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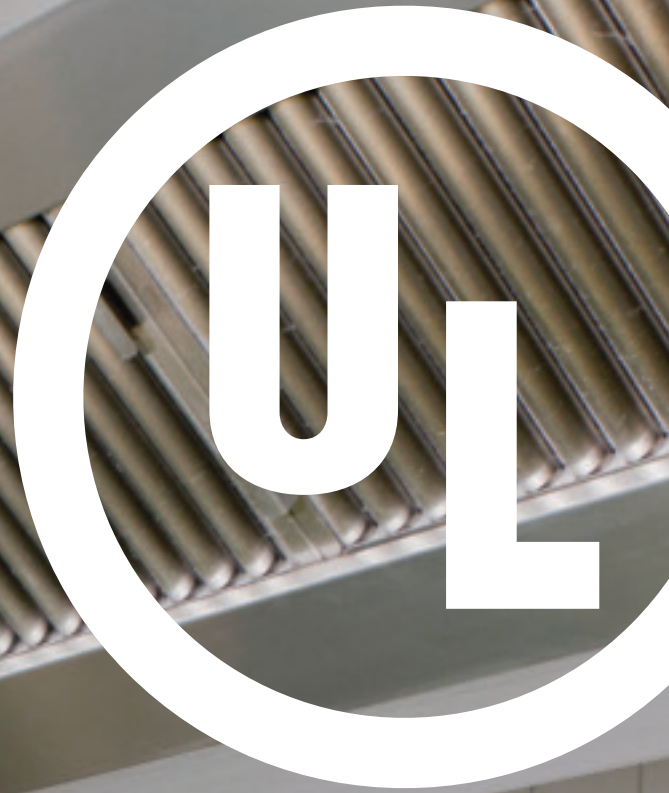
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Volume 75, No. 1 July/August 2012

Destination Tent City: Environmental Health Lessons From the Occupy Movement



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ABOUT THE COVER



This month's cover feature, "Destination Tent City: Environmental Health Lessons From the Occupy Movement," compares the temporary communities that

cropped up in protest last fall in several major U.S. cities to tent cities that arise after natural or human-made disasters. The author points out that public health responders can learn several important lessons from the Occupy Movement about disaster preparedness, such as how to handle food safety, sanitation, clean water, and vector control in tent communities. Examining the experiences from the Occupy Movement can lead to a path of better management of disaster relief in the future. See page 14.

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▶ PRESIDENT'S MESSAGE



Brian Collins,
MS, REHS, DAAS

“It’s All About Giving Back”

Empirically, NEHA presidents have used the first “President’s Message” column as an opportunity to introduce themselves. In doing so they tend to describe varied backgrounds and experience that qualified each for national office. With your indulgence, I would like to advance the agenda a bit by adding perspective as to why I felt compelled to become NEHA president.

I am a lifelong learner. In childhood and throughout my education, I learned from and was coached by my mother, who was a public health nurse, and a career military officer dad. Through the formative years, in addition to obligatory hygiene lessons and hierarchical reminders, they taught me to capitalize on capacities, learn from mistakes, and reciprocate on that which is good. Education, athletics, and job experiences fueled a competitive edge that nurtured risk taking and an expectation for high-level accomplishment. I also developed a desire (need) to do well.

In college I chose biology as a major with minors in chemistry and psychology. My choice was the result of influence from a friend of the family who was a physician. I was an asthmatic kid and he explained how asthma, and human health in general, are integrated with the environment in which we live and even more so, the ecology within. I was captivated by the cause and effect connection. Inadvertently, he created a means to an end, which ultimately led to a career choice.

I worked in a restaurant throughout college and was required to get a “food handler’s card.” Sitting in a crowded basement classroom below the municipal library in El Paso, Texas, I

I have benefited professionally, intellectually, and socially from NEHA.

listened to two guys called “sanitarians.” They spoke of how important it was as a restaurant worker to “wash your hands!” They addressed basic chemistry related to “sanitizing solutions” and how they attempted to change behaviors that contribute to foodborne illness. They also discussed X-rays used to screen for tuberculosis in food service workers. In those moments, my focus shifted from attaining a restaurant worker “food handler card” to a potential career marriage for a developing microbiology, chemistry, psychology, and now, environmental-public health interest. At a break, I engaged the “sanitarians” about the breadth of their work and serendipitously discovered a career path. I reveled in the thought of preventing or mitigating illness and injury while promoting well-being and balance with a healthy environment.

Fast forward through 25+ years. I have been novice, technician, specialist, supervisor, manager, and director—each as a sanitarian. Learning continues even now as knowledge, skill, and relevance demand change. I acquired a Master of Science degree in human

relations and business as the scope of my job changed, but so too had the profession. The field of practice was now known as environmental health and professionals within it as environmental health specialists. I learned from professional practice that a managed and favorable balance between environmental and human health “provides for better economies, increased productivity, fewer social issues, higher education attainment, reduced health care costs, and a better overall quality of life (Larry Gordon, personal communication, January 20, 2011).”

When I wanted greater exposure to the practice and profession, I looked to the Texas Environmental Health Association (TEHA). There I had the opportunity to receive coaching and mentoring from accomplished professionals in the state. Eventually, I sought election and ran the chairs so I could, to some degree, be in a position to repay or give something back in exchange for invaluable education from mentors and coaches.

In 2000, after 12 years of NEHA membership, an opportunity presented itself to pursue the NEHA Region 5 vice president position. My thinking was, “How can I expand my knowledge, skills, and attitude regarding environmental health with yet broader application?” I believe Maslow characterized this purpose as “metamotivation” (*Motivation and Personality*, 1954). Be mindful that metamotivation is not altruistic, but rather a focus on becoming the best you can be in service to self and others.

In 2005 “metamotivation” kicked in again and I ran for NEHA second vice president.

Defeated by former NEHA President Welford Roberts in 2006, the experience reminded me that not only is running for elected office a risk but that defeat must also be instructive. The refrain my parents instilled resonated, my competitive spirit awakened, and I remained committed to give back to the profession and association that provided me so much opportunity. I ran unopposed in 2008. (By the way, Dr. Roberts did a great job and I admire him greatly!)

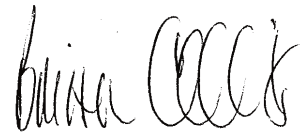
I have benefited professionally, intellectually, and socially from NEHA. I was credentialed, received numerous hours of current and relevant training, established a network of professionals (many of whom are not only

associates but friends!), published a number of times, and have traveled nationally and internationally. NEHA enabled this for me as a member. Years on the board, and especially the last few as a national officer, allowed me to assist in charting association policy and direction. In doing so, objectives I hoped to accomplish in the presidency were attended.

So now as I come in to office, it seems odd transitioning my focus from presidential aspirations to helping NEHA achieve and attain yet greater success—a different captain in the wheelhouse of a great vessel! In the next year, the association will grow in capacity and resources. NEHA will take measured risks. We will capitalize on capacities and we will learn

from mistakes! I will keep you posted and provide a summary report a year from now in my final “President’s Message.”

I am honored by opportunity, and by duty and promise, look forward to serving you, the profession, and NEHA. In a year, and after all that NEHA has done for me, when someone asks what legacy I attempted as NEHA president, the response will be, “It’s all about giving back!” 🐘



brianc@plano.gov

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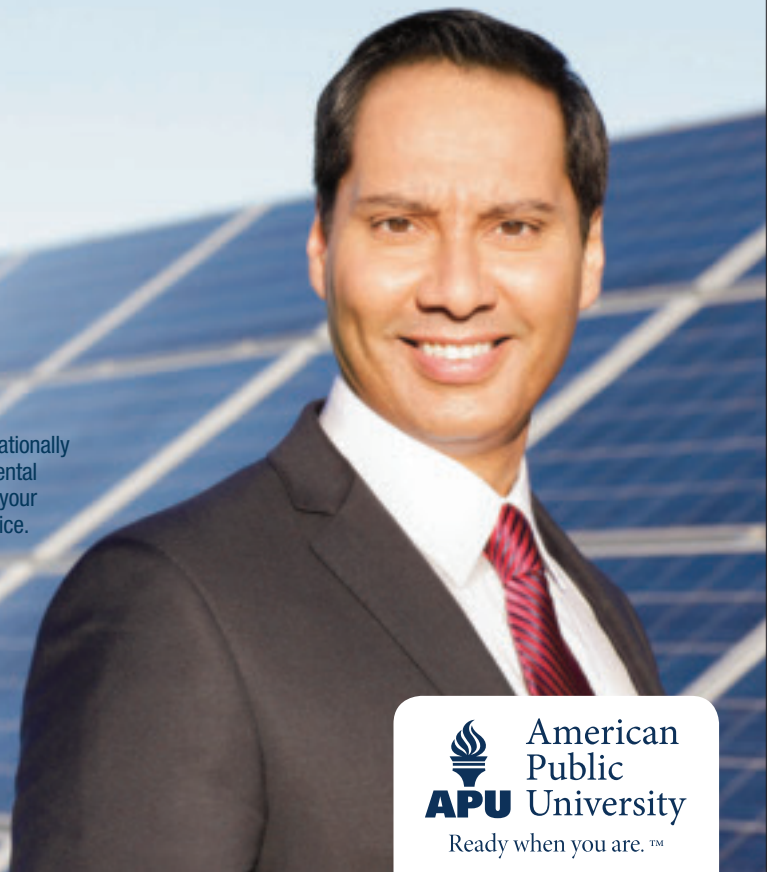
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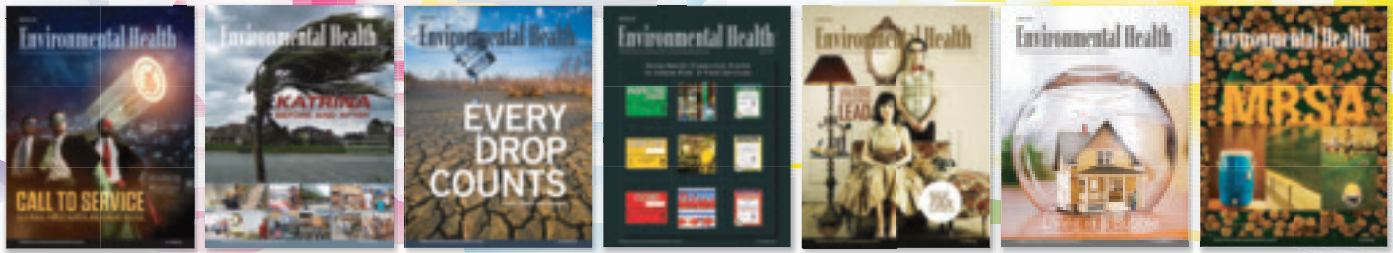
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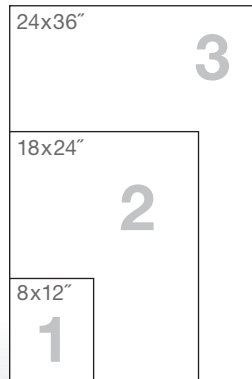


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Erratum

The corresponding author information for "A Chikungunya Outbreak in the Metropolis of Chennai, India, 2006," published in the *Journal of Environmental Health*, 74(6), 8-13, is incorrect. The listed affiliation for the author should be the French Institute of Pondicherry, India.

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Derby District Redevelopment in Colorado: Case Study on the Health Impact Assessment Process

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Control and Prevention

Abstract Health Impact Assessment (HIA) is a tool that is increasingly utilized in the U.S. to shape policies that may impact the public's health. Domestic examples of HIAs and the process by which they were conducted, however, are rarely documented in the peer-reviewed literature. Through an existing relationship with the planning department in Commerce City, Colorado, Tri-County Health Department (TCHD) was able to identify a proposed redevelopment plan as a candidate for an HIA. The HIA focused on potential effects of the proposed redevelopment of Commerce City's historic Derby District on residents' physical activity and nutrition-related behaviors. This article describes the HIA process used by TCHD.

Several sources of data were used, including participatory community input on walkability and safety, local health behavior data, and maps of health-influencing environmental characteristics. Using a variety of information sources including community input and local health behavior data can be useful in conducting HIAs and impacting policies. Local health departments should consider cultivating ongoing collaborative partnerships with municipal planning departments and community groups to conduct HIAs and to implement recommendations.

Introduction

Health Impact Assessment (HIA) is a tool that examines potential health effects of proposed policies, programs, and projects and guides decision makers in developing them with health in mind (Dannenberg et al., 2008). HIAs are commonly applied to land use decision making (Dannenberg et al., 2008). Use of HIAs has been well documented in Europe (Dannenberg et al., 2006, 2008); however, domestic examples in the scientific literature are rare, despite increasing usage in the U.S. One article described 27 domestic HIAs, of

which only five had been published in peer-reviewed literature (Dannenberg et al., 2008). This illustrates the importance of documenting domestic HIAs.

In 2006, Tri-County Health Department (TCHD), a local health department serving 1.2 million people in metropolitan Denver, conducted an HIA in Commerce City, Colorado (population 37,874; approximately 12,100 households) (Colorado State Demography Office, 2007). The HIA focused on the potential health effects of a proposed redevelopment of Commerce City's historic Derby District

(Tri-County Health Department [TCHD], 2006). Derby is part of what is commonly referred to as the historic city, which is physically separated from the newer portion of the city by a national wildlife refuge. In 2006 Derby was a commercially zoned 10-block area consisting of 64 commercial properties, three parks, three churches, and six households that predated its commercial zoning. TCHD had an established partnership with the city's planning department through years of consultation on land use and environmental remediation projects. Thus, the city invited TCHD to join the city planner and redevelopment consultants, who were strong health advocates, on the Derby Redevelopment Team from the outset of the effort. TCHD used this opportunity to conduct an HIA as an element of a healthy eating and active living grant. The HIA focused on potential effects of the redevelopment on residents' physical activity and nutrition-related behaviors.

Land use policies can promote physical activity and healthy eating (Bell & Standish, 2005; Brownson, Baker, Housemann, Brennan, & Bacak, 2001; Heath et al., 2006; Roof & Oleru, 2008) but encouraging adoption of healthy policies can be challenging. Studies have demonstrated the importance of partnerships among public health, urban planners, and local officials in implementing health-supportive policies along with community support (Dannenberg et al., 2008; Heath et al., 2006; Saelens, Sallis, Black, & Chen, 2003). Documentation is limited, however, regarding the process of influencing policy makers and fostering community support to promote health (Dannenberg et al., 2006; Heath et al., 2006). In this article, we describe the process TCHD used to

conduct the HIA, which included gathering community input on walkability and safety, collecting local health data, creating maps of health-influencing environmental characteristics, and integrating data into the redevelopment planning process throughout the year-and-a-half effort, to help shape a health-supportive redevelopment plan.

Methods of Data Collection

Community Input

Community input is critical to ensure that decision makers consider the needs, concerns, and expectations of the people who will be affected by a pending land use project. Aboelata and co-authors (2011) note that community engagement around built environment issues can occur through a variety of formal structures or ad hoc groups. TCHD used several ad hoc participatory strategies to gather the community's health and safety perspectives and to identify health-promoting concepts for inclusion in the redevelopment plans. Examples of these strategies include the use of walkability assessments, photovoice, and community meetings.

For the walkability assessment, TCHD and its partners recruited a convenience sample of 73 residents. The walkability assessment tool is located in Appendix B of the Derby Redevelopment HIA (TCHD, 2006), which is available on TCHD's Web site at www.tchd.org/pdfs/hia_final.pdf.

We also used photovoice to gather community input. Photovoice is a participatory assessment strategy that enables people to convey their community's strengths and weaknesses through photographs (Wang, 1997), which can often be more persuasive than narrative comments at public hearings or other forums. For this activity, we recruited 13 residents and staff from local service organizations.

In addition, TCHD scheduled community meetings with specific demographic groups, including monolingual Spanish-speaking families and local high school students and their parents. To encourage participation, the former meeting was held at the families' church in Derby and children were welcome; the latter was held at the city's recreation center. In both cases, participants engaged in facilitated discussions about health and safety issues and elements of their vision for the redevelopment plan. The student/parent meeting was

a working session in which groups marked up copies of a large map of the area with perceived barriers to physical activity. Each group presented its map for comment.

Because more than half of the historic city's population was Hispanic or Latino, TCHD designed outreach efforts to ensure participation by these residents. TCHD utilized a local nonprofit partner to recruit participants for the walkability assessment and community meetings. Located in Derby, this nonprofit organization had close ties with the Hispanic community and extensive neighborhood connections. Their Hispanic community outreach coordinator, who was also local, successfully recruited many monolingual Spanish-speaking residents for the community input events described below. In addition, the outreach coordinator or bilingual city staff provided translation services, and the city provided translation equipment for these participatory events.

Health Data

Through a one-time grant, TCHD gathered epidemiologic data to highlight local health-related behaviors. Because of Derby's limited population size, a citywide telephone survey was conducted in Commerce City among a random sample of 303 adult residents, using established methodology and questions from the Behavioral Risk Factor Surveillance System (BRFSS) (Centers for Disease Control and Prevention, 2006). Commerce City data were compared with state and national BRFSS data and *Healthy People 2010* national health objectives (U.S. Department of Health and Human Services, 2002).

To supplement local behavior data, TCHD used local demographic data from the census to highlight likely health disparities in the historic city. For example, TCHD included in its HIA a table summarizing the number and percentage of historic Commerce City residents from various demographic groups (e.g., seniors, low-income individuals) that are at disproportionate risk for physical inactivity or injury while being physically active. The risk data were derived from peer-reviewed research based on national studies.

