



# Bridges

JUNE 2007

## COEH RESEARCHERS PUBLISH FIRST FINDINGS ON POST-KATRINA AIR QUALITY IN NEW ORLEANS



Photo by Craig Noble

In the first scientific paper on air quality in New Orleans since Hurricane Katrina, National Resources Defense Council (NRDC) senior scientist **Gina Solomon** and Berkeley environmental health sciences Professor **Katharine Hammond** reported that startlingly high concentrations of mold spores indoors and out posed a significant risk to residents' respiratory health.

"It wasn't surprising that we found mold," said Solomon, "but the concentrations of mold were rather stunning, and in a range I'd never seen before."

In their paper, published in *Environmental Health Perspectives* in September 2006, Solomon, Hammond and collaborators argued that mold levels in New Orleans should be monitored over time and that people working and living in the city should continue to take precautions to protect their health.

Their investigation began shortly after NRDC scientists were contacted by local New Orleans groups and elected officials who had been evacuated from their homes after the hurricane struck in August 2005.

"They all had the same question," Solomon said. "Is it safe to return?"

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## When Politics Subvert Science



John Balmes, MD

Scientists are trained to base conclusions on observable data and to use caution when interpreting findings. This training tends to make it difficult for them to translate research contextually—often the testimony scientists give before legislative committees or regulatory boards is seen as overly complex and heavy with caveats. The ability to communicate findings towards the formulation of policy is a skill that scientists need to actively cultivate.

Researchers also need to ensure that data is not misrepresented. Politicians and anti-regulatory groups have used the banner of “sound science” to attack efforts to enact precautionary legislative and regulatory actions. This has resulted in unnecessarily high criteria for “proof” that specific contaminants cause adverse health outcomes (i.e., the definitive epidemiological study) as opposed to considered expert judgment based on data from multiple sources (e.g., in vitro, animal, and exposure assessment studies). A parallel anti-regulatory approach is to use extremely rigid risk assessment “studies” that make it seem unlikely that an exposure can cause illness when, in reality, there is simply insufficient

knowledge about level of risk, but certain knowledge about a chemical’s toxicity.

Recently, concerted attacks on the potential health impact of occupational and environmental agents have been occurring somewhat less obviously but in ways that parallel the visible attacks on the global warming “hoax.” One avenue of attack occurs when administration appointees fill scientific advisory committees with non-qualified ideologues.

One of the most egregious attacks was the wholesale dismemberment of the advisory committee for the CDC’s National Center for Environmental Health (NCEH). To ensure that NCEH would get no unwanted advice from this committee, it replaced 15 of 18 members, many with scientists from chemical or petroleum industries, often in leadership positions of organizations opposing health regulation. My colleague in the UCB Environmental Health Sciences program, Richard Jackson, was Director of the NCEH at this time and spoke out forcefully against this action. Dick was already one of my environmental health heroes, but my esteem for him rose greatly after his courageous stand.

Administrations try to advance their agendas through political appointees who fill leadership positions in federal agencies. The purpose of scientific advisory committees is to help these appointees address complex health issues. But stacking committees out of fear that they may offer advice that conflicts with administration viewpoints is incredibly harmful. Instead of grappling with scientific ambiguity and using the best available evidence, the current administration appears to want its committees to emphasize the uncertainties of health and environmental risks, thus supporting anti-regulatory positions.

Recently, I had the opportunity to testify before the U.S. Senate Environment and Public Works (EPW) Committee regarding attacks on the application of science to policy decisions. I agreed to do so in large part inspired by Jackson’s example. In late 2006, the U.S. EPA eliminated a key element in the review of the national ambient air quality standards - the EPA Staff Paper - designed to be a synthesis of scientific knowledge that the Clean Air Scientific Advisory Committee (CASAC) reviews. When the current administrator, Dr. Stephen Johnson, rejected the advice of both CASAC and EPA staff scientists and refused to lower the annual particulate matter standard on the basis of “scientific uncertainty,” there was a firestorm of protest from scientists and environmental health advocates. The administration’s response was to eliminate the Staff Paper all together, emphasizing the insidious efforts to divorce science from policy.

With me before the EPW Committee, testifying on other administration efforts to undermine EPA regulatory activities, was my UCSF and COEH colleague Dr. Gina Solomon of the Natural Resources Defense Council (see page 6). It was a great privilege to share the witness table with a champion of environmental health such as Gina.

I urge all of the COEH family to consider how to best respond when becoming aware of efforts to suppress scientific evidence in the policy arena.

John R. Balmes, MD

### Editor’s Note:

Press releases, reports, and other articles on both reports can be found at: <http://coeh.berkeley.edu>

## Ergonomics Researchers Evaluate Dental Tool Design and Use

Dentistry requires forceful and repetitive hand movements and awkward shoulder postures. Dentists and dental hygienists report high numbers of upper extremity musculoskeletal injuries, including tendonitis; these disorders are the leading cause of early retirement in this profession. Such problems have become more pronounced in recent years as dental practitioners have been required to care for more patients for shorter durations of time.

The opportunity to assess factors associated with dental tool use arose when **Hui Dong**, a dentist and PhD candidate at Berkeley, sought to redesign the tools used for dental scaling. At the same time, Professors **David Rempel** and **Robert Goldberg** were developing training materials on dental ergonomics. While there are other factors involved in injury, such as posture, lighting, and work organizational factors -- dental scaling is a major source of hand and wrist injury among dental professionals. The actions involved in tool use are often awkward, requiring constant pinching and repetitive scraping motions. Hence, Hui Dong and colleagues evaluated tool handle shape and surface texture, finger rest positions, muscle load, and pinch force in a series of studies involving dentists, dental hygienists, and dental students.

