter of the Air and Waste Management Association San Antonio, Texas (1995).
"Toxicology, Epidemiology and Risk Assessment in Environmental Programs," Ninth Annual Texas Environmental Superconference, Austin, Texas (1997).
"Overview of Environmental Risk Assessment Programs," Southwestern Association of Toxicologists, Spring Technical Meeting, Fort Worth, Texas (1998).
"Quantitative Risk Assessment and its Applicability to Industrial Hygiene," American Industrial Hygiene Association Local Chapter meeting, Austin, Texas (1999).
"Adventures of an Expert Witness Toxicologist," Air & Waste Management Association annual meeting, Salt Lake City, Utah (2000).
"So, You Want to be a Toxicology Consultant," American College of Toxicology annual meeting, San Diego, California (2000).
"Working with an Expert Witness," Texas Environmental Superconference, Austin, Texas (2005).
"Toxicology in the Media," Society of Environmental Journalists Annual Meeting, Austin, Texas (2005).
"The Toxicology Consultant as an Expert Witness," Roundtable of Toxicology Consultants Mid-Year Meeting, Tucson, Arizona (2008).
"Toxicology Consulting for the Chemical Industry," Continuing Education Course at the American College of Toxicology Annual Meeting, Palm Springs, California (2009).
"What You Need to Know About Indoor Air Quality," Green Expo, Austin, Texas (2010).
"Working with Toxicology Experts," DRI Young Lawyers Seminar, Austin, Texas (2017).
"TCEQ Air Quality Permitting Effects Evaluation," 4C HSE Conference, San Antonio, Texas (2018).
"World Trade Center Health Program," AIHA Gulf Coast Chapter Professional Development Course (2021).

IX. CONFERENCES, SEMINARS, COURSES, AND WORKSHOPS ATTENDED:

"Environmental Law" (1972).
"New Horizons in Environmental Biology" (1973).
"Air Pollution and Public Health," University of Texas at Dallas course (Fall, 1975).
"Environmental Medicine," Southwestern Medical School course (1975).
"Introduction to Epidemiology," Southwestern Medical School course (1976).
"Principles and Practice of Air Pollution Control" (1976).
Science Seminar, National Institute of Environmental Health Sciences (1977).
* American Association for Aerosol Research Annual Meeting (1982).
"Hazardous Waste Management," University of Texas at Austin course (Fall, 1982).
* "World Congress on Air Quality" (1983).
"Structure-Activity Relationships and Toxicity Assessment" (1984).
"The Occupational Health and Safety Professional in the Legal Environment," Southwest Occupational Health Services (1984).
* Air Pollution Control Association Annual Meeting (1984).
"Update on Cancer in the Deep South," Deep South Section of the American Industrial Hygiene Association (1984).
"Evaluation of the Scientific Basis for the Ozone/Oxidant Standard," Air Pollution Control Association (1984).

* Dr. Dydek made a presentation at this conference or meeting

IX. CONFERENCES, SEMINARS, COURSES, AND WORKSHOPS ATTENDED (continued):

* "Ozone-Its Environmental and Economic Impact on Southeast Texas," Environmental Quality Council of Southeast Texas (1984).
Society of Toxicology Annual Meeting (1985).
* Air Pollution Control Association Annual Meeting (1985).
"National Air Toxics Information Clearinghouse Database Seminar," U.S. Environmental Protection Agency (1985).
"Air Toxics Control: Clearing the Air," State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials (1985).
"First National Regulatory Agency Resource Recovery Workshop," Northeast States for Coordinated Air Use Management and California Air Pollution Control Officers Association (1986).
American Public Health Association Annual Meeting (1986).
* "Energy from Municipal Waste: Opportunities for the Southwest," U.S. Department of Energy (1986).
** State of New Mexico Environmental Improvement Board Hearings concerning an air toxics program for New Mexico (1986).
"Setting Air Toxics Standards," Lone Star Chapter of the Society for Risk Analysis (1987).
"Drug Metabolism and Toxicokinetics," Continuing Education Course, Society of Toxicology (1987).
Society of Toxicology Annual Meeting (1987).
* "Developing and Implementing Air Toxics Control Programs," State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials (1987).
* "Solid and Hazardous Waste Management Symposium" (1987).
* Annual Technical Meeting, Southwest Section of the Air Pollution Control Association (1987).
* "Air Toxics Regulation- Federal and State," North Texas Chapter of the Air & Waste Management Association (1987).
American Public Health Association Annual Meeting (1987).
Society for Risk Analysis Annual Meeting (1987).
"Respiratory Tract Toxicology," Continuing Education Course, Society of Toxicology (1988).
Society of Toxicology Annual Meeting (1988).
* Southwest Section of the Air Pollution Control Association Annual Meeting (1988).
"Environmental Health Faculty/Employer Forum," Association of Schools of Public Health (1988).
"Hospital Infectious Waste Incineration and Hospital Sterilization Workshop," STAPP/ALAPCO (1988).
* Air Pollution Control Association Annual Meeting (1988).
* "Air Quality Permits Workshop@, Texas Air Control Board (1988).
"Regional Risk Assessment Workshop," U.S. Environmental Protection Agency (1988).
* "Texas Environmental Superconference," State Bar of Texas and the Southwest Section of the Air & Waste Management Association (1988).
* "Community Leader/News Media Briefing," Joint Industry Council of South Jefferson County (1988).
"Annual Conference on Occupational Health," American Academy of Occupational Medicine (1988).
"Benzene and Leukemia," Lone Star Chapter of the Society for Risk Analysis (1989).
"Regulatory Toxicology," Continuing Education Course, Society of Toxicology (1989).
Society of Toxicology Annual Meeting (1989).
* North Texas Council of Governments (1989).
Southwest Section of the Air Pollution Control Association Annual Meeting (1989).

*   Dr. Dydek gave a presentation at this meeting or conference.
**   Dr. Dydek provided expert witness testimony at this hearing

IX. CONFERENCES, SEMINARS, COURSES, AND WORKSHOPS ATTENDED (continued):

* Air Pollution Control Association Annual Meeting (1989).
* "Haztech International Conference" (1990).
Air & Waste Management Association Annual Meeting (1990).
"Practical Strategies for Managing Environmental Liabilities" (1993).
* Solid and Hazardous Waste Management Conference, University of Southwest Louisiana and the Louisiana Department of Environmental Quality (1993).
Society of Toxicology Annual Meeting (1994).
Texas Natural Resource Conservation Commission Environmental Trade Fair (1994).
** Environmental Business Development Conference, American Institute for Environmental Education (1995).
Air Quality Operating Permits Seminar, Texas Natural Resource Conservation Commission (1995).
* Sixth Annual Environmental Law Symposium, South Texas College of Law (1995).
* Lone Star Chapter of the Air & Waste Management Association (1995).
* Alamo Chapter of the Air & Waste Management Association (1995).
Texas Natural Resource Conservation Commission Environmental Trade Fair (1995).
Mid-America Toxicology Course, University of Kansas Medical Center (1995).
Air & Waste Management Association Annual Meeting (1995).
Environmental Remediation Opportunities Conference, U.S. Department of the Air Force and the U.S. Small Business Administration (1995).
Society of Toxicology Annual Meeting (1996).
Texas Natural Resource Conservation Commission Environmental Trade Fair (1996).
"Advanced Topics in Pharmacokinetics," Continuing Education Course, Society of Toxicology (1996).
Fifth Annual National Expert Witness and Litigation Seminar, S.E.A.K., Inc. (1996).
Texas Environmental Superconference, State Bar of Texas and the Southwest Section of the Air & Waste Management Association (1996).
"Toxicology of Agents: Metals," Continuing Education Course, Society of Toxicology (1997).
Society of Toxicology Annual Meeting (1997).
Texas Natural Resource Conservation Commission Environmental Trade Fair (1997).
"Industrial Hygiene Calculations," Continuing Education Course, American Industrial Hygiene Association (1997).
American Industrial Hygiene Association Annual Meeting (1997).
"EPA's Planned Revisions to the Ozone and Particulate Matter National Ambient Air Quality Standards," Continuing Education Course, Air & Waste Management Association (1997).
Air & Waste Management Association Annual Meeting (1997).
* Texas Environmental Superconference, State Bar of Texas and the Southwest Section of the Air & Waste Management Association (1997).
"Improving the Practice of Risk Assessment," Society for Risk Analysis, Lone Star Chapter First Annual State Conference (1997).
* Southwestern Association of Toxicologists, Spring Technical Meeting (1998).
Texas Natural Resource Conservation Commission Environmental Trade Fair (1998).
Texas Environmental Superconference, State Bar of Texas and the Southwest Section of the Air & Waste Management Association (1998).

*	Dr. Dydek gave a presentation at this meeting or conference.
**	Dr. Dydek participated in a panel discussion at this conference.

IX. CONFERENCES, SEMINARS, COURSES, AND WORKSHOPS ATTENDED (continued):

"Hot Air Topics" Conference, Gulf Coast Chapter of the Air & Waste Management Association (1998).
"New Endpoints in Risk Assessment," Lone Star Chapter of the Society for Risk Analysis (1998).
Assessing and Managing Risks in a Democratic Society," Society for Risk Analysis Annual Meeting (1998).
* Texas Natural Resource Conservation Commission Environmental Trade Fair (1999).
** Air & Waste Management Association Annual Meeting (1999).
American Industrial Hygiene Association Hill Country Chapter meeting (1999).
Society for Risk Analysis, Lone Star Chapter Annual Meeting (1999).
Air & Waste Management Association National Conference on Ozone Action Programs (1999).
Roundtable of Toxicology Consultants Annual Meeting (1999).
"Hot Air Topics" Conference, Gulf Coast Chapter of the Air & Waste Management Association (1999).
"The Role of Human Personal Exposure Assessment in Determining Health Impacts of Urban Air Toxics," National Urban Air Toxics Research Center (2000).
Society of Toxicology Annual Meeting (2000).
Texas Natural Resource Conservation Commission Environmental Trade Fair (2000).
Air & Waste Management Association Annual Meeting (2000).
Texas Environmental Superconference, State Bar of Texas and the Southwest Section of the Air & Waste Management Association (2000).
Indoor Air Quality Association Annual Meeting (2000).
Expert Witness Workshop (2000).
* American College of Toxicology Annual Meeting (2000).
American Industrial Hygiene Association Symposium, "Molds in the Indoor Environment" (2000).
Air & Waste Management Association Annual Meeting (2001).
Texas Environmental Superconference, State Bar of Texas and the Southwest Section of the Air & Waste Management Association (2001).
Texas Natural Resource Conservation Commission Environmental Trade Fair (2002).
Texas Environmental Superconference, State Bar of Texas and the Southwest Section of the Air & Waste Management Association (2002).
Environmental Law Update Seminar, Fulbright & Jaworski (2002).
Society for Risk Analysis Annual Meeting (2002).
"Protecting the Central Texas Environment and Economy," Air and Waste Management Association, Central Texas Chapter (2004).
Texas Commission on Environmental Quality Environmental Trade Fair (2004).
American Bar Association Annual Meeting (as an exhibitor, 2004).
"Hot Air Topics" Conference, Gulf Coast Chapter of the Air & Waste Management Association (2004).
Environmental Law Update Seminar, Fulbright & Jaworski (2004).
Society of Toxicology Annual Meeting (2005).
Texas Commission on Environmental Quality Environmental Trade Fair (2005).
Texas Legislative Update Seminar (2005).
* Texas Environmental Superconference, State Bar of Texas and the Southwest Section of the Air & Waste Management Association (2005).

* Dr. Dydek gave a presentation at this meeting or conference.
** Dr. Dydek was co-chairman of a technical session at this meeting or conference.

IX. CONFERENCES, SEMINARS, COURSES, AND WORKSHOPS ATTENDED (continued):

** Society of Environmental Journalists Annual Meeting (2005).
Society of Toxicology Annual Meeting (2006).
Texas Commission on Environmental Quality Environmental Trade Fair (2006).
Texas Environmental Superconference, State Bar of Texas and the Southwest Section of the Air & Waste Management Association (2006).
Society of Toxicology Annual Meeting (2007).
Texas Commission on Environmental Quality Environmental Trade Fair (2007).
*,** Environmental Law Update Seminar, Fulbright & Jaworski (2007).
Legislative Update Seminar, Vinson & Elkins (2007).
Texas Environmental Super Conference, State Bar of Texas and the Southwest Section of the Air & Waste Management Association (2007).
"Chemical Specific Adjustment Factors," continuing education course taken at the Society for Risk Analysis Annual Meeting (2007).
Society for Risk Analysis Annual Meeting (2007).
Roundtable of Toxicology Consultants Annual Meeting (2008).
American College of Toxicology Annual Meeting (2008).
Society of Toxicology Annual Meeting (2008).
Texas Commission on Environmental Quality Environmental Trade Fair (2008).
Texas Environmental Superconference (2008).
"New Frontiers in Metal Toxicology: Genetic Susceptibility, Early Diagnosis, and Related Biological Indices," Continuing Education Course, Society of Toxicology (2009).
Society of Toxicology Annual Meeting (2009).
Texas Commission on Environmental Quality Environmental Trade Fair (2009).
Roundtable of Toxicologists Mid-Winter Meeting (2009).
* American College of Toxicology Annual Meeting, Continuing Education Course (2009).
Society of Toxicology Annual Meeting (2010).
Alliance for Risk Assessment, "Beyond Science and Decisions: from Problem Formulation to Dose-Response. Workshop Number 1" (2010).
Air and Waste Management Association Environmental Law Symposium (2010).
Texas Commission on Environmental Quality Environmental Trade Fair (2010).
National Urban Air Toxics Research Center "Air Toxics Symposium" (2010).
"Hot Air Topics" Conference, Gulf Coast Chapter of the Air & Waste Management Association (2011).
Society of Toxicology Annual Meeting (2011).
"Environmental Law Update Seminar," Fulbright & Jaworski (2011).
Society of Toxicology Annual Meeting (2012).
Texas Commission on Environmental Quality Environmental Trade Fair (2012).
"Beyond Science and Decisions" Webinar (2012).
Society of Toxicology Annual Meeting (2013).
Texas Commission on Environmental Quality Environmental Trade Fair (2013).
Roundtable of Toxicology Consultants Mid-Year Meeting (2013).

* Dr. Dydek gave a presentation at this meeting or conference.
** Dr. Dydek chaired a session at this seminar.

IX. CONFERENCES, SEMINARS, COURSES, AND WORKSHOPS ATTENDED (continued):

Texas Commission on Environmental Quality Environmental Trade Fair (2014).
"Independent Workshop on Ozone NAAQS: Science Policy" Webinar (2015).
Texas Commission on Environmental Quality Environmental Trade Fair (2015).
"Health Risks of Indoor Exposure to Particulate Matter," NAS Webinar (2016).
"Current Clinical Perspectives in Evaluating Chemical Induced Asthma" Webinar (2016).
"The Role of Toxicology in Asthma Hazard Assessment" Webinar (2016).
Texas Commission on Environmental Quality Environmental Trade Fair (2016).
"Manganese Health Effects on Neurodevelopment and Neurodegenerative Disease" Webinar (2016).
"The New Toxic Substances Control Act (TSCA)" Webinar (2016).
"Asthma-specific Hazard Characterization Approaches: A Novel Approach to a Complex Problem" Webinar (2016).
"The Toxic Substances Control Act Then and Now," Webinar (2016). "Long-duration Sampling of Indoor and Ambient Air," Webinar (2016).
Arsenic in Drinking Water and Human Health Webinar, Society of Toxicology (2016).
"Hydraulic Fracturing Drinking Water Impact Assessment," U.S. EPA (2016).
"Manganese 2016 Update," Webinar, Selikoff Centers for Occupational Health (2016).
"Introduction to Soil Gas Investigations" Cox-Colvin & Associates (2017).
"Selection of Representative Monitoring Data" NaviKnow Webinar (2017).
Texas Commission on Environmental Quality Environmental Trade Fair & Conference (2017).
* Defense Research Institute Young Lawyers Seminar (2017).
"Implementation of the New Toxic Substances Control Act," Winstead Law Firm Seminar (2017).
"Air Quality Data," NaviKnow Webinar (2017).
"Chemical Risk Management," Winstead Law Firm Seminar (2017).
Society of Toxicology Annual Meeting (2018).
*,** 4C Health, Safety & Environment Conference (2018).
Texas Commission on Environmental Quality Environmental Trade Fair & Conference (2018).
"Dispersion Modeling Audits: The Audit Process," NaviKnow Webinar (2018).
"Dealing with Dust in the Wind," U.S. Environmental Protection Agency Webinar (2019).
Texas Commission on Environmental Quality Environmental Trade Fair & Conference (2019).
"PFAS Detection from Aerial Data," Satelytics Consultants Webinar (2020).
"An Online Interface for *in vitro* to *in vivo* extrapolation in HepaRG Cells," Safer World by Design Webinar (2020).
"Identifying Emerging Chemicals of Concern" Gradient Consulting Webinar (2020).
"Assessing the Impact of Multi-Route Co-Exposures on Human Variability in Toxicokinetics of Drinking Water Contaminants in Binary and Quaternary Mixtures," Society of Toxicology Risk Assessment Specialty Section Webinar (2020).
"Flipping the Switch on Right and Wrong: Evolving Ethics in Science," Science and Entertainment Exchange Webinar (2020).
"Introduction to PFAS" and "A Practitioner's Guide to PFAS," Ensafe Webinar (2020).

* Dr. Dydek gave a presentation at this seminar.
** Dr. Dydek chaired a session at this conference.

IX. CONFERENCES, SEMINARS, COURSES, AND WORKSHOPS ATTENDED (continued):

“Methane Detection Using Satellites,” GHGSat Webinar (2020).
“Assessing the Human Health Risks to Fugitive Airborne Ethylene Oxide Emissions,” GHD Group Webinar (2021).
“Application of Toxicokinetic Modeling for the Prioritization of Chemical Groupings,” ScitoVation Webinar (2021).
“Applications of PBPK Modeling in Pesticide Risk Assessment” ScitoVation Webinar (2021).
“PFAS PBPK Models: Current Status and Progress Needed,” ScitoVation Webinar (2021).
“Moving from One-Size-Fits-All to Fit-for-Purpose Threshold of Toxicological Concern Values,” Society of Toxicology Computational Toxicology Specialty Section Webinar (2021).
“Composite Scores, Social Embodiment and Risk of CVD: Evidence from the UK Biobank Cohort” Society of Toxicology Risk Assessment Specialty Section Webinar (2021).
“Application of Toxicokinetics Modeling for Prioritization of Chemical Groupings,” ScitoVation Webinar (2021).
“Opportunities and Challenges Related to Saturation of Toxicokinetic Processes” Society of Toxicology Risk Assessment Specialty Section Webinar (2021).
* American Industrial Hygiene Association Gulf Coast Chapter Professional Development Conference (2021).
** “Particulate Matter Considerations,” Clean Air Force of Central Texas Luncheon for Meteorologists (2021).
“Natural Products Health Risk Assessment” Society of Toxicology Risk Assessment Specialty Section Webinar (2022).
“Climate Change and Vulnerable Populations: Complementary Approaches for Assessing Extreme Heat and Health” Society of Toxicology Risk Assessment Specialty Section Webinar (2022).

* Dr. Dydek gave a presentation at this seminar.
** Dr. Dydek was a member of an expert panel at this meeting.

Attachment B.

List of Testimony Given in Past Four Years

for

Dr. S. Thomas Dydek, Ph.D., D.A.B.T., P.E.

TESTIMONY GIVEN BY DR. S. THOMAS DYDEK
(last four years in chronological order)

Attorney/Client Name	Type of Testimony	Style, Cause Number, Location
Ms. Leigh O'Dell Beasley Allen Law Firm Montgomery, Alabama	Deposition (8/21/18)	*Diane Brower v. Johnson & Johnson et al.,* Civil No. 16-EV-005534-E in the State Court of Fulton County, State of Georgia.
Ms. Janice Savinis Savinis, Kane & Gallucchi Pittsburgh, Pennsylvania	Live Testimony at Trial (9/13-14/18)	*Fix v. 84 Lumber Company, et al.,* Civil Division-Asbestos No. G.D. 15-010595 in the Court of Common Pleas of Allegheny County, Pennsylvania.
Mr. Dan Kordik Kordik Law Firm Belleville, Illinois	Deposition (1/8/19)	*Swanson v. Insituform Technologies USA, L.L.C.*; Civil Action No. 1:18-CV-4125 in the United States District Court for the Northern District of Illinois, Eastern Division.
Ms. Lara Brock Espinoza Law Firm San Antonio, Texas	Deposition (1/15/19)	*Luevano vs. Walmart Associates, Inc.* JWA No. 1040-A-2017, Judicial Workplace Arbitration.
Ms. Lara Brock Espinoza Law Firm San Antonio, Texas	Live Testimony at Hearing (2/27/19)	*Luevano vs. Walmart Associates, Inc.* JWA No. 1040-A-2017, Judicial Workplace Arbitration.

TESTIMONY GIVEN BY DR. S. THOMAS DYDEK
(last four years in chronological order)

Attorney/Client Name	Type of Testimony	Style, Cause Number, Location
Ms. Marisa Perales Frederick, Perales, Allmon & Rockwell Austin, Texas	Deposition (4/23/19)	Application of Vulcan Construction Materials, LLC for Permit No. 147392L001, Comal County, Texas SOAH Docket No. 582-19-1955, TCEQ Docket No. 2018-1303-AIR Before the State Office of Administrative Hearings, Austin, Texas.
Mr. Eric Allmon Frederick, Perales, Allmon & Rockwell Austin, Texas	Live Testimony at Hearing (6/10/19)	Application of Vulcan Construction Materials, LLC for Permit No. 147392L001, Comal County, Texas SOAH Docket No. 582-19-1955, TCEQ Docket No. 2018-1303-AIR Before the State Office of Administrative Hearings, Austin, Texas.
Mr. Martin Barrie Burns Charest, LLP Dallas, Texas	Deposition (7/31/20)	*In Re: Bauxite Containing Silica, Halliday Litigation Series*. Case No. SX-15-CV-097 In the Superior Court of the Virgin Islands, Division of St. Croix.

Prepared June 23, 2022

TESTIMONY GIVEN BY DR. S. THOMAS DYDEK
(last four years in chronological order)

Attorney/Client Name	Type of Testimony	Style, Cause Number, Location
Ms. Marion Reilly Hilliard, Muñoz & Gonzales Corpus Christi, Texas	Deposition (8/13/20)	*Broussard vs. Buffco Production, Inc.* No. 18-04-14156-ZCV in the District Court, 293rd Judicial District, Zavala County, Texas.
Ms. Jennifer M. Lee Fee, Smith, Sharp & Vitullo Dallas, Texas	Deposition Part 1 (11/20/20) and Part 2 (12/18/20)	*Colon and Hunt v. Sunset 320, LLC, et al.,* Cause No. DC-18-18590 in the District Court of the 68th Judicial District of Dallas County, Texas.
Mr. Chris Byrd Byrd Law Firm Bulverde, Texas	Deposition (5/20/21)	*Justin Kelley, et al. vs. Comal Ag Operations, LLC; Santa Rita Land & Cattle Holdings, Ltd; and Zane Strader*, Cause No. 18-1118-CV-A In the District Court of the 2nd 25th Judicial District of Gaudalupe County, Texas.
Mr. Matthew Parish Tuanton, Snyder & Parish Houston, Texas	Deposition (8/5/21)	*Hang Pau, et al. v. Auburn Creek Ltd. Partnership*, No. 2017CI17349 in the District Court, 73rd Judicial District, Bexar County, Texas.

Prepared June 23, 2022

TESTIMONY GIVEN BY DR. S. THOMAS DYDEK
(last four years in chronological order)

Attorney/Client Name	**Type of Testimony**	**Style, Cause Number, Location**
Mr. Richard Gondik Gondik Law Firm Superior, Wisconsin	Deposition (1/18/22)	*Bell-Yellin and Moore v. Husky Energy, Inc., et al.,* Case No. 20-cv-631 in the U.S. District Court for the Western District of Wisconsin.
Mr. Chase Boeneke Rabalais Unland New Orleans, Louisiana	Deposition (2/8/22)	*Fontenot v. Union Tank Car Company* WDLA Docket No. 6:20-cv-00115 in the U.S. District Court for the Western District of Louisiana.
Mr. Mark Underwood Underwood Law Firm Houston, Texas	Deposition (7/21/22)	*Intercontinental Terminals Company, LLC: Dear Park Fire Litigation* Lead Case No. 4:19-cv-01460 In the United States District Court For the Southern District of Texas, Houston, Texas.

Prepared June 23, 2022

EXHIBIT 123

Excerpts of Transcript of Deposition of Milton Burt, August 31, 2022

IN THE SUPERIOR COURT OF THE VIRGIN ISLANDS

DIVISION OF ST. CROIX

MILTON BURT,)
)
Plaintiff,)
)
vs.) Case No. SX-2021-CV-548
)
LOCKHEED MARTIN CORPORATION,)
GLENCORE LTD., and COSMOGONY II,)
INC.,)
)
Defendants.)

THE VIDEOTAPED ORAL DEPOSITION OF MILTON A. BURT

was taken on the 31st day of August, 2022, at the Offices of Caribbean Scribes, Inc., 1244 Queen Cross Street, Suite 1A, Christiansted, St. Croix, U.S. Virgin Islands, and via Zoom teleconference, between the hours of 9:13 a.m. and 5:01 p.m., pursuant to Notice and Federal Rules of Civil Procedure.

Reported by:

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By: Sangeeta Shastry

Also Present: Debbie O'Toole, Videographer

APPEARANCES

E-X-A-M-I-N-A-T-I-O-N

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MR. YELTON: Same objection.

A. Because I've been working there all the days of my life.

Q. **(Mr. Belinskiy)** And that's the alumina plant, correct?

A. Yes.

Q. Okay. And what is -- what is your understanding of why you named Lockheed Martin in this action?

MR. YELTON: Same objection.

A. Because I started working in the alumina refinery from 1967 until 2001.

Q. **(Mr. Belinskiy)** Okay. And do you -- are you familiar with a company, Cosmogony II, Inc.?

A. Repeat that again.

Q. Are you familiar with a company, Cosmogony II, Inc.?

A. No.

Q. Are you familiar with the company, GEC?

A. Yes.

Q. What can you tell me about GEC?

A. It's a subcontractor of various companies in the -- in the refinery.

Q. Okay. Now, when -- were they working at the refinery your whole time there?

A. No.

Q. When did you first -- when did you first hear of GEC?

A. I can't remember.

Q. Do you remember when you first saw them working there?

A. No.

Q. Okay. Do you know of anyone who worked for GEC?

A. I can't -- I can't recall, because there's so many men have passed on. That if I see them by face, I would remember; but name, I cannot.

Q. Okay. Now, did you see GEC employees at the plant, specifically during the period of VIALCO's operations? And that's 1989 through 1995.

A. I can't remember.

Q. Okay. When you -- when GEC worked at the plant, do you know how many employees they had working at the plant at once, approximately?

A. You talk about GEC?

Q. Yes, sir.

A. No, I can't remember how many employees. There were several contractors also in there.

Q. Okay. What are some of the other contractors that were there?

A. I'm trying to remember. Some small contractors. I'm trying to remember how many other small contractors.

There was one contractor guy that I know that have pass on by the name of Cab. I only know him by his name. I don't know his -- his company name.

Q. Can you spell his name for me?

A. C-A-B, but he have passed on.

Q. Okay.

A. And there was another -- there was another guy that -- that they call Francie. Was -- his name was Francis, but his company name, I can't recall.

Q. Okay. And now going back to GEC, how often were they at the plant? Were they there daily?

A. Yeah, I saw them around there. Quite a while, I saw them around there.

Q. Sorry. Could you repeat that?

A. I saw them quite a while in there.

Q. Okay. But would you say they were there every day, or, you know, more like every other day, or couple days a week?

MR. YELTON: Object to form.

A. They -- they were there quite a while, doing odds and ends.

Q. **(Mr. Belinskiy)** Okay. And when -- when they were there doing work at the alumina plant, how did you know that they were GEC employees?

A. Because I know them. I know them, personally, but

I don't know their name. Seeing their faces.

Q. And did GEC ever participate in the work you did, or did you ever do the same work as them while they were working at the plant?

A. Well, they do the same work. Some -- some the job -- some the work I do, they do, but not all.

Q. Can you tell me what that work was that you both did?

A. They would break flanges. They would remove pipe. They would -- most -- most -- most of the jobs that they do, right? Is like breaking flanges, install new pipes, remove pipes, repair tanks.

Q. Okay. Do you know what other specific work GEC did there that you did not also do?

A. Did not what?

Q. That you -- so the type of work that GEC employees did at the plant that you wouldn't have done yourself?

A. They will do installation that I wouldn't know.

Q. Installation of what?

A. ESPs, pipe, tanks, filters.

Q. And how close -- were you close to them when they were doing this other work?

A. Yeah. All over.

Q. Do you remember if GEC typically only worked in specific units at the plant?

A. No. They worked all over where there's work to be done. And we, as maintenance guys, can't handle it, they would turn it over to GEC, or other small subcontractors.

Q. And did you see them performing waste oil removal during VIALCO's tenure?

A. Waste oil removal will be more over by -- most of it would be over by the powerhouse, so I wouldn't know.

Q. Okay. Did you ever complain to any of your superiors about GEC, or anything that GEC employees did?

A. No.

Q. Okay. So let's go back a little bit to before you started working at the alumina plant.

Did you have -- did you work anywhere else before that?

A. In my home country.

Q. And what was your first job?

A. Carpentry.

Q. Okay. And what company or companies did you work for?

A. We didn't have no company. Just here and there, regular job, to build a house, to repair a house, and things like that.

Q. Okay. And do you remember when you did that? Like between what years?

A. I would say from 1968. No, 1966. 1966. Around there.

Q. And were you doing this carpentry up until you started working for -- started working in the plant?

A. I migrate to St. Croix in '67, and started working at the refinery in 1967, April.

Q. Okay. And during -- when you were still doing carpentry before that, do you know if you were exposed to any dust?

A. No.

Q. Do you know if you were exposed to any asbestos?

A. We don't have them things at home.

Q. Okay. Now, we're going to move forward a little bit.

Do you remember VIALCO -- do you remember VIALCO started opening the plant in -- reopening the plant in 1989?

A. Yeah.

Q. And were you employed by Camino Del Mar for a period of time when VIALCO first started reopening the plant?

A. Yeah.

Q. For how long?

A. I would say about -- maybe about two years.

Q. Do you remember what years?

A. November '88 till -- till about '90.

Q. Okay. And what was Camino Del Mar?

A. It was a company that were doing a lot of cleaning and preparation to start up the refinery. To restart the refinery.

Q. Okay. And how many employees did it have, do you know?

A. We started with 11 to 16 employees.

Q. Now, was Camino Del Mar a contractor?

A. Yes.

Q. And did it contract out any other kind of work, other than cleaning, like cleanup work?

A. Not as far as I know.

Q. And what was your job title there?

A. My job title was a foreman.

Q. Was that in -- okay. And is that different from a maintenance supervisor?

A. No.

Q. Okay. It's the same job?

A. Same job.

Q. Gotcha.

And what responsibilities did you have specifically at Camino Del Mar while you were the foreman?

A. Well, my responsibility was doing maintenance work, cleaning up. At first when we went in, we had to do a lot of cleanup.

Q. And what did that involve?

A. That was mostly after Hurricane Hugo in '89. We had to -- the refinery had a lot of debris. A lot of removal of the installation from pipe, ESP tanks, and other equipment, and we had to clean it up.

Q. Did Camino Del Mar employees work at other locations or facilities, other than the alumina plant? Did it contract out employees to other facilities?

A. I don't think so.

Q. Did Camino Del Mar provide safety training?

A. Well, most of the guys that -- I don't -- I would say, no. Why I said no, is because most of the guys -- not most, every one of the guys was employed there before.

Q. And so does that mean they would have already received training?

A. Yes.

Q. Did Camino Del Mar warn or have any information they gave about asbestos?

A. No.

Q. How about bauxite?

A. All we had known is about bauxite and alumina.

Q. And what -- what information did Camino Del Mar give about bauxite?

A. Well, all that we know about is the bauxite. Bauxite.

Q. Okay. And do you know who, at Camino Del Mar, had the responsibility of ensuring safety of employees?

A. I don't think they had any.

MR. YELTON: Object to form.

A. I don't think they had anyone that specifically were teaching us about safety. We just had our training. We just had our safety meetings as usual. Even before the plant had closed.

Q. **(Mr. Belinskiy)** Okay. And did you wear any personal protective equipment while working for Camino Del Mar?

A. Yes.

Q. What was it?

A. Hat, safety hat, goggles, rubber boots, glasses. Those were the -- as I can recall now, that was issued.

Q. Any -- did you wear any masks ever?

A. No.

Q. And the hats, goggles, rubber boots, glasses, were there specific jobs that you wore these for, or was it pretty much throughout the time?

A. No. They were issued when you actually started to work. That was issued to everybody when they started working.

Q. Okay. Were masks available if you requested them?

A. No, not at the time when we started.

Q. Okay. So after your time with Camino Del Mar, did there come a time when you came to work at VIALCO?

A. I didn't hear that properly.

Q. Sorry.

Did there come a time when you came to work for VIALCO?

A. Yes.

Q. And when was that?

A. That was in 1990.

Q. Okay. And how did you come to work there?

A. Well, like most of us, we just switch over from working with Camino Del Mar to VIALCO.

Q. Was there anyone specific at VIALCO who hired you?

A. Yes. There was -- he's -- he's not present on -- in life right now.

Q. Do you, by chance, remember his name?

A. No.

Q. Do you remember his job title?

A. Beg your pardon?

Q. Do you remember his -- his job title?

A. He was -- he was a superintendent.

Q. Okay. And did you -- were you also a foreman or maintenance supervisor for VIALCO?

A. Yes.

Q. Was there a time when you transitioned? Was there a time prior to this, when you transitioned from a different position to being a maintenance supervisor?