Maps

TCHD used GIS mapping to identify environmental characteristics that might influence

health or safety. We leveraged existing data from the city, regional planning organization, transportation district, and local utilities to create maps of crime data overlain with street light locations; parks, trails, and grocery store locations; property conditions (e.g., deteriorated buildings, poorly maintained yards); motor vehicle crash locations; and access to public transportation.

Results of Data Collection

Community Input

The results of the walkability assessment revealed that only 37% of the 73 participating residents frequently walked in and around Derby. Reasons for not walking included personal safety fears, narrow sidewalks, lack of crosswalks, insufficient lighting, and litter. The photovoice activity highlighted similar concerns. The 13 participants identified issues regarding personal and traffic safety, graffiti, litter, and a lack of bicycle lanes (TCHD, 2006). During the community meetings, participants identified gang activity, poor aesthetics, and lack of family-oriented destinations as barriers to regular outdoor physical activity in Derby.

Health Data

The BRFSS data revealed that Commerce City residents were significantly less physically active than all Colorado residents for both leisure time (recreational) and routine (work or active travel-related) physical activity. City residents were also more likely to report fair or poor health status, compared with all Colorado residents (Table 1). The final HIA (TCHD, 2006) includes statistics and discussion of the five BRFSS measures listed in Table 1, as well as chronic disease data.

With regard to our use of local demographic data, we presented this information through a health lens, linking each of our vulnerable subpopulations with group-specific, evidence-based research on health risks. For example, we highlighted that over 54% of the historic city's population is Hispanic or African-American. These groups have pedestrian injuries and fatality rates due to vehicle crashes that are several times higher than those of Caucasians (Frank, Engleke, & Schmid, 2003). A table in the HIA summarizes these group-specific examples (TCHD, 2006).

Maps

TCHD used numerous sources of existing data to create maps that demonstrated health and safety concerns. An example can be seen in Figure 1, which depicts the triangular-shaped Derby District situated along 72nd Avenue, its southern boundary. Portions of two bus routes run along 72nd Avenue. The figure illustrates that 57% of Derby's area is within 500 feet of a bus stop on one of these routes. Based on data from the National Personal Transportation Survey of Americans, 500 feet is the distance that 70% of persons are willing to walk to access public transit (Ewing, Frank, & Kreuzer, 2006). Transit has been shown to increase physical activity, with some transit users achieving 30 minutes of physical activity daily solely by walking to and from transit (Besser & Dannenberg, 2005). This suggests that people living outside the area could obtain physical activity while accessing Derby businesses and public facilities by bus. Since the proposed redevelopment plan included rezoning portions of Derby for multifamily housing, future residents would also benefit from transit access.

Another map was created collaboratively by city and TCHD staff using police department vehicle crash data. The map depicted the locations of pedestrian and bicycle crashes involving vehicles that occurred in Derby over a five-year period. Six of the 14 crashes took place at the intersection of the two streets that residents identified as the main traffic safety hazards for people walking or bicycling in Derby. The police department data helped reinforce the qualitative data obtained from residents.

The city's property infrastructure data survey (PIDS) was the source of two additional maps used in the HIA. In 2004–2005 the city's neighborhood services (code enforcement) department inventoried the city, noting individual property conditions such as the presence of weeds, broken fences, rubbish, junk cars, and sidewalks. For the HIA, city staff aggregated the Derby PIDS data by block. TCHD's GIS specialist used this data to prepare a property conditions map (TCHD, 2006), color coded by block, for the personal safety section of the HIA. It showed that most blocks were well maintained and identified those that could benefit from improvements. A similar map showing sidewalk conditions (TCHD, 2006) was used in the

TABLE 1
Prevalence of Health Behaviors in the United States, Colorado, and Commerce City

Health Behavior	Healthy People 2010 Goal	% (95% CI) ^a		
		U.S.	Colorado	Commerce City ^d
Fair or poor health status ^b	–	14.7	11.6 (10.6–12.6)	19.7* (14.5–25.0)
Obese (BMI ^a ≥30) ^b	≤15%	25.1	18.2 (17.0–19.4)	19.5 (13.9–25.1)
No leisure-time physical activity ^b	≤20%	22.6	17.4 (16.2–18.6)	31.4* (24.8–37.9)
Regular, moderate, or vigorous physical activity ^c	≥30%	49.5	54.7 (53.5–55.9)	42.4* (34.9–49.9)
Five or more daily servings of fruits and vegetables ^c	≥50%	24.4	25.8 (24.8–26.8)	22.5 (16.5–28.5)

Note: Results from Behavior Risk Factor Surveillance System survey.
^aCI = confidence interval; BMI = body mass index.
^bColorado and United States data are from 2006 (<http://apps.nccd.cdc.gov/brfss/>).
^cColorado and United States data are from 2007 (<http://apps.nccd.cdc.gov/brfss/>).
^dCommerce City data were collected from October 2, 2006, through February 27, 2007.
^{*}Statistically significant difference in prevalence between residents of Commerce City and Colorado (i.e., no overlap between 95% confidence intervals).

HIA's walkability section. It showed where sidewalks existed and their relative condition throughout Derby.

Discussion

TCHD's HIA included community input on walkability and safety, local health data, and maps of health-influencing environmental characteristics. TCHD presented HIA data at periodic community and city council meetings throughout the year-and-a-half period when the redevelopment plan was being formulated. The Derby Redevelopment Team used these data to incorporate relevant health considerations into the evolving redevelopment plan. The final plan (www.ci.commerce-city.co.us/DocumentView.aspx?DID=388) was strongly health supportive, and at the redevelopment public hearing, TCHD recommended its adoption as proposed. City council adopted it unanimously in October 2007.

Because the Derby redevelopment plan was already health supportive, TCHD's HIA recommendations focused on city implementation actions. After the plan's adoption, TCHD

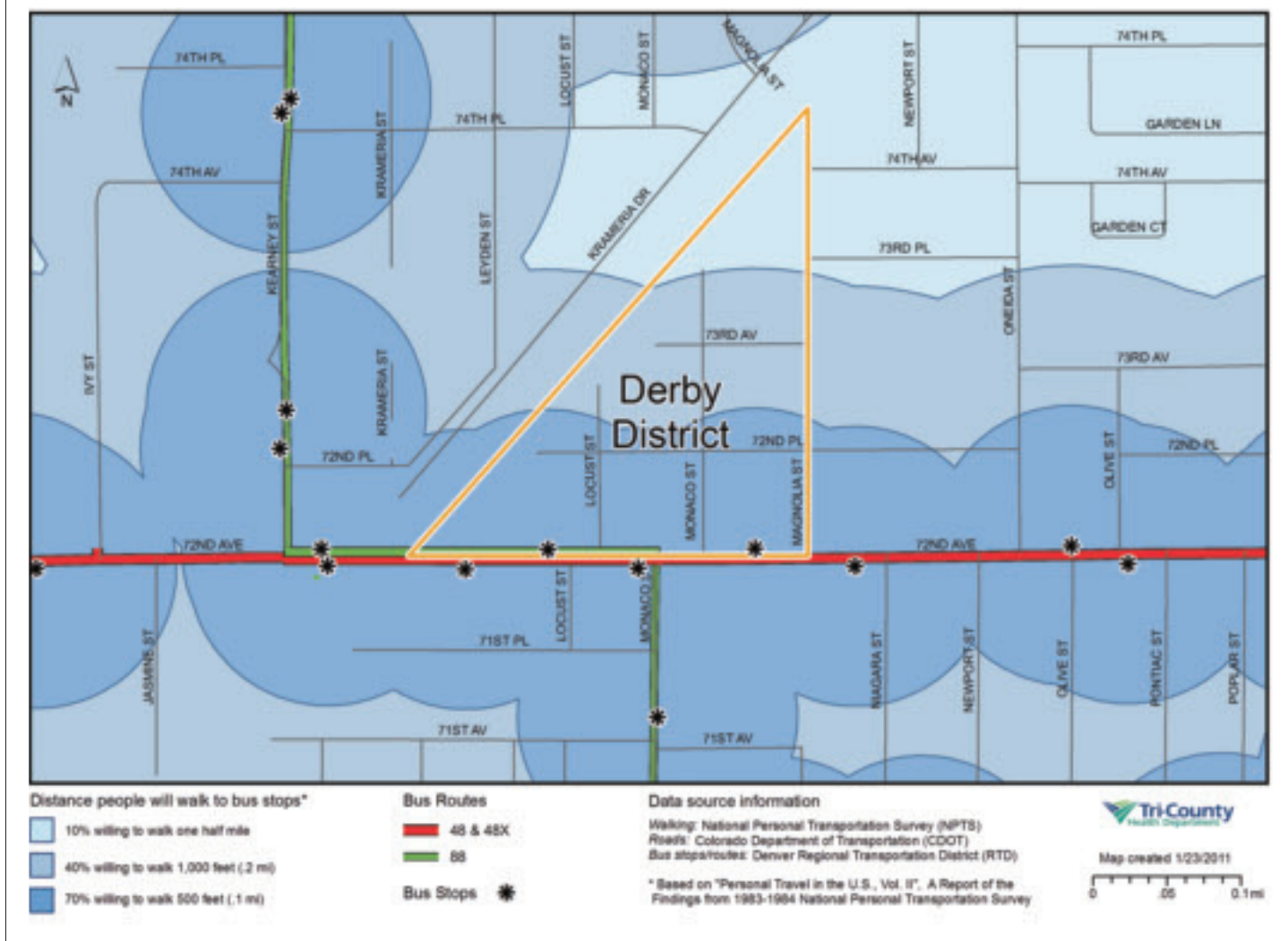
presented the recommendations at city council and planning staff meetings. Key recommendations included funding strategic traffic calming measures, preparing a bicycle and pedestrian plan, redesigning and connecting open spaces, upgrading transit service, promoting affordable housing, and establishing a Clean and Safe Initiative, which is a program to enhance maintenance, safety, and security.

The city has since taken actions to implement some of these recommendations. For example, the city's public works department recommended 2009 funding for initial traffic calming improvements on a key corridor identified in the HIA. Due to the economic downturn, funds were not available. The city did collaborate with TCHD, however, on a nine-month education and outreach program to build resident support for future traffic calming measures in Derby.

In addition, in late 2008 the city began an extended process to update its comprehensive plan, the policy document that will guide development through 2030. TCHD actively participated in the process. In May 2010, city

FIGURE 1

Likely Percentage of People Willing to Walk to Bus Stops in Derby Area



council adopted the updated plan, which is available at www.ci.commerce-city.co.us/index.aspx?NID=179. This plan contains citywide health-supportive policies, ranging from those that improve access to healthy food to a variety of health-promoting urban design strategies, support for active travel (walking and bicycling) and recreation facilities, and traffic safety improvements. The plan targets the Derby corridor as an initial priority for pedestrian improvements. An updated transportation plan, which city council adopted in July 2010, reinforces Derby as a priority for pedestrian and safety improvements. In the summer of 2011 the city installed the Derby Diamond, a \$900,000 pedestrian-friendly intersection in Derby's core (See

photos on page 12). Furthermore, in 2011 the city undertook the development of its first citywide bicycle and pedestrian plan. TCHD participated in the development of the plan, which was adopted by city council in March 2012.

Derby's redevelopment will occur incrementally over many years, and the final product will depend on both market conditions and city actions. The HIA process provided a focus for city planners and TCHD's ongoing land use-related work with the city in Derby. Through its land use program, TCHD will continue to support and monitor Derby's evolution relative to the adopted redevelopment plan. This will occur through agency written and oral comments on individual development applications

and plans within Derby, continued support for implementation of plans, encouragement of city funding for additional capital improvements in Derby, and collaboration with community partners who promote healthy eating and active living in Derby.

Conclusion/Recommendations

Conducting an HIA to successfully promote health-supportive policy changes, as well as the subsequent implementation of those policy changes, can be challenging. In this example, several factors influenced the adoption and implementation of a health-supportive Derby redevelopment plan, which offer lessons for future HIAs.



72nd Place and Monaco Street, before installation of the Derby Diamond intersection in 2011.



72nd Place and Monaco Street, after installation of the Derby Diamond intersection in 2011. Colored and textured pavement and curb extensions with landscaping slow traffic and make the intersection pedestrian-friendly.

Photos courtesy of Carol MacLennan (before) and Mike Garner (after).

1. Health departments should cultivate ongoing, collaborative partnerships with local planning departments. Regular participation in local planning activities not only improves the likelihood of knowing about upcoming initiatives that are HIA candidates but also increases opportunities for early involvement. It also improves the chances of continued health department involvement in the implementation of any policy changes that are adopted.
2. Health agencies should leverage existing data sources to highlight local health conditions and concerns. For example, using locally specific epidemiologic and GIS data to illustrate health issues, rather than relying on state or national statistics alone, can influence the consideration of health-supportive policies. While local officials prefer health data specific to their communities, local BRFSS or other epidemiologic data may be unavailable or expensive to obtain. If community-level health data is lacking, local health departments can characterize likely health conditions by presenting other easily accessible local data through a health lens. Examples include census, police, and traffic safety data.
3. Health departments should use participatory methods to gather community input and support for health-related actions. The unanimous support for the Derby redevelopment plans was likely related to the collaborative community involvement process undertaken by the Derby Redevelopment Team. Local partners, such as nonprofits or other groups with established

community ties, should be engaged to ensure or improve participation by high-risk or target populations.

4. Community input events should be designed to accommodate targeted populations. Many groups are unlikely to attend open houses or public hearings that are standard local government mechanisms for soliciting public involvement. Local health departments can encourage innovative community participation techniques. For example, meetings can be held away from city hall at locations where groups feel most comfortable. They can be scheduled on weekends or other times when residents can more readily attend. Tools such as photovoice or walkability assessments can be utilized to obtain rich information from community members who might not otherwise participate in a planning process. In engaging the community in these events, translation needs should be addressed to maximize participation.
5. An HIA should not be viewed as a document prepared in a vacuum, to be released near the end of a project. The HIA process can influence an outcome as much as the report itself. Those conducting an HIA can help shape the planning process by sharing data and community input as it is gathered. If this is done early in the planning process, an opportunity exists for health considerations to be woven into the fabric of the project as it unfolds.
6. HIAs offer recommendations to mitigate health impacts or improve health. The process does not end with the presentation of

the report. Local health departments need to stay involved with decision makers to promote implementation. In addition, health departments should encourage and collaborate with community partners who are also working with decision makers toward the same goal. This supports increased community capacity to effect sustainable change. 🚶

Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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Destination Tent City: Environmental Health Lessons From the Occupy Movement

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Introduction

The images of tent cities that appeared in urban areas across the nation last fall as members of the Occupy Movement settled in for days, and in some places weeks, of temporary residence turned my thoughts to the encampments of displaced people often observed following disasters. To investigate the similarities between the two types of camps, I consulted with environmental health professionals in the West Coast cities that experienced the largest of the Occupy camps. Their observations lead me to believe that the environmental health lessons learned from “Occupy” could help public health responders become better prepared for the next major disaster. This article outlines those lessons.

While the “Occupiers” chose to pitch their tents in the heart of major U.S. cities in protest of social and economic disparities, those displaced by damage done to their home or peace of mind by a disaster may have little choice in their temporary living arrangements. This major difference aside, the Occupy experience provides an opportunity to gain a greater understanding of the environmental health issues associated with disaster camps. This is important to public health responders, as access to safe and adequate food, drinking water, and shelter as well as basic health and safety protections are critical human needs that may be lacking in makeshift shelter arrangements that can stand up immediately following a major disaster.

Many people displaced by a large-scale emergency will seek shelter in traditional

evacuation centers such as those operated by the American Red Cross and other similar relief organizations. It is typically estimated by emergency planners that roughly 5% of the evacuated or displaced population will seek out such shelters, depending on the nature of the incident and the resources of the affected community. Those with the ability to do so may travel out of the area or stay with relatives, friends, or in hotels when these options are available. Others will find refuge in more loosely structured, ad hoc shelters such as those run by community or faith-based organizations that open their doors to local residents. Often overlooked is the significant percentage of people that will migrate to open areas, parks, and beaches, or into their cars and backyards after an earthquake to wait until the aftershocks cease. Outdoor sheltering in spontaneous, improvised camps is common after strong earthquakes because of damage done to housing and rattled nerves, especially in areas where the climate is mild.

Organized emergency shelters offer a safe sanctuary for those without food, water, medicines, or a place to sleep. Young families, elders, and people with physical and other types of limitations or special needs make up a large percentage of emergency shelter clients. For them, the security of “three hots and a cot” along with other services provided by the American Red Cross and affiliate organizations is a welcomed respite. Others displaced by an emergency find camping out of doors preferable to checking into an emergency shelter for a

variety of reasons. These may include a desire to stay close to home to watch over pets and possessions, to maintain job and school routines, and for some, a dislike of the regimented nature of organized shelters. Emergency shelters are viewed by some as a refuge of last resort due to conditions that congregate care settings can impose including crowding, noise, lack of privacy, rules of conduct, feeding and bathing schedules, and the queues to obtain food or use facilities. These factors can make shelter stays uncomfortable and leave some people looking for an alternative.

Tent cities, sometimes referred to in emergency planning documents as “open shelter areas” or “outdoor congregate sites” often fill this gap in temporary housing options. Both recent and historical disasters in the U.S. as well as elsewhere in the world, particularly earthquakes, have triggered spontaneous disaster tent cities. When these camps are makeshift in nature without adequate infrastructure or support systems they can pose significant environmental health hazards to the people who seek shelter there—many of the same hazards that were witnessed in the tent cities of the Occupy Movement.

