

# Developing a National Emissions Inventory for Mexico

---

## Phase II: Northern States Emissions Inventory

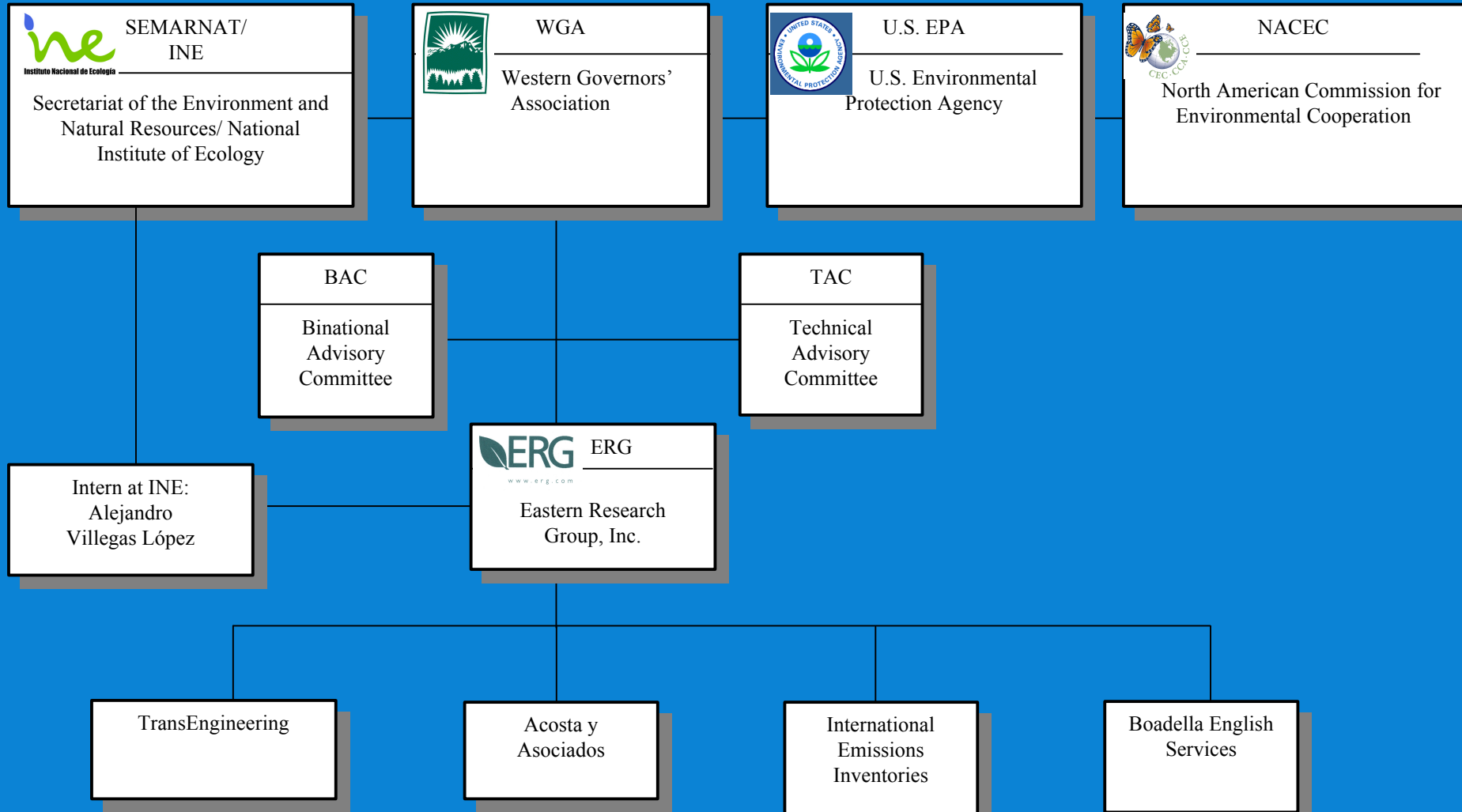
Paula Fields and Marty Wolf  
**ERG, Inc.**