A. Yeah. Well, foreman. It was around 19 -- it's either '82 to '83.

Q. Okay. And what were you before that?

A. I was a maintenance man.

Q. Okay. But your whole time at VIALCO, you were a foreman, correct?

A. Yes.

Q. Okay. So I'd like to understand what kind of work you did during your time as the foreman at VIALCO.

Can you describe a typical day as a foreman there? Typical workday?

A. Well, what I do, I -- I give the men assignment. What we're doing today. It was about 11 men, and I give them assignment, what we're going to do today. And we get our clearance, as you would call it, that everything is -- is okay to do the job. And I will give it to them, and they will get their tools, and they will go on the job.

Q. Are you done with your answer, Mr. Burt?

A. Huh?

Q. Are you done with your answer?

A. Yeah. They will go on the job and perform the job.

Q. And did you -- would you go with them to where they're performing the job?

A. Yes, I have to be around them, because there's -- there's -- there's certain times I have to help and make sure they work safely.

Q. Okay. How many -- okay.

What days, during the week, did you work, typically?

A. Repeat that again.

Q. Were there certain days of the week that you typically worked?

MR. YELTON: Attorney Belinskiy, do you -- are you talking about just the VIALCO days? Could you clarify?

Q. **(Mr. Belinskiy)** Yes. To clarify, I'm only asking about when you worked for VIALCO.

A. So repeat the question again.

Q. Were there certain days of the week that you typically worked?

A. I work -- I work -- sometimes I work a whole month without getting a day off.

Q. And how many hours a day did you typically work when you went in?

A. The normal hours of work is -- is eight hours, but I hardly work that. I work eight plus.

Q. Okay. And who did -- did you report to a specific individual?

A. No.

Q. Did you --

A. I worked -- I worked for the company.

Q. Okay. Did you have anybody that you considered your superior at VIALCO? Like your boss?

A. Yes.

Q. Who was that?

A. His name was Harry Denwood. He pass.

Q. Okay. How do you spell his last name?

A. D-E-N-W double O-D.

Q. Okay. And now you had -- you said you would send your men to jobs -- on jobs as foreman.

How -- and you said you made sure that, you know, they did their work properly. They were safe.

How did you make sure they worked safely?

A. I stick around with them.

Q. And were there, you know, certain precautions that you made sure that they took?

A. Yes. We have to get a clearance from production, which -- which makes everything -- which they would say that everything is safe to work, and we have to sign it and give them a copy.

Q. And so were there certain requirements that needed to be met in order for you to be able to sign that?

A. Repeat that again. I didn't quite understand it.

Q. Yeah. Sorry.

Were there certain specific measures you had to take, or certain requirements that you had to make sure were being employed, or -- in order to be able to sign that form?

A. No. You have to -- you'll go in the -- in the foreman -- the production foreman office to get that permit, to -- which he will sign, and you will sign it, that everything is okay.

And before you sign that, you go out on the job, and you have to tag out the valves. You have to put locks on the breaker. And everyone that going to work on that piece of equipment have to also put his lock and his tag on the valves and on the breaker.

Q. And so how -- how long did this process of getting clearance typically take?

A. Sometimes when we go in the mornings, we already meet the clearance there.

Q. Okay. Now, you had mentioned that before VIALCO began operating the plant, you were a maintenance man.

How were your responsibilities as a foreman different than your responsibilities as a maintenance man?

A. Well, you're giving orders. You're giving orders. And in -- as a maintenance man, you have to take orders and you have to do the job.

Q. Were you -- as the foreman, were you, say, doing more driving of equipment at the plant?

A. When you say driving equipment, they very heavy equipment, and they have cars, and they have -- they have golf cart. What equipment are you referring to?

Q. Any of them.

Did you operate any of those?

A. Well, I had a golf cart that I -- I move around from job to job and to get parts for the men them.

Q. Okay. And so when you would send your men out to these jobs, you would use this golf cart to kind of -- if you needed to get from one job site to the other, where your men were working?

A. Where the men them were working. Yes, I have to move from job to job in order to make sure they work safely and to bring whatever material they may need.

Q. Okay. And were your -- were the men that you assigned to jobs, you said typically there was around 11, if I recall correctly, right?

A. Yeah.

Q. And that -- that's at one time, right? That's not throughout the whole six years? Did you usually have 11 men working at one time working under you?

A. That was most of the time, I would say.

Q. Okay. And when you would send them out to these jobs, did you -- did they all typically go work in the same area, or were there times when, you know, there was a lot of multiple places around the plant that they were working at, at the same time?

A. It all depends.

Q. How much time in your day would you say was spent going -- driving between the areas where they were working?

A. All depends on the -- the -- what we have to do.

Q. Okay. Were there certain times -- like certain circumstances under which you would be doing a lot more driving than others?

A. No. Most of the time, I would be helping them.

Q. Did you, as foreman, attend any, like supervisor meetings?

A. Yes.

Q. How often were they held?

A. Maybe once a -- once a month.

Q. And what was typically discussed at these?

A. Most of it is -- discusses production.

Q. Okay. And so you had mentioned there was other equipment, like heavy equipment. The golf cart was the only thing you operated.

Did you operate any other equipment?

A. Not -- not -- not as of my job. Not as -- for my job. It's not included in my job, but we was given special training to operate maybe a forklift. That is as far as we go.

Q. Did you have to ever operate a forklift while you were employed by VIALCO?

A. Yes.

Q. And how often would that be?

A. It all depends how busy the other operators are.

Q. Okay. Would you -- is this something that you would typically send a man -- like one of your men to do, and you would do it if there wasn't anybody to send?

A. I will do it.

Q. So going back, when you were supervising your employees, just, would it be fair to say you spent about an hour a day driving in the golf cart at the -- at the plant?

A. No.

Q. A half hour?

A. It's just a few minutes. It all depends if you're going for parts, or -- most of the times, it's parts you're going for. To the warehouse to get parts for whoever need parts.

Q. Okay. And could you give me -- could you describe the type of work that you would send your men to do?

A. There's a lot of -- there's a lot a -- of things we had to do inside there. We have to clean pipe. We have

A. Yeah.

MR. YELTON: Same.

Q. **(Mr. Belinskiy)** Okay. Now, earlier, you had mentioned some of the types of jobs that your men would do.

Would you be able to give an estimate of what percent of the time that they were cleaning pipes, specifically?

A. We would -- you're talking on a specific day?

Q. Just -- sure. Just on an average day?

A. It's not every day we clean pipe. Only when it's -- mostly if it's a emergency, that production would cut because of a pluggage. We would try and solve that problem.

But if a pipe, which is on a main stream is restricted, we have to take down that pipe. We'll have to switch over to another pipe, and take down that pipe, and get -- with our help, we'll get some other men, especially to beat that pipe, to clean it, and put it on the rack again, so if the event that that thing would happen again, you have a clean pipe to continue production.

Q. Do you -- could you tell me how often these pipes would get blocked?

A. The main pipe -- the main pipe would -- would run for about a year, right? But it have other small pipes that take other liquid or material, we'll call it, that would get

Q. And would -- would they be kind of -- would they have different tasks?

A. Different what?

Q. Would -- would each of them kind of have their own separate task involved with fixing the pipe, or would they kind of be doing the same thing?

A. We do -- we do -- the only thing that we'll do different is a welder. A welder is not everybody's welders. But taking off a piece of insulation, anybody can do that.

Q. So there -- there was specific men under you who -- who were welders, and they would be the ones doing the welding work?

A. Yes.

Q. Did you do welding work?

A. I don't like it, so I don't do it.

Q. Did you ever have to do it as the foreman at VIALCO, specifically?

A. It have to be -- it have to be -- I think I did it once.

Q. Now, were these pipes indoors? Outdoors? Both?

A. The only pipe --

MR. YELTON: Object.

A. The -- the only pipe indoors is fire. Is fire sprinklers.

Q. **(Mr. Belinskiy)** Okay. So, typically, you would be repairing these pipes outside, correct?

A. Yeah.

Q. Do you know what percent -- sorry. Do you know what percent of your time fixing pipes would be spent fixing sprinklers?

A. We don't fix sprinklers. They bring in people to -- to work on that. Special people to work on that.

Q. So did it vary how long each pipe was?

A. How long what?

Q. Did the dimensions of the pipes, how long and wide, did they vary, depending on, you know, what they contained?

A. Well, we know -- we know what they contain. Were there for years, and we know what almost each pipe contain.

Q. And the sprinkler pipes, they didn't have insulation, did they?

A. Not all pipes.

Q. I'm asking specifically about the sprinkler pipes that you said were inside.

A. The sprinkler pipes them wasn't insulated.

Q. Okay. Now, when you would drill into a pipe, how long was the drill bit that you typically used?

A. I drilling, too. About three times, I drill -- I drill into pipe. I would say one, and twice, I drill into a tank.

Q. So would there be a different way to cut a hole in the pipe?

A. Different what?

It all depends on the pipe, you know. Some are insulated, and some are not.

Q. Right. But to cut into the pipe, what did you use?

A. Well, this is the way we do it. It all depends. We -- we'll weld a flange on the pipe, and we will set up the drill. It all depends on what size of hole we want to drill. And we'll just go ahead and drill it, whether it's full or it's not full. Whether material is running through it, or not.

Q. Now, did you, yourself, do this drilling, as the foreman at VIALCO?

A. Yes.

Q. How often?

A. Not often.

Q. How deep did your men typically have to cut into the pipe?

A. How deep what?

Q. How deep into the pipe would you typically have to cut?

A. Until the piece, whether it's a 6-inch, 8-inch, or 12-inch piece, we are -- we are taking out.

If you have a -- if you have a 12-inch pipe, you just going to take out maybe a 10-inch piece of the pipe.

Q. Okay. And how many times, in a typical week, would you have to repair pipes that had insulation?

A. For what?

Q. How many times, in a typical work, would you repair pipes that had insulation at VIALCO?

A. It all depends. It all depends on -- on pluggage.

Q. Who decided what pipe needs repairing?

A. Process.

Q. Was there a specific way that you would receive the information?

A. Yes.

Q. And how was that?

A. Planning.

Q. Sorry?

A. Planning. Planning department.

Q. Okay. What's the maximum amount of time it took to fix one of these pipes?

A. It all depends on how bad it is.

Q. Is there a -- what's the longest it ever took you to fix one pipe?

A. I can't remember how long. I fix so many pipes, I -- I -- I can't remember.

Q. It would take over an entire day, possibly?

A. Sometime more than that.

Q. So, in your interrogatory responses, you said when you were -- when you referred to clearing pipes as part of your maintenance work, you said that once the pipe was cleared, it was re-installed in the pipe rack and wrapped with asbestos insulation.

Do you remember that?

A. Yeah.

Q. And who was your employer during the time period when you'd re-wrap pipes with asbestos insulation at the plant?

A. Martin Marietta.

Q. Did you ever wrap a pipe in asbestos insulation in the plant between 1989 and 1995?

A. 1985 to when?

Q. 1989 to 1995 at VIALCO?

A. I can't remember having anyone.

I could remember some -- they had GE doing some installation on the -- on the ESPs, because all of that had blown -- blown off during the -- the hurricane, but I can't remember.

I know we had one guy that was -- in Martin Marietta days, they had one guy that was putting back the insulation that was taken off, but not in -- not in VIALCO.

Q. Yes.

A. When I say -- when I say break line, I mean disconnect flanges.

Q. Okay. And could you describe what that entailed?

A. Well, there's certain flanges that you can break with a wrench, and some that is you have to cut with a torch.

Q. And how long would it take to disconnect one of these?

A. It depends how many.

Q. Did it range between, you know, typically a certain amount of time, like an hour? More?

A. You have different flanges. It have different size of flanges, and it got different size of bolts. And all take different time. And it depends on how long that flange been there.

Q. Okay. Could you describe like what -- what the worker would physically do to disconnect it?

A. Well, first thing we got to get what we call a clearance. The process man have to make sure it's safe to work on. And when he give us that clearance, we have to do all the safety measures.

For instance, if there's a valve, we have to, he going to tag it out. We also have to tag it out. If there's any rotating equipment connected to that pipe, we

Q. Okay. And at VIALCO, did you wear a mask when you would work with insulation?

A. No.

Q. Did you wear any safety equipment?

A. Safety what?

Q. Personal protective equipment? Sorry.

A. We -- we use -- it depends on where we're working, we'll use a safety belt. If it's on the pipe rack, we'll use a safety belt, plus our regular safety equipment.

Q. Okay. Was there -- was there specific types of work for which you did wear a mask?

A. What we use, like when we work in the lime, we use a piece of cloth.

Q. And did you also -- you were responsible for providing the rest of the maintenance men with these, correct?

A. It depends on if they have them.

Q. Were there times when you wanted to provide them with masks, but the masks weren't available?

A. Most of the times, the guys doesn't wear mask; they use cloth.

Q. Okay. Did they -- were you the one who provided this cloth?

A. No. We always use -- we always have cloth on us.

Q. Okay. Were there ever times when one of them asked you for a mask or told you they wished they had one when performing some work?

A. The job that we does that require mask is not regular, and they would just go inside there with a piece of cloth.

Q. So what -- what were the not regular -- what were these not regular jobs for which you did wear actual masks?

A. Repeat that?

Q. What were these jobs that you say, you know, were not regular, for which you did wear regular masks?

A. That we wear a mask?

Q. Um-hum. Yes, sir.

A. I can't remember where we ever use a mask. Most of the times, as I said, we use a piece of cloth.

Q. Okay. So -- so it's 11 o'clock now. We've been going for a couple hours. Would this be a good time for a break for you? Short break?

A. Yeah.

MR. BELINSKIY: Okay.

THE VIDEOGRAPHER: Give me a second.

We are now off the record. The time is 11 o'clock.

(Short recess taken.)

THE VIDEOGRAPHER: We are now back on the record. The time is 11:15.

Q. **(Mr. Belinskiy)** Okay, Mr. Burt. Now, do you remember seeing anyone else wearing masks while they were working at the alumina plant? At VIALCO, specifically?

A. No, I can't remember anyone, in my area where I was working, wearing mask.

Q. How about in other areas?

A. They are not exposed to what we exposed to over in the red side, as you would call it.

Q. And, sorry, what -- what do you mean by that?

A. Well, we are exposed to red dust, especially, if that is what you are referring to. And we are exposed to a lot of installation. I can't call it asbestos, because at the time, we didn't know anything about asbestos. So I -- we are exposed to a lot of installation over on the red mud side. Yes, there's insulation over on the white side, especially Unit 9, where you have a lot of heat, and it need to be insulated to keep in the heat. I'm referring to the ESP. And that is about it over on the -- the white mud side.

Q. Did you -- which side did you mostly work on while at VIALCO?

A. Red.

Q. How -- did you also work in Unit 9, on the other side?

A. Occasionally.

Q. Now, did you ever complain about the dust or asbestos in any of the units you were working in to your --

A. No.

Q. -- to anyone? To your co-workers or another foreman or --

A. No.

Q. -- safety supervisor?

A. Just dust and insulation, we were accustom to that.

Q. Okay. So you also never submitted any written complaints --

A. No.

Q. -- about the conditions?

Okay. Now, do I understand correctly that one of the job duties that you had was scaling bauxite?

A. Repeat that.

Q. Scaling or descaling bauxite?

A. If you're referring to the -- the bauxite itself, where -- before it's processed, I had only if it's -- if there's a pluggage anywhere, and I have to be there, right? That is when I get involved in it.

But if you're referring to tanks where you have scales, where you have scales, I have to -- I have to do that, because there's certain equipment that is all scale up.

For instance, you have rakes that is all scale up, and I have to work on -- on the rakes. So I have to descale the rake in order to work in.

Q. And was this inside the digesters?

A. Inside -- inside the digesters, you have digesters. You have settlers. You have washers. You have what we call feed tanks. You have filters.

Q. And you had --

A. You have -- you have equipment in -- in those -- in those -- in those vessels that I'm talking about that we have to work on. So we have to do some scaling. Yes, there's scalers that goes inside there, but they mainly concentrate on the big things, but we concentrate on the things that we have to work on, so we have descalers.

Q. Okay. So you, in your duties, you would only be descaling inside of vessels that you would need to work on as part of your maintenance job?

A. Right.

Q. And so were there times when, in a situation like that, there was so much to descale, that even though you needed to perform maintenance inside the vessel, you had to ask the, you know, the scalers to come in?

A. Yes, I do ask the scalers to help us, because sometime we are short of men, and we -- we can't perform so many things.

Q. **(Mr. Belinskiy)** No, no. So you had mentioned that you first spoke to an attorney about this in a phone call, but you didn't remember the attorney's name.

A. Yeah.

Q. I'm just wondering, was that only one phone call, or did you have more than one interaction?

A. One -- one phone call.

Q. And when was the next time you spoke to an attorney about this?

A. Since my -- since my -- my health start to deteriorate, I -- I happen to get hold of my present attorney, and he visited me, and we spoke. And he told me what can happen to my health.

Q. Do you know when your health started to deteriorate?

A. About -- I would say about six years ago, I find that I -- there's certain things that I could have done, and I couldn't do it. The latest one was I start to get dizzy.

Q. Did you speak with Mr. Yelton, Attorney Yelton, before you met Attorney Pate?

A. I don't know, really, because I -- I can't remember their names.

Q. Who was the next attorney that you spoke to after that phone call? What was their name?

A. I spoke to Pate. I spoke to Rick. I spoke to first name. Those were people I know that super -- that supervise me.

Q. Now, I know we've talked about Mr. Denwood earlier today.

Could you spell the names of the two other individuals you mentioned just now?

A. Albert Bachoo, A-L-B-E-R-T. I think about B-A-C-H double O.

Did I say Roy Ashbey?

Q. I believe you mentioned that individual, yes.

A. R-O-Y, Roy. A-S-H-B-E-Y.

Anybody else that I call?

Q. There was a third individual. I heard the word Comes, but I'm sure that's --

A. Gumbs.

Q. That might not be correct.

A. His title was Gumbs, but his -- his first name, I can't recall.

Q. Mr. Burt, what was your first job responsibility or role when you began working for Martin Marietta in 1970?

A. My first job was, I would say, lubrication.

Q. Okay. So you talked about working as -- in lubrication when you were working for CITRA.

Did you continue doing that job when you started working for Martin Marietta?

A. For a short time.

Q. Where, in the plant, did you do that job?

A. I -- my main responsibility was in Area 5, 6, 16 -- 16, 18, 13, 14, 28, but occasionally, I have to go to other places, but those were my main responsibility.

Q. Did you work on both the red and white sides of the plant?

A. Yes. If you're talking about lubrication, occasionally I would go on the white mud side. But as I said, my main responsibility was on the red mud side.

Q. Can you describe your daily job responsibilities as a lubricator?

A. Well, I have to go around and make sure the equipment them is properly lubricated, whether it's grease or oil. And I have to do that on a daily basis.

Q. How much time did you spend lubricating each machine that you had to service?

A. It all depends, but most of the times, we just check it to make sure it's -- it's having the required amount of oil. And then we move on to other equipments. Some equipments, you don't even have to check it, because it's -- we know that it's -- it don't -- you don't have any leak or anything like that. I would say maybe a half day.

Q. And is that half day for all of the machines that you serviced?

A. In my -- in my area.

Q. How many hours per day were you working when you were working as a lubricator?

A. We normally work eight hours, but occasionally, we have to do more than that. Very frequent.

Q. You mentioned --

A. I --

Q. I'm sorry, Mr. Burt. Go ahead.

A. I wasn't assigned directly with -- with lubrication.

After I finish lubrication, I have to join in with the maintenance guys them, 'cause lubrication doesn't take up a whole day. As I told you, it's just a half an hour, most of the times.

Q. Was it a half hour or a half day that you were working as a lubricator?

A. About a half day. About half a day. Very most, half day.

Q. And that was my next question, is, what work did you do with the second half of the day? You were doing maintenance work; is that correct?

A. Yeah, doing maintenance work. Work on other equipment doing maintenance work, whether repairs or change or -- changeout. Whatever is necessary.

Q. When you were working as a lubricator, so for that half of the day, were you exposed to any chemicals during that time?

A. Yes, because the equipment them, the pump -- the pump or they -- they have to -- you have -- they have to use -- whatever chemical they're pumping, right? You have to -- sometimes you have to stop the leak. You have what you call packing, and it's a -- it's mechanical packing, which tends to leak, and there where you exposed to whatever that pump may be pumping.

Or, like, for instance, filters. You have some drum filters, and you have some pan filters. You're exposed to the chemical. It's not something that is covered up. You're exposed to it. The only filters that you may not exposed to is the -- the cylinder. Cylinder filling the filters. It's not an open filter. It's a -- it's -- it's a big drum that open and closes. And when it closes, it start -- it starting service. Like it filters the liquors, we call it, or whatever, right? So all the other filters is open. You're exposed to it.

Q. Okay. Because of this contact with any of the -- the substances that -- in the machines that you were working on, did you wear any sort of protective equipment when you were going your lubricating work?

A. The regular equipment. The regular protective equipment: Gloves, glasses, goggle, hat, and your boots.

Q. Was that protective equipment supplied by Martin Marietta?

A. Yes.

Q. Did you ever wear a mask when you were working as a lubricator?

A. I don't -- I don't remember. We -- we normally used cloth. Normally use cloth. We always have cloth on us. And if there is something that may hurt us, we just take the cloth from our pocket and just put it in -- around our nose and our mouth.

Q. Did you ever see anyone, that worked around you, wearing an actual dust mask, instead of a rag?

A. No, no. I haven't seen anybody wearing a mask around me.

As I said, we normally wear cloth. It's so easy to wear cloth. To get a piece of cloth.

Q. Did you ever see anyone, in any of the units that you worked in, ever wearing a dust mask when you were working as a lubricator?

A. I've seen contractors. I've seen contractors wearing masks.

Q. Did you ever see anyone employed by Martin Marietta wearing a dust mask in any of these other units?

A. No, can't remember that.

Q. How long did you work as a lubricator for Martin

Marietta?

A. As I said, from '67 to -- to '70.

Q. Okay. What position did you have after you stopped working as a lubricator?

A. Repeat that again.

Q. Sure.

What position did you have after you stopped working as a lubricator?

A. Maintenance man.

Q. Did you begin that position in 1970?

A. Yes.

Q. Were you still --

A. Because --

Q. I'm sorry, Mr. Burt. Go ahead.

A. Because lots of the -- lots of the men, who was naturalized, had moved on to other, I would say, greener pastures.

In that refinery, it was, as you know, it's a dirty job. It was not comfortable to work there. So when men have opportunities. Like, for instance, if a guy -- most of the times, most of us was on what you call bond. It is a immigration status. And most of us just stick around there, because it was -- I would say it was a job that you can get up in the morning and know that you have a job.

But because of our immigration status, we stick around the job there. But if you can -- most of the men them who could have done otherwise, move on, right? And I had -- I was one of those people that I couldn't, I would say, flex my muscle, because of my immigration status, right? And that is why I stick around until things get better immigration-wise. At that time --

Q. So --

A. At that time.

Q. Sorry, Mr. Burt.

A. At that time, I already had down roots here, right? So I had a family, and I couldn't, like some of the other guys there, move on.

Q. Okay. So when you were working as a maintenance man, so after you finished your role as a lubricator, where, in the plant, did you typically work?

A. Mostly in Area 2.

Q. Was that Area 2?

A. Area 2 is the units them that I call a while ago.

Q. Okay. And if I'm understanding correctly, that was primarily on the red side of the plant; is that right?

A. Exactly.

Q. Can you -- similar to our conversation about your work as a lubricator, could you describe your typical day as a maintenance man?

A. As a lubricator, it was an easy job, really. You just got to make sure that the equipment them have been -- whether they are grease or oil. It wasn't no difficult job.

Q. Okay.

A. Because that is a responsibility that, you know, if a equipment fail because of lubrication, you know, you have to answer a lot of questions, and you may be terminated.

Q. When you were working as the maintenance man and servicing machines in Area 2, roughly how long would you spend servicing each individual machine?

A. You're talking about as a lubricator man?

Q. No, sir. I'm sorry. I'm talking about when you were working as a maintenance man.

A. It all depends on the -- the -- the condition of the -- of the -- of the equipment. Why it fail and the amount of work involved, right?

Q. What is the shortest amount of time that you remember spending servicing a machine?

A. Servicing?

Q. Working on a machine?

A. Sorry. As I said, it depends on the -- on the -- the -- the amount of problem or damage that is done to the machine. You could spend an hour, a day, weeks, right? It all depends on -- on the size of the machine and the problem that we have to fix, right?

You have big machine. You have small machine. You have very large machine that take days to fix.

Q. Were you exposed to any chemicals while you were servicing these machines?

A. I'm checking. It had some chemical that came in there lately that we call Nalco, right? It's a chemical that is used for settling. Lime is not a chemical. Is lime a chemical?

Q. I suppose a more accurate question would have been, were you exposed to any substances or -- or chemicals while you were working as a maintenance man?

A. Lime, regular. Caustic. Very rare, acid, right? Very rare, acid. But caustic and lime. It had flour. I don't know if you consider flour to be a chemical.

Q. So I know you talked a little bit about some of the protective equipment you wore as a lubricator.

Did you wear any protective equipment when you were working as a maintenance man?

A. Yeah. The regular equipment. Regular equipment, like gloves, safety hat, glasses, goggles, boots, yeah.

Q. And, again, were these pieces of safety equipment provided by Martin Marietta?

A. Yes.

Q. Did you ever have to request new safety equipment or replacement safety equipment?

A. Yes.

Q. Okay. How many times would you estimate you had to replace your safety equipment?

A. Not regular.

Q. Okay.

A. Not regular.

Q. When you did have to make a request, did anyone ever tell you that you couldn't have new safety equipment?

A. No.

Q. Can you tell me how you went about requesting the protective equipment that you wore?

A. You have to fill out a request, a request form, and you go to the warehouse, and they will issue it.

Q. Did you have to contact your supervisor about requesting new protective equipment?

A. I don't remember having to. Only -- only if you have special -- special, like acid, we might have to request a special -- not coverall, a rain suit. Like a special rain suit that they have to -- to work on that dangerous chemical.

Q. Did you ever request one of those special suits when you did -- on the rare occasions that you had to work with acid?

A. No, I don't have to. I didn't had a reason to do that.

Q. Okay. Why didn't you have to request one of those special suits?

A. As I said, if you working on acid, you have to -- you have to have one of those.

It all depends on how -- how dangerous it is that you may have a spill, so you have to have that special rain suit to work on those equipment.

Q. When you were moving around Area 2, as a maintenance man, were you entirely inside of the refinery doing that job?

A. Repeat that again.

Q. Sure.

When you were moving around Area 2, as a maintenance man, were you always inside the refinery when you were doing that job?

A. Yeah.

Q. Were you exposed to any dust when you were working as a maintenance man in Area 2?

A. Plenty of it.

Q. Which dust?

A. Bauxite, lime, flour, alumina.

Q. Can you describe the level of dust that you were exposed to when you were working as the maintenance man?

A. Some of the times -- it all depends. It all depends how strong the wind is, and how -- how the equipment is functioning, right? It all depends. But there's always dust blowing. As long as you're running bauxite, there's always dust blowing.

Q. Was there more dust blowing when it was windy?

A. Yes. Yes, all over. All over.

Q. What about when it wasn't windy, what did the dust situation look like then?

A. Well, as I said, it depends on the wind, right? How the wind is blowing and how strong it is, but there's always dust.

Q. Did you ever wear a dust mask when you were working as a maintenance man?

A. No. I wear a piece of cloth.

Q. When you were working as a maintenance man, did you ever see anyone else employed by Martin Marietta around Area 2 who was wearing a dust mask?

A. No. It's easier to wear a piece of cloth than to -- than a mask, because you -- you -- you -- sometimes you need it immediately, and you always have a piece of cloth in your pocket. Every one of us.

Q. Did you ever ask for a dust mask when you were working as a maintenance man?

A. I -- it's probably, but I didn't had a reason to do it.

Q. Did you ever use the cloth that you were talking

How long did you work as a foreman for Martin Marietta?

A. I would say maybe three to four years.

Q. Okay. What did an average day look like for you --

A. No, no, no. Let me correct.

Q. Sure, Mr. Burt.

A. Let me correct myself.

Q. Absolutely.

A. I started -- I started in about -- I think in '80 -- '83. I want to, exactly sure. I probably started in '83. Yeah, as a foreman.

Q. Does that mean you would have been a foreman from 1983 to 1985, when the plant shut down?

A. I started -- let me recollect.

I started somewhere, I believe, in '83. I was a foreman till they shut down.

Q. Okay.

A. Right.

Q. What did an average day, as a foreman, look like when you were working for Martin Marietta?

A. A average day is -- was when production is up, and you don't have any serious mechanical failures, that is an average day that we may have, that we try and -- and it's our goal.

And not only that, the neighbors to the refinery, they have experience lots of dust. And I can go into details.

The company have spent thousands of dollars cleaning cistern in the -- in the neighboring to the plant here, to the plant in Martin Marietta, to a area that they call Machachou and Profit. And we fill them. We fill the cistern, when they have paid to clean the cistern. And they finally done away with the cistern, because so much dust that blowing in that refinery.

As I said, all color dust. So I don't know if the people in Profit have resumed using their cistern.

Q. Thank you.

A. All right.

Q. Now, did anybody at Martin Marietta ever tell you that bauxite dust, if inhaled, could hurt your lungs?

A. No, nobody did.

Q. Did anybody at Martin Marietta ever tell you that alumina dust, if inhaled, could hurt your lungs?

A. Nobody did.

Q. Did anybody at Martin Marietta ever tell you that asbestos dust, if inhaled, could hurt your lungs?

A. No, nobody did.

Q. What about VIALCO, did anybody at VIALCO ever tell you that inhaling bauxite dust could hurt your lungs?

A. Nobody in VIALCO. Nobody ever did in those three companies.

Q. And did anybody at VIALCO ever tell you that inhaling alumina dust could hurt your lungs?

A. Nobody ever told me.

Q. And did anybody at VIALCO ever tell you that inhaling asbestos dust could hurt your lungs?

A. Nobody did.

Q. What about CDM? When I mean that -- when I say that, you know I mean Camino Del Mar? Did anybody at Camino Del Mar ever tell you that inhaling asbestos dust could hurt your lungs?

A. No, nobody did.

Q. Okay. I'm going to share my screen again.

(Respite.)

Okay. Going back to the same document, still Exhibit 3 -- Exhibit 4. And so that means it's Mr. Pedersen's affidavit. And up here, there's the Number 3. That means it's Paragraph Number 3.

And do you see some words that I have highlighted in blue?

A. Yes.

Q. I'll read them to you, okay?

A. Um-hum.

Q. "It has always been my understanding that" -- I'm

C-E-R-T-I-F-I-C-A-T-E

I, SUSAN C. NISSMAN, a Registered Merit Reporter and Notary Public for the U.S. Virgin Islands, Christiansted, St. Croix, do hereby certify that the above named witness, **MILTON A. BURT**, was first duly sworn to testify the truth; that said witness did thereupon testify as is set forth; that the answers of said witness to the oral interrogatories propounded by counsel were taken by me in stenotype and thereafter reduced to typewriting under my personal direction and supervision.

I further certify that the facts stated in the caption hereto are true; and that all of the proceedings in the course of the hearing of said deposition are correctly and accurately set forth herein.

I further certify that I am not counsel, attorney or relative of either party, nor financially or otherwise interested in the event of this suit.

IN WITNESS WHEREOF, I have hereunto set my hand as such Registered Merit Reporter on this the 5th day of September, 2022, at Christiansted, St. Croix, United States Virgin Islands.

/s/ Susan C. Nissman

My Commission Expires: June 28, 2023

Susan C. Nissman, RPR-RMR
NP 234-19

EXHIBIT 124

Paul Arnold Affidavit in connection with *Henry v. St. Croix Aluminum,* No.99-0036, JA 009468-70

IN THE DISTRICT COURT OF THE VIRGIN ISLANDS

DIVISION OF ST. CROIX

JOSEPHAT HENRY resident of Harvey, KAY WILLIAMS resident of Harvey, SYLVIA BROWNE resident of Clifton Hill, MAUDE DREW resident of Estate Barren Spot, MARTHA ACOSTA resident of Estate Profit, WILHELMINA GLASGOW as in individual and mother and next of friend of SAMANTHA VIERA, a minor, both residents of Estate Profit, MERCEDES ROSA resident of Estate Profit, JULIAN ST. BRICE, resident of Clifton Hill, GEORGE RODRIGUEZ as an individual and as father and next friend of AMANDO and GEORGE E. RODRIGUEZ, minors, all residents of Estate Profit, SONYA CIRILO resident of Estate Profit, RAQUEL TAVAREZ, resident of Estate Profit, NEFTALI CAMACHO, as an individual and as father and next friend of ANGEL JAVIER CAMACHO a minor, both residents of Estate Profit, EYAJIE MALAYKHAN resident of Estate Profit, CHEDDIE KELSHALL resident of Estate Profit and other persons too numerous to mention, A CLASS ACTION,

Plaintiff,

v.

ST. CROIX ALUMINA, LLC, ALOCA INC., and GLENCORE, LTD, f/k/a CLARENDON, LTD,

Defendant.