Occupy Movement Tent Cities

The tent cities of the Occupy Movement exhibited characteristics often associated with makeshift disaster camps: they formed with little, if any, planning or notice; were inhabited for an extended period of time up to several weeks; lacked reliable support systems; had a loose, ad hoc type of organization;



*Camp kitchen at Occupy Portland.
Photo credit: Multnomah County Health
Department, Environmental Health*



*Overflowing portable toilet observed at the
Occupy San Francisco camp.
Photo credit: Environmental Health, San
Francisco Department of Public Health*



*Twenty-five tons of debris left behind after
Occupy LA moved out.
Photo credit: Environmental Health Division, Los
Angeles County Department of Public Health*

relied on spontaneous donations and the efforts of resident volunteers; and eventually became a source of concern within their host communities due to a host of issues including health hazards.

The 2011 protest encampments began in September in New York City with the Occupy Wall Street event. There, protesters occupied Zuccotti Park in lower Manhattan for almost two months of communal living in a park that lacked basic services. By early October, similar camps were either ongoing or had occurred in dozens of communities across the U.S. Of particular note are the sizeable Occupy camps that developed on the West Coast in Portland, Oregon, and in several California cities; the largest were seen in San Francisco, Oakland, and Los Angeles. These gatherings endured for several weeks, triggering concern over mounting public health hazards as protesters roughed it in tent communities with inadequate infrastructure for the preparation of food and limited to no access to sanitary and hygienic facilities.

In Portland, local environmental health agency staff conducted regular surveillance of the Occupy Portland camp but functioned primarily in an advisory capacity. One of the first areas of concern in the camp pitched in a downtown park was the lack of adequate toilet facilities; initially just two restrooms were available to serve the burgeoning population of protestors. Environmental health kept a close eye on the disposal methods employed for human wastes and grey water after (unsubstantiated) reports were received of latrines being dug in the park. Other environmental health issues included inadequate hand washing

facilities at the toilets and in the communal kitchen area, where facial tissue and dirty rags were used at times for hand wiping and soiled straw was employed as flooring. Observations of unsafe food handling practices included improper holding temperatures for potentially hazardous foods and inadequate storage of the mostly donated food supply. Improvisation was apparent throughout the camp: the kitchen's water was supplied via a garden hose that snaked back to the public restroom; vinegar was used to sanitize kitchen utensils in lieu of bleach; and the containment of wastes, trash, food scraps, and biohazards presented a continual challenge.

Further south in San Francisco's Justin Herman Plaza, sanitation problems resulting from inadequate toilet facilities topped the list of health hazards. The portable toilets brought in to the Occupy San Francisco camp lacked regular cleaning services and so were observed at times to be full-to-overflowing with human waste and as a result, excrement, urine, and vomit were evident on the ground in and around camp. The camp's environmental health hazards included a lack of hot water in food preparation area and hand washing sinks without any water at all; these conditions led to an early closure of the camp's food operation by city officials. Off-leash dogs, a lack of bathing facilities, and the overcrowding of tents in the plaza created uncomfortable and unsanitary conditions for campers who attempted to maintain cleanliness by organizing cleaning brigades; however, solid and human waste containment issues continued to plague the event. The City of San Francisco's Public Health Department eventually



declared the camp a public health nuisance and closed it down.

The Occupy Oakland tent city was comprised of over 200 protesters and shared many of the same problems observed in Portland and San Francisco with an added vector control issue. Poor food storage practices in the camp presented the potential to exacerbate Oakland's existing urban rat infestation and required close surveillance by environmental health staff.

At its peak, the Occupy Los Angeles tent city encompassed more than 350 tents on a lawn outside City Hall. After two months, Los Angeles officials declared the camp a health and safety hazard due to mounting trash and debris, an insufficient means of disposing of human wastes, and a lack of hygienic facilities that led to campers bathing in a municipal fountain. Initially, the Occupy LA camp had a food tent where campers prepared shared meals using donated food, however, the food handling methods employed there were deemed unsafe and the operation was closed by the public health department. Concerns also existed over the potential for the spread of communicable diseases such as norovirus and the impact that the onset of the impending cold and flu season would have on the campers who were living in close quarters. The public health department also received reports of a possible lice infestation within the resident population, and heard rumors of a clandestine body art operation in camp that were later validated once the protestors had vacated the area and discarded tattoo needles were discovered in the rubble (Table 1).

TABLE 1

Overview of Environmental Health Concerns in West Coast Occupy Camps

Location	Unsafe Food Handling	Poor Waste Management	Inadequate Toilet Facilities	Lack of Hand Washing	Vector Control Concerns	Camp Overcrowding	Other
Occupy Portland Portland, OR							 ^a
Occupy San Francisco San Francisco, CA							 ^b
Occupy Oakland Oakland, CA							
Occupy LA Los Angeles, CA							 ^c

^aMedical waste management.
^bPets/pet waste problems.
^cBody art activity.

Disaster Tent Cities

Many of the public health and environmental health hazards witnessed in the Occupy Movement camps are likely to materialize in tent cities that spontaneously form after a major disaster. Inadequate sanitation infrastructure and solid waste management, drinking water and food supplies of unsafe or unknown quality, and crowding that increases the risk of communicable disease transmission are potential public health concerns for a disaster tent city especially when the shelter is a makeshift arrangement created by the displaced residents themselves. Such shelter arrangements were observed following the 1987 Whittier Earthquake when hundreds of Southern California residents slept in local parks and in their cars for almost a month and the 1989 Loma Prieta Earthquake that struck the Santa Cruz area of California where makeshift tent camps sprung up in city parks in nearby Watsonville. California has a history of tent cities that includes those that continued for weeks and months in San Francisco after the Great Earthquake of 1906. After a strong earthquake it should be expected that people will converge on open areas in their communities seeking a familiar place to stay close to home. There, they will camp with their children, pets, and valuables in tow.

Tent cities may also be established by a relief or governmental organization such as the National Guard. The devastation wrought by Hurricane Andrew in 1992 resulted in hundreds of people in the south Dade area of Florida living in military canvas tents erected by the National Guard. Based on the Hurricane Andrew experience, the California National Guard stepped in to set up tents in the Canoga Park section of the San Fernando Valley four days after the 1994 Northridge earthquake. Of the estimated 50,000 residents left homeless by the magnitude-6.7 quake, approximately 14,000 people spent the first few nights on the streets or in improvised shelters. The military tents were deployed because many displaced residents were camped in a flood plain and needed a secure place to shelter away from the impending rains. At the time, the National Guard estimated that 6,000 people would be housed in the large tents set up in parking lots, parks, and other public places with relief organizations providing the meals. The National Guard's tent cities, however, were quickly closed down due to pressure from residents living nearby, for fear of a long encampment.

After a catastrophic incident, services provided by the American Red Cross and other mass care organizations may be overextended due to an overwhelming demand

for assistance and therefore unavailable to support a spontaneous tent city. Or it may be that local government and relief organizations are simply unaware that the camp exists due to the chaos surrounding the event. Moreover, in a well-intentioned effort to encourage displaced individuals to move into organized shelters, there may be a decision made to withhold support from a makeshift camp, especially if that camp is located within a danger zone or evacuated area. Instead, displaced residents may be encouraged to move to a location where relief services can be more readily provided. This was the case for the tent camps that appeared in Watsonville after the 1989 earthquake; they were not supported by relief organizations that instead directed residents to emergency shelters.

With or without official sanction, disaster tent cities will form and may persist even when support from government or relief organizations is withheld. The devastating 2010 earthquake in Haiti left tens of thousands of people homeless and living in makeshift camps. The shocking images of displaced residents struggling to rebuild their lives amid squalid warrens of tents and tarps may seem unthinkable in contemporary western society; however, recent disasters in the U.S. such as Hurricanes Katrina and Rita of 2005 have shown that some displaced people will

find themselves living, at least temporarily, in substandard, if not desperate, conditions.

Many communities have plans and policies in place that acknowledge and provide support to those shelters run or approved by the American Red Cross or other similar relief organization and neglect to mention the possibility of other arrangements including tent cities. And some local policies expressly prohibit the support of shelters that fail to meet basic health and safety standards or are without a sponsoring nonprofit organization. In these cases, it may fall to community members to donate supplies and food on an ad hoc basis until organized relief can be provided or tent city residents moved to a more suitable site. Because of its history of disaster tent cities, San Francisco is one of a few major cities that anticipates outdoor sheltering needs and has responded with the development of plans to activate tent dormitories supported by feeding, health, pet, and other mass care services and a process to assess public health and environmental health needs in outdoor shelters.

Lessons Learned

Tent cities, whether organized by a protest movement, displaced residents, or a responder or relief organization, can present serious environmental health challenges if adequate infrastructure or support is lacking. Even with support, tent cities require vigilance to avoid or mitigate the environmental health issues observed in the Occupy camps. This will require public health and environmental health agencies to have a method for quickly and adequately assessing conditions in a camp. In California, a range of guidelines was used for assessing the Occupy camps, from applying local special event and multifamily housing requirements, to use of the *California Disaster Field Manual for Environmental Health Specialists* and international standards designed for refugee camps such as *Sphere's Humanitarian Charter and Minimum Standards in Disaster Response*.

The Los Angeles County Public Health Department kept track of conditions within their Occupy camp through daily visits utilizing the Centers for Disease Control and Prevention's (CDC's) *Environmental Health Shelter Assessment Form for Shelters* developed for the rapid evaluation of conditions within (indoor) emergency shelters. This

tool proved to be quite useful outdoors in a camp setting as it covers all of the critical health and safety indices—security, food preparation, drinking water, sanitation, solid waste, sleeping areas, vectors and animal control, etc.—that allow for an assessment of the immediate needs of the sheltered population.

Like the Occupy camps, disaster tent cities without an adequate support system can be expected to have myriad environmental health issues from waste disposal to inadequate or unsafe water for drinking to hygiene and food safety hazards created by improper handling, impromptu food donations, and illegal food vending. Disaster camps erected by the National Guard and other relief organizations can also experience resource and service limitations in the first few days after a disaster that will increase the likelihood that environmental health hazards will manifest. Even in some of the best outdoor sheltering arrangements, for example San Diego's Qualcomm Stadium that was activated to house up to 20,000 people in individual tents during the 2007 Southern California wildfires that forced over 500,000 to evacuate their homes, environmental health issues require vigilance. Base camps that house firefighters and other responders also require surveillance for health hazards.

Therefore, public health responders should expect and assume that after a major disaster, and especially after an earthquake, a need will exist for an assessment of conditions within the camping arrangements that a significant portion of the affected population will temporarily house themselves in either by choice or circumstance. Camps that develop spontaneously in open spaces will overwhelm sanitary facilities, if they exist at all. Where sanitary facilities do exist, they may be nonfunctional due to disaster damage or through overuse, creating the potential for significant health hazards. Furthermore, disaster tent cities will likely be run at least initially, much like the Occupy camps, by the very individuals who inhabit them. Residents may organize to tackle feeding, sanitation, and security issues within the camp and will likely need guidance and information from environmental health on preventive measures to take to ensure safe food and drinking water safety and to mitigate health hazards arising from sanitation and waste management problems.

Environmental Health Guidelines Associated with Emergency Sheltering

For information on environmental health guidelines associated with emergency sheltering, see the following resources:

California Conference of Directors of Environmental Health *Disaster Field Manual for Environmental Health Specialists* — www.ccdeh.com/products/24-disasterman/18-disasterman

Centers for Disease Control and Prevention Shelter Assessment Tool — www.bt.cdc.gov/shelterassessment/

Environmental Health Training in Emergency Response — www.cdc.gov/nceh/ehs/eLearn/EHTER.htm

The Sphere Handbook: Humanitarian Charter and Minimal Standards in Disaster Response — www.sphereproject.org/content/view/27/84

World Health Organization Environmental Health in Emergencies and Disasters — www.who.int/water_sanitation_health/hygiene/emergencies

City and County of San Francisco Mass Care, Housing, and Human Services Annex Spontaneous Shelter Assessment Form — www.sfdem.org/Modules/ShowDocument.aspx?documentid=837

What the Occupy Movement camps did not share for the most part with postdisaster encampments is the presence of children and the elderly. While families with vulnerable members tend to gravitate toward organized emergency shelters, they will also be present in makeshift camps, making environmental health conditions all the more critical. Fortunately, no serious outbreaks of illness were reported from the West Coast Occupy Movement tent cities that sprouted up in the fall of 2011. The environmental health conditions that contribute to illness outbreaks, however—close quarters, poor food handling practices, inadequate solid waste, and human waste management—were there.

Conclusion

Most local response plans assume displaced people will leave the area or stay in shelters operated by the American Red Cross and other relief organizations, failing to recognize the possibility that some people will be housed, at least temporarily, in improvised shelters and camps without the necessary resources. After a catastrophic event, responding to the needs of disaster tent city residents could present the most difficult aspect of providing mass care services. In order to be adequately prepared for the next disaster, local governments, public health,

and environmental health planners need to develop plans and procedures that will guide the surveillance and assessment of conditions in spontaneous camps. Surveillance of this type of outdoor sheltering may need to take priority over other types of environmental health disaster response work—for it is there that environmental health may face its biggest challenges. 🐛

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Evaluating the Communication of Environmental Permitting Decisions in Diverse Communities

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Abstract Environmental communication plays a critical role in addressing the public's growing awareness and apprehension about environmental health risks. Although opportunities for public participation in environmental health assessments have greatly increased, environmental communication among key stakeholders is an evolving process. The authors evaluated the communication that occurred among a state environmental agency, six Title V operating facilities, and the public concerning environmental permitting decisions perceived to impact environmental and human health. The authors identify environmental concerns of diverse communities, analyze communication among key stakeholders regarding environmental permitting decisions, and propose recommendations for practitioners to improve environmental communication strategies among these key stakeholders in either urban or rural communities.

Introduction

Communities facing prior and potential environmental exposures often believe that government-based environmental agencies and facility managers are not adequately addressing their concerns regarding risk, which often results in a contentious relationship. Environmental communication, defined as "... the medium that we use in constructing environmental problems and negotiating society's different responses to them (Cox, 2006)," plays a critical role in addressing the public's growing awareness and apprehension about environmental and human health risks. Traditionally, the investigations associated with the community's myriad concerns from actual or perceived environmental exposures have been the responsibility of governmental agencies. On the one hand, the community

often believes that the governmental agencies are either not doing enough to address their concerns or are being influenced by the relevant industry. On the other hand, the governmental agencies involved in the investigation often perceive that the community possesses an inaccurate or irrational perception of the potential environmental or health risks. Misunderstanding and distrust on behalf of both parties often result (Charnley & Engelbert, 2005; McKinney & Harmon, 2002).

The importance of developing relationships, at a community level, among stakeholders involved in environmental issues and their impact on information delivery and reception have been previously demonstrated (Agency for Toxic Substances and Disease Registry, 2004; Charnley & Engelbert, 2005; Covello & Sandman, 2001; Hance, Chess, & Sandman,

1989; McComas, 2003; McKinney & Harmon, 2002; Sandman, 1989). Given that these stakeholder groups, most often comprised of community residents; environmental, public health, and safety regulatory agencies; and the operating facility all perceive risk differently, it is imperative for each group to appreciate the viewpoints of all involved to engage in effective dialogue (Park, Scherer, & Glynn, 2001; Tinker, Zook, & Chapel, 2001). Although opportunities for public participation in environmental assessments have greatly increased, we propose that the environmental communication process among key stakeholders is evolving and should be regularly evaluated.

The purpose of this article is to evaluate the environmental communication that occurred among a state environmental agency, selected Title V operating facilities located in urban or rural communities, and the affected residents concerning environmental permitting decisions perceived to impact environmental and human health. This article identifies environmental concerns of specific communities, evaluates the communication process utilized among key stakeholders regarding environmental permitting decisions, and proposes practical recommendations to improve environmental communication strategies among these key stakeholders in either urban or rural communities.

Stakeholders in Environmental Communication

The stakeholders considered in this work include a state environmental agency, facility managers of Title V operating facilities, and community residents living near these urban or rural facilities.

TABLE 1

Demographics of the Urban and Rural Communities in New Hampshire Shared by the Title V Facility and Community Stakeholders

Geographic Area	Race (White, Non-Hispanic) (%)	Housing (Own/Rent) (%)	High School Graduation (%)	Unemployment (%)
Urban Community				
Portsmouth	91.2	52.1/47.9	96.0	5.3
Rochester	96.3	70.1/29.9	86.7	7.3
Nashua	85.7	60.3/39.7	90.8	7.1
Rural Community				
Claremont	97.8	54.6/45.4	87.7	6.6
Berlin	98.0	63.9/36.1	80.6	7.9
Alexandria	97.8	90.0/10.0	86.0	6.8

Source: American Community Survey, 2005–2009 (www.census.gov/acs/www/) and the New Hampshire Department of Employment Security, 2005–2009 (www.nh.gov/nhes/).

The New Hampshire Department of Environmental Services, Air Resources Division (NHDES ARD) is responsible for monitoring and regulating air quality that is protective of public health and the natural environment in the state of New Hampshire (Air Resources Division [ARD], 2008a). NHDES ARD accomplishes this goal via numerous programs including a statewide permitting program to assure compliance with the Title V federal mandate, which ensures that facilities will not emit hazardous pollutants to a degree that could negatively affect human health. Title V operating permits are valid for five years.