Gildardo Acosta Ruíz  
**Acosta y Asociados**

Rich Halvey  
**Western Governors' Association**

Bill Kuykendal  
**U.S. Environmental Protection Agency**

# Organization of the Mexico Emissions Inventory Projects



# Capacity Building and Special Studies 1994-2003

---

- Mexico Emissions Inventory Manuals
- Mexicali and Tijuana Inventories
- 1998 ZMVM emissions inventory evaluation
- Unregistered vehicle study
- MOBILE5- and MOBILE6-Mexico models
- NONROAD-Mexico model

# Mexico National Emissions Inventory (NEI)

---

- Objectives:
  - Promote capacity building
  - Support air quality analyses along the Mexico/U.S. border by INE
  - Develop a first-ever, comprehensive emissions inventory for Mexico
  - Support regional haze compliance by WRAP, CenRAP
  - Support tri-national inventory efforts by NACEC

# Mexico NEI - Characteristics

---

- **Base Year:** 1999
- **Geographic Area:**
  - Phases I, II: 6 Border States
  - Phase III: National
- **Pollutants:**
  - NO<sub>x</sub>, SO<sub>x</sub>, VOC, CO, PM<sub>10</sub>, PM<sub>2.5</sub>, NH<sub>3</sub>
- **Spatial Resolution:**
  - State
  - Municipality
- **Temporal Resolution:**
  - Annual for 1999
  - Temporal profiles for finer resolution
- **Chemical Speciation:**
  - Identify available data



# Mexico NEI - Schedule

Phases and Tasks			Status
Phase I	1	TAC and Planning	Complete
	2	Inventory Preparation Plan (IPP)	Appendix to Task 5 report
	3	Interim Report	Complete
Phase II	4	National Fuel and Solvents Balances	Appendix to Task 5 report
	5	1999 Northern States Emissions Inventory	Scheduled: 6/30/03
Phase III	6	Projections Methodology	Scheduled: 6/30/04
	7	1999 National Emissions Inventory	

# Mexico NEI Phase II Overview

---

- Status of Point Source Inventory
- Status of Area Source Inventory
- Deliverables and Inventory Review Cycle



# Point Source Data Collection

---

- Point sources = federal and state jurisdiction
- Approach:
  - Collect existing data from:
    - DATGEN database
    - Cédula de Operación Anual (COA) reports
  - Quality assure
  - Estimate emissions for any significant missing facilities
- Goal: Compile a comprehensive database of all point source emissions

# DATGEN Emissions Data

---

- Federal facilities operating in areas with air quality improvement plans:
  - Tijuana, Mexicali, Cd. Juárez, La Laguna, Monterrey, Mexico City, Toluca, Guadalajara
- Combustion emissions, only
- Years = Various (1995-2001)
- Approximately 1,000 facilities in border areas