CIVIL NO. 1999/0036

ACTION FOR DAMAGES

JURY TRIAL DEMANDED

LAW OFFICES OF
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EXHIBIT 7

AFFIDAVIT OF PAUL ARNOLD

TERRITORY OF THE VIRGIN ISLANDS)
) **SS:**
DIVISION OF ST. CROIX)

I, Paul Arnold, having first been duly sworn, depose and state as follows:

1. I make this affidavit of my own personal knowledge and belief.
2. I was the Human Resources Manager for VIALCO from 1987 until they closed.
3. When I was first employed my interaction was with Clarendon and consisted of making recommendations to them as to what benefits we thought were appropriate for the VIALCO employees which they had to approve, approval of the budget as to salaries.
4. Clarendon contracted with a company called Ormet who then was the overall manager of human resources issues and whose approval we had to get for human resource issues.
5. There came a time when Clarendon became Glencore and the relationship remained the same except the people we interacted with changed but not the types of interaction.

6. Representatives from Clarendon and then Glencore would come to VIALCO 4-6 times a year or more. They would have progress meetings, discuss budget issues, do plant inspections, either approve recommendations for improvements or direct that improvements be made.
7. It my understanding that Mr. Prusak was the representative of Glencore and he reacted with VIALCO and it is my understanding that he had hands on control over VIALCO as to budget issues, personnel issues, and any substantive decisions. He communicated with VIALCO as to management issues at least a weekly basis.
8. It my understanding that if VIALCO had wanted to dispose of the red dust when they shut down they would have had to request permission from Glencore and gotten approval or they could not have done it.

FURTHER AFFIANT SAITH NOT.

Paul Arnold

SUBSCRIBED AND SWORN TO before me
this 22 day of July, 2005.

NOTARY PUBLIC
My commission expires [illegible] DEBBIE HENRY
COMMISSION NUMBER
[illegible]
EXP. DATE: MARCH 31, [illegible].

EXHIBIT 125

Excerpts of Transcript of Deposition of Robert Prusak, February 22, 2002

IN THE DISTRICT COURT OF THE VIRGIN ISLANDS

DIVISION OF ST. CROIX

JOSEPHAT HENRY (HARVEY), KAY)
WILLIAMS (HARVEY), SYLVIA)
BROWNE (CLIFTON HILL), MAUDE)
DREW resident of Estate)
Barren Spot, ANTONIA CRUZ)
resident of Estate Profit,)
MARTHA ACOSTA resident of)
Estate Profit, ROSEMOND)
HARPER resident of Estate)
Clifton Hill, JOSE BERRIOS as)
an individual and as father)
and next of friend of MIGUEL)
SANES a minor and resident of)
Estate Profit, WILHELMINA)
GLASGOW resident of Estate)
LaReine, and other persons)
too numerous to mention, A)
CLASS ACTION,)
)
Plaintiffs,)
)
vs.) Civil No. 0036/99
)
ST. CROIX ALUMINA, LLC,)
ALCOA, and GLENCORE, LTD.,)
f/k/a CLARENDON, LTD.,)
)
Defendants.)
-----------------------------)

CONFIDENTIAL

DEPOSITION OF ROBERT SCOTT PRUSAK

New York, New York

Friday, February 22, 2002

Reported by:
PENNY SHERMAN
JOB NO. 130747

February 22, 2002

8:45 a.m.

Rule 30(b)6 deposition of GLENCORE, LTD, through its representative, ROBERT SCOTT PRUSAK, held at the offices of Esquire Deposition Services, 216 East 45th Street, New York, New York, pursuant to Notice, before Penny Sherman, a Notary Public of the State of New York.

A P P E A R A N C E S:

LEE J. ROHN, ESQ.
Attorneys for Plaintiffs
1101 King Street, Suite 2
Christionsted, Virgin Islands 00820

BY: GORDON C. RHEA, ESQ.

TATRO, COFFINO, ZEAVIN, BLOOMGARDEN, LLP
Attorneys for Glencore and Witness
116 New Montgomery Street, Suite 640
San Francisco, California 94105
BY: RENE P. TATRO, ESQ.

PATTIE & DALEY
Attorneys for Defendants, St. Croix Alumina
and Alcoa
1104 Strand Street, Suite 204
Christiansted, St. Croix,
U.S. Virgin Islands 00820-5003
BY: BERNARD C. PATTIE, ESQ.

A P P E A R A N C E S: (Cont'd.)

LEBOEUF, LAMB, GREENE & MACRAE
Attorneys for Defendants, Alcoa and Alumina
420 Fort Duquesne Boulevard,
Suite 1600
Pittsburgh, Pennsylvania 15222-1437
BY: BENJAMIN J. FERRON, ESQ.

MACKAY & HODGE
Attorneys for Defendant, Clarendon

Q. What about the Corpus Christi?

A. I believe that's ALCOA.

Q. You mentioned a Louisiana plant. Whose was that?

A. That's the Burnside Alumina Plant owned by Ormet. B-U-R-N-S-I-D-E.

Q. I take it, also, the Eura Alumina plant that you mentioned earlier would be a place that Clarendon sent --

A. I don't know that.

Q. Any others that you can recall?

A. No.

Q. Item number 6 on our Notice asks for

"Details of the refining process used by VIALCO and steps taken by VIALCO to store bauxite and bauxite residue and to store and/or dispose of bauxite residue."

Do you have any knowledge about those matters?

A. I have some knowledge, yes.

Q. Are you able to speak as a representative of Glencore with respect to those matters?

A. Yes.

Q. Let me start by asking about the bauxite storage at the VIALCO facility. Have you ever visited the VIALCO facility on St. Croix?

A. Yes, I have.

Q. When was it that you visited the facility?

A. From 1989 through '94, '95.

Q. How many times do you think you went down there?

A. Probably about four or five times a year, on average.

Q. Did you have occasion to see the

storage facility yourself?

A. Yes. I did.

Q. Can you tell me what condition the bauxite storage facility was in when VIALCO acquired the property?

MR. PATTIE: Objection to the form.

MR. RHEA: Could you tell me the reason for the objection?

MR. PATTIE: I have no idea what condition it was in means. I don't know what you are asking the witness to give you.

Q. Do you know whether or not, when VIALCO came into possession of the St. Croix plant, the bauxite storage facility was intact or had it been damaged?

A. I believe there were parts of the roof missing from the bauxite building. There may have been some structural steel damage.

Q. Do you know what caused that damage?

the transcript will simply be used by lawyers or personnel working on this case and any experts that need to review it.

MR. TATRO: Excellent.

(Discussion off the record.)

(Time noted: 1:15 p.m.)

____

ROBERT SCOTT PRUSAK

Subscribed and sworn to before me
this ____ day of ___________, 2002.

____

CERTIFICATE

STATE OF NEW YORK)
: ss.
COUNTY OF KINGS)

I, PENNY SHERMAN, a Shorthand Reporter and Notary Public within and for the State of New York, do hereby certify:

That ROBERT SCOTT PRUSAK, the witness whose deposition is hereinbefore set forth, was duly sworn by me and that such deposition is a true record of the testimony given by the witness.

I further certify that I am not related to any of the parties to this action by blood or marriage, and that I am in no way interested in the outcome of this matter.

IN WITNESS WHEREOF, I have hereunto set my hand this 7th day of March, 2002.

____

PENNY SHERMAN

------------------ I N D E X ------------------

WITNESS	EXAMINATION BY	PAGE
ROBERT PRUSAK	MR. RHEA	5-

----------- INFORMATION REQUESTS --------------

DIRECTIONS: 143/11

------------------ EXHIBITS -------------------

PRUSAK	FOR ID.
Prusak Exhibit 1, two-page document	

EXHIBIT 126

Memoranda from Pedersen to Davis, VIALCO-CMP_0077459-0077470

Vialco
Virgin Islands Alumina Corporation

MEMORANDUM

TO: C. Davis

FROM: W. Pedersen

DATE: December 29, 1992

SUBJECT: **Weekly Review 12/22 - 12/29/92**

- **Hydrate Plant** -
  Numerous minor problems, but no major problems. We continue to be concerned about leaking heaters/digestors and flow restrictions in the Unit 13 area. We are boosting production by boosting yield, via higher charge ratio.

- **Calcine** -
  We cannot delay the Aluchem hydrate contract past January 15, therefore calcine production is being limited to 1700 tpd in order to store off the hydrate to fill that contract. Forecasting 52,000 MT for the month.

- **Quality** -
  We are expecting an increase in iron in the product, due to limitations in bauxite blending (ABC off loaded near the hole, Trombetas at the east end and a limited amount of dozers to bring it in). Other quality parameters are good.

- **Safety** -
  Near miss on 12/21 - Fire truck was started while in gear. Destroyed some fencing and damaged paint on the PWSA water tank. Some minor damage to the truck. No one injured.

- **Environment** -
  E. Black will be attending Tuesday/Thursday managers meeting to improve communication and response on environmental issues.

- Some mis-communications between Us and Clarendon regarding needed dock maintenance and its effect on the shipping schedule. Clarendon was asked if a ten day window was possible, they thought they were being told to provide one which resulted in some panic from Albras as to delayed shipments. The issue has been clarified.

Regards. Warren Pedersen

EXHIBIT 10

Vialco
Virgin Islands Alumina Corporation

MEMORANDUM

TO: C. Davis

FROM: W. Pedersen

DATE: January 4, 1993

SUBJECT: **Weekly Review 12/28 - 1/3/93**

Hydrate production rates have been very good. The low production of 1122 MT on 12/30/92 was due to a scheduled cut to replace some mainline valves in the "B" digestion Unit. Calcine was limited by control problems on the #1 ESP (still not completely resolved) and an intentional reduction in order to produce hydrate for sale. The #1 ESP will be taken off line today for repair.

We have begun testing the Alusuisse hardware. There is some de-bugging to be done as expected. A commissioning meeting will be held early this week. A new specific start-up date will be published after that. Alusuisse personnel have been put on hold until this information is available.

December production figures are 50,382 MT calcine, 49,324 MT hydrate. Annual is 540,655 calcined.

We are expecting T. Orender (Maint. Supt.) to report to work next week. Absenteeism has increased during the holiday season and I anticipate some terminations will occur.

We recently became aware of a federal financial form 5500 that is required to be filed annually and apparently this has not been done since the restart of the plant. It will now be handled by Alexander & Alexander. However we may be liable for up to $30,000 in penalties/late fees.

I have not received confirmation of a January technical meeting At Euralumina.

Regards,

Warren

0006

P.O. Box 1525, Kingshill • St. Croix, U.S. Virgin Islands 00851

Vialco
Virgin Islands Alumina Corporation

MEMORANDUM

TO: C. Davis

FROM: W. Pedersen

DATE: December 29, 1992

SUBJECT: **Weekly Review 12/22 - 12/29/92**

- Hydrate Plant -

Numerous minor problems, but no major problems. We continue to be concerned about leaking heaters/digestors and flow restrictions in the Unit 13 area. We are boosting production by boosting yield, via higher charge ratio.

- Calcine -

We cannot delay the Aluchem hydrate contract past January 15, therefore calcine production is being limited to 1700 tpd in order to store off the hydrate to fill that contract. Forecasting 52,000 MT for the month.

- Quality -

We are expecting an increase in iron in the product, due to limitations in bauxite blending (ABC off loaded near the hole, Trombetas at the east end and a limited amount of dozers to bring it in). Other quality parameters are good.

- Safety -

Near miss on 12/21 - Fire truck was started while in gear. Destroyed some fencing and damaged paint on the PWSA water tank. Some minor damage to the truck.
No one injured.

- Environment -

E. Black will be attending Tuesday/Thursday managers meeting to improve communication and response on environmental issues.

- Some mis-communications between Us and Clarendon regarding needed dock maintenance and its effect on the shipping schedule. Clarendon was asked if a ten day window was possible, they thought they were being told to provide one which resulted in some panic from Albras as to delayed shipments. The issue has been clarified.

Regards, Warren Pedersen

VIALCO

DAILY PRODUCTION

BE in Silos 42418 mt

	HYDRATE			CALCINED				
	Today	To Date	Avg/Day	Today	To Date	Avg/Day	In Silos	Shipment
1	433	433	433	1519	1519	1519	43937	
2	85	518	259	1950	3469	1735	45887	
3	1671	2189	730	1930	5399	1800	47817	
4	2107	4296	1074	1945	7344	1836	49262	
5	2072	6368	1274	1945	9289	1858	51707	
6	1985	8353	1392	1712	11001	1834	53419	
7	800	9153	1308	764	11765	1681	54183	
8	635	9788	1224	1697	13462	1683	55880	
9	1876	11664	1296	1945	15407	1712	57825	
10	1758	13422	1342	1715	17122	1712	35149	Sea Pearl 24391
11	1424	14846	1350	1583	18705	1700	36732	
12	1798	16644	1387	1676	20381	1698	38408	
13	1879	18523	1425	1920	22301	1715	40328	
14	1876	20399	1457	1895	24196	1728	42223	
15	1724	22123	1475	1870	26066	1738	28424	[illegible] Pearl 15669
16	1640	23763	1485	1691	27757	1735	30115	
17	873	24636	1449	1696	29453	1733	31811	
18	1876	26512	1473	1716	31169	1732	33527	
19	1630	28142	1481	1681	32850	1729	35208	
20	1466	29608	1480	1701	34551	1728	36909	
21	1745	31353	1493	1765	36316	1729	38674	
22	1778	33131	1506	1333 *	37649	1711	40007	
23	1897	35028	1523	1616	39265	1707	41623	
24	1900	36928	1539	1553	40818	1701	43176	
25	1953	38881	1555	1636	42454	1698	44812	
26	2040	40921	1574	1686	44140	1698	12715	New Opal 33283
27	1996	42917	1590	1671	45811	1697	14386	
28	2075	44992	1607	1661	47472	1695	16047	
29	2067	47059	1623	1566	49038	1691	17613	
30	1122	<47248>	<1575>	1239	<48745>	<1625>	<17320>	by [illegible]
31	2076	49324	1591	1637	50382	1625	18957	
	INVENTORY	{49324}	{1591}	INVENTORY	{50382}	{1625}	SHIPMENT	{73843}

* Corr. (oper. [illegible] adj.)

MONTH: December, 1992

Vialco
Virgin Islands Alumina Corporation

MEMORANDUM

TO: C. Davis

FROM: W. Pedersen

DATE: January 12, 1993

SUBJECT: **Weekly Review 1/4 - 1/11/93**

Hydrate production has been good. Reduced production on the 8th was due to scaling problems on the mainline pumps in Unit 13. Reduced calcination on the 4th and 5th due to ESP hardware problems, electrical problem in the I.D. Fan circuit and a line rupture in the kiln oil supply system.

We have enough hydrate stored to satisfy the Aluchem shipment and the ship may begin loading Thursday, January 14.

No.3 diesel generator has a failure in the generator section that will take at least two (2) weeks to repair. We will be at high risk during this time, since, should ~~be~~ the coal boiler go down we cannot have a quick recovery with only the two (2) remaining diesels. No.7 Turbine is also in some difficulty, but PWSA personnel have been able to keep it operable.

Bauxite-side shipping is very congested this month. Clarendon will divert a Trombetas ship to help the situation.

Alusuisse project de-bugging continues. Some control schemes had to be modified over the week-end.

Plant environmental audit began Monday, January 11. Nothing to report yet.

Regards,

Warren Pedersen

BF in Silos 18957 MT

	HYDRATE			CALCINED				
	Today	To Date	Avg/Day	Today	To Date	Avg/Day	In Silos	Shipment
	1956	1956	1956	1810	1810	1810	20767	
	1845	3801	1901	1800	3610	1805	22567	
	2033	5834	1945	1780	5390	1797	4156	Zyra 20191
	2049	7883	1971	1390	6780	1695	5546	
	1897	9780	1956	1152	7932	1586	6698	
	1857	11637	1940	1800	9732	1622	8498	
	1850	13487	1927	1886	11618	1660	10384	
3	1673	15160	1895	1765	13383	1673	12149	
	2056	17216	1913	1863	15246	1694	14012	
	1812	19028	1903	1925	17171	1717	15932	
	1873	20901	1900	1915	19086	1235	17852	
2								
3								
4								
5								
6								
7								
8								
9								
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								
1								
	INVENTORY	{ }	{ }	INVENTORY	{ }	{ }	SHIPMENT	{ }

MONTH: January, 1993

Vialco
Virgin Islands Alumina Corporation

MEMORANDUM

TO: C. Davis

FROM: W. Pedersen

DATE: January 19, 1993

SUBJECT: **Weekly Review 1/12 - 1/18/93**

Hydrate production has been good, but had to be slightly reduced over the weekend due to high inventories (Kiln #1 failure). Kiln #1 was taken off line on January 14 due to a failure on the internal dust return system (Goldberg). We will use the opportunity to do other work that was scheduled for a March outage. We expect to be down for 10 days. Calcination production for January will be about 45,000 M.T, vs. the planned 54,000 M.T. The hydrate plant will also be taken down this week for some work originally scheduled for March. The plant will be down for a maximum of three (3) days, putting hydrate production for the month at about 51,000 M.T.

Loading of hydrate for Aluchem went well. Soda is higher than we expected at 0.06 (they wanted 0.02).

Environmental audit was completed on schedule. We expect a report in 2 - 3 weeks. I expect that additional capital will be needed to satisfy their proposed corrections.

Financial audit begins this week (1/18/93).

Two of three arbitrations won so far. Troy Orender, mechanical maintenance superintendent is on board and Lester Chin, electrical/instrument engineer is due in mid-February.

Established acceptable control of the Alusuisse project over the weekend.

Regards,

Warren Pedersen

Vialco
Virgin Islands Alumina Corporation

MEMORANDUM

TO: C. Davis

FROM: W. Pedersen

DATE: January 26, 1993

SUBJECT: **Weekly Update 1/18 - 1/25/93**

The kiln outage, has been extended due to difficulties in removing the dam area. We now expect feed on Saturday, 1/30/93. Calcine production will thus be around 41,000 MT for January.

The soda problem on the Aluchem hydrate shipment has not been resolved as yet. Aluchem's technical manager, R. Mauzy visited the plant on Monday and brought with him several samples for analyses. For some yet unknown reason(s) our results are double the results they are getting.

The situation of lack of certification of the dock gantry crane has been resolved with no schedule changes necessary.

Mark Hoffman (Richco, Brazil) called to inquire if the alcohol plant had been dismantled or sold. I told him that I have not been informed of that. He apparently has another potential buyer for the columns.

Regards,

Warren Pedersen

P.O. Box 1525, Kingshill • St. Croix, U.S. Virgin Islands [illegible]

Vialco
Virgin Islands Alumina Corporation

Vialco

March 1, 1993

TO: C. Davis

FROM: W. Pedersen

RE: Weekly Review

February's calcination is 42,634 M.T. Hydrate production lagged at 39,759 M.T. February is thus 8,400 M.T. below plan. At this point we are 27,000 M.T. below our original plan and 14,000 M.T. below our revised plan (no outage in March). We continue to suffer losses due to kiln auxicilliary equipment; belt system, oil system, ESPs. We belive the oil system problems are being solved. The belt system problems may require some outside help.

Problems with Nos. 3 & 4 Desalination Units have been solved. We expect to take No. 5 Unit off line for inspection this week.

We have had some equipment failure on the Alusuisse process. The agitator failed in the main fine seed mixing tank. The problem should be resolved in a few days.

Regards,

Warren Pedersen

W. Pedersen

P.O. Box 1525, Kingshill • St. Croix, U.S. Virgin Islands 00851

INTER-OFFICE CORRESPONDENCE **ZUG**

To: **Stamford Office, Attn Bob Prusak** **Date: 8th October, 1993**

From: **Craig Davis** **cc:** VIALCO: Warren Pedersen

Joe Meszaras

Subject: Criteria for evaluating VIALCO production increases

In connection with your memo of October 6th I believe it is clear that capital projects which relate to increased production must consider market conditions. In addition any increased production in today's markets should always consider selling price whether or not the increase requires capital expenditures.

I believe that Warren and Joe understand that the criteria for this year's capital budget are to limit the expenditures as much as possible and that projects will be limited to ones that are required by law, such as environmental requirements or ones that are critical from a safety or operational security standpoint. Also we will consider projects that have a pay back of less than one year where funds would be spent in any event, for example for a lease versus buy option. I do not believe that our discussion last month implied a desire to see in the 1994 Capital Plan projects that would increase capacity.

STAMFORD

INTER COMPANY CORRESPONDENCE

TO: WARREN PEDERSEN/JOE MESZARAS
CAD

DATE: OCTOBER 6, 1993

865

FROM: RP

COPY TO: ISO/SDT
IFP

SUBJECT: CRITERIA FOR EVALUATING VIALCO PRODUCTION INCREASES/DECREASES

As we discussed during my last visit, I believe that current/near-term projected alumina market should be considered when evaluating capital projects. Perhaps a simple table as stated below will help clarify matters.

1993 Budget (Cash Basis)

	Production	$ in MM's	$/MT
Fixed Costs	618,000	39.0	63.11
Variable Costs	618,000	86.5	139.97
Total	618,000	125.5	203.08

- Hypothetical Capital Project For $.5 MM To Increase Capacity 10,000 MT's.

	Production	$ in MM's	$/MT
Fixed Costs	628,000	39.0	62.10
Variable Costs	628,000	87.9	139.97
Total	628,000	126.9	202.07

Vialco Conclusion: By saving $628,000 ($1.01/MT x 628,000), this project would pay-back in less than one year and would be approved.

"Global" Conclusion: Since variable alumina is at $139.97/MT and the market in 1994 is $140/MT (an assumption on my part), no capital money should be spent next year to produce alumina at market.

Of course the above is just an example and the incremental costs with 1994 market prices for all commodities is less than $139.97/MT and the alumina projections of market can change daily and there may be other strategic reasons for increasing production at the plant which in the end would lead to the approval of this hypothetical capital project.

867

But the above example does point out the dangers of evaluating capital projects without market projections on alumina and all raw materials.

We should either give Vialco the marching orders to increase production as long as average costs decrease (which I do not support) or as I would suggest, supply them with the most accurate information on commodity prices so that they may properly evaluate capital projects.

Please let me know your thoughts.

EXHIBIT 127

Claudette Anderson Affidavit in connection with *Henry v. St. Croix Aluminum* No.99-0036

IN THE DISTRICT COURT OF THE VIRGIN ISLANDS

DIVISION OF ST. CROIX

JOSEPHAT HENRY resident of Harvey, KAY WILLIAMS resident of Harvey, SYLVIA BROWNE resident of Clifton Hill, MAUDE DREW resident of Estate Barren Spot, MARTHA ACOSTA resident of Estate Profit, WILHELMINA GLASGOW as in individual and mother and next of friend of SAMANTHA VIERA, a minor, both residents of Estate Profit, MERCEDES ROSA resident of Estate Profit, JULIAN ST. BRICE, resident of Clifton Hill, GEORGE RODRIGUEZ as an individual and as father and next friend of AMANDO and GEORGE E. RODRIGUEZ, minors, all residents of Estate Profit, SONYA CIRILO resident of Estate Profit, RAQUEL TAVAREZ, resident of Estate Profit, NEFTALI CAMACHO, as an individual and as father and next friend of ANGEL JAVIER CAMACHO a minor, both residents of Estate Profit, EYAJIE MALAYKHAN resident of Estate Profit, CHEDDIE KELSHALL resident of Estate Profit and other persons too numerous to mention, A CLASS ACTION,

Plaintiff,

v.

ST. CROIX ALUMINA, LLC, ALOCA INC., and GLENCORE, LTD, f/k/a CLARENDON, LTD,

Defendant.

CIVIL NO. 1999/0036

ACTION FOR DAMAGES

JURY TRIAL DEMANDED

RECEIVED
'05 JUN 28 P5:09
CLERK OF THE
DISTRICT COURT
ST. CROIX

MOTION TO FILE SUPPLEMENTAL AFFIDAVIT IN FURTHER SUPPORT OF PLAINTIFFS OPPOSITION TO THE MOTION FOR SUMMARY JUDGMENT

COME NOW Plaintiffs, by and through undersigned counsel and files the attached supplement affidavit of Claudette Anderson, in further support of their opposition to the

LAW OFFICES OF
Rohn & Cameron, LLC
1101 King Street
Christiansted
VI 00820-4933
Tel: 340.778.8855
Fax: 340.773.2954
ail: lee@rohnlaw.com

Motion for Summary Judgment. This filing is supported by the Supreme Court's construction of Federal Rule of Civil Procedure 6, in the summary judgment context in *Lujan v. National Wildlife Federation,* 110 S. Ct. 3177, 3192, 497 U.S. 871, 896-97 (1990). There the Court construing Rule 56(f) and Rule 6(b), ruled "**that the time for filing any additional evidentiary materials [in response to a motion for summary judgment] was, at the latest, the day before the hearing**." (Emphasis added.) 110 S.Ct. at 3192, 497 U.S. at 897.

Moreover, Federal Rules of Civil Procedure, 6(d) specifically provides in relevant part that:

> When a motion is supported by affidavits, the affidavit shall be served with the motion; and except as otherwise provided in Rule 59(c), **opposing affidavits may be served not later than 1 day before the hearing**, unless the court permits them to be served at some other time.

Federal Rules of Civil Procedure, Rule 56(c) also specifically provides that "**[t]he adverse party prior to the day of the hearing may serve opposing affidavits.**"

Read together, these relevant portions of the federal rules permit Plaintiffs to supplement their response to Defendant's summary judgment up and until "1 day before the hearing" or at some later time as the Court in its discretion may permit. Fed. R. Civ. P. 6 (d) and 56(c).

WHEREFORE Plaintiffs attach the affidavit of Claudette Anderson in support of Plaintiffs Opposition to Defendants Summary Judgment.

Respectfully Submitted
LAW OFFICES OF ROHN AND CAMERON, LLC
Attorneys for Plaintiff

DATED: 6/28/5

BY: ____________________
Lee J. Rohn, Esq.
1101 King Street
Christiansted, St. Croix
U.S. Virgin Islands 00820
Telephone: (340) 778-8855
Fax: (340) 773-2954

CERTIFICATE OF SERVICE

THIS IS TO CERTIFY that on this 28 day of June 2005, I caused a true and correct copy of **MOTION TO FILE SUPPLEMENTAL AFFIDAVIT IN FURTHER SUPPORT OF PLAINTIFFS OPPOSITION TO THE MOTION FOR SUMMARY JUDGMENT** to be mailed postage prepaid to:

Bernard Pattie, Esquire
Law Office of Bernard Pattie
1244 Queen Cross Street
Suite 5
St. Croix, VI 00820-4932
Attorney For: St. Croix Alumina LLC

Derek M. Hodge, Esquire
MacKay & Hodge
12 Bjerge Gade
P.O. Box 303678
St. Thomas, VI 00803
Attorney For: Glencore, Ltd., f/k/a Clarendon, Ltd.

Gordon Rhea, Esquire
Richardson, Patrick Westbrook & Brickman, LLC
1037 Chuck Dawley Blvd. Bldg A
Mt. Pleasant, SC 29464
Attorney For: Plaintiffs

John C. Cleary, Esquire
LeBoeuf, lamb, Greene & MacRae LLP
One Gateway Center, Ste 1600
420 Fort Duquesne Boulevard
Pittsburgh, PA 15222-1437
Attorney For: St. Croix Alumina LLC

John P. Marino, Esquire
Fowler White Boggs Banker, P.A.
50 North Laura Street, Suite 2200
Jacksonville, FL 32202
Attorney For: Glencore, Ltd., f/k/a Clarendon, Ltd.

Juliet A. Markowitz, Esquire
Tatro Tekosky Sadwick Mendelson LLP
444 South Flower Street
42nd Floor
Los Angeles, CA 90071
Attorney For: Glencore, Ltd., f/k/a Clarendon, Ltd.

Ellen Presby, Esquire
Baron & Budd, P.C.
3102 Oak Lawn Ave.
Dallas, TX 75219-4281
Attorney For: Plaintiffs

Renee Melancon, Esquire
Baron & Budd, P.C.
3102 Oak Lawn Ave.
Dallas, TX 75219-4281
Attorney For: Plaintiffs

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IN THE DISTRICT COURT OF THE VIRGIN ISLANDS

DIVISION OF ST. CROIX

JOSEPHAT HENRY resident of Harvey,)
KAY WILLIAMS resident of Harvey, SYLVIA)
BROWNE resident of Clifton Hill, MAUDE)
DREW resident of Estate Barren Spot,)
MARTHA ACOSTA resident of Estate Profit,)
WILHELMINA GLASGOW as in individual)
and mother and next of friend of)
SAMANTHA VIERA, a minor, both residents)
of Estate Profit, MERCEDES ROSA)
resident of Estate Profit, JULIAN ST.)
BRICE, resident of Clifton Hill, GEORGE)
RODRIGUEZ as an individual and as father)
and next friend of AMANDO and GEORGE)
E. RODRIGUEZ, minors, all residents of)
Estate Profit, SONYA CIRILO resident of)
Estate Profit, RAQUEL TAVAREZ, resident)
of Estate Profit, NEFTALI CAMACHO, as an)
individual and as father and next friend of)
ANGEL JAVIER CAMACHO a minor, both)
residents of Estate Profit, EYAJIE)
MALAYKHAN resident of Estate Profit,)
CHEDDIE KELSHALL resident of Estate)
Profit and other persons too numerous to)
mention, A CLASS ACTION,)
)
Plaintiff,)
)
v.)
)
ST. CROIX ALUMINA, LLC, ALOCA INC.,)
and GLENCORE, LTD, f/k/a CLARENDON,)
LTD,)
)
Defendant.)
)

CIVIL NO. 1999/0036

ACTION FOR DAMAGES

JURY TRIAL DEMANDED

AFFIDAVIT OF CLAUDETTE ANDERSON

TERRITORY OF THE VIRGIN ISLANDS)
) **SS:**
DIVISION OF ST. CROIX)

I, Claudette Anderson, having first been duly sworn, depose and state as follows:

1. I make this affidavit of my own personal knowledge and belief.
2. I was employed at VIALCO from 1989 to until it was sold to St. Croix Alumina in July 1995. My position was that of accounting supervisor.
3. Clarendon who sold to Glencore was the owner of the refinery. I know that from the documents that I reviewed in my position.
4. When I was first employed all quarterly financial reports as to income and expenses, balance sheet went to Clarendon. That continued when Glencore took over. The title on the forms changed but the information was the same and it also required that they be given the information on a quarterly basis to review. We had a due date that the financial reports had to be received by Glencore or they would call us up and demand that we produce them to them immediately.
5. Persons from Glencore would come to the refinery on a regular basis to oversee the operations of the refinery and review whether we were following the correct policies and procedures or to establish policies and procedures. The person I usually dealt with was Robert Prusak who was in finance for Glencore.

He was the person that I dealt with on the finances and who would call and require that we send the financials to him.

6. Glencore would periodically (at least twice a year) come to VIALCO and inspect it and review what was going on and oversee what was occurring in their position as owners of the refinery. They were hands on management.

7. VIALCO had an account at the bank and Glencore financed that account. All of our sales of alumina were to Glencore and we would offset the monies they provided for the operation of the refinery from the sales. It was Glencore who actually funded all refinery activities. If VIALCO attempted to make fixed asset expenditures over a certain amount a request to be allowed to spend the funds had to be sent to Glencore and they had to approve it before we could expend the funds.

8. Glencore made all provisions for all the raw materials that were used at the refinery and all those contracts were with Glencore and not VIALCO.

FURTHER AFFIANT SAITH NOT.

Claudette Anderson

SUBSCRIBED AND SWORN TO before me
this 28 day of June, 2005.

NOTARY PUBLIC
My commission expires 12/06.

EXHIBIT 128

Frank Parker - Burt Report, 2022-08-15, 21-CV-548_BURT_000131 – 21-CV-548_BURT_000157

Caliche Ltd
Solid Solutions Seeking Sustainability

August 15, 2022

Mr. Rick Yelton
Bums Charest LLP
365Canal Street, S-1170
New Orleans, LA

Sub: Mr. Burt Re: 22-055

Dear Mr. Yelton,

I appreciate the opportunity to review this interesting case. My opinions are based on the information provided by your office, my telephone interviews of Mr. Burt, the scientific and other relevant information and my education, training and experience. I reserve the right to modify my opinions if significant new information is provided.

Retrospective Risk Assessment Methodology

A retrospective risk assessment utilizes scientific and other relevant information to estimate a worker's historic risk of incurring an occupational disease. Risk assessment has its roots in antiquity. Among the first recorded risk assessment efforts was in approximately 3,200 BCE among the Asipu in Mesopotamia.[1] Risk assessment's reliance on quantifiable data started emerging in the 17th century. Since then the advancement in science's ability to measure exposure concentrations and the use of mathematical data analysis has provided better tools for estimating both contemporary and historical risks. However, given the great biological diversity among human beings and the an almost limitless variation in a workers environment over a working lifetime, retrospective risk assessments are at best an approximation of the worker's actual historical risk.

Risk Assessment has been an integral part of the industrial hygiene profession since its founding in the early part of the last century. The ability to quantify airborne concentrations of hazardous materials and relate those exposure concentrations to incidence of occupational diseases constituted the basis for modern retrospective risk assessments. Today retrospective risk assessment has also found utility in attempting to estimate the risk an individual incurred as a result of historical exposure to hazardous materials.

The scientific methodology utilized here is that published by the The American Industrial Hygiene Association [AIHA] titled, "*Guideline on Occupational Exposure Reconstruction*".[2] Risk assessment is identified as one of the basic uses of this methodology.[3]

The AIHA's Guideline was peer reviewed and published by an organization recognized by the industrial hygiene profession as authoritative and reliable. The theories set forth by the AIHA's publication on occupational exposure reconstruction has widespread acceptance. It is routinely taught at AIHA's conferences and professional development courses and used by many practicing industrial hygienist and other scientist in this country and many other places in the world. The standards associated with this theory are maintained and published by the American Industrial Hygiene Association.