Once NHDES has prepared a draft permit for a Title V facility, a public notice is issued indicating that the draft permit is available for review and that public comment or requests for a public hearing may be filed with NHDES. The public comment period runs for 30 days. If someone requests a public hearing and NHDES grants the request, a public notice that describes the place, time, and purpose of the hearing is published (ARD, 2008). NHDES will also conduct public meetings, which are less formal than public hearings. Public meetings can be scheduled at the request of other regulatory agencies or local elected officials to provide information to the public that is necessary for the agency to accomplish their goal or is a method to communicate information that is beneficial to the community (Air Resources Division, personal communication, April 17, 2009).

Of the 43 current Title V facilities in the state of New Hampshire, six Title V facilities randomly distributed in urban and rural communities were selected to examine their environmental communication experiences regarding their various permitting operations and how this information was received by the affected communities. Three facilities were located in urban communities, which we defined as having a population of more than 20,000 people. These urban communities were Portsmouth, New Hampshire (population 20,566); Rochester, New Hampshire (population 30,974); and Nashua, New Hampshire (population 87,555) (U.S. Census Bureau, 2010). One of the three facilities located in an urban community was a coal-burning facility from 1950 through 2006 and now is a woodchip-burning electricity producing operation. The remaining two facilities are solid waste management facilities that have been in operation in their home communities since 1970 and 1979.

Three facilities were located in rural communities, which we defined as having a population of less than 20,000 people. These rural communities were Alexandria, New Hampshire (population 1,539); Berlin, New Hampshire (population 9,363); and Claremont, New Hampshire (population 12,970) (U.S. Census Bureau, 2010). Each of the three facilities in a rural community represents different operations. One is a biomass electricity generating facility in operation since 1987; one is a solid

waste energy plant in operation since 1987; and the last was historically used as a landfill for pulp and paper byproducts and has been a solid waste disposal site since 1989.

The community members living in the midst of these Title V operating facilities represent the final stakeholder group. Table 1 represents selected demographics (race, housing, education, unemployment) of the populations residing in the urban and rural communities they share with the Title V facilities described herein.

Methods

Document Review

Data collection and analysis of the interactions among key stakeholders were conducted using collective case study methodology (Cottrell & McKenzie, 2005). Publicly available documents in the form of written, e-mail, or phone correspondence and public hearing audio tapes and written testimonies were collected from NHDES documents concerning the six urban and rural Title V operating facilities we studied in the state of New Hampshire. A structured questionnaire was applied to each occurrence of communication by reviewing each document and abstracting the following information: date and type of communication; origin of concern; responder; general summary of concern; action requested; response time; total number of complaints per facility; method of ongoing communication; whether feelings of distrust or doubt were expressed by the community member with respect to facility operations; the type of organization(s) the community member contacted prior/following to communicating with the state agency or facility; and nonverbal communication (e.g., body language) observed and noted at public hearings. Abstracted information was first organized in chronological order by facility, duplicate records were removed, and a search for potentially missed documents was conducted. A document summarizing record review information for each site was constructed. Additionally, public inquiries/concerns received about each facility were reviewed and classified into thematic areas.

Structured Interviews

Following institutional review board approval from the University of New Hampshire, structured interviews were also

conducted with NHDES employees involved in the Title V permitting process and the Title V operating facility managers. Respondents were asked questions about the public's perception of their work and whether the community considered the facility's operations to be contentious or noncontentious, the communities' health and environmental concerns, and who the respondents considered to be the major stakeholders involved in their work. Respondents were also asked if they had experience conducting or attending a public hearing or public meeting about their facility.

Information pertaining to the type and number of concerns communicated by the public about the facilities operations as well as how these issues were addressed was collected. In terms of the communities' environmental management concerns, the respondents were queried about the following: whether or not they believed they were proactive in involving the community; whether a professional at their respective organizations was responsible for handling the public's concerns; whether they thought improving environmental communication among all stakeholders would enhance working relationships; whether an appointed liaison would facilitate environmental communication; and what specific recommendations they have to improve the communication of environmental permitting decisions among stakeholders.

Similar to the process used for the document review, a content analysis was conducted of the structured interview responses to extract and code recurring themes.

Results

Document Review

Table 2 summarizes aggregate information for the correspondence information among stakeholders regarding each facility located in an urban or rural setting. At NHDES, correspondence from concerned residents was received via phone, e-mail, written correspondence, or comments at a public hearing. In general, public inquiries were fielded by NHDES ARD staff or the NHDES complaint manager, which is a position designed to provide direct service to the public and eliminate the need for the person making the inquiry to be redirected multiple times. For both an urban and rural community, the primary

<p>TABLE 2</p> <p>A Summary of Aggregate Information for the Correspondence Among Community Stakeholders About Title V Facilities Located in an Urban or Rural Setting</p>	
Major Method of Correspondence by Which a Public Inquiry Is Received by a State Agency and Title V Facility	<ul style="list-style-type: none"> • Phone
Responder to public inquiry	<ul style="list-style-type: none"> • NHDES ARD^a staff • NHDES complaint manager • Title V facility manager
Summary of concern	<ul style="list-style-type: none"> • Nuisance (odor, noise, traffic) • Health (cancer, allergies, respiratory illness) • Air quality • Water quality • Property damage via coal dust
Action requested by public	<ul style="list-style-type: none"> • Schedule a public hearing • Extend the public comment period • Schedule a public meeting • Test air and water quality • Deny Title V permit • Close the facility • Investigate NHDES administration
<p>^aNHDES ARD = New Hampshire Department of Environmental Services, Air Resource Division.</p>	

method by which the public communicated their concerns was via the telephone. Regardless of how the inquiry originated from these communities, they were answered in a timely fashion (i.e., two days or less).

The concerns about the facility's operations expressed by residents of an urban or rural community were similar in that they ranged from health concerns (e.g., cancer, allergies, respiratory illness) to nuisance complaints (e.g., odor, noise, traffic). The actions most often requested involved scheduling a public hearing or public meeting, extending the public comment period, air and water quality testing, and an independent investigation of NHDES' administration. In some instances, the community members present at the public hearing called for the denial of the Title V permit or the closure of the facility. Two-thirds of the community residents who expressed their concerns about the facility also mentioned that they did not trust NHDES administration or the facility manager. Common frustrations voiced by citizens included the inability to locate the appropriate representative, either at NHDES or the facility, to communicate their concern(s) and dissatisfaction with the response to their inquiry, thus leading them to contact the U.S. Environmental Protection

Agency (U.S. EPA) or a local community official to relay their worries.

Structured Interviews

Both NHDES employees and Title V operating facility managers reported interacting with the public about environmental concerns and agreeing that the state environmental regulatory agency, the facility manager, and residents who share the community with the facility are the stakeholders in the environmental permitting process. At the time of the interview, all respondents believed that the respective facility was viewed positively by the public. NHDES and facility managers agreed that initially, the facility's operations may not have been viewed favorably but once the community saw the potential for employment, many residents welcomed the facility.

One incinerator located in a rural community, however, was regarded by both NHDES and the facility manager as having a negative public perception. This perception was facilitated by a citizen activist group that had formed due to health concerns they believed originated from the facility's operations. Interestingly, another incinerator owned by the same parent company but located in a different part of the state is perceived positively by

Recommendations to Advance Best Practices in Environmental Communication Strategies Among Key Stakeholders

1. Facilities should initiate communication early with the residents of the communities they share.
2. State government agencies could provide seminars to educate facility managers about community engagement.
3. Advocate that representatives from state government public health and environmental health bureaus be present at public hearings.
4. Establish citizen advisory committees.
5. Be accountable for communication among stakeholders.
6. Increase state agency awareness.
7. Use appropriate information and meeting logistics for all stakeholders.
8. Provide routine updates to stakeholders.

the surrounding community. We are conducting further research to examine the differences in environmental communication utilized by this Title V facility, which has been in operation in two distinct (rural and urban) communities since 1987 and 1989, respectively.

When asked if NHDES and the facility were proactive in involving the public in the permitting process, the responses varied in that some believed their work was more reactive than proactive and others believed they (NHDES and the facility manager) worked well together when it came to working with the public on an individual basis and during the public hearing process. The experiences of the facility managers with respect to the public hearing varied. For example, one landfill in a rural community experienced public outcry when it announced that it would be purchasing and reopening a facility that had been closed for 15 years. According to NHDES, this facility did not engage the surrounding community in their development plans and the community attended the public hearing to obtain an update on the facility's approach. Many of the issues presented at the public hearing could have been addressed beforehand in a public meeting but the facility was not proactive in involving the community.

Another landfill facility manager located in an urban community reported that in his experience, public hearings went well when the public did not attend and participate. The facility manager from an electricity-producing industry in a rural community commented that public outreach is not a core function at

his facility. Yet, in contrast, a landfill in a rural community held three public meetings at which the facility owners not only presented information regarding plans for their facility's growth and development but they also provided an opportunity for community residents to voice their concerns and ask questions. As a result, by the time the public hearing was held, all of the residents' issues had been addressed and no conflict occurred.

When asked if improving environmental communication would benefit the environmental permitting process, the responses also varied. NHDES was supportive of this action by stating that the public needs to be able to readily voice their concerns and be heard so that issues and concerns do not build up to the point where the interactions become contentious. In contrast, one facility manager stated that it was neither practical nor an efficient use of his time to interact with the community prior to initiating the permitting process. Yet another manager specifically noted that being proactive was helpful in enabling the facility to get its work done in the community they shared with the residents.

In addition, the responses were also mixed about whether an appointed liaison would help improve environmental communication. NHDES stated that it was essential that each stakeholder trusted this person but they (NHDES) could not elaborate on how this trust would be built. Yet others at NHDES believed that this person could be a barrier in the communication process. One facility manager stated that having one person as a contact would

be helpful in improving environmental communication. Another facility manager, however, stated that this liaison would be "beat up" by the stakeholders and would not be helpful.

The key recommendations of NHDES and the facility managers to improve the communication with affected communities regarding environmental permitting decisions included conducting more informal "conversation"-type meetings prior to the public hearing, presenting information at an appropriate educational level, and engaging in public outreach.

Discussion

Based on our systematic examination of the environmental communication that occurred among a state environmental agency, six Title V operating facilities in urban and rural communities, and the public concerning environmental permitting decisions perceived to impact environmental and human health, we developed the below recommendations that are applicable to urban and rural communities and are not facility-specific (e.g., landfill versus incinerator). Our recommendations provide a set of rubrics to help guide effective environmental communication among stakeholders in urban and rural communities when dealing with environmental permitting decisions (see sidebar above).

1. Facilities should initiate communication early with the residents of the communities they share. Early communication with potentially affected residents by neighboring facilities could facilitate the relationship between these two stakeholders and serve as the foundation for next steps. This recommendation arose from the experiences of two facilities that were completely different in their public outreach practices. One was not proactive in involving the community during the environmental permitting process and waited until the public hearing to address the community and explain the intent of their facility's operations. In this case, the relationship between the facility and public was strained from the beginning of the permitting process and the situation became the facility *versus* the public, instead of the facility working *with* the public. The other facility, however, was proactive in involving the community and held public information sessions prior to the public hearing to address the community's concerns. Our work did not demonstrate a need to initiate communication differently

depending upon whether the facility was located in an urban or rural setting. Interestingly, these different experiences both occurred in rural communities.

2. *State government agencies could provide seminars to educate facility managers about community engagement.* The state agency could offer seminars designed to educate facility managers on public outreach practices prior to the Title V permitting application process. These educational seminars would provide opportunities for facilities to develop an understanding of the concerns typically raised by communities and discuss how to be a “good neighbor” based on best practices.

In addition, in order to maintain the neutrality of the official Title V permitting process, yet be proactive in communicating with stakeholders, the state agency could require the facility to include several objective public outreach activities that support public participation. An example could include engaging the community prior to the public hearing, via nonregulatory communication, such as a public meeting, which would ease the environmental permitting process by providing an opportunity for the communities’ concerns to be addressed.

3. *Advocate that representatives from state government public health and environmental health bureaus be present at public hearings.* The concerns expressed by the public are so varied that no one agency could address them. The inability to answer questions during public hearings led to the community’s frustration and increased stress on the communication among the stakeholders. Therefore, representatives from each public health and environmental health state bureau should be represented on the public hearing panel to address a broad array of questions and reduce the feelings of distrust. A major caveat to this particular recommendation is that although the above-mentioned bureaus represent state government, they may function under different or even contrary guidelines so thorough preparation and communication among these stakeholders is essential.

4. *Establish citizen advisory committees.* This action could provide an opportunity for citizens to voice their concerns or ask

questions about the facility operations on a regular basis. One facility manager explained that this has been a great way for the public to have direct communication with officials about the permitting process and their concerns.

5. *Be accountable for communication among stakeholders.* To accommodate the high number of complaints the facility was receiving, one landfill utilized web-based technology for the public to express their concerns. It is important, however, that this communication be “two-way.” For example, numerous entries stated that many concerns had been filed online, yet the problems complained about were still in existence and the facility failed to respond to any concerns or requests for information. Therefore, as part of the routine evaluation of their communication with the public, facilities need to establish processes to assure a timely response to the communities’ comments. For example, the use of a blog or responses to frequently asked questions posted to the facility’s web page would be useful.

6. *Increase state agency awareness.* In several instances, the public contacted U.S. EPA because they were unaware of who to contact at state government or the facility. Increasing awareness of the state agency as a stakeholder in the environmental permitting process would help the public understand who to contact concerning environmental issues and facilitate relationship building between the state agency and the public. This may be accomplished through state agency and facility-sponsored community events or attendance at existing community events to raise awareness.

7. *Use of appropriate information and meeting logistics for all stakeholders.* Information complexity as a communication barrier for the public was evident in the public hearing audiotapes and interviews with facility managers. For example, the public requested clarification by NHDES ARD concerning emissions and health effects and asked what “all the figures and tables meant.” Furthermore, facility managers expressed concern that the information presented by NHDES ARD to the public was too complex, thus leading the public to contact the facility.

In addition, traditionally, the room for public hearings is organized in a polarized manner where the state agency and the facility are at one end and the community is at the other end. This creates an “us” versus “them” perception, which can inhibit positive communication among stakeholders. It would be optimal for the room to be organized so the stakeholders are interspersed at a roundtable. This format allows each participant to see each other and not feel as though any one viewpoint is valued over another.

8. *Provide routine updates to stakeholders.* State agency and Title V facilities should provide concerned community members regular updates about progress made to address their concerns. These updates could be communicated via a LISTSERV, mass mailings of a newsletter, and updates posted to NHDES’ and the facility’s web page. This practice would keep the public informed about what the state agency and facilities are doing and can dissuade distrust or contention from developing. The approach with this recommendation is to err on the side of too much communication as opposed to too little, which could breed misunderstanding and the eventual loss of a valuable community stakeholder, and just as importantly, a community partner.

Conclusion

Effective environmental communication among all stakeholders is essential when addressing environmental concerns and their related human health risks. McComas (2003) and Bennett (1999) describe how organizations will earn the trust of the community based on the content and delivery of their communication; the willingness for an inclusive, community-based participatory interaction; and their reputation for taking action. Agreement exists that environmental communication among stakeholders be an integral component of the working relationship and that resources be allocated to develop public outreach plans that are tailored to the specific community (Brauer et al., 2004; Parkin, 2004). The recommendations proposed herein should help guide effective environmental communication among stakeholders in urban and rural communities when dealing with environmental permitting decisions. 🐼

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▶ GUEST COMMENTARY

Setting a New Standard: Increasing Capacity at the Fort Drum Environmental Health Department

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At the Fort Drum Medical Department Activity environmental health (EH) section, the soldiers have changed their EH program from barely existent to cutting edge. With the leadership of Section Chief MAJ Ronald Havard, environmental science officer, a small section that was barely meeting mission requirements has grown in both mission scope and capability. From increasing the section's capacity by purchasing new equipment, creating and adapting new procedures, increasing communications and community involvement, to expanding the staff's cross-training opportunities, the environmental health section has grown in leaps and bounds. In doing so the EH section of Fort Drum is raising the bar for preventive medicine operations in the U.S. Army.

The EH section has increased its mission capability by cross-training its staff in a variety of subjects. In addition to pesticide application, ServSafe (food preparation certification), and medical waste training provided to most environmental health technicians, Fort Drum EH techs have also been trained in the hazard analysis critical control point (HACCP) approach, hazardous waste operations and emergency response (HAZWOPER), mold remediation, certified pool/spa operator, hearing conservation, and the medical effects of ionizing radiation. With these new skills the EH technicians are better equipped to perform their duties and manage any EH-related issues that may develop at Fort Drum while providing additional support to the 10th Mountain Division during technical assistance visits, staff assistance visits, and pre- or postdeployment activities.

By obtaining these additional skill sets the EH technicians have also been able to increase

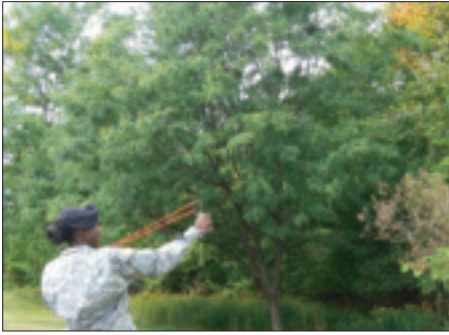
their training capability for the soldiers and civilians at Fort Drum. The EH section provides medical threat briefings for deploying soldiers monthly, food service/food handling classes for family readiness groups fundraisers, ServSafe classes for food handlers, new employee orientation briefings, and seasonal climatic injury prevention classes. In fiscal year 2009–2010, the soldiers at the Fort Drum environmental health section trained over 10,000 soldiers and family members.