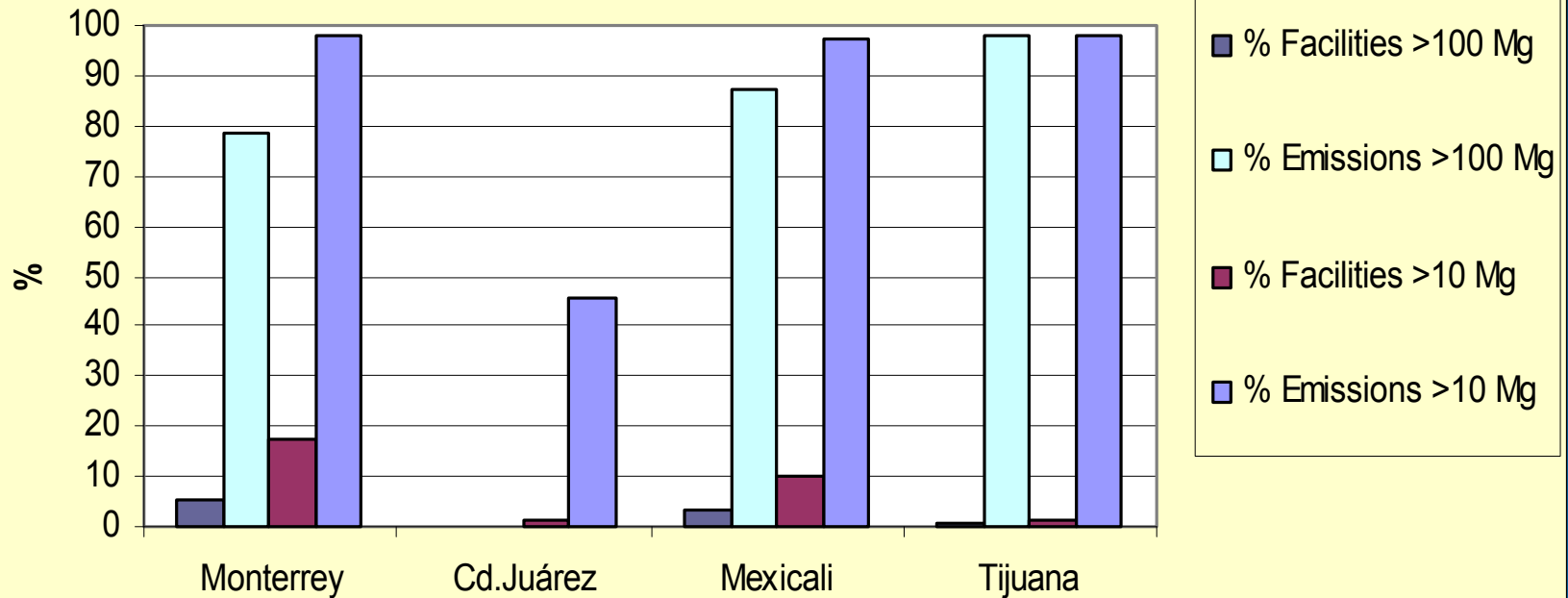
# DATGEN Quality Assurance

---

- Check for and correct:
  - Out-of-range records
  - Duplicate records
  - Incomplete/missing emission factors, production rates, control efficiency, facility location
- Significant sources to receive detailed QA:
  - Most emissions are emitted by 10% of the facilities
  - If >10 Mg/year then verify, replace, recalculate emissions for most significant emitters