Trying to understand a worker's past asbestos exposures might have been, many years in the past, is difficult. Typically there exists no contemporary exposure documentation uniquely relating to the worker in question. In these cases, The AIHA's guideline states:

> "In developing exposure assessments for these situations, the IH must rely on exposure and other data in existence. However, because much of the needed data is often missing, exposures must be reconstructed from existing data, historical facility information, interviews with workers, and professional judgment."[4]

To evaluate health risks we usually have to rely on published scientific articles and other relevant information to help us understand the likely asbestos exposures for the tasks the worker historically conducted. In place of worker interviews we usually, but not always, have the sworn testimony of the worker and their coworkers describing their work tasks, working conditions, safety procedures, etc.

The AIHA methodology requires the industrial hygienist to compare the worker's occupational history and working conditions with the available relevant exposure information and decide whether or not the worker's exposures were occupational significant. If the distribution of the historical exposure data demonstrates a propensity for exposure concentrations to be in excess of contemporary standards, then the worker most likely was at significant risk for developing a related occupational disease.

The AIHA method takes a hierarchy approach to occupational exposure risk reconstruction based on the availability of applicable data and other relevant information:

- Ever/never exposed – no other exposure related data or information exists;
- Qualitatively exposure – exposure data and/or other necessary information insufficient for quantitative analysis;
- Quantitative exposure – Exposure data and/or information sufficient for quantitative analysis;

To implement the AIHA method the following steps were taken, based on information available:

- Determine Mr. Burt's work history at the bauxite/alumna plant;
- Review and evaluate the information available to establish the presence and extent of asbestos containing materials in Mr. Burt's work areas;
- Illicit evidence of Mr. Burt's occupational exposure to asbestos containing materials;
- Illicit evidence of personal protective equipment [respirators, clothing, etc.] provided and used by Mr. Burt;
- Illicit evidence of necessary warnings & training provided to Mr. Burt;
- Illicit evidence of personal asbestos exposure air monitoring as required by national standards, OSHA [29 CFR Part 1910] & MSHA [30 CFR Part 56];
- Review and evaluate the plant owners asbestos safety, industrial hygiene & medical programs as required by national standards, OSHA & MSHA;

- Review the applicable scientific and other relevant information available that is applicable to Mr. Burt's occupational asbestos exposures;
- Review the available medical scientific literature and other relevant information available that relates asbestos exposure to occupational disease;
- Based on available information, determine which AIHA method was appropriate;
- Analyze data and other relevant information;
- Draw conclusions; and
- Formulate opinions.

Mr. Milton Burt

Work History

Mr. Burt related to me his work history, while employed by various companies, at the bauxite plant as follows:

- 1967 [April]- Starts at the bauxite plant as a Lubricator lubricating the plant's rotating equipment;
- 1970 [Approximately] – Maintenance Man maintaining all the equipment in the plant;
- 1982 [Approximately] – Maintenance Foreman maintaining all the equipment in the plant; and
- 2001 – Leaves the bauxite plant.

Dr. John documented Mr. Burt's work history during his medical evaluation.[5] Mr. Burt told Dr. John that he worked for a variety of companies doing maintenance work throughout the bauxite/alumina plant on St. Croix from 1967 till 2001.

Mr. Burt's Social Security record confirms that he worked at the bauxite/alumina plant for at least the following times:

- 1985- Martin Marietta Aluminum;
- 1990-1995 Virgin Islands Alumina, Inc.; and
- 1995-2001 – St Croix Alumina, LLC [ALCOA].

Evidence of Occupational Asbestos Exposure

Mr. Burt told me that he handled and was exposed to the following asbestos containing materials [ACM]:

- Thermal System Insulation [TSI] - TSI include insulation materials for pipes and flat or complex surfaces. It also includes the asbestos "muds", cloth and mastics used during the installation and maintenance of the process related equipment.
    - Mr. Burt frequently removed asbestos containing TSI from various pipes and tanks in the plant and was a bystander to others who also removed and replaced asbestos insulation. He would also clean up the scrap TSI. The TSI would easily crumble, "in your hand".
    - Hurricanes Hugo [1989] and Marilyn [1995] caused significant damage to TSI and Mr. Burt spent a lot of time physically cleaning up the TSI debris;
    - Disturbing the TSI was a very dusty process. He could see the dust in the air and breathed it;
- Gaskets – The plant contained many asbestos gaskets on pipe, valve and pump flanges. He frequently [daily] had to remove and replace them. Many times he used scrapers, chisels, wire brushes and/or power wire brushes to clean the flange surfaces prior to replacing the

gasket. He also frequently cut gaskets for flanges and tank doors from asbestos sheet material. These processes created visible dust which he inhaled.

- Rope – Asbestos rope [2" wide] was used as gaskets on equipment used to transport the alumina. He would have to replace these gaskets several times a year. The process created visible dust which he inhaled.

According to Dr. John, Mr. Burt removed, repaired & replaced TSI on pipes usually more than once a week, which generated large amounts of asbestos dust. He was also a bystander to others disturbing the asbestos insulation.[6]

Mr. Joseph Daniel, who also worked maintaining the plant from 1989 to 2000, confirms Mr. Burt's recollection of the tasks and asbestos containing materials the mechanics disturbed and the dusty conditions created to which they were exposed. Hurricanes Hugo [1989] and Marilyn [1995] caused significant damage to TSI and they spent a lot of time physically cleaning up the TSI debris.[7]

Personal Protective Equipment [PPE]

Mr. Burt said he was never provide any respiratory protection while disturbing asbestos TSI, gaskets and/or rope. He wore a "paper mask" only while working in bauxite areas. There is no evidence that he was ever included in a respiratory protection program as required by national standards, OSHA and/or MSHA.

Dr. John reports that Mr. Burt did not have a respirator while he or others disturbed asbestos insulation. Mr. Daniel also testifies that respirators were not worn during the disturbance of asbestos insulation.

He was provided work clothing which he changed out daily for his street clothing.

Asbestos Training and Health Hazard Warnings

Mr. Burt said he was never provided any training on how to handle asbestos containing materials safely. He said he was never adequately warned concerning the hazards of exposure to asbestos. He only heard that asbestos was a "problem" when the plant started to hire contractors to abate some of the TSI.

Asbestos Exposure Monitoring

Mr. Burt's asbestos exposure concentrations were never determined as required by contemporary national standards, OSHA, and/or MSHA regulations.

Medical Program

To his knowledge, Mr. Burt was never part of an asbestos related medical program as required by national standards, OSHA and/or MSHA regulations.

Bauxite Plant, St. Croix, VI

History

The Bauxite plant was constructed by Harvey Aluminum Company and began production of alumina in 1967. It processed some 226,000 tons per year which increased to some 700,000 tons per year by 1982.[8] Martin Marietta acquired controlling interest in Harvey in 1968 and completed the purchase in 1972. Alumina production continued until

1985. The plant was closed until VIALCO opened it in 1987 and operated it until 1995. Alcoa reopened the plant in 1997.[9] Mr. Burt indicated that the bauxite plant shut down in 2001.

Asbestos containing Materials [ACM]

Substantially all large industrial plants designed and built in the 1960s installed large quantities of ACM. NIOSH has identified several thousand products containing asbestos. Those ACM that Mr. Burt describes handling include:

- Thermal System Insulation [TSI] - TSI include insulation materials for pipes and flat or complex surfaces. It also includes the asbestos "muds", cloth and mastics used during the installation and maintenance of the process related equipment;
- Gaskets - Asbestos containing gaskets are used to join sections of pipe, etc. together to prevent leaks;
- Cloth - Asbestos cloth was also frequently used to wrap TSI, instrument and steam tracing lines among other uses; and
- Rope – Asbestos rope was used as a gasket on doors and tank manways.

Mr. Jose Bou worked as a Process Engineer at this facility from 1966 till 1980.[10] He testifies that the insulation used in this plant contained asbestos. He also testifies to the use of asbestos gloves.[11]

Mr. Louis Principe, General Maintenance Foreman in the plant starting in 1974, reported that asbestos insulation was commonly used during all construction in the plant prior to 1977 and that some asbestos free insulation was used after 1977.[12] Mr. Bou confirms that asbestos was used as thermal insulation for all construction prior to 1977 and that non-asbestos containing insulation was used to replace damaged asbestos containing insulation since 1977.[13]

MHSA [1990] received a complaint from an anonymous source at the VIALCO plant concerning, "Employees removing asbestos containing insulation from tanks, hot water pipes and steam pipes are not provided adequate personal protective equipment. Employees are not provided information and training associated with the hazards of asbestos."[14] MSHA citations were issued for improper storage of asbestos waste and failure to barricade asbestos areas and failure to post warning signs.

The following is a summary of reports in this record suggesting the scope and the amount of ACM in this facility:

- Thermal System Insulation
  - Mr. Louis Principe, who worked at the plant starting in 1966, conducted a survey of asbestos TSI in the plant sometime after the plant started production. He identified some 1,375 ft^2 of block insulation, 767 ft^3 of cone insulation, 9,120 ft. of pipe insulation and 1,134 ft^3 of stripped pipe covering.[15]
  - In April 1989 McDonnell Gamble Environmental Services, Inc. conducted a survey of the then existing ACM in the facility.[16] They reported some 11,841 ft. of asbestos containing pipe TSI and some 26,225 ft^2 of block TSI;
  - In 1989 VIALCO started, via an asbestos abatement contractor, to abated

    at least TSI. Hurricane Hugo apparently also damaged some TSI. According to a local news report, VIALCO collected some 15,000 bags of asbestos building materials with another 2,000 to 3,000 bags remaining to be abated.[17]
  - In 1993 RMT conducted an environmental audit of the VIALCO facilities.[18] They determined significant amounts of asbestos containing TSI still existed in the plant.[19]
  - In 1995, Induchem Environmental Services, Inc. conducted an asbestos inspection of the facility.[20] They did not report the quantities of TSI still present in the facility but estimated the cost of its abatement to be $4,687,244.
  - I have been provided a map of the facility locating the units reported to contain TSI.[21] It confirms the wide spread of TSI throughout the plant.
- Gaskets [Sheet & Rope]
  - Mr. Mackay [VIALCO 1984] prepared an inventory list of asbestos containing materials located in the warehouse. It listed numerous asbestos containing gaskets, packing, pads and wicks.[22]
  - Mr. Honore, [Martin Marietta 1983] provided a report that listed the repairs made on several units during a plant outage.[23] He reports changing out numerous valves, all of which most likely included disturbing at least one gasket. He also reports opening/closing mandoors which also most likely required replacement of gaskets. This activity required some four [4] supervisors and 28 Martin Marietta employees plus some 38 outside contractors.

Consequently, there is no question that this facility contained vast amounts of asbestos containing TSI. In addition it almost certainly contained large quantities of other ACM including gaskets, packing, cloth and rope.

Safety Programs

The record includes several safety standards:

- Welcome to Martin Marietta Alumina, St. Croix [1975].[24] This booklet contains a chapter on safety. It mentions respirators and indicates their use are required for protection where, "excessive dust is present" and when handling lime, bauxite and/or alumina.[25] No mention of asbestos is made.
- Martin Marietta Safety Standard [1976].[26] It specifies the use of asbestos materials for protection against heat.[27] The standard does not include any safety procedures for the safe handling of asbestos.[28] However, the restricted chemical safety standard actually lists asbestos as a Fully Restricted Chemical [Carcinogen].[29]
- Martin Marietta Welcomes You, St. Croix [1978]. No safety standards related to asbestos or respiratory protection programs are mentioned.[30]
- Safety Rules [1978]. These rules repeat the instructions found in the previous booklet and also asbestos is not addressed.[31]
- Martin Marietta Safety Manual, St. Croix [1981].[32] This standard includes the formation of a Safety Committee, requirements for job safety analysis, and safety training. It includes an Industrial Chemical Safety Standard which places the responsibility of, "Researching chemicals for toxicity and hazards" on the Safety Engineer.[33] It also includes a standard on cleaning respirators but nothing on the selection, fitting, medical qualification and training necessary for safe respirator use.

- Martin Marietta Respirator Program [Unknown Date].[34] Lays out the responsibilities of various organizations to implement the respiratory protection program. The industrial hygiene program includes identifying hazards, air monitoring, selecting respirators, training, fit testing, and medical monitoring. The index includes an appendix on Asbestos-Demolition [Appendix 5]. However, the actual appendix is not include in this document. There is no evidence that Mr. Burt was ever part of this program.

Industrial Hygiene Programs

This record contains no evidence that the plant ever had a formal industrial hygiene program including hazard warning, training, exposure monitoring, respiratory protection, and occupational medical surveillance as required by national standards, OSHA and/or MSHA.

The record also includes no documented effort to evaluate Mr. Burt's asbestos exposures as required by national standards, OSHA and/or MSHA.

The record does include two industrial hygiene survey reports:

- Dust Surveillance Report of the St, Croix bauxite operations.[35] Air sampling was restricted to employee exposures to silica only. No asbestos disturbance operations were evaluated. They documented one employee exposure in excess of the silica respirable Threshold Limit Value [TLV] and 11 employees' exposures in excess of the total dust TLV.
- Industrial Hygiene Survey and Program Review.[36] The survey sampled for bauxite, alumina, caustic mist and noise. Asbestos was not addressed.

Scientific and Other Relevant Information

Thermal System Insulation (TSI)

Introduction

Thermal system insulation is comprised of a variety of different products. These include:

1. Pipe and Block Insulation. These are the primary insulating materials. They vary in thickness and shape. Pipe insulation is usually preformed in to "half rounds" that fit the diameter of the pipe being insulated. They can be fastened to the pipe by a variety of methods, the most common being wired;
2. Muds. These materials look like Plaster of Paris when applied. They come to the work site in a dry form and are mixed with water onsite or they come already mixed with water. They are used as butt joints on pipe insulation (asbestos and others), to fill voids, for making pipe elbows and tees, and as a coating over the asbestos cloth or canvas exterior;
3. Mastics. Mastics, sometimes called glue, are usually made out of a tarry substance;
4. Cloth. All TSI requires an outer covering to protect the insulation materials. Many times this material was an asbestos cloth that was similar to canvas. It was wrapped around insulated pipe or was the final "skin" over large surface areas. Typically it would be covered with Mud and then painted; and
5. Rope. Rope was woven out of 100% long fiber asbestos and was used as gaskets on vessel/tank/furnace manways, duct work, valve stem packing, etc.

Pipe and Block Insulation

Pipe and block insulation, containing significant amounts of asbestos, have been used commercially since well before World War 2. Their intended use requires the cutting, fitting and sealing during installation; disturbance during repair and maintenance; demolition; cleanup; and disposal of waste ACM. All these activities result in the release of asbestos fibers.

Exposure levels have been reported in the literature since at least the 1940's that encompass the work tasks that insulators, and other tradesmen, conducted. Fleischer, et al, studied insulators in shipyards doing cement (mud) mixing and installation of insulation materials and reported exposure levels as high as 250 million particles per cubic foot (mppcf).[37]

In 1937, Standard Oil Company's Chief Safety Inspector, Roy Bonsib, investigated asbestos exposures to workers during insulation operations.[38] While insulating a 12" steam line he measured concentrations ranging from 12.6 to 23.8 mppcf; a cracking oil accumulator some 4.5 mppcf; acid suction line some 0.8 mppcf; hot oil lines 3.4 to 7.8 mppcf; removing old insulation 2.3 to 5.9 mppcf; and crushing scrap asbestos 10.2 to 27.5 mppcf.

Marr [1964] also studied asbestos exposures to workers in shipyards.[39] He reported concentrations ranging from a trace to 8 mppcf.

Warwick [1965] surveyed the cutting, application and cleanup of Kaylo insulation.[40] Concentrations reported were cutting and application 1.7 to 22.5 mppcf; application only, 0.1 to 13 mppcf; and cleanup with broom and shovel 0.1 to 2.5 mppcf.

In 1968 Balzar and Cooper reported exposure levels experienced by members of an insulators union working in a variety of locations in California and Nevada. They report exposure concentrations ranging from 0.2 to 26.3 f/cc (tearing out); 0.1 to 61.6 f/cc (application); 0.2 to 10.7 f/cc (mixing); and 0.1 to 22.9 f/cc (general).[41]

Harries [1971] studied exposure levels in Naval Dockyards including buildings and ships. He reported concentrations ranging from 2 f/cc to 78 f/cc [Ave. 30 f/cc] while workers were removing calcium silicate sections from their shipping boxes. He also reports concentrations ranging from 0.1 f/cc to 220 f/cc while workers were removing and installing thermal system insulation.[42].

Shell Oil Company conducted a survey of asbestos operations in 1972.[43] Exposure levels experienced by insulators removing asbestos insulation from a distilling unit charge pump were 2.21 and 2.27 f/cc (15 minute sample) and peak concentrations were 2.55 and 2.62 f/cc. Removing ACM from a distilling furnace transfer line resulted in exposure concentrations of 0.98 and 1.36 f/cc (25 minute period). A three hour area sample, collected 10 feet downwind of this work, averaged 0.03f/cc. Shell also measured exposure concentrations experienced by workers cleaning up scrap ACM. Over two work days they collected 10 samples and concentrations measured ranged from 0.32 to 4.53f/cc.

Venable, Exxon's Industrial Hygienist, collected nine samples during pipe insulation "Ripoff" in 1972. The concentrations ranged from 0 f/cc (sic) to 36 f/cc. The log normally distributed data set had geometric mean of 1.4 f/cc and a 95% of 179.3 f/c. When compared to the NIOSH REL (1971) of 2f/cc the exceedance level was 44.7%.

Venable collected three personal samples on insulators removing asbestos containing insulation during a unit turnaround in 1974.[44] He found concentrations of 15, 78, and 58 f/cc while removing insulation from an 8 inch hot oil line. He collected two additional samples while contract employees were removing insulation from the exterior of a reactor vessel. Concentrations were 203 f/cc and 255 f/cc. Combined the Mean=121 f/cc and the Geometric Mean= 81 f/cc.

Fontaine et al [1975] measured exposure levels to workers in a steam power plant during a routine maintenance outage.[45] Eight hour Time Weighted Average (TWA) exposures ranged from <0.1 f/cc to 5.9 f/cc for asbestos workers (insulators) and for laborers they ranged from <0.01 f/cc to 3.7 f/cc. Peak concentrations were as high as 24.6 f/cc for insulators and 21.5 f/cc for laborers.

Meyers [1976] collected short term [peak] air samples on two workers removing asbestos insulation from a refinery UDEX unit.[46] Results were 16.15 f/cc and 65.9 f/cc.

Salazar [1978] conducted a series of personal asbestos air samples during the demolition of asbestos containing block insulation on a boiler in an old Kraft paper mill.[47] He collected some 18 samples [13 personal & 5 area] the results of which ranged from 0.05 f/cc to 6.07 f/cc [personal].

In 1978 the 3M Corporation[48] collected some 9 samples during asbestos pipe covering demolition, removal and cleanup using the "Dry Method". Results ranged from 6.5 f/cc to 28.7 f/cc. They sampled the same activities that were using the "Wet Method". Results of the 6 samples ranged from <0.3 f/cc to 3 f/cc.

My review of this literature and my professional experience while abating insulating materials indicates that workers handling asbestos insulation, as well as those in the vicinity, are frequently exposed to high concentrations of airborne asbestos fibers if adequate control measures are not in place.

Mud

Insulation "mud" is a term applied to the cementitious materials typically applied to block, pipe and clothe as a wet "mud" to fill in cracks and holes as well as provide a hard exterior for the thermal system insulation (TSI). It is made by grinding up scrap block or pipe insulation or purchasing as a separate product from a TSI vendor. The dry "mud", with a consistency somewhat like Portland cement or flour, was traditionally poured into a bucket, on the floor, or in some other container and then mixed with water to the proper consistency. It was then typically trialed on or hand applied to the appropriate surface. Spillage was common which required sweeping or scraping to remove the residue.

Once the mud was in place and hardened it was subject to disturbance from equipment maintenance and vibration which released asbestos fibers into the work area. Eventually it has to be greatly disturbed during maintenance, rip out, and replacement of the TSI.

In the early to mid-1970's, after OSHA became effective, premixed mud, already containing water, was manufactured which while it reduced the dust created during mixing, it did nothing to reduce the dust during cleanup or removal.

Mud is very similar, and sometimes identical, to block and pipe insulation. Also, the exposure data associated with pipe and block insulation many times includes a contribution from the disturbed mud.

Cloth

The use of asbestos to make textile fabrics has a long history. Charlemagne supposedly had a table cloth made from asbestos and Benjamin Franklin sold an asbestos purse to raise money during his first visit to London in the early 1700's. Many of the first asbestos exposure studies were conducted in the textile industry here and abroad (See Mereweather[49] and Lanza[50]).

Typical uses of asbestos cloth include welding (fire) blankets, pipe (TSI) covering, pipe wrap, clothing, and tapes among others. The following is a summary of the literature and other information related to the use of these products.

Harries studied the asbestos fiber concentrations generated from asbestos cloth when shipyard workers fitted it over pipe lagging and ripping it. Concentrations ranged from some 0.3 to 43 f/cc.[51]

Samimi and Williams studied the exposure resulting from using asbestos gloves. They reported peak concentrations as high as 11 f/cc with Time Weighted Averages for workers conducting typical tasks in a well ventilated room ranged from 0.07 f/cc to 0.99 f/cc.[52]

In 1992, Millette reported on his experiments of workers wearing and using asbestos aprons and gloves. He found concentrations as high as 47.6 f/cc when a worker clapped asbestos gloves and 2.7 f/cc from a workers apron while moving material.[53]

The following tables summarize the reported exposure data:

Thermal System Insulation

Task	# Samples	Range [f/cc]	Average [f/cc]	Reference
Tearing Out	17	0.2 – 26.3	4.9	Balzer & Cooper[54]
Removal	12	0.16 – 2.62	1.6	Bell[55]
Removal	5	15 - 255	121.8	Venable[56]
Demolition	6	0.19 – 6.07	2.3	Salazar[57]
Demolition & Removal	3	6.5 – 7.7	7.0	3M[58]
		Weighted Average:	**17.4**	

Sweeping & Cleanup [TSI]

Task	# Samples	Range [f/cc]	Average [f/cc]	Reference
Sweeping	13	0.3 – 13.8	7.05*	Fountain[59]
Cleaning Debris	7	90 - 277	155+	Harries[60]
Cleaning Debris	16	0.1 – 22.9	4.8	Balzar[61]
Cleanup	4	0.72 – 2.32	1.4	Salazar[62]
Cleanup	10	0.32 – 4.53	1.54	Bell[63]
		Weighted Average:	**4.4**	

*Individual samples results not listed. Average is the average of the extreme values.

+ Reference only. Not included in Weighted Average

In conclusion, these data show that asbestos containing cloth and cloth products release substantial quantities of asbestos fiber when used as intended.

Asbestos Containing Gaskets and Packings Exposures

Merewether and Price, in their landmark study of asbestos workers published in 1930, recognized jointings (British term for gaskets) and packings as a distinct category of asbestos containing products.[64]

Millette and Brown examined the surface of asbestos containing gaskets materials using an electron microscope.[65] They concluded that "Not all asbestos fibers are bound in the organic matrix".

Millette also analyzed a sample of a Garlock 7228 gasket by PLM and electron microscopy.[66] They determined that the sample contained approximately 60% Chrysotile and 0.0009% amphibole (primarily tremolite asbestos). In addition that "uncoated" asbestos fibers protruded from the gasket surface and some fibers were released on to the hand during handling of the gasket material.

Liukonen, et al studied worker exposure levels to asbestos from gaskets during fabrication, installation and removal in a Naval Shipyard. They reported concentrations ranging from <0.03 to 5 fibers per cubic centimeter (f/cc.)[67]

Mangold conducted an experiment to determine the release of asbestos fibers from undisturbed Garlock gaskets.[68] He used new gasket, a used gasket removed from pipe flanges, and a gasket still in place between flanges. He reported concentrations ranging from 0.0f/cc (sic) to 0.008f/cc while environmental background concentrations ranged from 0.001 f/cc to 0.004 f/cc.

Millette, et al did several experiments with gaskets in a laboratory setting and reported concentrations up to 62 structures per cubic centimeter (s/cc) during gasket removal[69] and 4.2 f/cc during packing removal.[70]

McKinnery and Moore also studied asbestos fiber release during removal of gaskets and packing and report maximum concentrations of 75s/cc (gaskets) and 20s/cc (packing).[71]

Cheng and McDermott and reported concentrations ranging from 0.001 f/cc to 0.49 f/cc while cutting gaskets and from <0.05 f/cc to 1.4 f/cc while removing gaskets from pipe flanges in a petro-chemical plant.[72]

Longo, et al measured airborne concentrations of asbestos fibers that were released during the recreation of removal of asbestos-containing sheet gaskets from steam flanges.[73] The air samples were analyzed by light microscopy (PCM) as well as electron microscopy (TEM). In three studies the worker exposure concentrations ranged from 1.5 to 31 fibers per cubic centimeter (f/cc) by PCM and for samples analyzed by TEM the concentrations ranged from 29.9 to 1636.1 s/cc.

Mr. Matthew Carmel, in an unpublished study of asbestos exposures during simulated valve gasket cutting operations, reported average personnel exposure concentrations of 0.373 f/cc (PCM) and 5.294 s/cc (TEM).[74]

Airborne concentrations of asbestos were measured during the simulated removal and replacement of asbestos-containing gaskets and packings in industrial and maritime fittings by Boelter et al.[75] Personal exposure concentrations ranged from 0 f/cc (sic) to 0.052 f/cc (PCM).

Shell measured the airborne concentration of asbestos during the removal of a gasket from a 6 inch waterline using a power wire brush. The one personal sample collected documented 28.4 f/cc in the breathing zone over 24 minutes.[76] Two other related area samples were collected. The first was 4 feet from the pipefitter/welder during actual removal. The results indicate an airborne concentration of 16.1 f/cc.[77] The second area sample was collected also some 4 feet from the pipefitter/welder while he burned off a gasket. The results were 0.52 f/cc and the industrial hygienist who collected the sample, in his field notes, indicates that this sample "represents potential exposure of helper working nearby".[78]

Fowler studied potential worker exposure levels generated during sawing neoprene impregnated asbestos gasket material.[79] Results of personal sampling indicated exposure levels ranging from <0.11 f/cc to 4.9 f/cc.

Field studies, conducted by Spence and Rocchi, on workers removing sheet gasket material from flanges and equipment in a plant setting found asbestos exposure concentrations ranging from below detectable and 0.02 f/cc.[80]

DOW investigated the asbestos hazard presented by the cutting of asbestos containing gaskets.[81] Exposures to the worker cutting the gasket material ranged from 0.78 to 4.03 f/cc. One sample collected while a worker was "cleaning table off with a broom and picking up material off floor with a scoop" documented an exposure concentration of 3.08 f/cc.

Mangold et al conducted a series of studies on worker and bystander exposures to asbestos from activities associated with removing and installing asbestos containing gaskets and packing between 1982 and 1991.[82] They attempted to recreate the work Liukonen had conducted at an US Naval shipyard in the late 1970's. Their purpose was to separate exposure contribution from the gaskets and packing from any background that also might have existed in the work area. Only TWA values were reported and they were only for the specific activities described. Their studies document fiber release during the activities described. They concluded that "asbestos exposures to workers conducting removal and installation of asbestos-containing gasket and packing materials is below historical and current occupational exposure limits for asbestos". There are two exceptions. Their 1982 study recorded two 8 hour TWA results above the current 0.1 f/cc standard: Machine Punch (0.11 f/cc) and Nibbler Machine (0.14 f/cc).

Boelter conducted a recreation study of a worker using a ball peen hammer to cut out eight asbestos containing gaskets for pipe flanges ranging from 8" to 10 1/16" over an eight hour period. Two personal and eight area samples were collected. The average concentration for the personal samples was 0.045f/cc and for the area samples 0.04f/cc.[83]

In 2007 Madl, et al[84] reviewed the published and unpublished studies [1940-1985] on typical activities associated with asbestos containing gaskets and packing. They concluded:

- Gasket Formation [Workshop Tools]: Average Peak = 0.44 f/cc; Average TWA = 0.008 f/cc;
- Gasket Formation [Hand-held manual tools]: Average Peak = ~0.1 f/cc; Average TWA = ~0.01 f/cc;

- Gasket Removal [Hand tools]: Average Peak = 0.14 f/cc; Average TWA = 0.024 f/cc;
- Gasket Installation [No disturbance]: Average Peak =0.15 f/cc;
- Packing Removal & Installation: Average Peak = 0.4 f/cc; Average TWA = 0.01 f/c.

They concluded that workers working with gaskets and packings, "should not have been exposed to 8-h TWA airborne concentrations of chrysotile asbestos in excess of the OSHA PELs promulgated prior to 1986".

The following table summarizes the reported asbestos exposure concentrations:

Gaskets

Task	# Samples	Range [f/cc]	Average [f/cc]	Reference
Remove & Install	2	0.005	0.005	Mangold[85]
Scrape Flange	3	0.03	0.03	Mangold[86]
Remove	23	0.05-0.44	0.16	McKinnery[87]
Power Wire Brush	1	28.4	28.4	Shell[88]
Install	12	0.13-0.29	0.2	McKinnery[89]
Power Cut Gaskets	11	0.001-0.49	0.15	Cheng[90]
Remove & Clean Seating Surface	6	<0.05-1.4	<0.36	Cheng[91]

Review of this information demonstrates that asbestos fibers are released in significant quantities during the normal course of the installation and removal of asbestos gaskets and packing and that worker's exposures concentrations range from non-detect to some 28 f/cc.

Bystander Exposure

The knowledge that the inhalation of dusts into the lungs of workers predisposed them to occupational lung disease has been well known for several centuries. Ramazzini, in his famous 1713 book on occupational diseases, states:

> "Various and manifold is the harvest of diseases reaped by certain workers from crafts and trades that they pursue; all the profit that they get is fatal injury to their health. That crop germinates mostly, I think, from two causes. The first and most potent is the harmful character of the materials they handle, for these emit noxious vapors and very fine particles inimical to human beings and induce particular diseases;"[92]

At some level it is intuitively obvious that a person working with or in the vicinity of another who is disturbing a hazardous substance, such as asbestos containing materials, is also likely to be exposed to asbestos. It is so obvious that the early investigators of occupational disease did not differentiate between those actually performing the work and those in the immediate area. Oliver, in his 1902 textbook, Dangerous Trades, states:

> "...the fact remains that where an individual is working in the dusty atmosphere of a factory for several hours a day, week after week, particles of dust immediately find their way into the finer bronchi, and subsequently into the pulmonary tissue itself. It is the repeated working in a dusty atmosphere that causes the trouble." [93]

In NIOSH's 1995 report to the US Congress[94] they concluded, "...contamination of workers' homes is a worldwide problem, with incidents reported from 28 countries and from 36 States in the United States. Such incidents have resulted in a wide range of diseases and, in some cases, death among workers' families". NIOSH specifically addresses the issue of asbestos causing family exposure and disease.[95]

Specifically related to asbestos, in 1942 the US Department of Transportation required Contract Shipyards to "Segregate dusty work"[96] to prevent bystanders from being exposed to asbestos.

Grandjean and Bach reviewed the literature on bystander exposures, including asbestos, and concluded that "Indirect exposures may occur at work when adjacent workers are exposed to hazards originating from fellow workers' activities." [97]

In 1961, McClintock[98], Kaiser Aluminum & Chemical Corporation's Industrial Hygienist, conducted a series if air samples during the sawing and drilling of Marinite. He found 22.2 mppcf some 50' from the table saw that was the source of the asbestos emissions. He concludes, "Extremely high and hazardous dust concentrations are generated when Marinite is being cut on the table saw. The dust generated during this operation is distributed in hazardous concentrations throughout the room [Carpenter Shop]".

In 1968, Balzar and Cooper reported exposure concentrations experienced by members of an insulators union working in a variety of locations in California and Nevada. [99] In describing the complexity of insulator's work environment and its implications for quantifying exposures to discrete insulator tasks they recognized that, "Many times the materials he is exposed to result from the activities of other trades in the area." Balzar collected some 153 air samples during Prefabrication, Application, Finishing, Tearing Out, Mixing, and General. Sample times were from 30 minutes to 3 hours and, due to overloading problems, sample filters were changed out several times on each insulator. The average of the mean concentrations was 5.8 f/cc [range 0.1 f/cc to 61.6 f/cc] for those workers directly handling TSI. Several of the samples reported as General were actually personal samples collected on Balzar and thus are representative of a bystander. These General sample concentrations averaged 4.8 f/cc >5µ [range 0.1 f/cc to 22.9 f/cc].

Meyers [1976] collected air samples at various distances and directions from a refinery Vacuum Tower while asbestos insulation was being removed. He measured 12.1 f/cc at 35'; 5.1 f/cc at 70'; 1.6 f/cc at 150'; 2.7 f/cc at 200'; 1.6 f/cc at 175'; and 1.3 f/cc at 275'. He also did the same for asbestos removal from a UDEX unit. He measured 6.63 f/cc 30' downwind and 5.1 f/cc 60' downwind.[100]

Hickish conducted a field investigation at a Ford [Britain] dealer repair facility in 1968.[101] He measured airborne concentrations generated during brake servicing, including brake cleaning with compressed air. He collected 6 personal samples [BZ] whose concentrations ranged from 0.38 f/cc to 1.12 f/cc [Brake cleaning & repair]. He also collected air samples in the general area [GA] of the brake servicing operation. He found concentrations ranging from 1.12 to 3.62 f/cc [His Table 3]. In fact, a ratio of average GA to average BZ is 2.6 which indicate bystanders are exposed to an average concentration some 2.6 times than those directly disturbing the brakes.

Rohl, in his study of garage mechanic's exposure to asbestos from maintaining and manipulating brake shoes,[102] measured 0.1 f/cc of asbestos fibers 75 feet away from the area where a worker was using compressed air to clean a brake drum. He also measured 0.1 f/cc some 12 feet from and 3 minutes after a worker cleaned brake drums with a dry brush.