Another way the EH section has increased its mission capability is with the addition of new procedures and processes. GPS is now used in conjunction with the entomology program to coordinate overall vector control efforts. Whenever an entomological task is performed, including mosquito, mosquito larvae, or tick surveillance, rabies bait drop, or larviciding (see photo top left on page 27), the GPS coordinates are recorded. These GPS coordinates are entered into a GIS matrix, which are then transferred to a map of the installation. This allows the technicians to track their efforts to ensure efficient application of resources, establishing a baseline for possible disease surveillance, and also aids in predicting where problems may arise so that preventive measures can be taken.

A new process developed by MAJ Havard is a global environmental health management program called the environmental health program status report (EHPSR). This program provides EH-related performance measures/indicators as well as a "guidebook" for all EH-related activities/tasks within a typical U.S. Army garrison operation. These 300+ EH tasks are grouped into 10 separate sections with the driving requirements outlined within each of the respective sections subelements. Each of

these tasks is prioritized and assigned a point value based on overall risk/exposure. Once a baseline performance measure has been established, the garrison command structure can evaluate the health of their environmental program by reviewing quarterly and annual performance measures. These performance measures are further identified by the use of a balanced scorecard system and the assigning of either a "green," "amber," or "red" status for each of the 300+ task items. The EHPSR "guidebook" is utilized as a supplemental tool to provide guidance for incoming EH leaders on specific EH requirements and to decrease the subjectivity when measuring those task requirements. This program was so successful that in 2011, U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) integrated it into a public health initiative and made it a mandatory program with quarterly reporting requirements for all U.S. Army garrison EH operations.

Through the utilization of surplus funds (or medical care support equipment/capital expense equipment) the EH section has been able to acquire new environmental health and industrial hygiene labs, testing and surveillance equipment and both the BactiQuant (see photo top right on page 27) and Mycometer Fluorometric analyzers. The BactiQuant system measures total bacteria activity in water, air, and surface samples, while the Mycometer is used to detect mold activity on surfaces. This cutting-edge technology was developed in Denmark and is new to the Department of Defense (DOD). The Mycometer system was also initially introduced to USACHPPM-South in 2004 by MAJ Havard, creating the first field-expedient mold-detection capability within



PFC Smith conducting larvicide operations on Fort Drum, utilizing a sling shot placement technique to distribute packets.



SPC Barth conducting water samples utilizing the BactiQuant equipment.

all DOD elements. Now by introducing the BactiQuant to Fort Drum, the first DOD element is available with the capability of conducting field-expedient rapid-analysis capabilities for bacteria and chemical warfare agents. This capability reduces the analysis lag time from a matter of days to as soon as 45 minutes.

The EH section has also increased its visibility in the Fort Drum community by publishing articles in the post newspaper; developing and providing informational handouts to the community; and participating in post events like “Safety Days,” special events, and fundraisers. The articles published at least quarterly deal with projects the section is working on, safety concerns, and tips to avoiding environmental issues. By taking an active role in the post “Safety Days” activities, the EH department has the opportunity to highlight some of the environmental challenges of upstate New York to the soldiers and family members of Fort Drum. Another activity that EH is heavily involved with is the annual Mountain Fest air show. During this event, dozens of food vendors from local fundraising organizations sell food at temporary stands during a weekend in June. This

event draws 50,000+ attendees over a three-day period and has become so popular that the cable music channel VH1’s Top-20 Video Countdown was filmed at Mountain Fest in 2009. The EH section is involved with the overall organization of this event by providing extra food handler classes for the vendors, assisting with public health facilities and water point layouts, and inspecting the individual vendors during the show to ensure the stands are meeting sanitary requirements.

We have developed our affiliation with the local county public health department simply by communicating and interacting with them on issues ranging from rabies control to disease surveillance and providing subject-matter experts to sit on their emergency management council. The upstate area of New York has had a continuing rabies issue in the local wildlife population, so to fight this issue a rabies baiting program has been developed. This program is designed to provide the rabies vaccine to the local wildlife population in an effort to control the rabies infection rate among those populations. The vaccine is hidden in individual fish-meal baits, which are hand distributed to the surrounding areas. Because of the magnitude of this task, Fort Drum EH partners with the local

public health department to ensure the rabies bait is spread to the areas that need to be vaccinated. In doing so, Fort Drum EH distributed over 4,100 individual baits alone, thus contributing to the well-being of the garrison and the local communities surrounding the installation. These bait drop locations are then entered into the Fort Drum GIS. These results are then cross-referenced with the state health department’s rabies GIS tracker to ensure effective utilization of resources and provide the most significant impact on controlling the rabies infection rates.

In addition to classes, equipment, and new outreaches to the Fort Drum community, the EH section has increased its communication with the environmental health community. In the past year the EH section has obtained memberships with NEHA, the World Safety Organization, and the Institute of Professional Environmental Practice. These affiliations allow the section to communicate with other professionals in the field while building credibility and professionalism with EH customers and enable the EH staff to remain current with environmental health issues.

Fort Drum’s EH section has become a model for other EH programs on U.S. Army installations. By increasing the soldiers’ technical skill sets, providing a wide range of training and education to the local population and command, becoming more involved with the local community, developing new process and programs, and acquiring new equipment, the Fort Drum EH section is “setting a new standard” for EH operations in the garrison environment. 🐾

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▶ DIRECT FROM ATSDR



Vinicius C. Antao,
MSc, MD, PhD



D. Kevin Horton,
MSPH, DrPH

The National Amyotrophic Lateral Sclerosis (ALS) Registry

Editor's Note: As part of our continuing effort to highlight innovative approaches to improving the health and environment of communities, the *Journal* is pleased to bring back the bimonthly column from the U.S. Agency for Toxic Substances and Disease Registry (ATSDR). The ATSDR, based in Atlanta, Georgia, is a federal public health agency of the U.S. Department of Health and Human Services and shares a common office of the Director with the National Center for Environmental Health at the Centers for Disease Control and Prevention (CDC). ATSDR serves the public by using the best science, taking responsive public health actions, and providing trusted health information to prevent harmful exposures and diseases related to toxic substances.

The purpose of this column is to inform readers of ATSDR's activities and initiatives to better understand the relationship between exposure to hazardous substances in the environment and their impact on human health and how to protect public health. We believe that the column will provide a valuable resource to our readership by helping to make known the considerable resources and expertise that ATSDR has available to assist communities, states, and others to assure good environmental health practice for all is served.

The conclusions of this article are those of the author(s) and do not necessarily represent the views of ATSDR, CDC, or the U.S. Department of Health and Human Services.

Vinicius Antao is the registries team leader in the Environmental Health Surveillance Branch within the Division of Toxicology and Human Health Sciences at ATSDR. He received his MSc from Fluminense Federal University, his MD from Petropolis Medical School, and his PhD from Sao Paulo University, all in Brazil. Kevin Horton is chief of the Environmental Health Surveillance Branch within the Division of Toxicology and Human Health Sciences at ATSDR. He holds a BA from Emory University, an MSPH from Tulane University School of Public Health and Tropical Medicine, and a DrPH from the University of Georgia's College of Public Health.

Amyotrophic lateral sclerosis (ALS) is a progressive and often fatal neuromuscular disease. Most people die within 2–5 years of being diagnosed with ALS (Mitsumoto, Chad, & Pioro, 1998). Community concerns about perceived clusters of cases of ALS have challenged public health agencies to consider the possible contribution of environmental contaminants to the development of this disease. The general categories of possible environmental risk factors that have been investigated include heavy metals, trace elements, solvents and other volatile organic chemicals, ionizing and non-ionizing radiation, and agricultural chemicals.

Several investigations have been conducted of heavy metal exposure, particularly lead, as a risk factor for ALS. Some case-control studies demonstrated a positive association between past exposure to lead and risk of ALS (Armon, Kurland, Daube, & O'Brien, 1991; Kamel et al., 2002; Roelofs-Iverson, Mulder, Elveback, Kurland, & Molgaard, 1984). Also, the epidemiologic literature offers some support for an association between ALS and past exposure to organic solvents (Gunnarsson, Lindberg, Söderfeldt, & Axelson, 1991; McGuire et al., 1997).

In addition, certain occupations, such as military work, have been listed as a risk factor for ALS (Nicholas et al., 1998; Schulte, Burnett, Boeniger, & Johnson, 1996; Sutudja et al., 2009; Weisskopf et al., 2005). Several other potential risk factors have been evaluated in the scientific literature including infectious agents (Fang et al., 2011), nutritional intake (Okamoto, Kihira, Kobashi et al., 2009; Wang et al., 2011; Woolsey, 2008), physical activity, and trauma (Beghi et al., 2010; Okamoto, Kihira, Kondo et al., 2009; Piazza, Siren, & Ehrenreich, 2004; Strickland, Smith, Dolliff, Goldman, & Roelofs, 1996).

The uncertainty about the incidence and prevalence of ALS, as well as the lack of knowledge about the role of environmental exposures in the etiology of ALS, has created a need for structured data collection. In 2008, President Bush signed the ALS Registry Act into law, allowing the Agency for Toxic Substances and Disease Registry (ATSDR) to create the National ALS Registry. The purpose of the registry is to quantify the incidence and prevalence of ALS in the U.S., describe the demographics of persons with ALS, and examine risk factors for the disease.

When the law was enacted, ATSDR was already conducting four pilot projects (during 2006–2009) to determine the feasibility of creating a National ALS Registry. Results from these pilot projects showed that approximately 80% of ALS patients could be found through existing national databases. Combined methodologies would be needed, however, to identify a larger portion of individuals with ALS.

In 2009, ATSDR implemented the National ALS Registry using a two-pronged approach to better describe the epidemiology of ALS in the U.S. and its potential risk factors. The first approach uses existing national administrative databases, including Medicare, Medicaid, Veterans Health Administration, and Veterans Benefit Administration records to identify prevalent cases based on an algorithm developed through the pilot projects. The National ALS Registry is the first national surveillance system to use existing administrative data as a major source of case ascertainment.

The second approach, implemented in the fall of 2010, uses a secure web portal to capture

cases not included in the national administrative databases. This approach allows patients to self-identify and enroll in the ALS registry and take risk factor surveys. Current risk factor surveys include sociodemographic characteristics, occupational history (most recent and longest held jobs), military history, cigarette smoking, alcohol consumption, physical activity, family history of neurodegenerative diseases, and disease progression. In the near future, ATSDR expects to include additional surveys on residential history, pesticide exposures, occupations and hobbies involving toxic exposures, trauma (e.g., traumatic brain injury and electrical shocks), caffeine consumption, reproductive history, and health insurance information.

In addition, ATSDR is concurrently implementing surveillance activities that will allow for timely population-based case estimates of ALS in smaller defined geographic areas (i.e., at the state and metropolitan levels). Currently, Texas, Florida, New Jersey, Philadelphia, Chicago, Atlanta, Detroit, Los Angeles, and San Francisco are participating. These local surveillance activities will actively identify neurologists who diagnose or provide care for persons with ALS and check their medical records to find possible cases of ALS that have not been reported to the registry. This process will help ATSDR evaluate the registry's completeness by comparing state and local data to data from the same areas collected in the registry. If some areas or groups are not well represented in the registry, ATSDR will find ways to reach these populations.

ATSDR is also developing a system to inform persons with ALS about new research studies. When researchers send ATSDR infor-

mation about their studies, ATSDR will verify that the study has been approved by the researcher's institutional review board. Then the agency will e-mail information about the study to registrants who have agreed to be contacted about such projects. Registrants will have to contact the researcher if they want to be in the study.

Finally, ATSDR is funding a feasibility study for the creation of a national bank of biological specimens—blood, saliva, and tissue—known as a bioregistry. These samples would come from people in the ALS registry. Linking the specimens to the information collected from registry participants will make the registry even more useful.

Many environmental causes have been implicated as the etiology of ALS. This disease, however, remains without a definite etiology. Moreover, the true burden of ALS is not known in the U.S. The National ALS Registry is responding to these scientific gaps by collecting nationwide data on disease prevalence, assessing risk factors for the development of ALS, and exploring ways of facilitating research on ALS. The registry web portal can be accessed at www.cdc.gov/als.

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Who Should Apply?

Those with a genuine interest in expanding their knowledge and commitment to obtaining and encouraging radon-resistant techniques in new residential construction (particularly in those areas with high radon risk potential). We are strongly encouraging joint applications that involve a public/environmental health professional paired with a building code official, zoning or planning department official, or an interested builder or representative of a homebuilders association from the same community. These individuals should be prepared to serve as resources for residential construction activities in their area for a minimum of one year.

What?

The National Environmental Health Association (NEHA) is sponsoring a 2½ day (all expenses paid) training in Washington, DC. The training is designed to enhance your efforts to implement radon-resistant new construction (RRNC). You will work with U.S. EPA staff, NEHA field partners who have successfully implemented RRNC in their communities, local code officials and builders, other national affiliate partners, and nationally-recognized instructors. You will see specific examples of how to develop an effective, results-oriented program. And, you will develop your own comprehensive strategy to guide you in your efforts in promoting RRNC as part of your radon risk reduction strategy. The training will include an extensive overview of RRNC techniques and presentations on radon health effects, including recent research.

Why?

By the end of this training you will be knowledgeable in the technical components of RRNC and your state and local building code process. You will also acquire new skills to create consumer demand, build local coalitions, and work with other nonprofit affiliates and organizations such as Habitat for Humanity and other homebuilder associations. You will use this knowledge and these skills to develop a community action plan that contains specific and measurable goals for your program.

When?

November 27–29, 2012. Tuesday, November 27, will be a travel day; please arrive by 4:00 p.m. for a short evening session and reception. The class will then meet all day on the 28th and 29th. Return home will be Thursday, November 29.

How to Apply

Applications must be received by the close of business on Monday, October 15. Participants will be notified by Friday, October 19, if selected.

Applications must include:

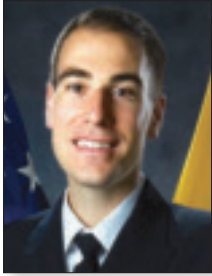
- Name, position title, full mailing address, phone, fax, and e-mail address.
- Brief description of your current or planned radon activities (include any organizations you are or will be working with).
- A description of the area to be served and the radon zone classification, if known, and approximate number of new residential construction building permits in the past year.
- Any previous radon or RRNC training you have received.
- A brief statement indicating that you have the support of your management to undertake this program.

Electronic applications should be e-mailed to:

Vanessa DeArman at vdearman@neha.org

For questions:

Contact Vanessa DeArman at 303.756.9090, ext. 311 or vdearman@neha.org



CDR Arthur M. Wendel,
MPH, MD

Establishing the Practice of Health Impact Assessment in the United States

Editor's Note: NEHA strives to provide up-to-date and relevant information on environmental health and to build partnerships in the profession. In pursuit of these goals, we feature a column from the Environmental Health Services Branch (EHSB) of the Centers for Disease Control and Prevention (CDC) in every issue of the *Journal*.

In this column, EHSB and guest authors from across CDC will highlight a variety of concerns, opportunities, challenges, and successes that we all share in environmental public health. EHSB's objective is to strengthen the role of state, local, and national environmental health programs and professionals to anticipate, identify, and respond to adverse environmental exposures and the consequences of these exposures for human health. The services being developed through EHSB include access to topical, relevant, and scientific information; consultation; and assistance to environmental health specialists, sanitarians, and environmental health professionals and practitioners.

The conclusions in this article are those of the author(s) and do not necessarily represent the views of the CDC.

CDR Arthur M. Wendel is a family and preventive medicine physician and team lead of the Healthy Community Design Initiative within CDC's Division of Emergency and Environmental Health Services in the National Center for Environmental Health.

It's 4:00 p.m., Friday afternoon, and someone unfamiliar is knocking on your office door. She introduces herself as a city planner and asks whether you could help her with an upcoming redevelopment decision. She knows the health department has environmental health, chronic disease, and injury programs, and that redevelopment affects these issues. She came to your office first because she perceives redevelopment as a change in the environment. Through her

planning education she has heard of "Health Impact Assessment" (HIA) and thinks it would help this situation.

The practice of HIA acknowledges that decisions made outside of the health sector can profoundly affect public health. Furthermore, the health sector's engagement can promote evidence-based policy change. HIA practice is growing and environmental health professionals frequently lead the charge. The National Prevention Strategy states that HIA can facilitate ac-

complishing the key strategy of building healthy and safe community environments (National Prevention Council, 2011). As the provided scenario implies, awareness of HIA has reached city planners and associated professionals.

HIA is a method to incorporate health into decision making. The National Research Council's (NRC's) formal definition of HIA is as follows:

HIA is a systematic process that uses an array of data sources and analytic methods and considers input from stakeholders to determine the potential effects of a proposed policy, plan, program, or project on the health of a population and the distribution of those effects within the population. HIA provides recommendations on monitoring and managing those effects (National Research Council [NRC], 2011).

What does this mean? HIA is akin to a pre-operational physical for communities. Before patients undergo major surgery, their physicians conduct thorough examinations, identifying health issues that could be impacted by the surgery and recommending actions to improve outcomes. HIAs offer similar checkups for communities, and environmental health professionals can be communities' health consultants.