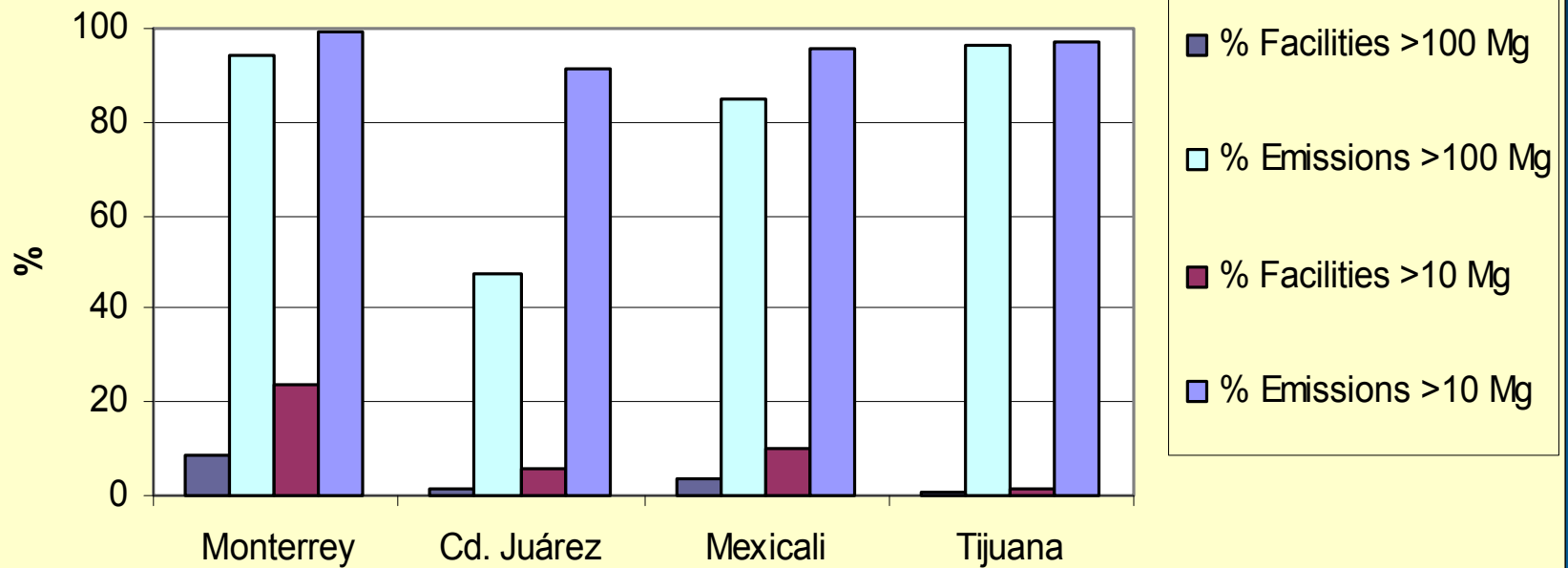
# DATGEN Data Summary

## PM Emissions



# DATGEN – cont.

## NO<sub>x</sub> Emissions



# COA Emissions Data

---

- Federal and state facilities throughout the country with operating permits
- Combustion, process, some fugitive emissions
- Detailed operation and equipment information
- Years = 1999, 2000
- Approximately 600 federal facilities collected to date
- Currently compiling data from state environmental agencies and performing data entry of hard copy forms

# COA Quality Assurance

---

- Check for and correct duplicate records
- Findings to date include:
  - Solvent usage but no VOC emissions
  - Incorrect emission factors
  - Unreported emissions (e.g., combustion sources with no NO<sub>x</sub> emissions)
- Significant sources (>10 Mg/year) to receive detailed QA

# Area Source Data Collection

---

- Area sources = small industries, services, fugitives
- Approach :
  - Collect all available data based on area source matrix
  - Fuels and solvents balances
- Goal: Estimate emissions for each source category using the best methodology that the data support



# Area Source Data Sources

---

- National Institute of Statistics, Geography, and Information (INEGI)
- Mexican Institute of Transportation (IMT)
- National Chamber of the Dry Cleaning Industry (CANALAVA)
- National Chamber of the Perfume and Cosmetics Industry (CANIPEC)
- Secretariat of Agriculture, Livestock, Rural Development, Fisheries, and Food (SAGARPA)
- Secretariat of Energy (SENER)
- Mexican National Oil Company (PEMEX)
- National Association of Paint and Ink Manufacturers (ANAFAPYT)

# National Fuel Balance

---

- Commercially available fuels:
  - Gasoline
  - Fuel oil
  - Diesel
  - LPG
  - Natural gas
  - Other
- Fuel consumption and usage:
  - Production
  - Imports, exports
- National and regional data obtained from SENER and PEMEX
- Municipality-level data being developed

# 1999 Fuel sales in 1,000,000 m<sup>3</sup>



# 1999 Mexico NEI Deliverables

---

- Draft: 6 Border States
  - All source types (P, A, M, NRM, N)
  - Some missing categories due to missing data
- Draft Final: 32 States
  - All source types and categories
  - Fill gaps using alternative methods as necessary
- Mexico NEI Final Report:
  - Address comments on draft final
  - National Emissions Inventory Format (NIF)

# 1999 Mexico NEI Review Cycle

---

- June 30, 2003: Draft (6 States)
- July, 2003: 2-Day Workshop (Chihuahua)
- September 1, 2003: Comments due
- February 27, 2004: Draft Final (32 States)
- May 1, 2004: Comments due
- June 30, 2004: Final

# Conclusions

---

- Mexico NEI is the first comprehensive emissions inventory for Mexico (criteria pollutants)
- National, state, and municipality level
- Heavy reliance on existing point source emissions reporting requirements (COA)
- Extensive data collection efforts underway for area source categories

# Conclusions – cont.

---

- Capacity building continues:
  - New tools being developed (MOBILE6- and NONROAD-Mexico)
  - Transition of Mexico NEI from U.S. entities to INE and SEMARNAT
  - Working together to achieve tri-national goals for consistency and comparability of emissions inventories