In 1976, Lorimer, et al measured peak concentrations experienced by maintenance workers using compressed air to clean out automobile brake drums.[103] The worker was exposed to 0.4 f/cc while the background concentration 65 feet away was 0.1 f/cc.

Kauppinen, et al studied asbestos exposures to brake mechanics in Finland.[104] They found background concentrations of 0.1 f/cc in the general area where automobile brakes were being manipulated.

P. G. Harries measured airborne concentrations of asbestos at various distances from a sprayed insulation removal operation on a ship.[105] He found 30 f/cc two decks away from the operation demonstrating the propensity for asbestos fibers to disperse throughout any structure.

Harries also measured asbestos concentrations during the removal and installation of pipe and machinery lagging [insulation] in engine and boiler rooms. He measured both general environmental (GA) and personal (BZ) asbestos concentrations. The GA samples are representative of concentrations others in the area most likely experienced. In this case, during the removal of pipe and machinery lagging in Boiler Rooms the GA concentration average was 171 f/cc [0.04 f/cc-1052 f/cc] and in Engine Rooms 88 f/cc [0.46 f/cc-3021f/cc]. During the application of pipe and machinery lagging in Boiler Rooms the GA concentration average was 22.4 f/cc [1f/cc-61f/cc] and for Engine Rooms 2.1 f/cc [0.1f/cc-14f/cc]. These data show that bystanders can also experience exposure concentrations in excess of contemporary exposure standards by just being in the area where others are disturbing asbestos. In addition, ratios of the GA to BZ samples range from 0.3 to 1.8 which demonstrates that bystander concentrations can exceed the concentrations experienced by those workers directly manipulating the ACM.

DOW measured asbestos concentrations 15 feet from a gasket cutting operation.[106] They collected two samples. They reported results of 5.44 f/cc and 0 f/cc. The 0 f/cc was collected on the second day after they had cleaned up the work area.

Mangold, et al [2006][107] summarized previous work in order to estimate bystander exposure concentrations from several activities relating to the handling of asbestos gaskets and packing. These studies were conducted in 1982, 1989, 1991 and 1993. The data presented in the various tables that listed results for both workers and bystanders showed that both groups received substantially the same exposures.

Donovan,et al [2011][108] reviewed published and unpublished data and attempted to develop a "Rule of Thumb" that would allow estimating exposure concentrations experienced by bystanders based on actual worker exposure [source] concentrations and the distance the bystander was from the worker [distance]. In fact, there are studies [Harries and Balzar] that demonstrate bystanders are exposed to higher concentrations than those experienced by the workers actually generating the asbestos fibers.

Selikoff, et al summarized the bystander issue when he recognized the importance of bystander exposures in his famous 1964 study of insulators when he said:

> "A particular variety of environmental exposure may be of even greater concern. Asbestos exposure in industry will not be limited to the particular craft that utilizes

the material. The floating fibers do not respect job classifications. Thus, for example, insulation workers undoubtedly share their exposure with their workmates in other trades; intimate contact with asbestos is possible for electricians, plumbers, sheet-metal workers, steamfitters, laborers, carpenters, boiler makers, and foremen; perhaps even the supervising architect should be included."[109]

The following table summarizes the reported asbestos exposure concentrations:

Bystander

Task	# Samples	Range [f/cc]	Average [f/cc]	Reference
Gaskets -Circular Cutter	8	0.002 – 0.006	0.003	Mangold[110]
TSI-Install & Tear Out	16	0.1-22.9	4.8	Balzar[111]
TSI-Tear Out	8	1.3-12.1	4.5	Meyers[112]
		Weighted Average:	**3.5**	

Consequently, bystanders are routinely exposed to asbestos as a result of simply being in a work area where others are disturbing asbestos containing materials. The fibers can simply migrate from the original source to the bystander or be released from another worker's contaminated clothing when it is disturbed in the immediate area of the bystander. Under some situations the exposure concentrations experienced by the bystander can be equal or greater than those of the workers creating the asbestos dust in their work area.

Occupational Exposure Standards

Throughout the modern industrial use of asbestos, society has attempted to minimize the risk from exposure by establishing occupational exposure standards. The airborne concentration of asbestos fibers to which a worker is exposed has been used as a predictor of health hazard since before the first half of the last century.

ASBESTOS OCCUPATIONAL EXPOSURE STANDARDS

Date	Promulgating Agency	MAC [a]	AL [b]	TWA [c]	STEL/C/EL [d]
1938	U.S. Public Health Service[113]	5 mppcf			
1939	State of California[114]	5 mppcf			
1942	U.S. Department of Labor[115]	5 mppcf			
1943	State of Louisiana[116]	5 mppcf			
1945	State of Oregon[117]	5 mppcf			
1946	American Conference of Governmental Industrial Hygienists[118]	5 mppcf			
1946	State of Ohio[119]			5 mppcf	
1951	U. S. Department of Labor[120]	5 mppcf			
1957	State of Texas[121]			5 mppcf	
1967	U. S. Bureau of Mines[122]			5 mppcf	
1968	American Conference of Governmental Industrial Hygienists[123]			12 f/ml > 5 µm [proposed]	
1969	United Kingdom[124] Chrysotile, Amosite, & Anthophyllite Crocidolite				2 f/cc > 5 µm [10 min]
1969	U.S. Department of Labor[125]			12 f/cc > 5 µm or 2 mppcf	

Date	Promulgating Agency	MAC [a]	AL [b]	TWA [c]	STEL/C/EL [d]
1969	U. S. Bureau of Mines[126]			2 mppcf or 12 f/cc >5 μm	
1971	American Conference of Governmental Industrial Hygienists[127]			5 f/ml > 5 μm [proposed]	
1971	Occupational Safety and Health Administration[128]			12 f/cc > 5 μm or 2 mppcf	
1971	Occupational Safety and Health Administration [Emergency Standard][129]			5 f/cc > 5 μm	
1972[g]	Occupational Safety and Health Administration[130]			5 f/cc > 5 μm	10 f/cc > 5 μm
1972	National Institute for Occupational Safety and Health[131]			2 f/cc > 5 μm	10 f/cc > 5 μm
1974	American Conference of Governmental Industrial Hygienists[132]			5 f/cc > 5 μm	10 f/cc > 5 μm
1974	U. S. Bureau of Mines[133]				
1975	Occupational Safety and Health Administration[134]			0.5 f/cc >5 μm [proposed]	5 f/cc > μm [proposed]
1976[g]	Occupational Safety and Health Administration[135]			2 f/cc > 5 μm	10 f/cc > 5 μm
1976	National Institute for Occupational Safety and Health[136]			0.1 f/cc > 5 μm	0.5 f/cc > 5 μm
1976	U. S. Bureau of Mines Coal Mining[137]			2 f/cc	
1978	U. S. Bureau of Mines Metal & Non-metal Mining[138]			2 f/cc >5 μm	10 f/cc >5 μm
1980	American Conference of Governmental Industrial Hygienists[139] Amosite [e] Chrysotile [e] Crocidolite [e] Other Forms [e]			0.5 f/cc > 5 μm 2 f/cc > 5 μm 0.2 f/cc > 5 μm 2 f/cc > 5 μm	1.5 f/cc > 5 μm 4 f/cc > 5 μm 0.6 f/cc > 5 μm 4 f/cc > 5 μm
1985	Mine Safety & Health Administration[140]			2	10
1986	Occupational Safety and Health Administration[141]		0.1 f/cc > 5 μm	0.2 f/cc > 5 μm	NA
1989	U. S. Bureau of Mines[142]			0.2 f/cc >5 μm [proposed]	
1994	Occupational Safety and Health Administration[143, f]			0.1 f/cc > 5 μm	1 f/cc > 5 μm
1998	American Conference of Governmental Industrial Hygienists[144, h]			0.1 f/cc > 5 μm	0.5 f/cc > 5 μm
2008	Mine Safety and Health Administration[145]			0.1 f/cc > 5 μm	1 f/cc > 5 μm

a - Maximum Allowable Concentration. b - Action Level. c - Time Weighted Average (8 hours). d - Short Term Exposure Limit / Ceiling Concentration /Excursion Limit. e - A1a (Human Carcinogen). f – For Brake Mechanics the effective PEL = 0.004 f/cc. h- A1 (Confirmed Human Carcinogen). g- The rule was actually promulgated in 1971. This date is the effective date.

Walsh-Healy and OSHA Standards

In addition to the exposure standards set out in the above table, regulations required additional steps be taken to protect the worker. Among these were:

1. Walsh – Healey, Basic Safety and Health Requirements [1942 – 1951][146]
    a. Special precautions to be taken in work places where toxic dusts are used;

   b. In quantities injurious to workers the contaminant shall be reduced or otherwise controlled at the point of origin by local exhaust;
   c. Where local exhaust is impracticable the work area shall be enclosed or isolated to prevent contamination of the work area;
   d. Workers or others required to enter the enclosed or isolated area are required to wear US Bureau of Mines approved respirators; and
   e. Workers who handle or are exposed to harmful materials in such a manner that contact of work clothes with street clothes will communicate to the latter harmful substances shall be provided with facilities to prevent contact between work clothes and street clothes.

2. Minimum Requirements for Safety and Industrial Health in Contract Shipyards [1943][147]
   a. Lists Asbestosis as one of eight common diseases found in shipyards;
   b. Jobs requiring respiratory protection [airline and/or dust respirator] included "Asbestos (as in covering pipes)";
   c. Quality of supplied air;
   d. Sterilizing respirators;
   e. Requirements for general and local ventilation; and
   f. Provision for safety training of shipyard employees.
3. Walsh – Healey, Safety and Health Standards [1951 - 1971][148]. The 1951 standards added the following requirements:
   a. Determine the workers exposure concentrations of asbestos and other hazardous materials;
   b. Substitute less hazardous materials;
   c. Provide engineering controls including enclosures, isolation, ventilation [dilution and local]; and
   d. Provide personal protective equipment such as respirators and impervious protective clothing.
4. Occupational Safety and Health Act [1971 – Present]
   a. Provide a work place free from recognized hazards;
   b. Conduct initial and periodic monitoring to determine worker exposure concentrations;
   c. Provide feasible engineering controls;
   d. Provide respirators;
   e. Special clothing, change rooms and lockers to separate work clothes from street clothes;
   f. Provide medical programs and controls;
   g. Labels and warnings; and
   h. Worker training programs.

Other National Standards Organizations

There were a series of governmental, national and trade associations that also addressed the occupational hazards associated with asbestos exposures to workers well before Walsh-Healey and OSHA. Some of the more prominent organizations include:

1. National Safety Council
   a. NSC is an industry supported consensus organization formed in 1913 to address common industrial safety issues; and
   b. Has produced a textbook on industrial hygiene and guidance on personal protective equipment including respirators.
2. Industrial Hygiene Foundation

   - a. Founded in 1936 primarily to address silicosis, a serious and sometimes fatal lung disease;
   - b. Developed into a resource for all occupational health issues for its members;
   - c. Published a quarterly review of the medical literature including published articles on asbestos; and
   - d. Provided industrial hygiene consulting services, including asbestos, to its members.

3. US Department of Commerce
   - a. Published a Safety Code for Protection of Heads, Eyes, and Respiratory Organs in 1921.
4. US Bureau of Mines
   - a. Founded well before WW II to address hazards associated with mining;
   - b. It started the program of approving respiratory protective devices. This program was transferred to NIOSH in 1970.
5. American Conference of Governmental Industrial Hygienists
   - a. Founded in the 1930s to study hazardous materials and recommend Threshold Limit Values (TLV);
   - b. Its first TLV for asbestos was published in 1947; and
   - c. Has also produced many guidance documents concerning occupational health issues including Biological Exposure Indices (BEI) and air sampling methodology.
6. American Industrial Hygiene Association
   - a. Founded in the 1930s it published the first industrial hygiene journal in 1940; and
   - b. The journal has published numerous articles on asbestos and respiratory protection.
7. American Society of Safety Engineers
   - a. Founded in 1911, it is the oldest professional society devoted to safety in the work place; and
   - b. It has published, or co-sponsored publication, many safety guidelines including respiratory protection over the years.
8. American National Standards Institute (ANSI)
   - a. The successor to the American Standards Association which was formed in 1928;
   - b. A industry supported consensus organization that produces national standards on many issues of common interest;
   - c. Published a Safety Code for Protection of Heads, Eyes, and Respiratory Organs in 1921; and
   - d. Has published many guidance documents on various occupational health issues including respiratory protection programs. and
9. National Institute for Occupational Safety and Health (NIOSH)
   - a. Founded at the same time as OSHA (1970) for the purpose of scientific investigation of occupational stressors including asbestos. It has published many documents concerning asbestos including air sampling methods, maintenance and abatement guidance and work place evaluations; and
   - b. Approves respiratory protective devices used for worker protection against hazardous materials including asbestos.

Worker Exposure Monitoring

In order to determine whether or not a worker's airborne asbestos exposure concentrations meet the occupational exposure limits [PEL, TLV, REL, Ceiling/Short Term] one must collect and analyze air samples representative of the worker's breathing zone. Scientific air sampling and analytical methods have existed since the early part of the last century.[149] These scientific methods have been adopted by government agencies including OSHA [29 CFR], MSHA [56 CFR], NIOSH [www.cdc.gov/niosh/asbestos] and many other organizations.

Warnings and Training

Conveying information to workers, including warnings, has been a part of the industrial workplace for many years. It has been well known that a worker needs to have some basic information in order to work safely with hazardous materials. One of the first published safety professionals in this country, Tolman, in his 1913 Safety textbook[150], stated:

> "Workers who handle poisons should be instructed with regard to the character and actions of these substances, the initial symptoms, and, particularly, all means and measures necessary for rendering first aid to their fellows. The best hygienic provisions, protective devices and measures are valueless when the worker does not use and follow them. [1]Not only should instruction be given with regard the object and use of devices, but workers should be urged and, if necessary compelled to use them."

In 1930 the National Safety Council issued a pamphlet on accident prevention signs which addressed such things as wordage, size and color.[151] Their Introduction states:

> "How much credit shall be given the use of warning signs for the reduction of accidents in various plants is impossible to determine, but that they are of considerable value as part of a well-organized safety campaign is generally acknowledged."

In our time OSHA has promulgated many regulations concerning Safety Training for workers handling hazardous materials.

In review of these articles, plus some 40 years of experience in communicating with workers, I have reduced the minimum requirements of warnings to their essential elements. These are:

1. The hazards resulting from exposure to the hazardous material. The warning should include the most devastating consequence of exposure such as cancer and death;
2. How the worker can recognize when they are at risk;
3. How the worker can protect himself, and others, from the hazards; and
4. What constitutes misuse of the hazardous material and the potential consequences of misuse?

Asbestos Exposure and Asbestosis

Asbestosis is defined as a lung disease consisting of, "diffuse interstitial fibrosis affecting lung parenchyma, induced by the inhalation and deposition of asbestos fibers".[152] The presence of

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the disease normally indicates the individual experienced significant exposures to relatively high asbestos concentrations over a period of years. Asbestosis was the first occupational lung diseases identified that was caused by asbestos.

Asbestos related diseases, including asbestosis, cancer and mesothelioma, have been studied for many years by many different investigators and government agencies in this country as well as the rest of the world. Scientific articles, learned thesis, books, and editorials started appearing in this country after the turn of the last century and peaked in the late 1970's. Several bibliographies have been developed by scholars as well as participants in the legal issues. Dr. Selikoff, in his book, lists some 810 individual references. Peters and Peters[153] produced a bibliography 162 pages long including approximately 2,000 references.

From a practitioner's point of view, however, I rely primarily on those publications that are comprehensive in nature and are published by recognized agencies or leading scientists. In my review of the literature, the landmarks listed in the following table summarized the development of medical knowledge in this issue since the 1930's.

MAJOR ASBESTOS DISEASE LANDMARKS

Date	Author & Title	Lung Disease	Asbestosis (fibrosis)	Lung Cancer	Mesothelioma	Other Cancers
1927	Cooke-Pulmonary Asbestosis[154]	Yes	Yes			
1930	Merewether-Report of Effects of Asbestos Dust on the Lungs [155]	Yes	Yes			
1931-35	Lanza-USPHS Reports- Effects of the Inhalation of Asbestos Dust[156]	Yes	Yes			
1942	Hueper – Occupational Tumors and Allied Diseases[157]	Yes	Yes	Yes		
1955	Hueper-Silicosis, Asbestosis, & Cancer of the Lung[158]	Yes	Yes	Yes		
1955	Doll-Mortality from Lung Cancer in Asbestos Workers[159]	Yes	Yes	Yes		
1960	Wagner-Diffuse Pleural Mesothelioma & Asbestos Exposure in NW Cape Province[160]	Yes	N/A	Yes	Yes	
1964	Selikoff-Relation Between Exposure to Asbestos and Mesothelioma[161]	Yes	N/A	Yes	Yes	
1975	Selikoff-Asbestos Disease in the United States[162]	Yes	Yes	Yes	Yes	Yes

Opinions

Based on my telephone interviews of Mr. Burt and the review of the information in this record describing Mr. Burt's occupational environment and activities, and based on my special training, knowledge and expertise as a Certified Industrial Hygienist, including review of numerous scientific peer reviewed articles, publications and other relevant information, including but not limited to those summarized above, I have formed the following opinions to a reasonable degree of scientific probability:

- Methodology :
    - Mr. Burt was occupationally exposed to airborne concentrations of respirable asbestos fibers which meets the Ever/Never Exposed methodology;
    - The lack of the required company generated asbestos exposure data and other necessary information relating to Mr. Burt's actual asbestos exposures dictates that Mr. Burt's retrospective risks be determined using the qualitative method;
- Mr. Burt's Qualitative Retrospective Risk/Exposure Assessment
    - Mr. Burt frequently [daily] worked with and was exposed to asbestos fibers from asbestos containing materials including thermal system insulation, gaskets and/or rope;
    - He was frequently exposed to airborne concentrations of respirable asbestos fibers which most likely frequently exceeded contemporary occupational exposure standards;
    - Mr. Burt's asbestos exposures took place over many years;
    - Mr. Burt was in close proximity to the source of airborne asbestos whenever he personal disturbed TSI, gaskets and/or rope or was a bystander to others disturbing TSI, gaskets and/or rope;
    - Mr. Burt was not timely, adequately and/or sufficiently protected as required by national standards, OSHA and/or MHSA regulations including, but not limited to:
        - Not being timely, adequately and/or sufficiently warned concerning the hazards of asbestos exposures including the risk of serious diseases including asbestosis, cancer and death;
        - Not being timely, adequately and/or sufficiently trained on how to protect himself from asbestos exposures;
        - Not being timely, adequately and/or sufficiently trained in the selection, use or fit testing of respirators; and
        - Not having his asbestos exposure concentrations monitored timely, adequately and/or sufficiently.
    - Mr. Burt's chronic occupational asbestos exposures put him at increased risk of developing asbestos related diseases including asbestosis, cancer and death.
- Martin Marietta and VIALCO knew, or should have known, that asbestos was hazardous throughout the time period Mr. Burt was employed at the plant and that they were required to protect Mr. Burt consistent with at least the contemporary regulations and national standards.

If you have any questions or if I can be of further service please let me know.

Sincerely,

Frank M Parker, III
CIH, CSP, PE, BCEE

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EXHIBIT 129

Status Conference Hearing Transcript,

In Re: Bauxite Containing Silica,
Halliday Series, SX-2015-CV-00097,
09-16-2022

IN THE SUPERIOR COURT OF THE VIRGIN ISLANDS

DIVISION OF ST. CROIX

IN RE: BAUXITE CONTAINING) MASTER CASE NO.
HALLIDAY LITIGATION SERIES) SX-2015-CV-00097

Friday, September 16, 2022
Kingshill, St. Croix

The above-entitled action came on for STATUS CONFERENCE before Staff Master Joseph Gasper, via Microsoft Teams, commencing at 11:02 a.m.

THIS TRANSCRIPT REPRESENTS THE PRODUCT OF AN OFFICIAL COURT REPORTER, ENGAGED BY THE COURT, WHO HAS PERSONALLY CERTIFIED THAT IT REPRESENTS HER ORIGINAL NOTES AND RECORDS OF TESTIMONY AND PROCEEDINGS OF THE CASE AS RECORDED.

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PROCEEDINGS

(Commencing at 11:02 a.m.)

THE COURT: Good morning.

THE CLERK: *In Re: Bauxite Containing Silica Halliday Litigation Series, Master Case No. SX-2015-CV-97.*

THE COURT: Good morning, Counsels, if you can give your appearance beginning with plaintiffs and we'll get started.

MR. YELTON: Good morning. Rick Yelton on behalf of the plaintiffs of Burns Charest LLP.

MR. PATE: Good morning, Your Honor. Russell Pate and Tom Alkon on behalf of the plaintiffs.

MR. ALKON: Good morning. Tom Alkon on behalf of the plaintiffs.

MR. RAMES: Yes, good morning, Staff Master Gasper. This is Kevin Rames on behalf of Lockheed Martin Corporation.

MR. CAPDEVILLE: I think Semaj is on mute.

MR. RAMES: He was on a moment ago.

MR. JOHNSON: Semaj Johnson for

Lockheed Martin Corporation.

MR. CAPDEVILLE: Good morning, Staff Master. This is Douglas Capdeville on behalf of Glencore. I'm not participating. I'm just listening in.

THE COURT: Good morning. Anyone else who is going to make an appearance?

MR. WU: Staff Master Gasper, this is Greg Wu from Shook, Hardy & Bacon. I will not be making any arguments today, but I'm just listening in as for counsel for Lockheed Martin.

THE COURT: That's fine. Good morning. Anyone else?

MS. ROGIERS: Good morning, Staff Master. This is KaSandra Rogiérs for defendant Lockheed Martin. I am here for observation.

THE COURT: Good morning.

Yes, Attorney Capdeville, I was going to note for the record that the motion that's being addressed today is really a motion that concerns Lockheed Martin. If you want to stay on as observer that's fine. If you wanted to be excused I wouldn't have an issue with that as long as the other attorneys don't have an issue with it. It's just your choice.

MR. CAPDEVILLE: I'm just listening in, Mr. Gasper.

THE COURT: Could you repeat that, Attorney Capdeville. I'm sorry.

MR. CAPDEVILLE: Yes. I'm sorry, Staff Master. I'm just going to listen in.

THE COURT: Sure. That's fine. Actually, since you are still here one point I wanted to address before we got started is that in reviewing the file I noticed that the current scheduling order is Case Management Order No. 3. There was a stipulation to enter into Case Management Order No. 4. My review of the record shows that that's I guess technically still pending, the dates and the proposed Case Management Order.

Counsel, we need to take a recess because a fire alarm just went off here at the court so we'll be in recess for at least ten minutes.

MR. YELTON: Okay.

(Recess at 11:06 a.m.)

(This hearing resumed at 11:14 a.m., a follows:)

THE COURT: Counsels, good morning. We

are back. My apologies for the disruption. At least it gave me a moment to realize I hadn't started the recording for the hearing. And just for the record purposes this is *In Re: Bauxite Containing Silica Halliday Litigation Series, Master Case No. SX-2015-CV-00097*. Counsels already made their appearances on the record. It just wasn't part of the recording. My apologies.

And for the record as well there was a fire alarm and we had to exit the building. I started the recording just before we left so there will be a gap at the start of the recording and that's why.

As I was saying before the interruption, the Case Management Order that I see that's in effect is Case Management Order No. 3. The parties had submitted a stipulation to enter into Case Management Order No. 4. I don't see that that was acted on by the Court, either the judge or myself, the staff master.

One of the party's position on updating the Case Management Order -- the reason I asked is because I looked to it with respect to plaintiffs' characterizing the submission of

Attorney Pate as additional materials submitted in furtherance of the summary judgment motions, or in opposition to the summary judgment motions so I wanted to see if there was a cutoff date.

I see that the parties had requested to, as I was saying, requested to extend the deadlines. At this juncture I don't know, you know, if -- do we need Case Management Order No. 4, or do we really just need a trial -- a true pretrial order?

MR. YELTON: Okay. This is Rick on behalf of the plaintiffs. You know, right now we are at a kind of a stand still. We have summary judgment briefs in the lead cases of *Halliday*. We have Daubert motions briefed. We have oral argument -- or rather, hearings on the Daubert motions in November. And, you know, if the Court rules on any of those summary judgment motions before then, I think that would be a reason to open things back up. But right now, I mean, there's not a whole lot we can do until we get rulings on those fundamental issues.

THE COURT: Counsel for defendants.

MR. RAMES: Kevin Rames for Lockheed Martin. I concur.

THE COURT: Attorney Capdeville, if you're still here -- maybe Attorney Capdeville can chime -- yes.

MR. CAPDEVILLE: Sorry about that. I had stepped away for a second.

THE COURT: We were just wondering if you see any need, Attorney Capdeville, for a revised or revision to the existing Case Management Order given that summary judgment has been filed, trial-related motions, Daubert, motions in limine have been filed. My question was basically do we need maybe just a true pretrial order; and I think trial dates would probably be appropriate, yes?

MR. YELTON: You're right, Your Honor. That's exactly what I was -- where I was driving. We're ready for trial. We're ready to beat the dispositive motions and we want to go to trial. So, if you give us a date we can back date or you can give us orders on when the pretrial stuff is supposed to happen, but we want to go to trial.

THE COURT: I will speak with Judge

Willocks' chambers, with him and with his staff to see a date. I know dates had been given in the *Daniel* case which then settled. I believe there was a date -- yes, there was a date in the case of the *Estate of Anthony v. HOVIC*, one of the sandblaster cases that was stayed obviously because of the bankruptcy proceedings. So, I will reach out to them. I think it would be helpful for everyone considering the Daubert motions being scheduled and argued.

I don't see any benefit to, you know, summary judgment being addressed and trial-related motions being addressed and then the parties waiting a very long time because things could happen in between that could upset that proverbial apple cart. So, if there is no objection to that I will informally reach out to the judge and to the staff to see when is a good date for trial; and if he will give me a date to give you, or he will issue the order himself, or he will give me, you know, a series of dates and I can ask, inquire about Counsel's availability, but is there is any objection overall to that process?

MR. WU: Staff Master Gasper, this is Greg Wu. I'm sorry. I wasn't following you. You were talking earlier about *Alumina Dust* in the stipulated Case Management Order, or are you talking about *Halliday*?

THE COURT: *Halliday*, yes. I see -- let me open the full docket. There was a -- one second.

MR. WU: If you're just talking about *Halliday*, I don't think there was an objection, but I think it was kind of unclear about -- it sounded like you were kind of toggling back and forth between *Alumina Dust* and *In Re: Bauxite,* but if that's not the case then that's my confusion.

THE COURT: No. The last what I see is joint case status report and stipulated Case Management Order No. 4 that was filed July 13th, 2021. I don't see that that was acted on. That's why I was inquiring and that's only in the *Bauxite Halliday* case.

Judge Willocks had signed off on stipulated Case Management Order No. 3 on April 22nd, 2021. So that's the scheduling order that would be in place. Since the parties had filed a forth version in July of last year, it's been over a year and couple months, I just wanted to -- in reviewing the docket before today I saw that that was outstanding. It does seem -- certainly the dates in there are moot, they're passed, but my question overall was, is there a need for another scheduling order at this juncture, or should we really just shift toward like a true pretrial, like an order before trial?

Daubert motions have been filed, discovery -- trial-related motions have been filed, dispositive motions have been filed. I imagine there might be one final cutoff for any other motions of that nature, but my thought is that, you know, a trial order will be more appropriate at this juncture.

MR. WU: Sure I understand. And I think the only issues that we would, you know, for pretrial motions I believe there would be, you know, motions in limine or, you know, motions about certain deposition designations. But I think if I understood what Attorney Yelton was saying that if there was a trial date, that we would then work out certain pretrial deadlines following the issuance of that date.

THE COURT: Sure. Judge Willocks' approach has been he is sort of the opposite of Judge Andrews in the sense that he tends to appreciate if the attorneys give him their dates, generally speaking. He might be willing to give you the trial date and then you set everything back from that. And Judge Andrews on the other hand is more, you know, he sets all of his dates out, you know, going forward, but Judge Willocks, my guess is he would be amenable to the parties submitting a proposed trial order, for lack of a better way to phrase it.

MR. WU: Do you know what dates, Staff Master, or how far out Judge Willocks is currently scheduling civil jury trials?

THE COURT: I do not so that's why I wanted to ask with him. One second. The clerk was trying to get my attention. Hold on.

(Pause.)

THE COURT: Okay. We're back. My apologies. So, yes, as I was saying I will reach out to Judge Willocks' chambers to find out when he would schedule this for. And then, like I said, I will either report back to you what the date is, or that date will come out by order; or if he gives me, you know, several dates to run by Counsel, I'll communicate all that to you. That's as far as I see the only issue that I wanted to bring up that involves Glencore.

So we then switch to -- is there anything that the parties wanted to raise generally, otherwise we switch to the motion, the summary judgment motions. Nothing? Okay.

We had scheduled argument on the plaintiffs' summary judgment motions. And last time we were together that was a jointly -- a hearing that was scheduled jointly with the *In Re: Alumina Dust Claims Master Case*. I didn't include the *Alumina Dust Claims Master Case* this time because the motions I was mistaken last time. I had gotten them mixed up. And the motions that the plaintiffs filed were in the *Bauxite* cases, not in the *Alumina Dust* cases.

The reason I had wanted to schedule on the plaintiffs' motion was because I thought that provides more of a cleaner vehicle for raising the issues since the defendants' motion for summary judgment also on the Workers' Compensation issue is -- correct me if I'm wrong, but is it part -- is it a chapter in the larger book that we were talking about if I'm using that phrasing to refer to the defendants' motion, right? We had heard argument back in I think it was November or December on the statute of limitations.

Attorney Rames, was Workers' Compensation part of that larger motion or is it a stand-alone motion? I think it's a stand-alone motion, right?

MR. RAMES: It is a stand-alone motion, that's correct, Your Honor -- Staff Master.

THE COURT: So then if there is no objection maybe I will address both together because Lockheed Martin had already cross moved, opposed the plaintiffs' motion and filed a cross motion in the three cases, filed a cross motion for summary judgment. So, I'm thinking about sort of tackling this holistically.

I might loop in the *Alumina Dust Claims* since the issue was first raised there like 14 years ago. It's been pending for way too long and it's time to, you know, resolve this issue, the question of Workers' Compensation.

Last time we were together I had asked the parties to come prepared to address Judge Andrews' order and in *Mohansingh*. How do the parties want to proceed with oral arguments since technically it was plaintiffs who filed the motion, but defendant had filed their motion long before that and also cross moved? Do you want to divide up the time? Do you want to -- does anyone have a preference of who goes first?

MR. YELTON: Yes, well, since it is the plaintiffs' motion that you called for oral argument, we would like to begin as the movants and of course have Lockheed have an opportunity to speak.

THE COURT: To make it fair we'll do two rounds. We'll do plaintiffs/defendants, plaintiffs/defendants, if there is no objection to that, since there is two emotions essentially. No objection to that?

MR. JOHNSON: None from Lockheed.

THE COURT: So then, Attorney Yelton, if you want to begin.

MR. YELTON: Thank you so much, Staff Master. I will say that the order that you issued setting this hearing advised the parties to be prepared to argue the *Velez, Ramos* and *Felix* motions, but also be ready to argue Judge Andrews' order in *Mohansingh*.

I want to say at the onset, I am here to talk primarily about the plaintiffs' motions in *Velez*, *Ramos* and *Felix*. I'm going to turn it over to Attorney Pate to talk about the *Mohansingh* order from Judge Andrews and that, you know, the issues that are involved there, if that's cool.

Okay. So, I will begin with our discussion about those three motions that were filed by the plaintiffs back in December of 2020. And, you know, I appreciate you setting those motions up for oral argument here today. And I won't, you know, restate what's already been put in the papers and there is no need for that and it's pretty clear already and, you know, we won't belabor that point.

What I'd rather do is spend a couple

minutes talking about why we filed this motion the way we filed it, what we were hoping to draw out and I guess the simplification of what we think is the pretty simple legal issue.

Okay. Lockheed Martin filed these -- has sort of begun this, the Workers' Compensation based arguments, over a decade ago like you said. I mean, a couple minutes ago you said the first motion was filed 14 years ago. And it kind of go in spits and starts, you know. There is a motion filed and then there is some oral argument and then there is some sitting and then there is some more oral argument and some sitting. And I think it begs the question, well, why hasn't this been adjudicated? Why hasn't this been finalized? And we think one of the reasons is because Lockheed, through its very competent counsel, has done a pretty good job of kind of making this thing feel more complicated than it really is.

And so when our team filed this series of motions in *Velez*, *Ramos* and *Felix*, who also by the way are as the Court knows bellwether plaintiffs in this series and there has also been the motion for summary judgment that's pending before the Court more globally when we filed this motion, the idea was to narrow the scope so that we could kind of draw out some key elements of Workers' Compensation in the Virgin Islands here.

So, the idea was to point out that Martin Marietta Corporation, MMC, Martin Marietta Corporation, never employed any of these three guys at any point. Never. And so, you know, we wanted to pull away from Martin Marietta Alumina, Martin Marietta Aluminum, Martin Marietta Aluminum Properties because once you start mixing up those entities, what seems pretty simple starts to become confusing.

So, this motion filed three different times is just seeking to, you know, to -- the Court to rule on the affirmative defense of Workers' Compensation exclusivity as to the conduct of Martin Marietta Corporation.

And I guess to make -- I won't go over the points again, but what I'd like to do right now is engage in like a thought experiment where the facts are different, a little bit different. Let's just take *Gabriel Ramos*.