HIA practice in the U.S. was reviewed last year by NRC. HIAs are completed in a six-step process. The first is *screening*, which asks the question, "Is the HIA worthwhile?" *Scoping* is next—determining what health outcomes to consider. Characterizing the beneficial and adverse health effects of the proposal (and alternatives) occurs during *assessment*. Identifying strategies to improve health makes up the *recommendation* step. Documenting the process and communicating the findings occurs in the *reporting* step. Finally,

tracking changes in the health indicators and evaluating the HIA comprise the *monitoring and evaluation* step. NRC also identified three major areas of effort needed to advance HIA: societal awareness of and education about HIA, policies to support HIA, and research on and scholarship in HIA (NRC, 2011).

The Healthy Community Design Initiative within the Centers for Disease Control and Prevention's (CDC's) National Center for Environmental Health has built tools and resources to engage in HIA and funds six HIA programs. Our Web site (www.cdc.gov/healthyplaces/hia.htm) contains information about, and provides links to, various partners and resources, including online training programs and toolkits (Centers for Disease Control and Prevention, 2011). Reviewing the online course (professional.captus.com/Planning/hia) (Captus Press Inc. & American Planning Association, 2008) and the Minimum Elements and Practice Standards for Health Impact Assessment (North American HIA Practice Standards Working Group, 2010) is a great start. Allied partners within

CDC (e.g., Division of Nutrition, Physical Activity, and Obesity) and external to CDC (e.g., Health Impact Project and San Francisco Department of Public Health) help advance HIA.

Back to the scenario—how can you help the city planner at your door? Environmental health professionals are adept at considering a breadth of health outcomes, a required skill for HIA. Consider this an opportunity to influence another organization's approach to a problem. You should ask about the project and affected population, identify when design decisions are being made, and ascertain the public engagement process. Reviewing preliminary designs can help identify problems before they become too expensive to fix. You might see a fence separating residents from a grocery store or a building's air intakes located close to a freeway. For community design issues, the most common health effects relate to injuries, chronic disease, and pollution exposure; thinking through the impact on each major health system can help organize your approach. The effect on vulnerable populations is especially important to consider. While not every project will benefit from HIA,

the opportunity to forge a relationship with people who design your community is invaluable.

Environmental health has a history of strong relationships with entities that create infrastructure such as water and housing systems. These relationships have led to some of public health's greatest strides forward. Current leading causes of death and disability, including diabetes, injuries, asthma, and heart disease, are influenced by infrastructure and community design. Many environmental health departments brought HIA to their communities to address these issues; with a bit of education on HIA and a well-screened project, environmental health practitioners are well suited to lead HIAs in their communities. 🐼

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▶ DEMYSTIFYING THE FUTURE



Thomas Frey

The Rise of the SuperProfessor: The Walls of the Ivory Tower Are Coming Down

Editor's Note: Significant and fast-paced change is occurring across society in general and our profession in particular. With so much confusion in the air, NEHA is looking for a way to help our profession better understand what the future is likely to look like. The clearer our sense for the future is, the more able we are to both understand and take advantage of trends working their way through virtually every aspect of our lives today. To help us see what these trends are and where they appear to be taking us, NEHA has made arrangements to publish the critical thinking of the highly regarded futurist, Thomas Frey.

The opinions expressed in this column are solely that of the author and do not in any way reflect the policies and positions of NEHA and the *Journal of Environmental Health*.

Thomas Frey is Google's top-rated futurist speaker and the executive director of the DaVinci Institute®. At the Institute, he has developed original research studies enabling him to speak on unusual topics, translating trends into unique opportunities. Frey continually pushes the envelope of understanding, creating fascinating images of the world to come. His talks on futurist topics have captivated people ranging from high-level government officials to executives in Fortune 500 companies. He has also authored the book *Communicating with the Future*. Frey is a powerful visionary who is revolutionizing our thinking about the future.

For colleges and universities, the great age of experimentation is now upon us.

Recently, Harvard and MIT announced a new nonprofit partnership, known as edX, to offer free online courses from both universities.

The Minerva Project recently announced it will become the first elite American University to be launched in over a century, at the same time, transforming every aspect of the university-student relationship. The Ronin

Institute is promising to reinvent academia, but without the academy.

The University of the People (UoPeople) is the world's first tuition-free online university dedicated to the global advancement and democratization of higher education.

In addition, iTunesU, Khan Academy, Learnable, Udemy, Codecademy, Udacity, and a number of other online courseware providers are offering their own approach to next generation learning.

But somewhere, lost in the middle of this battle of the institutions, are the lowly professors upon whom these organizations were built.

That is about to change, and here's why.

The Great Disconnect

As the student loan bubble nudges ever closer to a financial implosion, and the flow of information on the Internet disrupts every traditional delivery mechanism, a number of questions begin to surface.

Will online learning diminish the face-to-face community that is the heart of the college experience? Will it elevate functional courses in business and marginalize subjects that are harder to digest in an online format, like philosophy? Will fast online browsing replace deep thinking?

Colleges and universities carry with them considerable inertia. They have long-standing traditions, huge alumni networks, solid brands in the minds of consumers, and are more durable than corporations. Many have lasted centuries and are still going strong. Most have integrated themselves into their respective communities with multiple funding tentacles, often benefiting from massive state-funded budgets and intense fundraising operations that extend around the world.

People attend colleges for many reasons, including a desire for a better job; a sense of personal accomplishment; to improve their resume, status, and prestige; build relationships; and to have fun. All of these reasons boil down, however, to one overarching motivation—the quest for a better life.

Over the years colleges have evolved from a simple place of learning into a vast array of potentials. In the end, classrooms

and teachers are only a tiny portion of the collegiate experience.

Touch points for the college experience include dorm life, textbooks, credits, sports, friends, parties, social circles, fraternities, sororities, libraries, computers, clubs, campus events, research, writing papers, classrooms, teachers, beer, advisors, labs, job interviews, and much more.

Ironically though, most of these touch points have been relegated to “all that crap that happens outside the classroom.” College friends, parties, social events, and all the other “stuff” provides many more of the ingredients for college being a life-changing experience than all those fact-cramming lectures could ever hope to achieve.

Yet credits are only given for completed courses.

Typically, young people begin the process at age of 18 and exit between the ages of 22 and 24. As they leave, they are not only better educated, but also more mature, with a new circle of friends, and a cadre of stories that will frame their thinking for the rest of their lives.

Any person fighting a war understands that the outcome of the battle is highly dependent upon the caliber of people standing next to them. Similarly, the outcome of the college experience is heavily dependent upon the caliber of students involved.

Over the years, the “rules of the game” have been erroneously written to exclude the value of the experience, thereby giving undue advantage to both low-cost and minimal-experience providers. With college costs spiraling out of control, students are rightfully asking, “What’s the cheapest way to get a diploma?”

Celebrity Professors, a Scarce Commodity

Much like Henry Ford’s “control everything” approach to building cars at the River Rouge Plant where raw materials were brought into one end and finished cars rolled out the other end, colleges have maintained tight control over virtually every aspect of the academic food chain happening on their campuses.

Professors are carefully recruited, classroom times and schedules are thoroughly planned, courses are tightly prepared, degrees are strategically framed around in-house talent, and academic accomplishments are meticulously positioned to help brand the experience.

For this type of system, the days are numbered. The walled gardens of academia are losing their walls.

Institutions who have professors locked under contract offer few options for extending influence beyond the traditional publishing route. That is changing with the availability of online courseware.

As an example, iTunesU, started in 2007, currently has over 1,000 universities participating from 26 countries. Their selection of classes, now exceeding the 500,000 mark, have had over 700 million downloads. In addition, they recently announced they were expanding into the K–12 market.

Even when colleges start playing catch-up, however, and begin offering Internet-based courses, the professors tend to get left out of the decision-making process. In most cases, courses are little more than a video camera in the back of the room fraught with low production values and irrelevant lengthy diatribes.

Professors are also being left out of marketing decisions, personal branding campaigns, and how the intellectual capital of their life’s work gets disseminated.

Universities can always add more professors, but an individual professor has a limit to how much they can produce over a lifetime. And that’s the nugget of scarcity that professors will demand greater control over in the future.

Moving From a History of Scarcity to a Future of Abundance

The “SuperProfessors” designation was officially launched in 2011 by the academic social network site FacultyRow.com.

People they judge to be worthy of the SuperProfessor title come from a peer-reviewed group of academics and consistently demonstrate excellence, passion, and clarity, throughout their academic careers.

“Technology is beginning to stratify academia,” according to FacultyRow expert Steven Lewis. “We are convinced that leading educators, or SuperProfessors, will become increasingly valuable going forward. Student classrooms and expert knowledge will continue to become global on a massive scale.”

Currently 4,000 professors have applied for the official 2013 SuperProfessor Award.

In much the same way the Nobel Prize rose to prominence in the early 1900s, Faculty-

Row hopes to set the stage for uncovering the best of the best in college faculties.

Unleashing the Celebrity Professor

Working as a professional speaker, I see many parallels between the teaching profession and the speaking profession. But one big difference is that professional speakers are not bound by the walls of a single institution.

Last fall when Stanford professors Sebastian Thrun and Peter Norvig offered their class, “Introduction to Artificial Intelligence,” to anyone who had a web connection, something amazing happened. More than 160,000 students, two-thirds of whom lived outside the U.S., enrolled for the class.

As a way to deal with the huge numbers, lectures and assignments—the same ones administered in the regular on-campus class—were posted and autograded online each week. Midterms and finals had strict deadlines.

Much of the course’s popularity can be attributed to the celebrity status of the professors. Sebastian Thrun headed up the Stanford team that won the DARPA Grand Challenge in 2005 and currently serves as the head of Google X, a lab created to incubate Google’s most ambitious and secretive projects. Peter Norvig is the director of research at Google.

While the Stanford brand played a significant role in the popularity of the course, it was the celebrity status of the two professors that made the course go viral.

This course served as a Woodstock moment for academia.

Thinking Long-Term

In addition to academic prowess, future SuperProfessors will be ranked according to attributes like influence, fame, clout, and name recognition.

Future criteria for winning the FacultyRow SuperProfessor designation will likely include benchmarks for the size of social networks, industry influencer rankings, and gauges for measuring effectiveness of personal branding campaigns.

But college courses can be much more than an expert talking in the front of a room. If the same college courses were handed off to television producers, game designers, or mobile app developers, we’d see radically different approaches to making the material fun, interesting, and engaging. Look for this

approach in the next generation of online programming.

People most effective at producing courseware in the future will have complete production studios staffed with video crews, interactive experts, gamification mavens, courseware experience specialists, usability teams, outcome testers, and much more. Leading the operation will be a celebrity SuperProfessor whose name extends far beyond traditional classrooms to the hearts and minds of nearly everyone on the planet.

Final Thoughts

Even though the Stanford class taught by Sebastian Thrun and Peter Norvig had over 160,000 students enroll for their class, a mind-numbingly high percentage of those

students, over 137,000, dropped out before completing it.

This is clear sign of our current experimentation phase where colossal mistakes are needed to test the limits of what's possible. But at the same time that we see colossal mistakes, we will also see colossal disruption, and many traditional colleges will begin closing their doors.

Thrun predicts that in 50 years only 10 universities will be left standing to deliver courses. Look for over half to be gone by as early as 2030.

Currently we are seeing a tremendous duplication of effort. Entry-level courses such as psychology 101, economics 101, and accounting 101 are being taught simultaneously by thousands of professors around the

globe. Once a high-profile SuperProfessor and brand-name university produces one of these courses, what's the value of a mid-tier school and little-known teacher also creating the same course?

As Ball Corporation executive Drew Crouch puts it, "Education is definitely moving from a history of scarcity to a future of abundance. Just like Gutenberg freed the written word, the Internet has freed information."

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UPCOMING NEHA CONFERENCES

July 9–11, 2013: Hyatt Regency Crystal City at Reagan National Airport, Washington, DC.

NEHA AFFILIATE AND REGIONAL LISTINGS

Colorado

September 26–28, 2012: 2012 Annual Education Conference & Exhibition, sponsored by the Colorado Environmental Health Association, Keystone Lodge & Spa, Keystone, CO. For more information, visit www.cehaweb.com/aec.html.

Connecticut

September 26–28, 2012: 50th Annual Yankee Conference, hosted by the Connecticut Environmental Health Association, Mystic Marriott, Groton, CT. For more information, visit www.cteha.org.

Florida

September 6–8, 2012: FEHA Annual Education Training Meeting and Trade Show, sponsored by the Florida Environmental Health Association, Royal Plaza Resort, Lake Buena Vista, FL. For more information, visit www.feha.org.

Illinois

August 29–30, 2012: South Chapter Annual Educational Conference, sponsored by the Illinois Environmental Health Association, Holiday Inn, Mount Vernon, IL. For more information, visit www.iehaonline.org.

Indiana

September 23–26, 2012: IEHA Annual Fall Educational Conference, sponsored by the Indiana Environmental Health Association, Inc., Bloomington Monroe County Convention Center, Bloomington, IN. For more information, visit www.iehaind.org/conference/html.

Missouri

October 3–5, 2012: 2012 Annual Education Conference, sponsored by the Missouri Environmental Health Association, The Resort at Port Arrowhead, Lake Ozark, MO. For more information, visit www.mmmfeha.org.

Montana

October 2–3, 2012: MEHA/MPHA Fall Conference: “Healthier People in a Healthier Environment,” co-sponsored by the Montana Environmental Health and Public Health Associations, Copper King Hotel and Convention Center, Butte, MT. For more information, visit www.mehaweb.org.

Nevada

July 31–August 2, 2012: 2012 NvEHA Annual Educational Conference, sponsored by the Nevada Environmental Health Association, Three Square, Las Vegas, NV. For more information, visit www.nveha.org/conf_reg_2012.html.

North Carolina

July 18–20, 2012: 66th Annual Interstate Environmental Health Seminar, hosted by the North Carolina Environmental Health Association, Fontana Village Resort, NC. For more information, visit www.wvdhhr.org/wvas/IEHS/.

Oregon

October 8–9, 2012: 2012 Annual Education Conference, sponsored by the Oregon Environmental Health Association, Oregon State University, Corvallis, OR. For more information, visit www.oregoneha.org/aec.htm.

Texas

October 9–12, 2012: 57th Annual Education Conference, sponsored by the Texas Environmental Health Association, Double Tree Hotel, Austin, TX. For more information, visit www.myteha.org.

Utah

September 19–21, 2012: 2012 Fall Conference, sponsored by the Utah Environmental Health Association, Provo, UT. For more information, visit www.ueha.org.

Wyoming

September 18–20, 2012: 2012 WEHA Annual Education Conference, sponsored by the Wyoming Environmental Health Association, Best Western Tower West Lodge, Gillette, WY. For more information, visit www.wehaonline.net.

TOPICAL LISTINGS

Water Quality

September 10–12, 2012: International Conference on Hydrology and Ground Water Expo, sponsored by the OMICS Group, San Antonio, TX. For more information, visit www.omicsonline.org/hydrology2012/.

INTERNATIONAL LISTINGS

October 21–28, 2012: 66th Annual Conference and Exhibition, sponsored by the Jamaica Association of Public Health Inspectors, Jamaica (location TBD). For more information, e-mail info@japhi.org.jm.

JEH QUIZ

FEATURED ARTICLE QUIZ #1

Derby District Redevelopment in Colorado: Case Study on the Health Impact Assessment Process

Available to those holding an Individual NEHA membership only, the *JEH* Quiz, offered six times per calendar year through the *Journal of Environmental Health*, is a convenient tool for self-assessment and an easily accessible means to accumulate continuing-education (CE) credits toward maintaining your NEHA credentials.

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JEH Quiz #5 Answers March 2012

- | | | | |
|------|------|------|-------|
| 1. e | 4. c | 7. b | 10. f |
| 2. a | 5. b | 8. c | 11. a |
| 3. b | 6. d | 9. b | 12. c |

➔ Quiz deadline: October 1, 2012

1. Health Impact Assessment (HIA) is a tool that examines potential health effects of proposed policies, programs, and projects and guides decision makers in developing them with health in mind.
 - a. True.
 - b. False.
2. Along with Tri-County Health Department (TCHD), the following individual(s) were part of the Derby Redevelopment Team:
 - a. the city mayor.
 - b. the city planner.
 - c. redevelopment consultants.
 - d. b and c.
 - e. all of the above.
3. Photovoice is a participatory assessment strategy that enables people to convey their community's strengths and weakness through photographs.
 - a. True.
 - b. False.
4. TCHD leveraged existing data from ___ to create maps to identify environmental characteristics that might influence health and safety.
 - a. the city
 - b. the regional planning organization
 - c. the transportation district
 - d. the local utilities
 - e. all of the above
5. The results of the walkability assessment revealed that only ___ of the participating residents frequently walked in and around the Derby District.
 - a. 15%
 - b. 37%
 - c. 51%
 - d. 57%
6. The Body Risk Factor Surveillance System (BRFSS) data revealed that Commerce City residents were ___ physically active compared to all Colorado residents for both leisure time and routine physical activity.
 - a. significantly more
 - b. significantly less
7. Based on data from the National Personal Transportation Survey of Americans, ___ feet is the distance that ___ of persons are willing to walk to access public transit.
 - a. 400, 70%
 - b. 500, 50%
 - c. 500, 70%
 - d. 700, 50%
8. The study also used ___ data to create maps to identify environmental characteristics that might influence health and safety.
 - a. bicycle and pedestrian crash
 - b. community employment rate
 - c. property infrastructure
 - d. a and c
 - e. all of the above
9. TCHD's HIA recommendations focused on city implementation actions.
 - a. True.
 - b. False.
10. Other BRFSS data used to determine health behaviors of Derby District residents included
 - a. health status.
 - b. obesity status.
 - c. genetic dispositions.
 - d. a and b.
 - e. all of the above.
11. Commerce City residents have ___ obesity rate compared to all residents in Colorado.
 - a. a lower
 - b. the same
 - c. a higher
12. Colorado residents' indication level of regular, moderate, or vigorous physical activity is ___ the Healthy People 2010 goal level.
 - a. lower than
 - b. the same as
 - c. higher than



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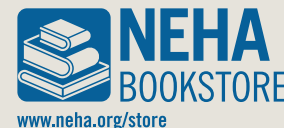


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Disaster Field Manual for Environmental Health Specialists

California Association of Environmental Health Administrators (2011)

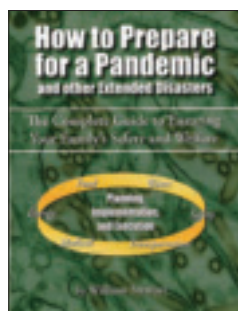


This manual serves as a useful field guide for environmental health professionals following a major disaster. It provides an excellent overview of key response and recovery options to consider as prompt and informed decisions are made to protect the public's health and safety. Some of the topics covered, as they relate to disasters, include water, food, liquid waste/sewage, solid waste disposal, housing/mass care shelters, vector control, hazardous materials, medical waste, and responding to a radiological incident. The manual is made of water-resistant paper and is small enough to fit in your pocket, making it useful in the field.