In reality, he worked for Martin Marietta Aluminum from '72 to '85. Now, let's just pretend for a second that he stopped working for Martin Marietta Aluminum in 1980. Let's just pretend that's what happened, he stopped working at the aluminum refinery entirely; he went somewhere else. He worked at Carambola. Let's stay he stopped working there in January 1st, 1980. And then on September 16th, 1980, he filed a lawsuit against Martin Marietta Corporation. Let's just pretend.

If he filed that lawsuit in September 16th, 1980, against Martin Marietta Corporation, Martin Marietta Corporation wouldn't avail itself, wouldn't be able to avail itself of Workers' Compensation exclusivity. Why? Because it wasn't Mr. Ramos' employer. It never was Mr. Ramos' employer. And Martin Marietta Corporation could not avail itself of a borrowed servant or statutory employer defense. Why? Because this section 284 of the Workers' Compensation Law, Statute explicitly states that statutory and borrowed servant doctrine is not recognized in this jurisdiction. So, if we would have filed this case in September 16th, 1980, against Martin Marietta Corporation, we wouldn't be having this conversation.

Now, coming back, drawing back to reality, we didn't file Mr. Ramos' case in 1980. It would have been hard for me to do that because I wasn't born yet, but I think it was filed in 2011, right? When it was filed Martin Marietta Corporation didn't exist anymore. It was rolled into Lockheed Martin along with Martin Marietta Alumina and Aluminum Properties, but as --

THE COURT: Well, I have another question. This is going to be for defense as well because I don't know if there is any nuances to this issue or if there is any discrepancy. I don't believe there is across the cases, and by cases I'm referring both to the *Bauxite* cases and to the *Alumina Dust Claims* cases. But I have noticed -- and if there's an objection to leaning on let's say or taking into consideration documents filed by the defendants in the *Alumina Dust Claims* cases and not in the *Bauxite* cases, then please, you know, voice that. My guess is there wouldn't be in that the documents are pretty much the same, but courts can take judicial notice of papers of other cases. They can't take papers from other cases to prove or disprove or, you know, to find that facts are proven or disproven, right?

But just for discussion purposes I'm noting the statement of undisputed facts in support of summary judgment that was filed in *LaBast* that said Lockheed Corporation and Martin Marietta Corporation consummated a transaction on March 15, 1985, pursuant to which Lockheed and Martin Marietta became a wholly owned subsidiary of a new company, Lockheed Martin Corporation. So as I read that, Martin Marietta -- Lockheed Martin Corporation was formed and acquired portions of each. That's different than Lockheed and Martin merging, is that correct? Are there legal distinctions to how Lockheed Martin Corporation was formed?

MR. YELTON: I'm just going to say one thing right here. Why are we incorporating arguments that Lockheed Martin didn't make in this briefing? If that's an argument they wanted to make, they should have made that in this briefing. They just didn't make it. And I can't be ready and prepared to argue against an argument they didn't make.

THE COURT: I don't know that they didn't make it because the *Eddie Gaut* affidavit, for example, has been submitted in support of multiple motions of Lockheed Martin, but the underlying issue is -- one of the underlying issues, for example, the *Eddie Gaut* affidavit also says on July 31, 1989, Martin Marietta Aluminum Properties, Inc. was merged into Martin Marietta. Is that Martin Marietta the corporation? Counsel for defendants, is that accurate? Because my understanding is the defense counsel takes the position that all Martin Marietta entities eventually became Martin Marietta Corporation which became Lockheed Martin Corporation.

So if you will, the plaintiffs' employers are sort of the corporate grandchildren of Lockheed Martin. That's the reason why I'm asking. If that is correct you would have, you know, inheritance upon inheritance upon inheritance of Workers'

Compensation immunity. That's what I'm getting at because I don't know that the record shows that all Martin Marietta entities were eventually acquired by Martin Marietta and then Lockheed Martin.

And then the other issue is if Lockheed Martin Corporation was formed separate from -- wasn't formed through a merger but it was created and then acquired portions of Lockheed and portions of Martin Marietta, that could have a legal distinction. Because they might have only acquired certain portions of each company rather than the two coming together as one. I'm questioning just the factual background.

MR. YELTON: Let me say this. I think honestly, I think, Staff Master, that's still overcomplicating this because check this out.

STAFF MASTER GASPER: You think it's all --

MR. YELTON: In 1980, even if, even if they did take, you know, become the successors of these other corporations, they only inherit the liabilities and the defenses that were available to that entity at that time. At the time that -- for the time period that we are suing Lockheed Martin for the conduct of MMC, Martin Marietta Corporation, Martin Marietta Corporation itself could never avail itself of Workers' Compensation exclusivity. How could it? It wasn't an employer.

And so even if you -- it doesn't matter how you roll it up through a series of iterations into the future, you know, it could be 7,000 iterations into the future, it doesn't change the fact that back in 1980 and 1979 and 1984, Martin Marietta Corporation could not avail itself of a defense and it doesn't get to add one on later.

THE COURT: Is plaintiffs' position that a successor corporation could never inherit the Workers' Comp immunity of its predecessor?

MR. YELTON: Again, it --

THE COURT: There is case law to support that position. The Supreme Court has said only the entity named on the certificate of insurance from the Department of Finance is the one entitled to Workers' Comp, to claim the benefits of the exclusivity provisions. So, you can make a good faith argument if that's your position, but I don't -- there are complicated facts here, including the fact that Lockheed Martin Corporation, the only defendant in existence, never did business in the Virgin Islands. In fact, it didn't exist when the injuries complained of occurred, right?

So, this is factually a complicated case, but it's -- I would like to address the issue holistically which is why I'm referencing some of the other documents from the other cases because has it already bubbled up in the cases before Judge Andrews, or is it not there yet?

MR. YELTON: It is in the process of being briefed. The plaintiff has filed a couple motions and Lockheed is going to respond by the 30th. So, we'll have it briefed up, but we won't have, you know -- hopefully we'll have adjudications on that soon.

MR. JOHNSON: Just for the record, Staff Master Gasper, Lockheed Martin did address this successor in interest issue in its November 19th supplemental briefing.

THE COURT: Thank you.

MR. YELTON: It still doesn't change the fact that in 19 -- I mean, there is no set of complicated mergers and acquisitions that could change the fact that Martin Marietta Corporation from 19 -- in the years that it existed did not employ any of the plaintiffs who filed these three motions, or any else of our other plaintiffs. That's why we're trying to get out of the complication. Like, Martin Marietta Corporation is where this motion is focused, not Alumina, not Aluminum, not Properties, but MMC. It never actually employed our guys.

So, if we're suing for its conduct, then what -- you know, and I want to make this point, and I know I'm talking a lot, but I want to make this point.

If you look at the briefing that's the opposition here by Lockheed and then some of the other stuff in the -- you know, more holistically, you'll see a lot of discussion about family, the Martin Marietta family of companies, you'll see a lot of well, you know, Martin Marietta Aluminum, we think they -- they filed -- they paid Workers' Comp; and Alumina, they paid comp. But when you start -- you see this conversation about family of companies, what they're trying to do is build a borrowed servant sort of statutory employer. Like, if one of the entities bought it, then the other entities should benefit.

I'm saying Martin Marietta Corporation straight up did not buy Workers' Compensation. And even if it had, it wasn't the employer of our client.

THE COURT: But, Attorney Yelton, correct me if I'm wrong, the proof you submitted in support of your motion is an affidavit from the plaintiff, correct, nothing else?

MR. YELTON: It's part of this motion?

THE COURT: I saw only one document filed by plaintiffs in support of their motion. So, I mean, that could be an issue with the record. Motion for summary judgment was filed, submitted by Attorney Gower, December 2nd, 2020. We might have then still been in the period where we were receiving the filings by e-mail. Let me check. Because if there's a stamp on --

MR. YELTON: I'm not going to dispute with you. I'm looking right now at the exhibit. Sure that's the only exhibit.

THE COURT: That's correct, yes?

MR. YELTON: Sure.

THE COURT: So, I mean, you know, I guess you don't have to prove a negative, right, if you're saying Martin Marietta Corporation never paid Workers' Comp insurance because Martin Marietta didn't have any employees in the Virgin Island. But your point is Martin Marietta Corporation was no one's employer so, therefore, Mr. Velez, for example, can sue Martin Marietta Corporation, or could have sued Martin Marietta Corporation if they were still in existence.

MR. YELTON: Right. You're right that that's not my burden and let's -- and I do want to point out that affirmative defense.

Now, we're seeking to have the Court rule on the affirmative defense, but the affirmative defense of Workers' Compensation itself is -- the burden does sit with the defendants, but I do want to point out that --

THE COURT: Before you --

MR. YELTON: I want to answer your question. I am literally going to answer your question right now. No, we did not prove it, but neither in its brief -- I'm looking right now at Lockheed's opposition in the *Felix* case. It says, Martin Marietta Aluminum submitted and paid its actual Workers' Comp. Martin Marietta Properties did the same. It does not, does not state that Martin Marietta Corporation paid its Workers' Comp.

THE COURT: Okay. So here is my question. If, let's take, for example, who did -- well, let me look at your exhibit. This is for *Miguel Felix* -- *Miguel Velez*. He worked for Martin Marietta Aluminum, Inc. from 1982 to 1985, according to your statement of uncontested material facts filed December 2nd, 2020.

Let's assume for discussion that Martin Marietta Aluminum was acquired by Martin Marietta Corporation. Let's assume further that Martin Marietta Corporation still existed and that Martin Marietta Corporation still employed the plaintiff. Could he sue his employer for wrongs done to him before Martin

Marietta Corporation became its employer?

MR. YELTON: That's a humongous assumption, but then I would have to say if we went there, which is an argument that I haven't seen, if we went there, then we would have to look at section 284.

THE COURT: But isn't that essentially what the defendants have been arguing all along? I mean, that's where I think it's the New York case, *Biliu*, as being one of the first that sort of came up with this dual persona idea that, you know, courts have distinguished between employers acquiring -- or companies acquiring each other and, therefore, getting the immunity, right?

Say maybe an asbestos supplier purchasing, say hypothetically speaking -- I can't even think right now, but an asbestos supplier, let's say Asbestos ABC Company bought -- let's do it the other way. HOVIC bought Asbestos ABC and, therefore, the workers who worked for HOVIC couldn't sue Asbestos ABC fictitious company because they're now one company and the company is now the plaintiffs' employer.

Courts have distinguished that scenario to say we don't want to encourage that. We don't want to allow companies to sort of abuse the Workers' Compensation statutes by gobbling up each other and then acquiring immunity and leaving plaintiffs, you know, individuals without a remedy.

My understanding throughout is that Lockheed Martin has taken the position that it stands in the shoes of all of the Martin Marietta entities. I agree with you that I think there's a simpler approach and that's why I asked the parties to address Judge Andrews' order. And I think that's more the meat of the discussion, but I don't want to spend too much time on your side. We will just switch over to defendants. But what is your position why you think the pedigree of Lockheed Martin is irrelevant?

MR. YELTON: Well, I will say that -- no New York case that I recall saying in their briefing was something that I could read, you know, in preparation for today's hearing, but I will -- you know, first of all I don't know the New York case right now because I don't think it was cited in their -- I don't think we need to make their arguments for them.

And I will say that if, you know, you've got to look at section 284 that's, you know, if you go to 284 it says, a contractor shall be deemed the employer of a subcontractor's employee only if the subcontractor fails to comply with the provisions of this chapter with respect to being an insured employee.

The statutory employer and borrowed servant doctrine are not recognized in this jurisdiction. And an injured employee may sue any person responsible for its injuries other than the employer named on the certificate of insurance under the, you know, this title.

In this case I just get back to the very simple basic nature of it. We're suing for the conduct of Martin Marietta Corporation. For purposes of this motion here today Martin Marietta Corporation did not employ my clients nor did it purchase Workers' Compensation coverage for my clients. I mean, that's it for us.

THE COURT: I'm going to switch to

defendants. For the record the case that I was referencing is *Billy v. Consolidated Machine Tool Corporation*. That's at *412 NE 2d 934*. A New York case, Court of Appeals from New York from 1980. That started to distinguish between a dual capacity doctrine. Not dual persona; dual capacity that you can -- you could have, for example, supplied a product to someone who becomes your employee. So, even though you later become the employer of the employee through corporate transactions, you don't gain the benefit of immunity from suit because the product that you supplied to that individual injured him before you were his employer.

Counsel for defendants.

MR. JOHNSON: Thank you, Your Honor.

THE COURT: You want to address plaintiffs' points and also the pedigree or the history of Lockheed Martin; and further, address the issue I think that, you know, plaintiffs were getting to which, is the more simple point, none of the plaintiffs, correct me if I'm wrong, Attorney Yelton, none of the plaintiffs are currently working, is that correct?

MR. YELTON: That is correct, but when it comes to that, the issue of -- that area, I want to let Attorney Pate handle that.

THE COURT: Yes, but everyone's aware that's one of the issues to address because Workers' Compensation Statutes overall seem to -- the goal is to provide some compensation to an injured worker to get her or him back on their feet and back into the work force. So, if they are not working, they're not employed and the entity that they're suing was never their employer, does not exist, did not exist when the injuries occurred, why are we even talking about Workers' Compensation?

MR. JOHNSON: All right. Let me -- there's a few things there, Staff Master Gasper. So, let's start, if I may peel back with keeping it simple and then we can sort of progress from there. So, if we were to meet the plaintiffs where they are, and their argument essentially being that they have not sued Martin Marietta Corporation --

THE COURT: Attorney Johnson --

MR. JOHNSON: -- it's a basic fundamental flaw --

THE COURT: Attorney Johnson, you are breaking up a little bit. It might be, if you want, it might be easier if you shut off your video because your video is lagging and that might be what's causing the audio to hiccup. If you want to try --

MR. JOHNSON: Sure. Is that any better?

THE COURT: That is better for your voice, yes. All right. I want the court reporter to be able to get your comments.

MR. JOHNSON: Good, good. Let me know if there is another issue.

THE COURT: No. Just remember to speak slowly so the court reporter can get everything.

MR. JOHNSON: Will do. So, fundamentally the problem here is that while the brief, while the plaintiffs' brief claim that they're suing Martin Marietta Corporation, their complaint does not. Very basically. Right now we're working off of the Fourth Amended Complaint.

For there to be actionable allegations against Martin Marietta Corporation, Martin

Marietta Corporation would have had to injure the plaintiff. This goes back to Tort 101, right? There's got to be some injury, there's got to be causation, there's got to be a duty, there's got to be a breach. There are none of those allegations in the complaint. And that's not it.

I mean, if you take a look at the complaint it mentions Martin Marietta Corporation essentially in two places. One place is in paragraph --

THE COURT: You're talking about the fourth, not the first.

MR. JOHNSON: The fourth, No. 4, our operative complaint, the complaint that's in play today. Plaintiffs just can't be pursuing generally Martin Marietta Corporation because the only time that they mention them essentially was when they said that Martin Marietta undertook services related to the plant. It doesn't define what services were taken, so how can Martin Marietta be liable for premises liability?

It doesn't allege, right, much less is there any evidence that there were any occupational diseases that Martin Marietta was responsible for. No causation there. No claims, no causation.

Without those allegations the plaintiffs just can't pop up and say, well, we're suing Martin Marietta Corporation, you know, and pass the fourth iteration of their complaint. I mean, we've already agreed and all the other parties are already aware that Martin Marietta Corporation did not exist, so they can't have it both ways. They can't say, hey, listen, we're going to peel off Martin Marietta Corporation and we're suing them. But there actually are no actionable offenses because the corporation didn't exist.

Now, let's back that down, right, to the (audio garbled) to discovery. Because we are -- even though we're at the Fourth Amended Complaint we're well into discovery.

From day one their medical expert, Ms. Betancourt, claimed that the injuries were all a result of their occupations. And this is from Ms. Betancourt's report.

Question: Is it your opinion that the plaintiffs in this case were injured or, you know, had mix dust pneumoconiosis as a result of the exposures that they experienced while working at the St. Croix Alumina plant? It is. That's her answer.

And all of that is just a result of the actual employment, the conditions, the working conditions at the plant, correct? She answers: Absolutely.

That's Ms. Betancourt's deposition on page 175, lines 3 to 8. And it goes on. I won't go through all the testimony, but the complaint, the discovery, none of it alleges that Martin Marietta Corporation injured the plaintiff in anyway. I mean, if we're talking about basic, there's nothing more basic than that.

THE COURT: Attorney Johnson, you're pointing me to the complaint and of course that's, you know, obviously the beginning and end of the pleadings for a case, but I didn't notice it until just now, I had to pull it off the docket and run the character recognition software.

Plaintiffs in their complaint allege that Lockheed Martin, this is paragraph 3, is the successor in interest to Martin Marietta Aluminum, Martin Marietta Alumina and Martin Marietta Corporation. What impact, if any, does that have on their claim now that the pedigree, the history of Lockheed Martin Corporation is irrelevant?

MR. JOHNSON: Again, this goes back to Professor Boyer at Howard University, right? The plaintiff is the master of their complaint, right? And if they're now alleging, right, because they're blowing the horn, they're saying that it's very simple, that we're just suing Martin Marietta Corporation, they've raised this hypothetical of what if Martin Marietta Corporation existed, right? So, that question is really one to ask the plaintiffs because they are now alleging that they're only suing Martin Marietta Corporation, that they only intended to sue Martin Marietta Corporation. How do you do that when there is no causation, there are no allegations of causation, no evidence of causation, the corporation did not exist?

And in Judge Molloy's October 15th, 2019, opinion he ruled that Martin Marietta

Corporation couldn't be sued in its individual capacity because it ceased to exist. That's the argument. Our rebuttal is as simple as their claim. You gotta have a claim. You gotta have duty, you've got to have breach and causation, you gotta have the basic elements of tort law and they just never allege it here. And our cross motion is fundamentally based on that point.

And I'm glad that -- again, you know, one of the things that I also want to just highlight is that under this particular standard of review the facts should be inferred in the light most beneficial to the non-moving party, which in this case because this is regarding the plaintiffs' motion for summary judgment on our affirmative defense, it should be viewed in Lockheed Martin's favor, right? One other --

STAFF MASTER GASPER: How does that work when there is a cross motion?

MR. JOHNSON: Well, the question of whether they have alleged it in their complaint, that's the basis of our cross motion.

THE COURT: No. I just mean viewing it in the light most favorable, I mean, does that have as much force when there's a cross motion? I mean, it's usually when you're just opposing the motion that facts, loosely speaking, are viewed in the light most favorable to the non-moving party. But when the non-moving party then moves as well I'm just wondering if there is a difference.

MR. JOHNSON: Well, I think the way that Lockheed Martin views that is that those allegations of the claims that are made, right, by the party on -- the moving party have to be viewed on the other side, right, as the facts most favorable to that party.

So, for example, this question with respect to the summary judgment of the -- with respect to the affirmative defense, right, those facts are viewed in the light most favorable to us.

Now, on our cross motion we say, you haven't alleged injury on Martin Marietta Corporation. On that cross issue, the facts should be viewed in the light most favorable to the plaintiffs, right? So, with respect to --

STAFF MASTER GASPER: Okay. So, what about page 7, Attorney Johnson? I know you're saying that Martin Marietta Corporation, they don't allege anything, but and again, you know, just quickly I was looking for Martin Marietta throughout the complaint and it only came up once because the plaintiffs' then use M/M Corp., right? So, that's on page 7 and 8.

They allege in paragraph 49 Lockheed Martin Corporation is the successor in interest to M/M Corp.; that M/M Corp. undertook to render services to its three subsidiaries; that Martin Marietta Corporation should have recognized the services it provided which is necessary for the protection of the plaintiffs; they failed to exercise reasonable care; their failure to exercise reasonable care increased the risk of harm; they undertook a duty, plaintiffs suffered harm because one or more of their subsidiaries relied on Martin Marietta Corporation. I mean, it is --

MR. JOHNSON: Kind of, right?

STAFF MASTER GASPER: Yeah, I mean --

MR. JOHNSON: But our argument is that's not sufficient for even notice pleading with respect to the specific claims. Notice pleading has a standard and this doesn't come close to striking at the heels of notice pleadings.

STAFF MASTER GASPER: What about the --

MR. JOHNSON: But that's not it. That's not it. Another issue with respect to the standard of review, before I forget, one of the things that it purports that was issued with the standing orders is that motions to strike were essentially looked at disfavorably, correct? And this is exactly what this is. This motion for summary judgment is essentially a motion to strike sort of cloaked in a summary judgment coat.

THE COURT: Well, yes, but to be clear, Attorney Johnson, the motions to strike, and I don't know if the standing orders say that, but my understanding is that it was a motion to strike like something from the record, not a motion to strike. I think it even carves out 12(f) I think as an exception. So, the concern was the fighting, so to speak, that you would see between attorneys of moving to strike documents off of a case, moving to strike a reply just to sort of eliminate some of that litigation and instead just file a notice and let us know if something in someone's papers didn't comply with the rules, right? It just sort of reduced the litigation.

You raise an interesting point because I have wondered myself what is the plaintiffs' 12(b)(6) equivalent when you're trying to attack a defense to say get rid of that defense. But that's how I view it, that's what they're trying to do is they're trying to take this defense, an affirmative defense that Lockheed Martin has put on the table, they're trying to take it off the table prior to trial. I don't see an issue with the motion itself --

MR. JOHNSON: Of course we're not privy to the backroom, you know, thinking of how the rules were construed, but to your point, Staff Master Gasper, every one of those standards that you mentioned --

THE COURT: Attorney Johnson, the court reporter asked if you could slow down.

MR. JOHNSON: I'm so sorry. I have that habit. I will try to slow it down.

Every single standard that you

mentioned that could be a functional equivalent whether it's 12(h), 12(f), 12(b), all of them provide standards that are so deferential, right, especially (audio garbled) close to Rule 56, so deferential with respect to standard of review because that's also what drives this motion here, right, are we looking at these facts. And based on that standard alone the hurdle that they've got to climb isn't satisfied by the portions of the complaint that you mentioned in their favor. That's the best they've got. We just don't get there.

How do you peel off -- like, we're not even getting into the successor complexities, which I agree with Mr. Yelton can get very complex; and, quite frankly, I don't think anyone was prepared to argue that here today. But putting that aside, right, just for now, and we hope to argue the successor issue with some notice later, just the complaint; and if not the complaint because we're at summary judgment motion, all the reports, their reports just arrives out of work place injury.

THE COURT: Yes, but I think you're kind of going to the merits, Attorney Johnson, when what we're talking about here is Workers' Compensation, affirmative defense, right?

MR. JOHNSON: Well, the question is really, is there a genuine issue of material fact, whether there is --

THE COURT: On Lockheed Martin.

MR. JOHNSON: On Lockheed Martin. So, you've got to look into the facts a bit, Staff Master Gasper --

THE COURT: Yes.

MR. JOHNSON -- at least to the extent that they've been deduced so far. And all I'm saying is that from the complaint to where we are now, the facts don't allege that and the standard of review is overwhelmingly in Lockheed Martin's favor. That's my position.

THE COURT: Let's go back then. The complaint alleges --

MR. JOHNSON: Look at paragraphs 50 to 57. That's where the complaint alleges --

THE COURT: Okay. Wait. Thirty-three says that --

MR. JOHNSON: And 35.

THE COURT: Paragraph 33 says, Plaintiff (*Velez)* worked at the Aluminum

Refinery from 1982 to 1985 for CA Lewisport; in 1985 to -- maybe that should say 1990, Martin Marietta Aluminum Properties -- so at least beginning in 19 -- he worked at CA Lewisport from '82 to '85, switched to Properties from 1985 forward, I don't know until when. From 1990 to 1995 was the VIALCO; and from 1995 to 1999 for St. Croix Alumina; and 1999 and 2000 for GEC, Inc.

So, Counsel, Attorney Yelton, the period of time we're talking about that involves Lockheed Martin, are you -- well, let's keep it in civil terms. Are you blaming Lockheed Martin for what -- anything that happened during the time he worked for CA Lewisport?

MR. YELTON: I'm not blaming Lockheed Martin, no, because they didn't exist. I know I'm not trying to be smart. No. Sorry. It's just the age old thing. We know what CA Lewisport is. It's Martin Marietta Aluminum. Should it have said Martin Marietta Aluminum here? Yes. CA Lewisport is -- well, I'm just -- we've already established this previously that like -- but we should have put it in our complaint. Don't get me wrong, but Martin Marietta Aluminum is CA Lewisport.

So, we are alleging -- well, let's go back to what -- this is really -- I'm glad --

THE COURT: Attorney Yelton, you're trying to argue again. I'm just trying to get a fact here. So, what is the period of time? Is Lockheed Martin's/Martin Marietta Corporation involvement here ends at 1995 when he ceased to work for Martin Marietta Properties?

MR. YELTON: Martin Marietta Corporation is, you know, it is -- we are suing for the conduct of Martin Marietta Corporation for all of the years that Martin Marietta Corporation played a role in the Aluminum Refinery and my client worked there.

THE COURT: Okay. So, that would be from -- I guess, well, paragraph 33 doesn't give an end date for when he worked for Martin Marietta Properties. The facts, you know, through discovery would give that, but let's just for discussion purposes assume that's 1990. So, Martin Marietta Corporation would have played a role, to use your words, in the

Aluminum refinery from 1982 when the plaintiff worked until 1990, so roughly eight years.

MR. YELTON: 1970.

THE COURT: 1970?

MR. YELTON: Yes. Remember CA Lewis Port is Martin Marietta Aluminum.

THE COURT: I'm talking with respect to Mr. Velez.

MR. YELTON: Oh, I'm sorry. I'm sorry. Yes.

THE COURT: So, the period of time we're talking about is '82 to '90. I just wanted to verify his work history.

Attorney Johnson, I mean, if the plaintiffs in their complaint allege that, you know, Martin Marietta Corporation is the successor to the plaintiffs' employer and --

MR. JOHNSON: I mean, now we're getting back to the -- that's not their argument though. Their argument is suing Martin Marietta Corporation. There was a whole hypothetical that Attorney Yelton just gave, you know --

THE COURT: I mean, that was just for the --

(Overlapping speakers.)

MR. JOHNSON: -- designed to underscore the argument that they are suing Martin Marietta Corporation and we're not even dealing -- I think the successor issue is something that we -- neither party briefed, neither party saw --

STAFF MASTER GASPER: Well, that is --

MR. JOHNSON: -- and it's not their argument. These are not arguments that they -- I mean, similarly, these are not arguments that they made.

THE COURT: Well, let's be clear. They're suing Lockheed Martin Corporation.

MR. JOHNSON: Absolutely.

STAFF MASTER GASPER: It's in the Fourth Amended Complaint, but it's clear that they're only suing Lockheed Martin Corporation as the successor to Martin Marietta Corporation.

So, when Attorney Yelton is saying they're suing Martin Marietta Corporation and when you are saying, Attorney Johnson, that they're suing Martin Marietta Corporation, I'm assuming that both of you are talking about

Lockheed Martin, a successor to Martin Marietta. Because Martin Marietta Corporation doesn't exist, Martin Marietta Corporation is no longer a party named to the complaint, and they've been dropped from the first amended -- from the first complaint going forward.

So, they're not suing Martin Marietta Corporation. They're suing about Martin Marietta Corporation's actions; and that Lockheed Martin is the successor as sort of has to carry the -- has to take the blame, if you will, for what Martin Marietta Corporation did because it is one half Martin Marietta Corporation, which is why I had asked before is it really one half or was it, you know, how Lockheed Martin Corporation was formed. So, that's my point.

My point is that there is allegations in here about Martin Marietta Corporation. You're raising Workers' Compensation as a defense because you're saying we are, effectively, we, Lockheed Martin are effectively the plaintiffs' employer. We became Martin Marietta Corporation. Martin Marietta Corporation became Properties, Alumina, Aluminum. And so through all those transactions, those mergers or acquisitions, we inherited the immunity from suit of our predecessor companies, our daughters, or grandchildren.

And that's the only reason why the Workers' Compensation exclusivity provision kicks in. So, I don't know how we argue this issue without talking about is Lockheed Martin, Martin Marietta; and is Martin Marietta Corporation, Martin Marietta Properties and Martin Marietta Aluminum and I guess CA Lewisport. Because if as plaintiffs are saying they never worked for Martin Marietta Corporation and if Martin Marietta Corporation didn't acquire its subsidiary companies, then it may not have acquired their immunity from suit and neither did Lockheed Martin.

Again, I think the other question I want to get to is should we even be talking about the Workers' Compensation Statute at all since none of the plaintiffs are currently employed. They couldn't go to Workers' Comp now and seek benefits. They couldn't file a claim with Workers' Comp, so why are we even talking about this statute? And before we switch to that I did come across something that I thought was very interesting in a recent decision.

Are you familiar with *Tip Top Construction v. Austin*? The parties, are you familiar with it?

MR. YELTON: Is it a Virgin Islands rule?

THE COURT: Mr. Austin had worked for *Tip Top Construction*. He was -- the citation is *71 V.I., 549*. It's a 2019 decision of the V.I. Supreme Court.

He sued his -- he was essentially fired for not showing up a number of times. He developed athlete's foot, you know, injury on his foot that caused him to miss some days at work and he was fired. He sued for a number of things, breach of duty of good faith and fair dealing, violations of the Wrongful Discharge Act. He sued also for violations of the Workers' Compensation Statute. I'm not really sure what that was, but the only claims that went to the jury were wrongful termination. And there was another one I forget now, but the provision I want to point everyone to is pages 573 and 574. And it's probably easier if I read this to you.

Tip Top had argued in that case that the exclusive remedy provision essentially barred any kind of relief; that his injury occurred on the job, he developed athlete's foot an infection and he wasn't able to work because he was working in like a wet condition; and mud and water got into its boots and that's where the fungus developed and why he lost his -- ultimately where he lost his job.

He was fired of course, but they claim the exclusive remedy provision should have barred him from getting any relief. And the Supreme Court disagreed. They said, essentially, once he was fired he couldn't go for Workers' Comp.

This is on page 573, quote, "Tip Top argues that because section 284 of the Workers' Compensation Act provides the exclusive remedy from compensating employees for work-related injuries the Court's instruction improperly permitted the jury to award Austin damages for loss of income attributable to his work-related injury. I'm skipping all citations."

"According to Tip Top the jury should have been instructed that there could be no damages awarded for any loss of income caused by Austin's injury, either before or after the termination of his employment. We disagree.

"Although we usually review the Superior Court's decision to overrule an objection to jury instructions only for abuse of discretion, when the question is whether the jury instructions failed to state the proper legal standard, this court's review is plenary." Next paragraph.

"In considering Tip Top's argument on this issue, we are called upon to examine the relationship between the exclusive remedy provision of the Workers' Compensation Act and the right to recover damages for wrongful termination under the Wrongful Discharge Act. Tip Top is correct insofar as it claims that the exclusive remedy provision of 24 V.I.C., section 284 prevents courts from awarding damages for loss of income attributable solely to an employee's work-related injury.

"In this case, however, Austin's loss

of income for the period following his termination was clearly not attributable solely to his work-related injury, because from that date forward, Austin began to lose income for another, more fundamental reason: He was no longer employed.

"In other words, if the jury determined that Tip Top wrongfully terminated Austin's employment on February 13, 2013, then the exclusive remedy provision of 24 V.I.C., section 284 does not bar the award of damages for loss of income after that date because, no matter whether Austin's injury would have prevented him from working, he was nonetheless prevented from earning income for the more basic reason that he no longer had a job. In essence, Austin's wrongful termination superseded his injury as the legal cause of his loss of income beginning on the date of this termination."

This is not on all fours; maybe on all threes, most likely on two, but the Supreme Court --

MR. JOHNSON: And a totally different matter as well.

THE COURT: Yes, but the Supreme Court clearly distinguished between pre-termination and post-termination, right? It was an injury. He sued his employer. It was a work-related injury. The employer raised the exclusive remedy provision and the Supreme Court drew a distinction said, exclusive remedy provision doesn't apply after he was fired even though he is suing for an injury that occurred while he was on the job.

My question here is, considering that the Supreme Court has already said in *Defoe v. Phillip* that we look to the general understanding of words and statute, right, that's section 42 of Title 1 of the Virgin Islands Code, and the Court looked to the general definition of "employer," likewise I think here we would look to the general definition of "employee," none of the plaintiffs are employees of anyone right now. They couldn't go to Workers' Compensation and file a claim. So, isn't the simplest answer here that the Workers' Compensation Act just doesn't apply?

MR. JOHNSON: Let's take a look at the

Act. Let's take a look at the Act itself because I don't think this is not an all fours, not on all twos. It's also with respect to appeal of a jury award very different than what we're looking at here, right? So, let's start with the closest of what we actually have in front of us. And I think we start there with the statute. Because one of the things that we have --

THE COURT: Okay. Look, Attorney Johnson, at section 254b(a), Title 24. One the primary purposes of this Act shall be the restoration of the injured employee to gainful employment and to assist in lessening or removing any handicaps resulting from his injuries.

We're not trying to restore injured employees to gainful employee here. So, if that's one of the primary purposes of the Act, how are we -- why should we even be in the Workers' Compensation Act? I mean, it's clear courts have said, you know, you could sue for -- well, Virgin Islands courts I don't think have addressed sort of emotional damages and whether -- emotional injuries and whether they're covered.

Courts in other jurisdictions have, you know, gone both ways, but it's clear that, you know, intentional torts you can sue. You can sue for defamation. Some of those types of damages are not barred by Workers' Compensation. And there are courts in other jurisdictions that have said if the plaintiff is ultimately left without a remedy, you know, too bad, so sad.

The issue here is this really truly is a case of first impression, right? I am not familiar with any other decision of a Virgin Islands court defined as broadly as we can that has addressed the exclusive remedy provision for a former employer or the successors of former employers. And I think some of the problem is that we're looking here at former employees, right? We're looking at employees who sued for work-related injury years after they stopped working and now years after their employer is out of business.

So, I mean, if -- what's an example of a company that's gone out of business completely? Well, let's take GEC because I think GEC was in this case and there is allegations -- not allegations, just generally understood between counsel that GEC may not even be existent anymore.

Let's assume GEC has gone out of business completely. They couldn't sue GEC. It doesn't exist anymore. They couldn't go to Workers' Comp because GEC is not paying insurance for them currently.

So, I mean, the whole statute is premised on, and I think this is what Judge Andrews' order was kind of saying in *Mohansingh*, that the statute assumes someone is currently working and gets injured and tries to seek compensation. And that's why -- we don't want employees and employers bogged down in litigation. Legislatures have made the decision to pull their rights and defenses, you know, their claims and defenses away and say, no. We're not going to let you sue each other for work-related injuries; go to this neutral third party who is going to oversee your claim and award you compensation. I agree with you that the --

MR. JOHNSON: I can't wait to address

it. I can't wait to address it, but -- oh, I'm sorry --

THE COURT: Go ahead.

MR. JOHNSON: One of the issues here I think is this, is that when you read that, Staff Master Gasper, you're looking at the preamble and of course very fundamental cannon of statutory construction (audio garbled). Preamble by definition is general.

Let's take a look at section 252. Let's go straight to the statute, right? Section 252(a). Every employer shall make compensation as herein after specified for disability or death of an employee resulting--this is where it gets good--from a personal injury, or occupational disease. Then it goes on to say --

THE COURT: Absolutely no question that --

MR. JOHNSON -- arising out of --

(Overlapping speakers.)

THE COURT: Wait, Attorney Johnson. We both can't speak at the same time. That even speaks to pleural, like, tuberculosis diseases of a --

MR. JOHNSON: Pneumonia based tuberculosis.

THE COURT: Yes. So you were at 24 V.I.C. 252.

MR. JOHNSON: Right. But I also want to point the Court, because that's the beginning of the analysis here. The real -- where it sticks is in section 257(a), right? Now, here the statute by its own design creates a time-based distinction between personal injury; meaning, I stubbed my toe, a plank fell on me, you know, some caustics splashed on me, which you will know right away, and occupational injuries.

So, if the Court is already accepting that occupational injuries are anticipated by the statute, it goes even deeper here. Here it gets specific. In the case of an occupational disease like the ones we're talking about here today like mixed-dust pneumoconiosis notice shall be given by the person or injured -- person injured or someone on his behalf or the employer or any agents within 30 days from the first distinct manifestation there of. The statute says it.

STAFF MASTER GASPER: Yes, but --

MR. JOHNSON: The statute anticipates because by its very nature occupational diseases are latent. They pop 15 years later. They could pop up 20 years later. And the employer should be held accountable. Like, remember --

STAFF MASTER GASPER: Attorney Johnson --

MR. JOHNSON: -- these statutes are written for the benefit -- I'm sorry. Go ahead.

STAFF MASTER GASPER: Attorney Johnson, you're skipping what I think is -- I think everyone's in agreement that occupational diseases are covered by the statute. What we're talking about here is Lockheed Martin is the only entity to whom notice could be given by personal delivery or mail, right? This is section 257(a), quote, "by personal delivery or mail, written notice on an accidental injury shall be given by the person injured or someone on his behalf to the employer or any of its agents."

Lockheed Martin is not their employer.

MR. JOHNSON: I mean, if we go back --

STAFF MASTER GASPER: We have to read the whole sentence.

MR. JOHNSON: -- back to our fundamental -- first line of our argument we absolutely agree with that, but this is their motion for summary judgment, right, on the affirmative defense.

(Overlapping speakers.)

STAFF MASTER GASPER: Yes, but you --

MR. JOHNSON: As in this --

THE COURT: Your cross motion, isn't your cross motion to say grant summary judgment in our favor because we're immune?

MR. JOHNSON: Grant summary judgment -- if they're saying they're specifically suing Martin Marietta Corporation because that's what they are claiming now, right, then of course there are no claims.

In our cross motion and we are saying that due to the merger that Martin Marietta Corporation, that the entities that would have been liable, in other words, the entities that would have had coverage, those entities are clearly protected. And because the successor accedes to the benefits and liabilities of its predecessors, yes, it's covered.

Now, their carve out there is that we're just suing the Martin Marietta Corporation. And of course our defense to that is that, well, where is the injury?

This provision is important because it provides -- because I think the *Mohansingh*'s issue was that, one, the statute doesn't provide for people who are separated from the employment either because they left employment or they are retired or of retirement age, right. Because as you noted the court's position in *Mohansingh* is that this was supposed to be able to put people back to work, right, but the statute where it's specific to latent disease doesn't provide for that boundary. Other states throughout the jurisdiction do. Even the Federal Employees Act provides an analogy for that.

THE COURT: I think that's the issue that we're noticing here is really the statute is deficient, and we are trying to -- defendants are trying to read the statute in their favor. Plaintiffs of course are trying to read the statute in their favor and really the statute doesn't speak to the situation.

There are other jurisdictions who have provided a whole window of time that says, you know, no later than 20 years after you stop working can you, like a statute of repose, but no later than 20 years after. Our statute is silent. It doesn't speak to that, but we have to --

MR. JOHNSON: And our position was if the Legislature wanted the statute to speak, it would. And it did not. As a matter of fact, they tied the reporting to when the first distinct manifestation of occupational injury shows its head.

THE COURT: But you report to your employer and they are not employed and Lockheed Martin is not their employer. I mean, so you're reading it to your benefit and I understand because you are advocating from your client, but from the Court's perspective we have to read the statute as a whole. We have to deal with it in its entirety. We can't pick out certain pieces.

And I think what Judge Andrews was

getting at and, again, that wasn't the basis of his decision because his decision was, you know, Hess Oil Virgin Island Corporation waited too long to raise the Workers' Compensation issue, but in dicta you could say he said, but I don't even see how that applies here because he no longer works there, Mr. Mohansingh can't go to Workers' Comp. And that's the issue that I think was, you know, raised essentially by Attorney Pate's affidavit and that's at issue here.

It's 12:30 so let's switch over. I'll come back to you and we'll switch to plaintiffs so they can be heard for their second round.

MR. PATE: Staff Master Gasper, I think I only need five minutes on the issue of Judge Andrews' order. I think you've read -- first, I have to -- you're an amazing researcher. I thought that I had dug up every case possible. I found 49 cases that addressed that it had to be a present employee, and you've now found the 50th. I did not read *Tip Top v. Austin*, but it's in every other case possible. I'm going to start first --

THE COURT: Well, wait. Let's clarify.

You have not found a decision where a court says, thou must be employed currently, correct?

MR. PATE: Just on the *Mohansingh* case would say that reading the opposite of the 50 cases that the people who got benefits were always currently employed.

THE COURT: But no court has held the Workers' Compensation Act does not apply if you cease working.

MR. PATE: I would say the administrative court of Department of Labor is probably held that, but no court, yeah.

THE COURT: No court. And there are no decisions available from the Department of Labor, is that correct? Like how in other jurisdictions for the administrative law, the administrative law judges' decisions, we don't have anything like that in the Virgin Island that would be persuasive only at best, but there is no body of law to lean on from the administrative agencies.

MR. PATE: I don't know how we get access to that. No, I do not know, Your Honor, but I'll give you the plaintiffs' position in about five minutes. I'm first going to start just briefly with Attorney Johnson saying latent injuries, talking about the statute. I've word searched the statute many times.

The statute never says latent injuries. That's not in the Workers' Compensation Act. It only talks about, as you pointed out, an occupational injury that occurs on the job. That's why athlete's foot would work. I got an occupational injury that developed slowly; and he would then from the first manifestation, it's actually 30 to 90 days is what the statute says, they have up to 90 days if the delay is excused, but it has to be an employee.

Now, you talked about the *LaBast* briefing so I'm going to give you the case number for *Milton Burt*, which is *SX-2021-CV-548*.

We filed on August 20th our motion as a matter of judgment on the pleadings as a matter of law. And then we also did one, a summary judgment. I think in the *Burt* case it's like painting -- we've done this a lot, so it's kind of like we're painting the same picture, but every time we're better artists now. It's getting clearer. It's not looking as much like a five-year-old painting. We're now at college art class.

And if you look at the briefs that plaintiffs filed we broke it into two to make it easier. One is the matter of law as a matter of judgment on the pleadings. And then the other one is if the Court doesn't address that and that's conclusive for dismissing affirmative defense, then there is factual issues that are summary judgment.

Lockheed Martin had an extension from their deadline of I think September 20th. We've allowed them to September 30th to file their response. And I think that's going to give you, as the Court, it's going to layout whatever arguments Lockheed Martin has on the law.

To summarize the law, you know, the Workers' Compensation Act goes all the way back to 1940. It's been in place 82 years. Every case that I've found, which is 50 cases, the first one starting in 1945, have only, only applied Workers' Compensation benefits to a current employee. And then you found *Tip Top v. Austin* which show how strictly the court construes this. And the court does construe it strictly because we have a self -- the Virgin Island Government is self-insured. So, if the Workers' Compensation system funding is exceeded, which is in I think 50 million dollars of arrears, it's borne by the taxpayers.

So, it makes sense for the Legislature saying, hey, we're going to make this really narrow and you've got to pay and it's narrowly protected and everybody else who is an employee has a remedy against these other companies. Because the burden, unfortunately, falls on the Government to self-insure for any excess. So, unfortunately, and I can see how the Legislature and the Department of Labor would be concerned here if the court went against, what is it, 82 years of the statute and case law and threw all these cases on to the Government for funding.

Now, not only has there been 82 years and over 50 cases that say it has to be a current employer to qualify for Workers' Compensation; from my tally, and we got this number from the HOVIC bankruptcy case, there's been 1,143 toxic lung injury cases filed in the Virgin Islands since 1987. And none of those have ever had a Workers' Comp bar. So, you've had --

THE COURT: Well, I did see it referenced in one the *Catalyst* decisions that Judge Willocks had issued. I think he said it was premature. I know *Catalyst* ultimately settled, so I don't know if it was tried.

I also noticed that -- well, continue, Attorney Pate.

MR. PATE: What I'm saying is -- what I'm trying to say is that this would be kind of a paradigm shift to say since 1987 there's never been -- the court has never read the statute against the statute. Workers' Comp has always been narrowly applied to (audio garbled). I also finish with this last --

THE COURT: Okay. Well, then let me continue because section -- this is further to Attorney Johnson's arguments that we're supposed to look at the whole statute, right? And section 263 of Title 24 says -- I don't think there is subsections in there. I think it's just one statute, so let me pull up 263.

Sorry. The internet is going slow here at the court -- yes, 263 I don't think has subsections, no. It's just sort of one long statute.

And it does say, quote, the injured workman or employee or his beneficiaries may not institute any action nor may compensate -- nor may compromise any right of action they may have against the third person responsible for the damages unless the administrator is a party to the action or agrees to the compromise, but the failure to join the administrator shall not deprive the court of jurisdiction over the claim or otherwise result in dismissal of the claim so long as the injured worker or employee acknowledges that all sums due the government insurance fund are secured by any recovery.

So, clearly that's under the section talking about the liability of third persons in subrogation. I'm not -- older case, years ago, 30, 40 years ago would have the administrator of the Workers' Compensation Administration join as a party.

But to my knowledge the years that I've been at the court of course, you know, that's just the general understanding. I've never seen Workers' Compensation brought into a case for any of these toxic tort cases.

Again, I assume what the statute is saying is that the administrator has to be made a party because it assumes that the worker went to Workers' Comp, right? So, I don't know that the administrator has to be made a party if the injured worker never got benefits because then there's nothing for the administrator to recoup. But if you read it strictly it says, no injured workman or employee may institute an action unless the administrator agrees.

So, arguably if these are all work place injuries, there's no question that all the toxic tort cases that are pending in the Superior Court that they are injuries that occurred on the job. So, if you read the statute strictly the administrator has to be joined in every toxic tort cases even though no one went to Workers' Comp to file claim.

MR. PATE: Yes. I have three points --

THE COURT: That's why I'm saying I don't think the statute works in this situation.

MR. PATE: Right. You've jumped -- I think you've jumped Z and we needed to go through A, B, C, but here my three comments would be, first, you have to read "injured workman" first and "employee" in the context of the statute, which when you read it just like Judge Andrews said, all the provisions for providing notice are actual on-the-job workmen employees. And the provision is actually, you're supposed to tell your company, hey, I got hurt; and the company takes it over to Workers' Comp.

Now, a plaintiff or worker can also go to Workers' Comp and then elect remedies if there is not insurance, or if they get their Workers' Comp they can then sue the third parties and then have to come back and reimburse Workers' Comp. Here it doesn't apply to any of our plaintiffs. They were not on the job or injured on-the-job currently employed workers.

But the flaw, this is point two now, I want to move to point two and this is pointed out in the *Burt* briefing, Lockheed Martin, if it's truly believed the Workers' Comp statute apply, when the complaints were filed and we served them on Lockheed Martin, they have a duty under the statute to go report this to the Workers' Compensation. They never want to because they know they'll lose there.

The Workers' Compensation authority has never given payment for latent injury. It's not in the statute and that's the affidavit from the general counsel and assistant commissioner, Neesha Christian Hendrickson. That's never happened never. That's not what happens. They only pay people who are hurt on the job. That's what the statute says.

So, Lockheed Martin has been trying to do an end-around with the court which has caused extraordinary delay and cost for the last ten years because they know they'll lose at the Department of Labor.

THE COURT: Section 252(a) used to have a list of occupational diseases. They were removed I think in 1965. I don't know why. I found a copy of the original 1957 code, the one that was first issued. It listed arsenic poisoning, phosphorus poisoning, lead poisoning, glanders, anthrax, poisoning by carbon, by sulfide, poisoning by gasoline, compressed air poisoning. That list of occupational diseases were pulled out.

There is no -- to my knowledge there is no definition on occupational diseases elsewhere except that the definition section of the statute says that Workers' Compensation laws shall also mean occupational disease law; and so the definition section, I think section 251. I'm just at a loss as to how the entire statute should operate here. Section -- in the context of a disease that accrues over many years sort of manifests long after the employees are not working and the employer doesn't exist anymore.

I mean, think about it the other way. If Lockheed Martin didn't exist and Martin Marietta Corporation didn't exist and they were long out of business, the employees, unfortunately, would be left without a remedy. They couldn't go to Workers' Compensation, correct? Attorney Pate, and then I'll switch back to Attorney Johnson.

MR. PATE: I appreciate, you know, the hypotheticals to try and construe the statute in 20, 40 different ways. As it stands, the best thing for our clients is full civil remedies and that's --

STAFF MASTER GASPER: But that's not the question I asked. The question I asked is if Martin Marietta did not exist, Lockheed Martin did not exist and Mr. Velez went to his doctor and he said, hey, I think you're developing pleural thickening, you're developing cancer, could he go to Workers' Compensation and say 20 years ago I worked for Martin Marietta, one of the Martin Marietta entities; I want Workers' Compensation now? They would turn it down, correct?

MR. PATE: Correct. And he would come back to me and we'd find some of the suppliers on the dangerous chattel, we'd probably go after some other further removed fruit. I mean, it would be a harder case, but that's what attorneys do.

STAFF MASTER GASPER: Attorney Johnson, what is your -- do you believe that if Lockheed Martin and Martin Marietta did not exist that the employee, the former employee could go to Workers' Comp and say, hey, look, I have this disease; it's now manifesting? Can I get compensation?

MR. JOHNSON: Yeah -- you said Lockheed Martin --

STAFF MASTER GASPER: I'm saying if the employee's employer--the person who employed him at the time his injuries began--right, we're not talking about the time the injuries manifest, that's another nuance to this issue, right, we're talking about when the action occurred he was not employed, right; they were all retired at that point. But if we're talking about just factually we understand that they were exposed when they worked at Martin Marietta, could that person go to Workers' Comp today and file a claim?

MR. JOHNSON: Look, that person can go because Lockheed Martin Corporation accedes the benefits and liabilities of its predecessors, absolutely they should be able to go and file a claim and the administrator would also have to be brought in, right?

I mean, and to Attorney Pate's point he said that there is an onus on Lockheed Martin to essentially submit a claim. That's not how the statute works at all.

If you take a look at section 258, the filing of the claim, it's a two-part -- both 250 and 257, it's a two-part standard, right? Within eight days of receipt of the written notice of injury, the injury filed by the claimant, right--this is a claim, this is going to be filed by the claimant--the employer shall complete an employer's report of injury and forward the same together with the employee's notice of injury to the Administrator.

And this other line is important too. "The failure of the employer to file such reports within such period shall not prejudice the claim of the employee." This is all employee driven.

To say that Lockheed Martin or Martin Marietta Corporation or Martin Marietta Aluminum had a duty to affirmatively report or affirmatively tender these cases to the Workers' Compensation, the Workers' Compensation is just not an accurate reading of the statute. That burden of course is on the person who is hurt.

Another point and I think this --

THE COURT: Attorney Johnson, where are you? Slow down again. Where are you reading the language about -- this is 257 you said?

MR. JOHNSON: 257(b).

THE COURT: Okay. And 257(b) says within eight days after the receipt of the written notice of injury referred to in section (a), the employer shall complete an employer's report and forward same to the administrator. So, couldn't we view the lawsuit as your notice of claim?

MR. JOHNSON: No. I think that it provides for specific notice, a specific procedure has to go through the Department of Finance and Workers' Compensation.

STAFF MASTER GASPER: I'm saying if we're --

MR. JOHNSON: And it provides --

(Overlapping speakers.)

STAFF MASTER GASPER: Attorney Johnson, you can't speak at the same time.

MR. JOHNSON: I'm sorry.

STAFF MASTER GASPER: If we're stretching the statute to fit Lockheed Martin into the definition of an employer, which clearly is contrary to *Defoe v. Phillips*, why couldn't we stretch the definition of claim to mean the lawsuit that was filed in 2011? It says, the employer shall. It doesn't say may. You're talking about the consequences if none of that happens, but it still says the employer shall complete a report and forward their notice to the administrator.

This is making the point that I just don't think this statute applies in this circumstance. I just don't see how when you look -- yes, we can pull out portions of clauses, sentences, even entire sections, but the chapter as a whole, it has to be read as an entire, as a whole.

And I don't see, and going back to Attorney Yelton's point I think why the court has been struggling with this and rightfully we've been struggling with it for years, is I think it just doesn't fit. It's like square peg, round hole. It doesn't seem to be fitting.

And I don't think it does anybody any good to leave it lingering. I think all sides need a decision, whatever the decision is, so then it can be moved on, whether that's to trial, whether it's appeal.

There's been talk about certifying the question to the Supreme Court. They have been less welcoming to that lately. They smacked down the *Castillo* certified question from Judge Molloy. I think part of that might have been because of HOVIC's bankruptcy proceedings that could have complicated matters.

But if Judge Willocks were amenable to it and the parties agree it could be certified, it doesn't have to be certified in the *Bauxite* cases I guess to avoid disrupting the trial schedule that goes forward, but it has to lead to the ultimate termination of litigation. So, it can't just be a question that's interesting to the case. It has to be a question that if it's answered one way or the other it will terminate to the case or lead to the ultimate termination.

I think that's clearly this question -- well, I don't even know that it's this questions because if you dig into the facts, there is still the issue of whether Martin

Marietta Corporation's predecessors complied with the statute by paying the premiums and all, and the certificates of insurance. I mean, that was the issue of *Island Tile*, right? *Island Tile* said the only entity that benefits from Workers' Compensation is the person who's named on the certificate. That's another reason why I don't even know why we're in the statute.

MR. PATE: Your Honor, I can finish up --

THE COURT: Go ahead, Attorney Pate.

MR. PATE: And then I'm going to be finished because I had two points. One is I'm going to point the Court to the opposite of what Attorney Johnson said; and, number two, I had a question hopefully that the Court could ask Lockheed Martin.

So for number one, I was going to point the Court back to *Milton Burt*'s case, 21-CV-548, the August 20 filing on -- as a matter of law on Workers' Comp. At Exhibit A is a letter from general counsel and assistant commissioner Neesha Christian Hendrickson. She talks about the notice requirements and this is what she says.

THE COURT: This is to your motion for judgment on the pleadings?

MR. PATE: Yes.

THE COURT: Which means it's also --

MR. PATE: Right.

MR. JOHNSON: That hasn't been fully briefed yet and our position has always been that, you know, this is the position of Neesha Christian Hendrickson. They're not evidence, they're not argument and they shouldn't be --

THE COURT: Attorney Johnson, I guess you're getting the benefit of hearing their thoughts and you can incorporate that in your response to his, you know -- if plaintiffs want to reference filings and motions made in other cases, I don't think it is improper. Obviously, I can't rely on them for, you know, summary judgment motions limited to the facts and record of each case, but you would get the benefit because you're hearing, and something I just noted is that that's not outside the record.

MR. PATE: Yes. Thank you. This goes to a matter of law. It's her referencing the statutes. Attorney Johnson said it's incumbent on the employee to give notice to Labor. And her letter goes through the statutes, footnotes them. And she says three time lines are important to note for all Workers' Compensation cases. Those are 48 hours, eight days and 90 days. When an employee becomes injured because of his employment or during travel to or from work, his or her supervisor or employer must be notified within 48 hours of the incident. The employer is then required to report the injury within eight days to the Workers' Compensation Division.

Finally, in unique circumstances in which the claim shows reasonable cause that an injury developed from an occupational disease, and this is an employee who is currently working, the administrator can accept notice no later than 90 days. That's from the employer.

So, this is my big kind of irony on all of this that I point out only to undermine the defendants' position. They were served notice of the complaint. It's been 11 years. They've never taken this to the Department of Labor, ever.

And then I'll follow-up with this question if the Court would ask because I'm curious. So, Lockheed Martin after Judge Andrews' opinion and when the case was set for pretrial settled *Joseph Daniel*. Did Lockheed Martin tender any of that settlement to Workers' Comp and asked for indemnity that they paid premiums; that they want premiums back for their issue of *Daniel*? Because that would really go to whether this is a good faith basis. Are they interacting with the Department of Labor trying to say that *Daniel* was covered by Workers' Compensation. I don't think they have.

THE COURT: Well, *Daniel* was represented by different counsel for Lockheed Martin so I don't know that counsel who are currently on the case can speak to that. That was Attorney Francis' office; Simone R.D. Francis.

Attorney Johnson, back over to you.

MR. JOHNSON: Thank you, Staff Master. Let's start with some -- clear up some premises here with respect there's been no cases that says that former employers are entitled to the benefit of the Workers' Compensation section.

THE COURT: But wait let me ask. Are you aware of any case in the Virgin Islands that says an injury that manifests some type after employment has terminated the former employer as defendant of the former employee as plaintiff is immune?

MR. JOHNSON: So, with respect to drawing that issue out, that is a question of first impression. We would ask that whatever the rational for the order is that the order be certified for appellate review. So, the answer to that is no.

I agree with Attorney Pate that there is and you that there is nothing, no case in the Virgin Islands that directly addresses that which is why we think this is a question for the Supreme Court to essentially review on certification.

However, in *Erwin LaBast v. St. Croix Alumina*, right, which was regarding this same client decided by Judge Deramo in 2008, there is an order providing that St. Croix Alumina was entitled to the Workers' Compensation's protection for an employee who no longer worked there. So, this is an employee for a suit that's filed long after he left the employment.

THE COURT: Yes, and I am familiar with that, you know --

MR. JOHNSON: That is my argument, Staff Master, just next piece to that. If the Court or the plaintiff is sort of walking down this road that these claims could never be submitted for Workers' Compensation coverage, that is just a fallacy. It is not how this statute, it's not what this statute says. And I take the position that we're picking apart the statute and it doesn't fit has to double back to the statute. It's got to double back to the statute. It's got to double back to the language that's there.

We're creating hypotheticals that don't exist, right? We're creating assumptions that are not in play. With respect to the statute that we have here it provides for 48 hours -- I'm sorry -- for 30 days, 30 days after the manifestation for it to be reported. It could be reported through Lockheed Martin Corporation because it was the successor in interest.

And another thing and this is sort of

the larger picture, the court's decision in these cases do not only affect these plaintiff. It will affect the interpretation of Workers' Compensation coverage throughout the territory.

And as a practical matter, and this speaks to the last of the *Banks* analysis on this rule for the Virgin Islands, workers should have coverage if they're injured by employers even if it pops up several years later. The ALR, the body of case law all says that Workers' Compensation Statute should be construed broadly, not narrowly, for the benefit of workers' coverage.

Everyone is not going to have -- every worker in the Virgin Islands, St. Thomas, St. Croix, St. John, is not going to have the benefit of counsel with respect to how they're injured. And Workers' Compensation should be, and that's why these companies pay premiums to cover these folks when they're hurt.

This can't only apply to the plaintiffs here, right? If there's a cutoff that's not in the statute and other jurisdictions have cutoffs, if there is a cutoff, the Legislature can provide one and it hasn't.

MR. PATE: Staff Master, I appreciate Attorney Johnson's advocating for the wellbeing of the plaintiffs. It's pretty ironic --

THE COURT: He is not advocating for the wellbeing of the plaintiffs. He's advocating for the wellbeing of all workers in the Virgin Islands.

MR. PATE: And I understand that. Historically it's been 82 years that the Workers' Compensation system has operated and the Department of Labor has not had a problem with this. You can look at Exhibit A on *Burt*, but it's very ironic when Lockheed Martin keeps saying it can be submitted to Workers' Compensation yet they have the ability to do it, yet they refuse to do it because they realize that for 82 years non-employees are not covered and --

THE COURT: I appreciate the point. I mean, I think the record might be different if someone had tried to submit, someone had gone to Workers' Compensation and was rejected. You know, maybe that could be made part of the record of a case, but that hasn't happened here. So, Lockheed Martin hasn't notified

Workers' Compensation on any of the lawsuits going back to 2007.

I think *LaBast* was not the first because that's 502 whatever, 500 of 2007 is the first. They're probably filed on the same day. But going back to 2007 I take your point, Attorney Pate, that Lockheed Martin has never gone to Workers' Compensation and notified them. The plaintiffs also have not gone even, you know, out of abundance of caution just to get rejected and come back to the court with a stronger position, right?

So, I don't see the relevance really to what each side should or should not have done, or did or didn't do, but it's the statute itself that speaks to it. And my point is I don't -- I just don't -- I take Judge Andrews' point that the entire statute seems to speak in terms of employees and employers. And the plaintiff is not an employee of anyone right now, nor was he at the time the lawsuit was filed; and the Lockheed Martin as the employer, Lockheed Martin is not the employer. It's defendant.

So, if we're using the plain meaning of

those words as directed by *Defoe*, I just don't see why we're in this statute. It doesn't say former employer. It doesn't say former employee. We're adding those adjectives to the words.

The definition section says employee. It talks about occupational diseases. And remember the statute was enacted, you know, in the 60s dating back to the 40s. There were two different versions, right, that sort of merged into the version that it is right now.

The immunity from suit provision, section 263 -- no, not 263; 284. Section 284 was originally section 283, was moved to section 284 I think in 1961, but it was borrowed from the Puerto Rico -- was taken from there.

I looked for any case law from Puerto Rico prior to 1961 when the statute was enacted and I could not find anything that interpreted that would be a binding interpretation under the bar of statute doctrine and would have come with that statute when the Legislature enacted it. So, we're kind of at a loss here.

One other question I have before we

close is section 284 does say when an employer is ensured under this statute, right, if we take that statute apart, Lockheed Martin is not an employer. Lockheed Martin was never insured. Plaintiffs are now claiming that Martin Marietta was never the employer and was never insured so, the only way we get to that first clause is if we say Lockheed Martin is Martin Marietta, who is the predecessors that the plaintiff worked for.

Then it says, the right herein established to obtain compensation. So, it would be the only remedy against the employer; so, obviously the employee's right to obtain compensation. And then there is a semicolon, and then it says, but in cases of accident to, or disease or death of an employee.

So, Attorney Johnson, it's talking about disease, so it clearly contemplates something that can take a long time to come about, I mean, a disease generally speaking doesn't happen overnight. That's why the statute distinguishes between accidents, diseases.

In the case of an accident to,

or disease or death of, an employee not entitled to compensation under this chapter, the liability of the employer is, and shall continue to be the same as if this chapter did not exist.

If you take the situation here that if we assume that the plaintiffs are employees, they are not entitled to compensation because their injuries accrued long after and Lockheed Martin isn't their employer. So, it's a stretch, but even under a plain meaning of the second half this statute, wouldn't that allow the cases to go forward?

The courts have interpreted 284 as sort of referring back to I think it's 261, the part that talks about being unemployed or uninsured, but why wouldn't the statute just refer back to that section and say if the employee is -- if the employer is uninsured, right? The statute says when employer is insured, no compensation. You can't sue. But it doesn't say when the employer is insured -- or is not insured, excuse me. Do you understand what I'm saying? It doesn't say when an employer is insured; next clause, when the employer is not insured.

It says, when the employer is insured Workers' Comp is your only remedy. When the employee is not entitled to compensation, you can go after the employer.

So, it would be redundant to read that second half of the section to just basically be a reference back to section I think it's 261, the section that talks about uninsured employers.

MR. JOHNSON: Uninsured, yeah, because that question is proceeding as if the statute didn't exist. Throughout the statute it's contemplated in the context of uninsured employers, right?

STAFF MASTER GASPER: Well --

MR. JOHNSON: And in this case you meant that the plaintiffs had conceded that there is coverage. I mean, I don't think that's the issue here. There are several places that literally we concede that --

THE COURT: No. Lockheed Martin has represented that the plaintiffs could go to Workers' Comp now perhaps, or they could have gone to Workers' Comp, you know, back in 2009 or whenever they got the documents from

Dr. Betancourt. And, again, that's another issue of when did the claim accrue, right, but let's just pick a date.

Lockheed Martin's position is as of today, yes, they could have gone to Workers' Comp then. I have not heard the plaintiffs say they could have gone for Workers' Comp at any point.

MR. JOHNSON: Let me tell you what their concession is, I mean, because these cases are long. But if you were to take *Felix's* opposition to Lockheed Martin's motion to dismiss the First Amended Complaint that was filed in August of 2011, there's a specific sentence there that says concessions. And in that section it reads, plaintiff has learned his employer was Martin Marietta Aluminum, Inc. and accordingly concedes that its charges against Martin Marietta Aluminum, Inc. must be dismissed; and that the allegation that Lockheed Martin's operation, a successor to Martin Marietta --

THE COURT: Attorney Johnson, the court reporter.

MR. JOHNSON: I'm sorry. Let me start

over.

THE COURT: Yes, please because I need the reference to the document.

MR. JOHNSON: Sure. I'll start there. Plaintiffs' opposition to Lockheed Martin's motion to dismiss the first complaint dated August 15th, 2011, this is at pages 1 through 2. It contains a provision explicitly entitled "Concessions," which states that, "Plaintiff has learned his employer was Martin Marietta Aluminum, Inc. and accordingly concedes his charges against Martin Marietta Aluminum, Inc. must be dismissed and the allegation that Lockheed Martin Corporation a successor-in-interest to Martin Marietta Aluminum, Inc. is responsible to plaintiff for Martin Marietta Aluminum, Inc.'s tortuous acts must also be dismissed."

MR. YELTON: Can I jump in here, Your Honor?

MR. JOHNSON: I waited patiently while the other side argued and I'd like to be able to make my record.

MR. YELTON: Of course.

MR. JOHNSON: So there is -- I mean,

when we say there are no concessions, there is a clear concession. Let me give you another one, all right. In plaintiffs' opposition to Lockheed's Martin motion to dismiss the Third Amended Complaint which was filed on March 11, 2019, at page 2, and I quote, "While plaintiff cannot sue his direct employers because of the Workers' Compensation exclusivity, he can sue other companies, even the parents, subsidiaries and sisters of his employer."

And then there is a citation of the -- the transcript of December 17, 2018, hearing on motions before Judge Molloy. So, there have been clear concessions here with respect to the Workers' Compensation coverage, which also brings us to why are we still here. Why are we still here arguing whether there is coverage --

(Overlapping speakers.)

MR. YELTON: We should have an opportunity --

THE COURT: Wait, wait, Counsel, Counsel, we're trying to make a record here. The court reporter has to get this down. Everyone is speaking, they are animated. I understand, but you cannot interrupt each other. You can't talk to each other. It's no different than if you were in court. And the administrative orders of the Supreme Court has made that clear for remote proceedings that you still need to dress as you're in court, you need to behave as though you're in court.

I think that's a fair point, Attorney Johnson. I agree, which is why I said earlier that it's time to put this issue to bed so that it's addressed. And on that point, I mean if the parties prefer, I can defer addressing this issue until the briefing in -- well, you said it's in *Burt*? Because *Burt* is being teed up for trial. That might not be appropriate. I thought you were talking about in the master case.

MR. PATE: Well, it will be. I think this will be treated as dispositive for the master case and you can talk with Judge Andrews on this issue, but it is the issue as a matter of fact obviously would be dispositive for all issues, and I so I think that would be important to look at. I did have one distinguish to be make, Your Honor, and I'm going to be finished because I feel like we've beat a dead horse.

But the Court asked why the plaintiffs -- the plaintiffs could have gone to Workers' Comp or the defendants could. We look at it as we have no good faith basis, but Lockheed Martin is making arguing like they do. So, if they feel like they have a good faith basis to go to Workers' Comp, they should. And then Labor will tell them that there is no coverage and then the issue is decided.

THE COURT: Well, again, it's not before the Court. It's helpful to talk about how the statute, you know, operates in practice and how statute could function here, but none of this has happened so it's not part of the record, you know, in support or in opposition to either side's motions.

So, I think it's best to leave *Burt* alone at this point and I just make this recommendation. I think it might be fair to address it in *Alumina Dust* even though it's not been argued here before the court, but it's been argued multiple times over the years. The issue has been supplemented multiple times.