224 pages / Spiral-Bound Hardback / Catalog #535
Member: \$37 / Nonmember: \$45

How to Prepare for a Pandemic and Other Extended Disasters

William Stewart (2006)



This book provides valuable information on preparing for a pandemic or other extended disasters with a focus on the needs of a family. It provides information on the planning, implementation, and execution of family preparedness plans with a focus on food, water, safety, transportation, energy, and medical issues that arise during these times. This book is a must-have

for those interested in preparing their homes for the possibility of a severe pandemic or other disaster, as well as for public health professionals who are looked upon to provide guidance and support during times of disaster.

104 pages / Paperback / Catalog #764
Member: \$16 / Nonmember: \$18

The Community Planning Handbook: How People Can Shape Their Cities, Towns, and Villages in any Part of the World

Nick Wates (2000)

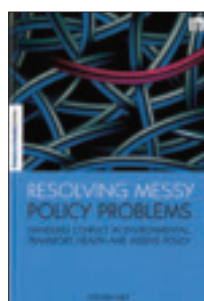


Growing numbers of residents are getting involved with professionals in shaping their local environment, and now a powerful range of methods is available, from design workshops to electronic maps. This book is the essential starting point for all those involved: planners and local authorities, architects and other practitioners, community workers, students, and local residents. It features an accessible how-to-do-it style, best-practice information on effective methods, and international scope and relevance. Tips, checklists, and sample documents help readers to get started quickly, learn from others' experience, and select the approach best suited to their situation.

230 pages / Paperback / Catalog #807
Member: \$32 / Nonmember: \$35

Resolving Messy Policy Problems: Handling Conflict in Environmental, Transport, Health, and Ageing Policy

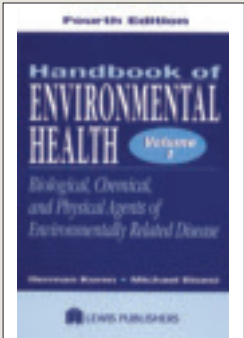
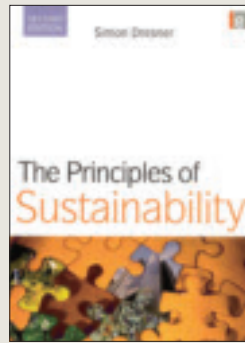
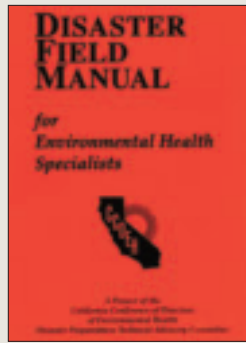
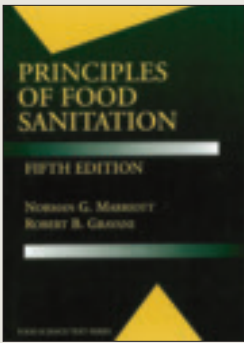
Steven Ney (2009)



Our lives increasingly take place in ever more complex and interconnected networks that blur the boundaries we have traditionally used to define our social and political spaces. Accordingly, the policy problems that governments are called upon to deal with have become less clear-cut and far messier. This book focuses on the intractable conflict that characterizes policy debate about messy issues. The author first develops a framework for analyzing

these conflicts and then applies the conceptual framework to four very different policy issues: the environment—focusing on climate change—as well as transportation, aging, and health. The aim is to contribute to a more refined understanding of policy making in the face of uncertainty and, most importantly, to provide practical methods for critical reflection on policy and to point to sustainable adaptation pathways and learning mechanisms for policy formulation.

210 pages / Hardback / Catalog #1080
Member: \$110 / Nonmember: \$117




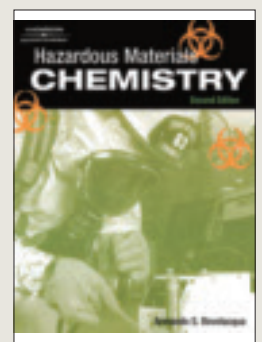
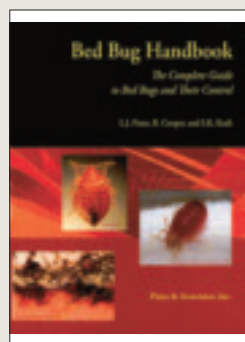
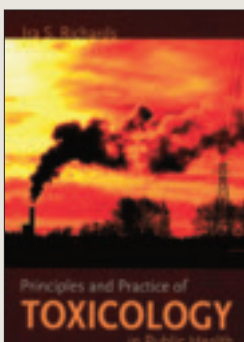
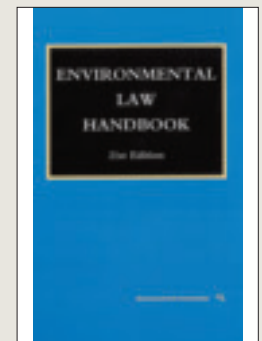
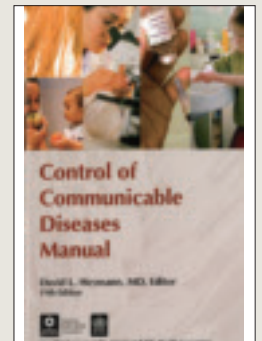
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2	Coutts, Christopher J., MPH, PhD, et al. Putting the Capital “E” Environment Into Ecological Models of Health	74.4 Nov 11 Pages: 26–29	Land Use Planning/Design	Management/ Policy	Public Health/ Safety	Sustainability	
3	Dark, Tyra, PhD, et al. 2005 Hurricane Surveillance: Measures to Reduce Carbon Monoxide Poisoning in All Floridians	74.9 May 12 Pages: 16–21	Disaster/ Emergency Response	Hazardous Materials/Toxic Substances	Indoor Air	Occupational Health/Safety	Terrorism/ All-Hazards Preparedness
4	Elloyan, Richard, REHS Burning Man, Extreme Environmental Health	74.10 June 12 Pages: 14–15	Food	General	Public Health/ Safety	Solid Waste	Wastewater
5	Foscue, Kenneth, MPH, et al. A Statewide Multiagency Intervention Model for Empowering Schools to Improve Indoor Environmental Quality	74.2 Sept 11 Pages: 8–15	Children’s Environmental Health	Indoor Air	Institutions and Schools	Public Health/ Safety	
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7	Hatfield, Thomas H., DrPH, REHS, et al. Global Benefits From the Phaseout of Leaded Fuel	74.5 Dec 11 Pages: 8–14	Hazardous Materials/Toxic Substances	Lead	Management/ Policy		
8	Heaney, Christopher, PhD, et al. Use of Community-Owned and -Managed Research to Assess the Vulnerability of Water and Sewer Services in Marginalized and Underserved Environmental Justice Communities	74.1 Jul/Aug 11 Pages: 8–17	Ambient Air	Drinking Water	Environmental Justice	Epidemiology	Wastewater
9	Hoover, Michael T., et al. Impacts of Biological Additives, Part 1: Solids Accumulation in Septic Tanks	74.5 Dec 11 Pages: 16–21	Solid Waste	Wastewater			
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11	Horacek, Tanya M., PhD, RD, et al. Sneakers and Spokes: An Assessment of the Walkability and Bikeability of U.S. Postsecondary Institutions	74.7 March 12 Pages: 8–15	Children’s Environmental Health	Institutions and Schools	Land Use Planning/Design	Public Health/ Safety	Research Methods

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13	Hout, Joseph J., MSPH, REHS, et al. Evaluation of CS (o-Chlorobenzylidene Malononitrile) Concentrations During U.S. Army Mask Confidence Training	74.3 Oct 11 Pages: 18–21	Hazardous Materials/Toxic Substances	Occupational Health/Safety	Public Health/ Safety	Terrorism/ All-Hazards Preparedness	
14	Massawe, Ephraim, ScD, et al. The Dilemma of Promoting Green Products: What We Know and Don't Know About Biobased Metalworking Fluids	74.8 April 12 Pages: 8–16	Hazardous Materials/Toxic Substances	Sustainability			
15	Miller, Charles W., PhD, et al. Murder by Radiation Poisoning: Implications for Public Health	75.10 June 12 Pages: 8–13	Hazardous Materials/Toxic Substances	International	Public Health/ Safety	Radiation/Radon	Terrorism/ All-Hazards Preparedness
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18	O'Bryant, Sid E., PhD, et al. Low-Level Groundwater Arsenic Exposure Impacts Cognition: A Project FRONTIER Study	74.2 Sept 11 Pages: 16–22	Children's Environmental Health	Drinking Water	Technology	Water Pollution Control/Water Quality	
19	Perez, Hernando, PhD, MPH, CIH, CSP, HHS, et al. Fish Consumption and Advisory Awareness Among the Philadelphia Asian Community: A Pilot Study	74.8 April 12 Pages: 24–28	Food	Hazardous Materials/Toxic Substances	Public Health/ Safety		
20	Pham, Mai T., MSc, et al. Food Safety Issues and Information Needs: An Online Survey of Public Health Inspectors	74.10 June 12 Pages: 22–29	Food	International	Public Health/ Safety	Workforce Development	
21	Raja, Dewan S., MBBS, MPhil, et al. Potential Health Hazards for Students Exposed to Formaldehyde in the Gross Anatomy Laboratory	74.6 Jan/Feb 12 Pages: 36–40	Hazardous Materials/Toxic Substances	Indoor Air	Institutions and Schools	Risk Assessment	
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23	Redwood, Diana, MPH, MS, et al. Occupational and Environmental Exposures Among Alaska Native and American Indian People Living in Alaska and the Southwest United States	74.9 May 12 Pages: 22–28	Epidemiology	Hazardous Materials/Toxic Substances	Occupational Health/Safety	Risk Assessment	

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Tracynda Davis, MPH

2012 Federal Laws, Regulations, and Guidelines for Aquatic Facilities: What You Need to Know to Inspect a Public Pool

Editor's Note: NEHA Technical Advisors are subject-matter experts who represent 30 different areas of environmental health expertise. These individuals are appointed by the NEHA president and are responsible for providing subject-matter expertise and counsel to NEHA's board of directors, staff, affiliates, and members. Within their areas of expertise, their specific duties include the following: staying abreast of the latest developments and educational needs of the profession; identifying and sharing trends and needs of importance; actively assisting in the development and implementation of the education offered at the NEHA AEC; assisting NEHA in responding to press inquiries, developing position papers, serving as an expert witness, and speaking on behalf of the association; and other activities requested and agreed upon by the NEHA board of directors. A complete listing of Technical Advisors can be found in the Special Listing section of the *Journal*.

The NEHA Technical Advisors' Corner was created to provide readers with relevant, timely, and useful information generated from the NEHA Technical Advisors. This feature will be printed occasionally throughout the year as content is made available to NEHA from the Technical Advisors.

Tracynda Davis is the director of environmental health programs at the National Swimming Pool Foundation. She is a member of the steering committee for the Centers for Disease Control and Prevention's Model Aquatic Health Code and served on four technical committees. She serves as Technical Advisor to NEHA's Recreational Health Section.

2012 is destined to be a year filled with new federal regulations and guidelines for public swimming pools and aquatic facilities. The Consumer Product Safety Commission (CPSC) changed its interpretation of the Virginia Graeme Baker Pool & Spa Safety Act in the fall of 2011 with a compliance deadline in 2012. In addition, the Americans with Disabilities Act (ADA) accessibility requirements were scheduled to take

effect this year. The Centers for Disease Control and Prevention's (CDC's) Model Aquatic Health Code (MAHC), which provides guidelines on the best available practices for protecting public health, published its modules for public comment on design, construction, operation, safety, maintenance, policies, and management. The following provides an update for environmental health specialists on the latest federal laws and guidelines for aquatic facilities.

Americans with Disabilities Act (ADA)

The ADA sets minimum standards for newly constructed and existing swimming pools, wading pools, and spas to make them accessible to people with disabilities. The Department of Justice (DOJ) is the federal agency charged with enforcing the ADA. All public entities, schools, and municipalities are required to meet ADA guidelines. This includes public accommodation facilities such as hotels, bed and breakfasts, timeshares, and vacation homes that operate as hotels.

Although the ADA does not affect private or residential property, it could still be considered a public accommodation if it allows members and nonresident use of the facility. Condominiums and homeowner associations may have to comply with the ADA if units are rented and availability is advertised. Private clubs (those with a restrictive membership) are typically not required to comply with the ADA. If the pool is open to non-members, however, then they must comply. States may be more stringent if they so choose.

If a facility provides accessibility equipment, the staff should be instructed on how to use the equipment and be knowledgeable on the safety considerations. If a facility is using pool chair lifts that aid a swimmer in getting in and out of a pool without using stairs, they must be available at each pool during hours of operation.

The ADA standards establish two categories that dictate the accessibility requirements of pools: 1) pools with more than 300 linear feet of pool wall require two accessible means of entry with at least one being a pool lift or sloped entry and 2) pools with less than 300 linear feet of pool wall require one accessible

means of entry that it is either a pool lift or sloped entry. If compliance is not readily achievable (due to cost, lack of resources, or product availability), the facility is advised to have a written "barrier removal plan."

Additional information on exemptions and permitted means of access can be found at www.ada.gov/regs2010/2010ADASTandards/2010ADASTandards.htm#pgfld-1011378.

March 15, 2012, was the original compliance date for all existing or newly constructed facilities to comply with the 2010 standards. In response to public comment and concerns, however, the DOJ has extended the date of compliance for existing pools, wading pools, and spas to January 31, 2013. On that date anyone can file a complaint or lawsuit if they think a facility should have accessibility and it does not.

In most localities, any new construction or building modification will not receive a certificate of occupancy without meeting the ADA requirements. States and local governments may adopt the latest guidelines into their codes or enforce stricter requirements if they choose.

For further information contact the ADA information line at 800-514-0301.

Virginia Graeme Baker Pool & Spa Safety Act (P&SS Act)

As of December 19, 2008, all operating public pools and spas must have suction outlet covers that meet the ANSI/ASME A112.19.8 (2007) standard or any successor standard. On July 27, 2011, CPSC unanimously approved ANSI/APSP 16-2011 as the successor suction outlet cover standard, which pool operators need to follow in order to comply with the P&SS Act. This standard is virtually identical to ANSI/ASME A112.19.8 and its two addenda.

In addition to the suction outlet cover requirement, if the pool has a single suction outlet (other than an unblockable suction outlet), the operator must install a second anti-entrapment device or system. The P&SS Act defines an "unblockable drain" as "a drain of any size and shape that a human body cannot sufficiently block to create a suction entrapment hazard." A secondary system can be an automatic pump shut-off system, gravity drainage system, safety vacuum release system, or a suction-limiting vent system. The operator can also disable the drain, taking into consideration the pool's filtration system and the regulations within

the particular jurisdiction. If a pool has dual or multiple suction outlets (per pump) that are separated by at least three feet or located on different planes, it may be exempt from the secondary backup device or system requirement.

In April 2010, CPSC issued a rule permitting a drain cover of certain specifications to be used to convert a blockable suction outlet into an unblockable suction outlet. In September 2011, CPSC revoked the April 2010 interpretation of an unblockable drain. As a result, an unblockable suction outlet cover can no longer be used to convert a blockable suction outlet to an unblockable suction outlet. A single suction outlet of a blockable size must be equipped with a secondary anti-entrapment device or system. If the pool has an unblockable-sized drain cover installed over a blockable-sized drain/suction outlet, one of the approved secondary anti-entrapment devices or systems needs to be added in order to be in compliance with the current interpretations.

CPSC has set a compliance date of May 28, 2012, but on April 5, 2012, it voted to extend the deadline to May 13, 2013. To view CPSC interpretations and guidelines go to poolsafely.gov/pool-spa-safety-act/interpretations-guidelines/.

Model Aquatic Health Code (MAHC)

Since 1978, the number of recreational water-associated waterborne disease outbreaks reported annually has increased dramatically. Public health investigations have revealed that many of these diseases can be prevented by proper maintenance and water treatment and more modern disease prevention practices. In the U.S., no federal regulatory authority is responsible for aquatic facilities that use disinfected water (e.g. swimming pools, water parks, etc.). Thus, the code requirements for preventing and responding to recreational water illnesses can vary significantly among local and state agencies. The MAHC is intended to serve as a tool for local and state agencies interested in adopting a science-based code in an effort to reduce the number of drownings, illnesses, injuries, and outbreaks at aquatic facilities.