I recall this argument before Judge Willocks when there have been the *Boston* and

Charles cases before *Halliday* was sort of a lead plaintiff and the cases were separated out. So, I think it's time to tee this up, let it get resolved. If the parties think it's appropriate to ask the Judge Willocks certify to the Supreme Court, they can. I can make that recommendation.

I had included in the Case Management Order in the *Alumina Dust Master Case* that I would make a recommendation -- if I felt that it was a controlling question, that I would include that in my recommendation. If there is no objection since everyone who is on the call right now is also in *Alumina Dust*, if there is no objection I think I would do a global recommendation on this issue.

I know, Attorney Johnson, you had said earlier that you look forward to arguing the corporate pedigree, you know, the history of Lockheed Martin. I don't know at this point that argument is going to do anymore because argument is really just going to be based on what's already on file.

If there's conflicts in the record, you know, if there's inconsistencies and how

Lockheed Martin -- in the formation of Lockheed Martin, if you want to submit something to the court, I think that would be helpful to sort of to clarify that, but talking about it I don't think will make a difference because it is what it is, right?

MR. JOHNSON: No, agreed, agreed. I think in the course our position has always been that successor in interest is a continuation of the named insured, right? And I think we've drawn that out quite a bit in briefing.

What I would ask is this, though, is that that we be allowed to brief something with the issues here today and maybe not have arguments, but there are some new things that came up that gave us insight into what the Court is thinking, right, even raising *Tip Top*.

And I know that we had discussed potentially briefing and so we had a more comprehensive record for the purposes of your recommendation to the judge. So, I recommend that we have some time out to brief some of these things and put it on paper so we have a complete record.

THE COURT: Plaintiffs have asked to brief, you know, submit briefs beforehand. Yes, Lockheed Martin had said no, let's just defer it and we'll see after argument. I didn't act on that and by not acting on that, you know, you got my answer.

I guess I don't see anything wrong with a little more briefings and it's been briefed about 17 times already; exaggerating, that's not a precise number. But I do want Counsel to address if you can the corporate pedigree, right, if that matters. Because I'm seeing inconsistencies in the parties pleadings, right?

Attorney Yelton is saying basically that we don't care about the corporate history, why does it matter. The plaintiffs never worked for Martin Marietta Corporation and yet in the Fourth Amended Complaint it's part of the allegations that the plaintiff's employer is -- well, it became Martin Marietta Corporation who became Lockheed Martin Corporation, right? So, some of the consequences of all of that seems to be like every time you try to get a hold on it, it just wiggles out of our grasp and morphs into something completely different and that's as to both sides.

MR. JOHNSON: And the law -- you know, there's also *Mohansingh* and the law has changed. You know, there have been some developments rather. When I say the law has changed, I mean there have been developments.

STAFF MASTER GASPER: *Mohansingh* --

MR. JOHNSON: I think -- just wrap it all up in one bow. I mean, for example, in our paragraph 11 of our November 2019 submission we describe in detail how Lockheed Martin Corporation acceded to the protections of Workers' Compensation.

THE COURT: Why don't we do this. Why don't Counsel submit -- I wish this could be done jointly, you know, where there was a true estimate of undisputed facts that both sides like clearly agree on, but that just never seems to happen. There always seems to be a spin on each other's version of what's undisputed.

If there is any way that you can meet and confer and submit on this issue of the

Workers' Compensation affirmative defense of Lockheed Martin, a true statement of undisputed facts, right, like all sides agree that Lockheed Martin Corporation was formed on X date, all sides agree that Martin Marietta Corporation dissolved on Y date; true facts that no one disagrees on, that would be helpful.

It would also be helpful if everyone agreed whether Lockheed Martin Corporation was merged, formed into a merger, or whether it was as the document that I referenced earlier said it was an independent entity that was formed and acquired some of Lockheed Corporation and some of Martin Marietta Corporation. You may want to argue differently if there is a legal distinction to that. I don't know. But if you can do that, that would be great.

And then if you could also argue the other issues that are being raised here. This issue cuts across the *Bauxite Halliday* cases and the *Alumina Dust Claims* cases and so this I guess would be an exception to whatever deadline is currently in place in the *Alumina Dust Claims.* I don't recall now if there is a deadline for dispositive motions. I'm sure it's not come yet, but you have leave to move beyond those deadlines if, you know, it will be implicating. If there is something in the Case Management Order in the *Alumina Dust Claims* that would conflict with what you're going to do, that's fine with me. I don't have an issue with that.

So, I guess I'm envisioning one document that the parties submit jointly where everybody agrees on pure, clean, simple facts. A complaint was filed on X date, if these are facts that you need to submit. Otherwise, I'll just go through the record and find those. But if you're trying to make is simpler for me, that's great.

And then your arguments, you know, your separate arguments. Do you think it's best -- Judge Willocks is a fan of simultaneous briefing. It's questions of law, I can see that because it's really just both sides chiming in on what the law should be, but here it sounds like this might have to be like a surresponse and a surreply because where we're talking about motions and oppositions and different positions you've both taken, Attorney Yelton and Attorney JOhnson, who should go first? Should it be simultaneous or sequential?

MR. YELTON: Your Honor, on the issue of coming together and seeing what facts we can agree to, we're on board. We'll do it. As to the order of receiving, whatever you want.

STAFF MASTER GASPER: With respect to this issue of affirmative defense.

MR. YELTON: Right.

STAFF MASTER GASPER: I don't need -- I don't think it's -- you know, you don't need the plaintiff went to see Dr. Betancourt on XYZ date.

MR. YELTON: Of course, of course. I understand what you're saying. We'll get with Lockheed and come up with some facts about the corporate history which we can, you know, not dispute. And then as far as briefing is concerned, in order, I defer to Attorney Johnson. We'll do it any way they want.

STAFF MASTER GASPER: Attorney Johnson.

MR. JOHNSON: We generally work well together in figuring out dates and navigating those types of issues, so I think we can come up with that. We would also, I mean, if this all wraps up, we would like, you know, for both plaintiffs and the Court to have up until October 14th to file the *Bird* briefs since all of this you can have filed simultaneously.

STAFF MASTER GASPER: I don't know. I mean, *Bird* hasn't been called. And if Judge Andrews already has a scheduling order in place, I don't think it would be appropriate for me to essentially amend that just for this issue. I mean, I don't have a problem with making the recommendation across the board to Judge Willocks and to Judge Andrews on this issue, the understanding being, you know, two different judges, and then going to act on it.

MR. JOHNSON: Yeah, that would -- allows for all motions to be filed by October 14th in that Case Management Order. Plaintiffs filed the *Bird* motion pretty quickly, very early, for summary judgment motion of course. Given that it's a trial preference case it was filed super early. And so --

STAFF MASTER GASPER: Well, their --

MR. JOHNSON: -- we would ask that for

the depositions and essentially at the motions deadline, which is October 14th.

MR. YELTON: That's a different issue. Why are we talking about having --

STAFF MASTER GASPER: Attorney Yelton, I mean, if it's the same legal issue I don't see the problem with it being addressed across the board in whatever cases it's raised in.

MR. JOHNSON: Precisely.

THE COURT: But the concern I have is that it was filed as a motion for judgment on the pleadings, but as I mentioned earlier, you know, Attorney Pate attached, at least he represented that, you know, an affidavit of the assistant director or assistant commissioner of the Department of Labor was attached so that's technically outside the four corners of the complaint. So, Judge Andrews might want to exercise his discretion and convert that to summary judgment or to reject it. I don't know. So, that's not really in the right posture for it to be acted on in time.

And of course, you know, plaintiffs can argue I think as Attorney Pate said before that it's not outside the pleadings, but I mean, I think *Reynolds v. Rohn* sets clear if it's anything outside the four corners of the complaint, the V.I. Supreme Court hasn't touched on Judge Molloy's decision that sort of said if it's inferred in the complaint you can reach it, right. I don't know.

I hear you and I think it would be cleaner for everyone if it was one recommendation across the board on this issue, but I don't know that it -- I don't know that it can be done in time. When is *Burt* scheduled for trial?

MR. YELTON: January.

MR. JOHNSON: January.

THE COURT: But the jury is being selected in December.

MR. JOHNSON: Yes.

MR. YELTON: Yes.

THE COURT: And it is the middle of September. And you want until the middle of October, Attorney Johnson, to file your opposition.

MR. JOHNSON: Just for 30 days. And, you know, *Burt* is also being brought into this case. It just makes sense to just deal with them all at the same time.

STAFF MASTER GASPER: I hear you, but if you take until the middle of October to get your opposition to the *Burt* motion in, that means the reply could come quickly, but it might not. It might not be in until the beginning of November.

MR. PATE: Exactly.

STAFF MASTER GASPER: I mean, look, I can talk with Judge Andrews about it. The parties can file, you know, whatever they want in that -- in *Burt* too, to alert the judge to it. The issue has not been filed in the master case. It's only in the individual case, correct?

MR. PATE: Correct. And we had already agreed on a stipulation for September 30th, so this is coming as a little bit of a surprise.

THE COURT: September 30th for what?

MR. PATE: For the responses to the judgment as a matter of law and to the summary judgment on the facts in the *Burt* case. We've already extended ten additional days to the defendants.

THE COURT: And was that stipulation

filed with the court and approved?

MR. PATE: Attorney Rames emailed this morning he'd be filing -- or yesterday that he'd be filing a stipulation to such effect. So it's a little surprising to get a statement on this.

MR. RAMES: It might be a little surprising, Russell, but the only reason why I conceded to that last night is because for weeks you guys have refused to respond on the issue, you know. You know, so you know, a lot of things came up today. We wanted the additional 14 days and I presume you're still saying no. I mean, I guess that's where we come down, right?

MR. PATE: We gave you the ten days to September --

MR. RAMES: Yeah, I understand that, but I asked for --

THE COURT: Counsel, Counsel, Attorney Rames, not here. I know it seems more like a general meeting over Teams, but this is a court proceeding. You can't speak to each other in court. The judges would --

MR. RAMES: Understood.

THE COURT: -- smack that down very quickly.

I think the better approach, Counsel, and Attorney Johnson, I don't have a problem until October 14th for everyone to meet and confer for the *Bauxite* and *Alumina Dust* cases and submit the documents we talked about. October 14th -- well, you didn't answer the question I was asking. Would that be simultaneous briefing for these two cases or would that be sequential?

MR. YELTON: Your Honor, I did answer that. I said however Semaj wanted to do it, but then he changed the discussion into *Burt*.

MR. JOHNSON: The only reason I changed to *Burt* is *Burt* was introduced in this discussion or else I wouldn't have raised *Burt.* With *Burt* being brought in it just seemed like it should all be streamlined. I mean, we will meet and confer when it's a good time to brief for *Alumina Dust* and *Halliday*.

And, you know, if -- as Attorney Rames mentioned, our position is that it does make sense to brief them all at the same time -- around the same time.

THE COURT: I mean, look, I agree. I think it does make sense, you know. Clearly whatever decision Judge Willocks would make on it would be, you know, Judge Andrews would take it into consideration and vice versa.

I guess the down side to doing it simultaneously is that they won't get the benefit of each other because, you know, in theory they would be working on it together. And then if there was objections to the recommendation or motion to adopt or to modify -- the parties read Judge Willocks' or are familiar with Judge Willocks' decision in *Stanley v. Virgin Islands Bureau of Correction*? It was his *2022 VI Super 77*. He basically said he agrees that 53(f) of Virgin Islands Rules of Civil Procedure should govern actions on a staff master's recommendation. So, I mean, take that into consideration.

Maybe it's best to leave *Burt* out at this point because *Burt*'s on a faster track. At least at this juncture let's leave it out. *Burt* is on a faster track. There's already a scheduling order in place. It wasn't called for today. Neither was *Alumina Dust Claims* of course, but the last time this case was on, both parties -- both cases were called and the parties had submitted their notice of availability jointly under the caption of both master cases.

And of course *Alumina Dust Claims* is where this issue first arose when it was first filed in the *LaBast* case when *LaBast* was being functioned essentially as the master case. So, I think for now we can leave it out, leave *Burt* out because it's just on a different track. I don't have an objection to including it.

If the parties think it's appropriate to file motions to Judge Andrews and say essentially the staff master is going to make a recommendation on this same issue and can we hurry up the briefing in *Burt* or shorten the deadlines or what have you, but I'll leave you all to meet and confer and figure that out.

MR. RAMES: Thank you.

THE COURT: So, as to the deadline here, Attorney Johnson, do you want simultaneous or sequential briefing? Meaning, do you want to go first and plaintiffs respond, or both get their documents in by October 14th?

MR. JOHNSON: Can I be allowed to just confer with my team on that, Staff Master, and then I can meet and confer with the others.

THE COURT: Yes, you want to pause for five minutes? I mean, I could pause and you talk to each other. It's just that you can't talk to each other while we're on the record. Do you get me?

MR. JOHNSON: That's fine.

THE COURT: Okay. So we will take a five-minute recess. You guys can stay on and talk to each other.

(Discussions off the record.)

(Recess at 1:25 p.m.)

(Hearing resumed at 1:32 p.m., as follows:)

THE COURT: We could go back on the record. So, Counsel, have you come up with a plan of action going forward? I have no objection to the October 14th deadline. I like the idea of October 14th everything being in, meaning, if we're going to go sequential, then it's fully briefed by October 14th rather than the first set of briefing come in. Because then it could be the end of October when the second round comes in, but I'm flexible. It's been waiting since at least what, 2009, I think since this issue was first raised in *LaBast*.

MR. YELTON: Yes, Your Honor. Plaintiffs totally defer to Lockheed's side.

THE COURT: Attorney Johnson, you're the one who seems to be -- it's up to you I guess. Otherwise, I'll just make --

MR. JOHNSON: October 14th is fine for the *Halliday* and the *Alumina Dust* briefing.

THE COURT: For everything to be fully briefed for October 14th. You guys can set your own dates for however. Lockheed Martin, you want to go first? Is that fine, or do you want to --

MR. JOHNSON: Unless anyone on the team has an objection here, anyone else on the Lockheed Martin team want to weigh?

MR. WU: I was going to say why don't we do simultaneous then.

MR. RAMES: Yes, that's preferable.

THE COURT: So, then everyone will get whatever documents that you're going to submit to the Court, whether if you're going to do -- if there's any benefit as I was saying earlier to doing a statement of uncontested facts.

And it's not required. I'm just saying if you think it will be helpful to give that to us, that's fine. And then October 14th will be the date to submit your briefing on the issues that were raised today and whatever other statement of uncontested fact if you think it's necessary.

I don't know if there's a need for additional documents to be submitted since the motion's are already fully briefed so I was thinking -- go ahead, Attorney Wu.

MR. WU: Sorry. Thank you, Staff Master. I apologize. I didn't anticipate talking this much, but I think Mr. Yelton referenced this earlier, but I think that part of that would also be another stipulation on CA Lewisport and their kind of corporate history to show that they are -- or that they assumed the portion of Martin Marietta Aluminum, Inc.'s employer identification number. Because that entity -- it's shorthand for Commonwealth Aluminum. Does that family of company still exist and that's why CA Lewisport remains listed under that tax ID.

I think Rick and I -- or Attorney

Yelton and I can reach a stipulation on, you know, that history to show that indeed it does -- it stands for Martin Marietta Aluminum, at least for that time period. Does that make sense, Attorney Yelton?

MR. YELTON: Yes.

THE COURT: The only issue you're going to have there is you cannot stipulate to essentially amend a decision. That's a Judge Molloy -- this is coming back to me now. Judge Molloy had already ruled in *Ayala* that he denied summary judgment, right? Because he said -- and I think he cited references or he cited in there, something is coming to mind that he cited case law that says you're not supposed to be able to like sell your tax identification number; or it really can't -- I'm just saying take that into consideration because, you know, your stipulation can't amend a ruling of the Court, you know. Nobody move for reconsideration.

MR. WU: I understand, but I would say I think we can stipulate as to what our understanding of the corporate history of that tax ID number is and then, you know, we can go from there in terms of maybe the Court can amend its decision and, you know. But I'll tell you what, like I'm pretty sure I have what would happen more clear now. And like I said I didn't anticipate this much today so I apologize.

THE COURT: That's fine. So then October 14th, that is what, a Friday?

MR. YELTON: It is.

THE COURT: Friday, October 14th for the parties to submit their briefing on the issues raised today, namely, the Workers' Compensation Statute, how it applies; when your former employee sues a former employer or someone who is not their former employer; whether the parties should or should not have gone to Workers' Compensation and the effect of that. And any document -- and any summary timeline events of Lockheed Martin's corporate history that everyone agrees to that I guess would be taken as a stipulation, right, of the parties. Okay. If there is nothing else, then we stand adjourned. Thank you.

MR. RAMES: Staff Master Gasper.

THE COURT: Yes, Attorney Rames.

MR. RAMES: Yes, the second section of your order dated August 12, 2022, that brought about this particular hearing talks about, if you recall, the motion to strike plaintiffs' notice of declaration filed May 17, 2022; and whether or not Lockheed Martin wanted to construe that motion to strike as a notice pursuant to Standing Order No. 4, section 7, that document was of course filed with the court on May 17th of 2022.

And when that document was filed with the court it was filed as a -- excuse me. It was filed with the court on August 19th, 2022. And when it was filed with the court on August 19th, 2022, it made reference to two other filings made by plaintiffs' counsel; the notice of declaration of counsel, we referenced the Workers' Compensation Statute. That's the April 9th document; the notice to the court of compliance with the oral recommendations regarding sanctions, which is an August 14th document; and plaintiffs, *Rodney Felix*, Miguel *Velez*, *Jorge Ramos* notice to the court re rule 6-1d to supplement, which was filed on August the 14th.

The question is, you know, will the Staff Master take up those matters now that they're pending and now that the motion to strike has been refiled as a notice?

THE COURT: Yes. If it's a notice -- well, let me back up. I meant to bring this up, but I forgot. Thank you for reminding me, Attorney Rames.

I thought about it and I do not believe the Staff Master has the authority to strike documents because that really goes to, you know, the heart of the case, the documents that are on record creating the record, I don't know that that's really something within the authority of the Staff Master. So, it will be a recommendation to the judge to grant or deny the motion to strike.

If it's a notice violation and it's Lockheed Martin's own motion, they can withdraw it. I don't see there's a problem with Lockheed Martin saying treat our motion as a notice; motion to withdraw a document being treated as a notice of withdrawal. So, this would just be the reverse, right? You filed a motion; you're saying, could you treat that now as a notice instead of a motion; meaning, there is no need to act on it, Court, if you don't have to grant my motion.

What would happen instead is that the Court -- I would be recommending to Judge Willocks either that he not consider the affidavit -- it wasn't an affidavit. It was the --

MR. RAMES: It was a notice and declaration which included the affidavit of the assistant commissioner of the Department of Labor.

THE COURT: So, I would either be recommending to Judge Willocks that he consider that, or that he excuse it and -- that he not consider it, or that he excuse it and not consider it. So that would be part of the final decision. I think essentially what Attorney Rames -- excuse me, not Attorney Rames, but Attorney Pate brought up in there is kind of what we're talking about now. So, there may be no need to consider it, but it will be part of the final recommendation because it's not something that I believe that I can act on.

MR. RAMES: I do understand. Okay. So, the only reason I raise that today is because it was raised in your order and of course we filed the document in compliance with your order and however you want to treat that in the context of recommendation is appropriate. We deem that satisfactory from Lockheed Martin's perspective.

THE COURT: The other point now that you brought up the order, Attorney Rames, is thank you, Attorney Pate, I have not forgotten about the sanction. You went ahead and acted on it or plaintiffs did, not necessarily Attorney Pate, before the recommendation went out. I cannot guarantee you that Judge Willocks -- he might cut you a pass and then you paid the money for nothing. He may disagree with the amount and may order you to pay more.

Just so you know, I will point out to the judge that you've already essentially mooted it, so to speak, by paying the amount that I was going to recommend, but just so you are aware I have not forgotten that and I will get that out as soon as possible. It was tied up with the motion to strike issue in considering that, right, because it was all part of the same package. And now that I've come to the position that I don't think I can act on the motion to strike, obviously I can now if it's a notice, but I don't believe I would be able to grant the motion to strike, but now that the motion is a notice it will be part of the overall recommendation.

MR. PATE: Thank you, Staff Master.

MR. RAMES: Understood.

MR. PATE: My issue of paying that, getting that is just to go ahead and take away that issue so we can focus on substantive issues and not waste one more brain cell on something that's not moving this case to conclusion. That was my call.

THE COURT: Yes. Hopefully, you won't have to be before Judge Willocks explaining why you jumped the gun. He could because I do recall emphasizing not doing anything yet and so you did the exact opposite of what I said.

MR. PATE: My charity. And I support them already. Hank Smock is on the board so either way it's fine.

MR. JOHNSON: Staff Master Gasper, I have a proceeding before Judge Meade at 2:30. And given the court's closure, I may have to excuse myself because I've got to drive to court now.

THE COURT: We're finished now and I did want to point out the court is closing at 3:00 today. So, unless there is anything else, everyone is excused and be safe and have a good weekend.

MR. RAMES: Thank you. Much appreciated. Have a good day.

MR. YELTON: Everybody stay safe down there.

(This hearing concluded at 1:43 p.m.)

*****

CERTIFICATE OF REPORTER

I, SANDRA HALL, Registered Merit Reporter, Official Court Reporter II, of the Superior Court of the Virgin Islands, Division of St. Croix, do hereby certify that I reported by machine shorthand, in my official capacity, the Status Conference in the case of *In re Bauxite Containing Silica Halliday Litigation Series, Master Case No. SX-2015-CV-97*, in said Court, on the 16th day of September 2022.

I FURTHER CERTIFY that the foregoing 128 pages are a true and accurate computer-aided transcription of my stenotype notes of said proceedings.

I HAVE HEREUNTO subscribed my name, this 21st day of October 2022.

/s/ Sandra Hall 10/21/2022

SANDRA HALL, RMR
Official Court Reporter II

EXHIBIT 130

Excerpts of Transcript of Deposition of Dr. John, August 31, 2022

IN THE SUPERIOR COURT OF THE VIRGIN ISLANDS
DIVISION OF ST. CROIX

------------------------------*

MILTON BURT,
Plaintiff, SX-2021-CV-548
vs.
LOCKHEED MARTIN CORPORATION,
GLENCORE LTD., and
COSMOGONY II, INC.,
Defendants.

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STENOGRAPHIC AND VIDEO-RECORDED
REMOTE VIRTUAL DEPOSITION OF
CHRISTOPHER L. JOHN, M.D.
Wednesday, September 14, 2022
10:41 a.m.

Reported stenographically by:
Josephine H. Fassett, RPR, CCR
Job No. 5427597

Wednesday, September 14, 2022

10:41 a.m.

TRANSCRIPT of the stenographic and video-recorded remote virtual deposition of CHRISTOPHER L. JOHN, M.D., on Wednesday, September 14, 2022, commencing at approximately 10:41 a.m., before Josephine H. Fassett, a Registered Professional Reporter, Certified Court Reporter, and Notary Public.

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Exhibit 1	Curriculum Vitae of Christopher Leigh John, M.D.	9
Exhibit 2	American Thoracic Society Statement titled Diagnosis and Initial Management of Nonmalignant Diseases Related to Asbestos	9
Exhibit 3	Report of Christopher L. John, M.D., dated July 20, 2022, Bates BURT_000035 to BURT_000038	43
Exhibit 4	Document titled Legal Cases Serving as an Expert Witness or Deposition, Bates BURT_000043	44

would then read whatever X-rays were on it.

Q. Now, do you know -- now for a time, I guess -- let me strike that.

Typically, would you be able to access X-rays from the imaging center through a file share or website?

A. Well, for a couple of years I was able to do that, and as Russell said, they had some issue with the software update and I could no longer access the X-rays on their site. And so the only way that they could get me X-rays was then by disk or by thumb drive.

Q. Now, when you did have access to the imaging center website, were you able to read X-rays on the same day that they were taken?

A. No. Normally -- well, I can't -- what I can tell you is, I would read the X-rays. I would look in the box and see if there were any X-rays. Because, of course, they weren't every day. And I would then read the ones that had accumulated prior to that date. And if there were some on that date, I would read them then. And then I'd probably go four or five days -- and sometimes it was longer -- before there'd be new X-rays there for me to read. So it wasn't a regular as clockwork the deposition of X-rays and they would come and go. You know, sometimes there' be two or three, sometimes there might be 15 or 20, and sometimes none for a week or two.

Q. Now, on what's Bates stamped 3855, it says, at the top of the B read form, February 28, 2019, as the date of the radiograph. Am I reading that right?

A. Yes.

Q. Okay. So does that indicate that that was the date that X-ray was taken at the imaging center?

A. Yes. So this one was one that was read on the day that it was done.

Q. Perfect. Because then on the bottom the date of the reading is also February 28, 2019?

A. Yes.

Q. Okay.

A. And I would say, you know, sometimes there would be one from that particular day and there might be half a dozen others over the preceding seven to ten days. And, as I said, I didn't check it every day because I knew that wouldn't be worth doing.

Q. And then the first page of that document Exhibit 8, Bates stamped BURT_000354, is your impression also of February 28, 2019, correct?

A. That's correct.

Q. So would you have dictated or typed this after filling out the B read form?

A. That's correct.

Q. If you had done it on a different date or a later date, would you have reflected that date at the top?

A. Yes.

Q. Okay. Now, in preparing this impression, this February 28, 2019, impression and reading the February 28, 2019, report, did Mr. Burt's lawyers provide you with any facts or data that you considered in forming this impression?

A. No. All I used to get was an X-ray. And now I would have known that they weren't sending me an X-ray of their best friend, obviously I knew that they were sending X-rays of patients who were part of the lawsuit. But I would have no idea what this person's occupation was, what they did, but common sense would tell me that, you know, it was likely one of their clients that I was to read, but that would be the only information I would have.

Q. Do you know or do you recall if, you know, Mr. Burt's lawyers provided you with any assumptions prior to reading this X-ray that you relied on in forming your opinions?

A. No, never had any information. And, in fact, it's typical when you do B reads, the less you know about the patient, the better in some cases because you don't get preconceived ideas.

Q. And, so you didn't know anything about what Mr. Burt, you know, may have been exposed to or what he did or what type of work he was engaged in?

A. That's correct.

Q. All right. We'll come back to that -- oh, but one follow-up question.

If you had been provided any facts or data from plaintiff's counsel that they wanted you to consider in forming your opinion, would you have -- would you have a document or notes of that conversation?

particular time I had a backlog or whether I read it as it came in. And generally speaking, I would say it would be a few days before -- after -- sorry -- a few days after receiving the X-rays that I would get around to reading them. Because typically there's always some X-rays that were in the queue and, you know, we don't like to bump people's position just because we've got a new set of X-rays. Unless they give us a date and say, you know, we need it by X date and then we obviously try to make sure we send it to them by that date, but not in this case.

Q. Do you have any record of when this was physically mailed or emailed to Mr. Burt's lawyers?

A. I don't have any record of that because it's not something, you know, I would be involved in.

Q. Would your office have it?

A. I don't know if they would have a record of the date it was sent. It's possible.

Q. What are you looking at now?

A. Oh, my daughter is writing that I read a re-X-ray on the same date, but we already know

JOHN, M.D.

Your report of July 20, 2022 -- which we're happy to post if you need it, but you'll tell us if you need to look at it -- did that report rely on this PFT?

A. Not on this particular portion of the PFT, but the entire thing, yes.

Q. Well, I didn't mean to suggest just one isolated page. The entire PFT report?

A. Yes.

Q. Now, I think we will have to post your July 20, 2022, report because I don't expect you to have everything in your head, so I'm happy to post it and work from that.

MR. SEMMELMAN: So let's have the PFT report on standby, but let's post the 2022 report, which I believe is Exhibit 3.

Okay. And let's go to page 3.

And maybe make it a little bigger for all of us, please.

Okay. Scroll down, please. A little more. A little more.

BY MR. SEMMELMAN:

Q. Okay. Do you see toward the bottom of what's on the screen, which is page 3 of your 2022 report, that -- I'm reading the second sentence of the last paragraph:

"Based on that exposure, his abnormal chest X-ray showing lung scarring/fibrosis, abnormal pulmonary function test showing decreased lung function and appropriate latency period," and it continues, but that's the part I want to focus on. Do you see that?

A. Uh-hum. Yes.

Q. How significant to your opinion is what you describe as the abnormal pulmonary function test showing decreased lung function?

A. Sorry, could you repeat that?

Q. Yes. Yes. You include that statement, among others, in what I just read; is that correct?

A. Yes.

MR. YELTON: Object to form.

Q. And I'm just trying to understand how much emphasis or weight you give in reaching your conclusion on the abnormal pulmonary function test showing decreased lung function.

A. Well, it's not necessary to have an abnormal PFT to make the diagnosis. In early stages of the disease process, the pulmonary function can frequently be completely normal. If there are changes on it -- and in this case his diffusion capacity is reduced -- then that gives you added information that there is a pulmonary parenchymal problem that is affecting his lung function. But you could make a diagnosis of a parenchymal lung disease and still have a normal pulmonary function. Typically that would be in the earlier phases of the diseases. And, because as the fibrotic process progresses, of course you're likely to have more abnormal findings on the pulmonary function. So it isn't a hundred percent required to make the diagnosis, but if there are abnormalities like the reduced DLCO, that certainly helps you feel more comfortable with your diagnosis and because otherwise that shouldn't happen.

Q. Does a change in pulmonary function testing results over a period of years tell you anything about the disease or diseases that the patient is suffering from?

A. Yes. In the early stages of interstitial lung disease -- and we're including

CERTIFICATE

I, JOSEPHINE H. FASSETT, a Registered Professional Reporter, Certified Court Reporter, and Notary Public, do hereby certify that the witness, whose stenographic remote virtual deposition is hereinbefore set forth, was first duly sworn by me on the date indicated, and that the foregoing stenographic remote virtual deposition is a true and accurate record of the testimony given by such witness.

I FURTHER CERTIFY that I am not employed by nor related to any of the parties to this action by blood or marriage, and that I am in no way interested in the outcome of this matter.

IN WITNESS WHEREOF, I have subscribed my hand this 26th day of September 2022.

JOSEPHINE H. FASSETT, RPR, CCR
NCRA License No. 32148
CCR License No. 30XI00098400
New York Notary Public
New Jersey Notary Public

CERTIFICATION OF WITNESS

I, CHRISTOPHER L. JOHN, M.D., hereby certify that I have read the transcript of my testimony taken under oath in my stenographic remote virtual deposition of September 14, 2022, and that the transcript is a true, complete and accurate record of my testimony, and that the answers on the record as given by me are true and correct, subject to the changes and/or corrections, if any, shown on the attached page.

____

CHRISTOPHER L. JOHN, M.D.

Subscribed and sworn to before me this_______ day of________________, 2022.

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Notary Public State of

ERRATA SHEET

CASE: BURT vs. LOCKHEED MARTIN CORP., et al.

DATE: SEPTEMBER 14, 2022

NAME: CHRISTOPHER L. JOHN, M.D.

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CHRISTOPHER L. JOHN, M.D.

Subscribed and sworn to before me this_______ day

of_______________, 2022.

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Notary Public My Commission Expires

EXHIBIT 131

Russell Pate Declaration in *Milton Burt v. Lockheed Martin Corp., et al.,* SX-21-CV-548, Nov. 1, 2022

IN THE SUPERIOR COURT OF THE VIRGIN ISLANDS
DIVISION OF ST. CROIX

Milton A. Burt,

Plaintiff

v.

Lockheed Martin Corp., Glencore Ltd., and Cosmogony II, Inc.,

Defendants

SX-2021-CV-00548

Jury Trial Demanded

Complex Litigation Division

DECLARATION OF J. RUSSELL B. PATE IN SUPPORT OF PLAINTIFF'S OPPOSITION TO LOCKHEED MARTIN AND GLENCORE'S JOINT MOTION FOR SUMMARY JUDGMENT BASED ON STATUTE OF LIMITATIONS

I, J. Russell B. Pate, declare the following:

1. I am counsel of record for the Plaintiff in the above-captioned case.
2. I am an attorney on St. Croix.
3. I have an office on St. Croix with a staff. My staff sends letters to individuals who reach out to me. The letter invites the individuals to undergo an x-ray.
4. On February 7, 2019, my staff sent Mr. Milton Burt a letter, at my direction, inviting him to undergo an x-ray at the Imaging Center in Sunny Isle. At the time when my staff sent the February 8, 2019 letter, Mr. Burt had not signed a retainer with my firm and was not my client.
5. On May 20, 2019, my staff sent Mr. Burt a letter, at my direction, instructing him to undergo a pulmonary function test ("PFT") at the Heart Center at Sunny Isle.
6. My firm's PFT intake process includes: 1) the client signing a representation agreement retaining my firm and Burns Charest as counsel; 2) a meeting with me or one of my

representatives where the client describes his work history in great detail; and 3) the client signs a request for his Social Security Statement of Earnings.

7. When my representatives, or I, take the work history during the PFT intake, we ask detailed questions about the client's full employment history, job titles, and job responsibilities.
8. Mr. Burt came to the Heart Center for his PFT on July 21, 2019. During his PFT intake, a representative of my firm interviewed Mr. Burt and asked detailed questions about his work history.
9. On July 21, 2019, Mr. Burt signed his retention agreement as part of the PFT intake process.
10. Although I do not recall when I received them, I know that Mr. Burt's Social Security records were sent to my office because that is where my office requests them to be sent and that is where I first saw Mr. Burt's Social Security records.
11. The Social Security records of my clients are important to me and my colleagues because they allow us to confirm our clients' potential exposure at the Alumina Refinery, the Hess Refinery, or other potential sources of exposure.

I declare under penalty of perjury that the foregoing is true and correct.

Executed November 1, 2022.

/s/ J. Russell B. Pate

J. Russell B. Pate