The MAHC provides guidelines for design standards and construction, operation and maintenance, and policies and management for aquatic facilities. These guidelines are divided into 14 different modules, each of which can be used independently, and which together


provide a comprehensive tool for the review of a jurisdiction's aquatic health laws, to ensure the best available practices for protecting public health are used in its aquatic health codes.

The MAHC is the product of a collaborative effort between CDC and dozens of expert volunteers in recreational water health and safety. These experts were drawn from a wide variety of stakeholders, including the federal government, state and local health departments, manufacturers, industry, operators, academia, certification organizations, and nonprofit aquatic associations.

The MAHC is based on the best scientific evidence available for the protection of public health. Each module of the MAHC is accompanied by an annex that provides further information to assist users in understanding and applying the provisions effectively. The annexes 1) give explanations, scientific data, and references to support why specific recommendations are made; 2) discuss the rationale for making decisions about code content; 3) provide a discussion of the scientific basis for selecting certain criteria and to explain why other scientific data may not have been selected, e.g., due to data inconsistencies; 4) highlight areas where additional research may be needed; 5) discuss and explain the terminology used; and 6) provide additional information, including summaries of scientific studies, charts, graphs, or other illustrative materials.

The MAHC is a tool that state and local governments can use to update their own codes, should they choose to do so, but it carries no regulatory authority. Jurisdictions are not required to adopt the MAHC. It is not a federal law like the ADA or P&SS Act. Jurisdictions can adopt it entirely, parts of it, or choose not to adopt it at all.

Even if a jurisdiction does not adopt the MAHC, it will likely become the de facto standard of care for the aquatic industry. If a facility follows the MAHC, it provides an affirmative defense, indicating that the facility is meeting the foremost standard of care. Adoption by states and local governments of the MAHC helps the aquatic industry and communities by providing a standard that prevents waterborne disease outbreaks and leads to fewer injuries and ultimately less liability.

The MAHC modules and annexes can be viewed at www.cdc.gov/healthywater/swimming/pools/mahc/structure-content/. 

LETTERS TO THE EDITOR

Lead in Drinking Water

Dear Editor:

While reading the article “Lead in Drinking Water: Sampling in Primary Schools and Preschools in South Central Kansas” in the March 2012 (*JEH* 74[7]) edition of the *Journal of Environmental Health*, I came across a few issues with the figure, tables, and conclusions that I would like to bring to your attention.

Figure 1 implies that 35.7% of water samples contained lead and that 64.3% were below lead detection limits. This figure, however, inflates the actual percentage of samples that contained lead and underreports the percentage of samples that were below detection limits. The area that represents the percent with detectable lead (32.1%) already captures the two samples that exceeded U.S. Environmental Protection Agency (U.S. EPA) guidance levels. Therefore it is inappropriate to add another area (3.6%) to represent these two data points again. By “double counting” these data points and subtracting them from 100%, the author arrived at 64.3% for the percentage of the samples that were below the detection limit. In actuality, only 32.1% (18/56) of the samples contained detectable lead (two of which exceeded U.S. EPA guidelines) while 67.9% (38/56) were below lead detection limits.

Tables 1–3 used the Chi-square test for independence to assess the relationship between multiple variables and the concentration of lead in drinking water. When conducting the test, the author divided the number of observations in each row of the table by the number of columns to arrive at the expected values for each cell of the expected contingency table (not shown in article) instead of using the formula $\text{expected value} = (\sum \text{Row} * \sum \text{Column}) / n$. When using the correct formula to calculate expected values, it is clear that the Chi-square test is not appropriate for these data (less than 80% of the expected values are greater than five and one or more value is less than one). Even if one ignores the limitations of the Chi-square test with these data, calculations using $\chi^2 = [(\text{Observed} - \text{Expected})^2 / \text{Expected}]$ result in $\chi^2 = 8.9, 12.6, \text{ and } 15.5$ for Tables 1–3, respectively. Using these values, the test fails to reject all null hypotheses, indicating independence between the concentration of lead in drinking water and all covariates analyzed here.

In conclusion, lead in drinking water is a very important issue, especially when we consider the impact on the youth. As such, regular sampling of drinking water in primary and preschools is an important step to help preserve the health of this population. Although it is logical that the age of a building, corrosiveness, and temperature of water may impact the concentration of lead in drinking water, these associations cannot be drawn from the data presented here. The associations claimed in this article are based upon improperly conducted statistical tests and are spurious.

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The Authors Respond

Dear Editor:

MAJ Hout is correct in his observations regarding our data analysis and we thank him for his careful attention to our statistics. We did make a simple mathematical error in calculating the percentages in Figure 1, and the expected values were calculated incorrectly for Tables 1–3. The expected values of each column were actually calculated as being equal (total observations divided by number of columns), not as MAJ Hout described in his letter.

Ms. Massey was a graduate student in our online Master of Science program when she conducted this research. Her faculty advisor abruptly resigned and left Ms. Massey (and many other students) without a research mentor. As director of the program I stepped in and helped Ms. Massey and the other students finish their independent research projects, even though many projects were well outside my area of expertise (cardiovascular physiology). As the senior researcher on this project, I accept full responsibility for not verifying the accuracy of the data analysis. The errors are completely unintentional but inexcusable nonetheless.

MAJ Hout states that the Chi-square test is inappropriate for these data. We disagree, as do the reviewers of our manuscript, one of whom specifically commented that the “statistical methods applied to the data are appropriate.” None of the zero values were structural zeros; all were sampling zeros and could not have been anticipated. MAJ Hout cites a “rule of thumb” attributed to Cochran (1954) that suggests avoiding the use of the Chi-square test when there are expected cell frequencies less than 1 or when more than 20% of the table cells have expected cell frequencies less than 5. This “rule,” however, is considered by some to be overly conservative (Larntz, 1978).


While our data fail to meet these suggested criteria, there is a second “rule of thumb” for determining if data may be analyzed using the Chi-square test. According to Roscoe and Byars (1971), the Chi-square test may be used if the average expected cell frequency is at least 2 when the expected cell frequencies are not equal and $p < .05$. Our data fit this second “rule of thumb.”

Reanalysis of the data using the Fisher’s exact test, which is an appropriate statistical test when the expected numbers are small but is most commonly applied to 2x2 contingency tables, reveals that lead contamination of drinking water is not significantly related to building age or water corrosiveness but is significantly related to water temperature ($p = .026$).

Our observation that approximately one-third of the schools and child care facilities sampled in this study had measurable levels of lead in the drinking water is still meaningful. The Lead and Copper Rule requires sampling of single-family dwellings only, so it is likely that schools and many child care facilities are not monitored. There are 782 elementary schools and nearly 7,000 licensed child care facilities in the state of Kansas. Our observation that 3.5% of the facilities sampled in this study had lead contamination

LETTERS TO THE EDITOR

in drinking water that exceeded the U.S. Environmental Protection Agency guidance level should be of concern to us all because as many as 27 elementary schools and 245 child care facilities in the state of Kansas could be affected.

Janet E. Steele, PhD
Professor of Biology
Director, Online MS Program
University of Nebraska at Kearney 

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Did You Know?

If you weren't able to make it to San Diego for the NEHA 2012 AEC, you can access it online instead. Over 30 educational sessions were recorded live, and you can participate online almost as if you were sitting in the room by registering for the Virtual AEC. You can also earn continuing education credits for participating in the sessions. To register for your access to the Virtual AEC, visit neha2012aec.org.

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NEHA NEWS

NEHA General Election 2012—Results

Elections are a critical part of the democratic process and one way for members to have a voice in the running of their organization. NEHA board of directors officers serve a one-year term in each officer position—progressing from second vice president to board president and then immediate past president—for a total of five years. Regional vice presidents serve a three-year term. NEHA voting members have an opportunity to vote for candidates of a contested board of director's office.

For more information about NEHA elections and the critical deadlines for nomination forms, eligibility dates to become a NEHA voting member, and ballot dates, please visit the election page on NEHA's Web site at www.neha.org/about/elections.html. For the 2012 NEHA general election, the results are as follows:

Regional Vice Presidents

The terms of three regional vice presidents (RVP) expired in 2012:

- Region 2—RVP David Ludwig

- Region 3—RVP Roy Kroeger
- Region 8—RVP Bob Custard

No candidates opposed either RVP Ludwig or RVP Kroeger, and per board policy both retained their respective positions on the board. Board policy does not require an election if candidates are unopposed. Their terms will expire in 2015.

RVP Bob Custard vacated his Region 8 position to seek the second vice president position. No candidates ran for the Region 8 vice president position, which is now vacant. The board will fill this position in accordance with existing board policies.

Second Vice President

Bob Custard was the only candidate for this position and will become the second vice president at the closing of NEHA's 2012 Annual Educational Conference & Exhibition in San Diego, California.

**Managing Editor's Desk**

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Informally Exerting Our Influence

It is one thing to author a position or formally participate on a committee. It is quite another to express an opinion whenever and wherever you can. And NEHA does this as well.

We have contributed our voice to issues and discussions as diverse as CDC's budget, the future of IT in environmental health, environmental health messaging, the development and continuation of a national partnership council for environmental health, media stories on a variety of environmental health issues, how environmental health can play a role in local sustainability programs, environmental health program accreditation, the future of environmental health education in colleges and universities, and best practices for environmental health—again, just to name a few examples of many.

My point through all of this hasn't been to literally list out every single action that NEHA has undertaken that can be tied to policy and position taking. Rather, it is to convey that our association is more involved in shaping public policy today than at any time in our 76-year history.

Even more to the point, our policy-related actions aren't limited to just formal position taking. In fact, it can easily be argued that our

ability to actually shape policy is far more effective when carried out in the many informal arenas in which we are now playing. That point is too often overlooked by the more tempting belief that policy influence is primarily the result of formal policy position creation.

Finally, we wouldn't be able to be this active if it weren't for the board members we have who are willing to add this function to the many that they already shoulder, the talented staff that we have who travel hither and yon to make sure that NEHA is properly represented at the unending numbers of committee meetings that take place, and a growing roster of exceptional volunteers who are willing to expend their time and energy on behalf of NEHA and environmental health to respond to policy drafts, attend meetings, and otherwise just be available to inject their expertise into important discussions that have policy implications.

NEHA is many things. Across that wide swath of a definition, we are increasingly becoming a more sought-after opinion on environmental health issues and concerns.

It is important that the entire membership know this and especially that segment of the membership that has long pressed NEHA to become what we are today. 🐻

nfabian@neha.org

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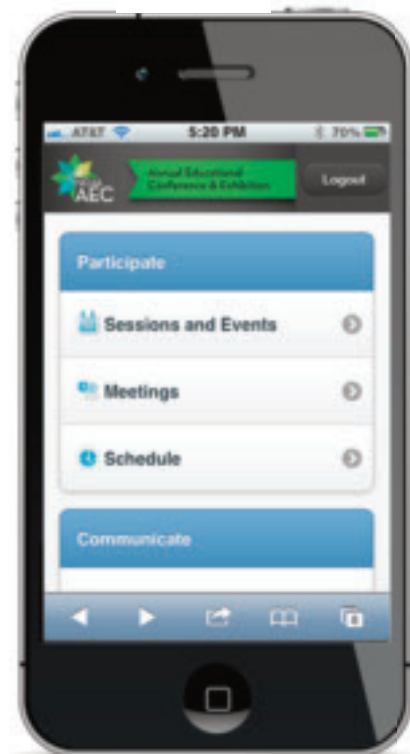
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Though the NEHA 2012 AEC has ended in San Diego, you can still access valuable educational content from this event using the Virtual AEC. The Virtual AEC provides you with:

- An archive of over 30 educational sessions that were recorded live from San Diego, which can now be viewed on-demand
- Access to speaker presentations, hand-outs, and other materials
- The opportunity to earn continuing education credits
- A way to connect to a professional network of environmental health professionals, speakers, and exhibitors that attended the AEC

Whether or not you attended the NEHA 2012 AEC in San Diego, the Virtual AEC serves as an important resource for you to review valuable educational content over and over again, and to continue networking and conversing with other professionals!

Visit neha2012aec.org for more information.



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The NEHA AEC is the premier event for environmental health training, education, networking, advancement, and more!

NEHA 2013 AEC CALL FOR ABSTRACTS

The National Environmental Health Association presents its
77th Annual Educational Conference & Exhibition
in Washington, DC, July 9-11, 2013.

The NEHA AEC is designed to train, educate, and advance people who have an interest or career in environmental health and protection, as well as to bring people together to build a professional network of environmental health colleagues, exchange information, and discover new and practical solutions to environmental health issues.

AEC Format

Directed and sequenced programming will be presented in simultaneous training and educational tracks. NEHA is seeking abstracts that bring to a national and international audience the latest advances in environmental health, as well as unique responses to environmental health and protection problems. Practical applications in both the public and private sectors should be emphasized along with the latest in proven emerging technologies.

NEHA offers two different types of training and educational sessions at the AEC—the Lecture and the Learning Lab. For Lectures, applications for single or multiple speaker presentations that are educational in nature are being accepted. However, presentations that are more interactive will be given first consideration. For Learning Labs, NEHA is accepting applications for hands-on demonstrations, tabletop exercises, poster presentations, drop-in learning labs, roundtable discussions, and other types of interactive and innovative presentation formats that will help train the attendees.



Ensuring Attendees a Return on Investment

Additionally, the NEHA AEC is being rationalized according to return on investment (ROI) principles. Emphasis will be given to those abstracts that have the potential to impart knowledge to attendees, which enables them to make cost effective program improvements in their workplaces as a result of what they learn by attending the event, and thereby helping to pay for the investment made for their attendance to the NEHA AEC.

Virtual AEC

NEHA continues to offer attendees the opportunity to access the AEC online with a number of educational sessions being streamed as they happen live at the AEC. Thus, abstract submitters should be aware that if accepted, their abstracts and presentations may also be part of the Virtual AEC. Certain presentations on particularly pertinent issues will be selected for live webcasting during the event, and presenters are required to engage with attendees on the Virtual AEC as well.

Submission Process

Individuals and groups involved in all aspects of environmental health and public health are strongly encouraged to participate in this Call for Abstracts. If you have a presentation, please submit your abstract electronically at neha2013aec.org.

The deadline for submission is October 1, 2012.

▶ MANAGING EDITOR'S DESK



Nelson Fabian, MS

Over the years, a persistent theme within a segment of the NEHA membership has been that NEHA should be more involved in taking positions and engaging in policy debates on behalf of the causes of both our profession and our science. I'm pleased to share with the entire membership a brief report on the increasingly significant role that NEHA has been playing in precisely this topic.

In explaining the range of policy-related activity that NEHA has been undertaking, it is important to first define the various methods that NEHA is using to advance policy in ways that support our profession or our science. In particular, the three tracks that we operate on are as follows:

- Author or sign on to original positions on specific issues, and to the extent practical, publicize and promote those positions.
- Participate in various initiatives that aim to evolve public policy in ways that reflect environmental health understandings.
- Informally exert our influence wherever and whenever we have the opportunity to do so.

Taking these in order—

Position Taking

Our board of directors has examined a number of issues over the last several years with an eye to taking a position on them. The same is true for sign-on letters where our board or president have weighed the pros and cons of lending NEHA's good name to environmental health positions emanating from other organizations. The result is a long list of official NEHA positions that cover topics as diverse as deep sea oil drilling, cottage foods, raw milk, global climate

NEHA as a Driver of Public Policy

We are increasingly becoming a more sought-after opinion on environmental health issues and concerns.

change, public health tracking, the use of the Affordable Health Care Act's Prevention Fund money, swimming pools, body art, the built environment, various U.S. Environmental Protection Agency (U.S. EPA) rule makings, fluoride, housing, radon, One Health, lead, and even vaccinations. In fact, the NEHA board meets four times a year (with one of those meetings being exclusively devoted to financial issues). At each of the other three meetings, we now regularly have an agenda item that deals with positions, policies, resolutions, and the like.

As you can see from this illustrative list, what is so interesting is that the subjects of these positions are so varied. In addition, our positions have dealt with state, national, and international issues; technical and workforce issues; and even internal issues such as the relationship between our various professional credentials. The matter of taking positions and expressing this profession's views has easily become one of the most important functions we carry out.

For a look at some of the positions that your association has been taking, I would encourage you to visit the NEHA Web site at www.neha.org.

Participation in Initiatives

This line of activity might not sound quite as bold or relevant as original position taking, but I assure you, it is every bit as important in terms of getting our viewpoints out there ... if not more so.

Thanks to an involved board, a highly talented staff, and a cadre of outstanding volunteers, we find ourselves more involved in committees, councils, task forces, and study groups these days than at any time in NEHA's history. We have board members serving in key leadership positions in the emerging national integrated food safety system; the Council on Linkages, which connects academia with the practicing professional; code bodies like the International Code Council; an onsite wastewater consortium; and even White House briefings. We have volunteers involved in everything from U.S. EPA efforts to deal with arsenic in small water systems, Centers for Disease Control and Prevention (CDC) efforts in vector control, and Food and Drug Administration efforts in food safety, to nongovernmental organization activities on behalf of safe water recreation, radon, and sustainability, to international efforts on behalf of environmental justice and global climate change. We have staff contributing to work on behalf of third-party certifications, environmental health training, and education and health tracking. Moreover, this list of examples just begins to touch the surface of all the committee work that NEHA is involved in and through which our association impacts both policy and even thinking.

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