Before testing began, scaling tools were developed in the lab by the researchers, and were machined largely by **Charles LaRoche**, a physician in the occupational medicine residency program at the time. Design considerations included handle diameter, weight, shape, and surface texture. Force measurements were made by instrumenting the tip of the tool, the handle and through electrodes placed on the user's forearms. Some of the research involved patients being seen in a community dental clinic while other

research was carried out in the laboratory with standard head mannequins commonly used in dental training. On the mannequins, dental scale was represented by paint (nail polish) applied directly to the "teeth".

The resulting six papers were authored by a multidisciplinary team including students in ergonomics, occupational medicine and bioengineering, as well as faculty and staff in ergonomics, medicine and dentistry. Analyses of pinch force, effects of texture, finger rest position, and handle shape were presented. One finding of the study was that experience led to differences in the use of the scaling tool -- more experienced dentists used less pinch force and applied force more efficiently, compared to less experienced users who tended to apply more force to the handle and less at the site of action of scaling. The authors concluded that dental professionals can reduce the risk of developing musculoskeletal disorders by scheduling patients according to the amount of scaling needed, by taking breaks, and ensuring that tool handles are an appropriate diameter and that tips are kept sharp. The outcomes of these studies provide dentists and hygienists a guide in selecting dental scaling instruments, show that tool users can benefit from ergonomics instruction during training, and demonstrate the importance of redesign of dental scaling tools. 🧐

Dong, H., Barr, A., Loomer, P., & Rempel, D. (2005). The effects of finger rest positions on hand muscle load and pinch force in simulated dental hygiene work. *Journal of Dental Education*, 69(4), 453-60.

Dong, H., Barr, A., Loomer, P., Laroche, C., Young, E., & Rempel, D. (2006). The effects of periodontal instrument handle design on hand muscle load and pinch force. *Journal of the American Dental Association*, 137(8), 1123-30.

Dong, H., Loomer, P., Villanueva, A., & Rempel, D. (2007). Pinch forces and instrument tip forces during periodontal scaling. *Journal of Periodontology*, 78(1), 97-103.



Above: Simulated dental scaling, showing mannequin positioned to simulate the clinical situations, and surface electrodes attached to the right forearm of the practitioner.  
Below: The 10 instruments used in the study.



Dong, H., Loomer, P., Barr, A., Laroche, C., Young, E., & Rempel, D. (2006). The effect of tool handle shape on hand muscle load and pinch force in a simulated dental scaling task. *Applied Ergonomics*, doi:10.1016/j.apergo.2006.09.02

Laroche, C., Barr, A., Dong, H., & Rempel, D. (2007). Effect of dental tool surface texture and material on static friction with a wet gloved fingertip. *Journal of Biomechanics*, 40(3), 697-701.

Villanueva, A., Dong, H., & Rempel, D. (2006). A biomechanical analysis of applied pinch force during periodontal scaling. *Journal of Biomechanics*, doi:10.1016/j.jbiomech.2006.09.001

## COEH Researchers Publish First Findings Post-Katrina Air Quality in New Orleans (from page 1)

At the invitation of local leaders, Solomon headed to New Orleans to conduct a quick visual assessment of environmental health concerns. Solomon said three things stood out: massive piles of debris, including furniture, vehicles, and the ruins of homes; residual sediment from receding waters, six inches thick in some spots; and the overwhelming stench of mold.

In the weeks that followed, Solomon said, it became clear that other agencies—such as the Environmental Protection Agency and the Louisiana Department of Environmental Quality—were going to focus their efforts on cleaning up debris, not mold.

In the meantime, New Orleans mayor Ray Nagin had announced plans to re-open the city. In a “frenzied rush,” as she put it, Solomon and Hammond pulled together funds and a team of investigators to return to New Orleans.

The researchers took air samples at indoor and outdoor sites in New Orleans and in three nearby towns over several days in October and November 2005. The outdoor sites ranged from flooded to not flooded. Indoor sites ranged from completely untouched, or unremediated, to fully remediated, meaning the homes’ furniture, carpets and interior walls had all been removed and replaced.

The researchers evaluated their samples for both mold spores and endotoxins (fragments from the cell walls of certain bacteria). They found 45 distinct mold types, though *Cladosporium*, *Aspergillus* and *Penicillium* predominated, the latter two particularly so inside flooded homes.

Concentrations ranged from 21,000 to 102,000 spores per cubic meter (m<sup>3</sup>) of outdoor air, and 11,000 to 645,000 spores/m<sup>3</sup> of indoor air, well above the National Allergy Bureau’s 50,000





*Top Left: Just one of many houses left damaged by Hurricane Katrina in August, 2005.*

*Lower Left: NRDC senior scientist Gina Solomon examining samples of indoor mold.*

*Right: Gina Solomon and research associate Mayra Quirindongo prepare to test for mold at a home in New Orleans in October 2005 (Photos by Craig Noble)*

spore/m<sup>3</sup> cutoff for “very high” spore concentrations. Concentrations were much higher on average inside homes in flooded areas, with the highest spore concentration found in an unremediated home.

Endotoxin levels were, to the researchers’ surprise, not particularly high. However, a concurrent, separate study did find elevated levels, leading Solomon to believe that it was her team’s protocol that led them to find lower than expected levels. Whereas mold spores become readily airborne, endotoxins will not do so unless disturbed, and the researchers took care not to overestimate mold levels by stirring up dust.

Nonetheless, the mold findings were alarming enough for NRDC to issue a public health advisory. Local residents were urged to wear coveralls, gloves, and N-95 respirators, which can filter out infectious particles, when returning to clean up their homes.

The researchers posted their results on NRDC’s website as they became available, advertising the information through the local media and on neighborhood listservs. The findings had “immediate health relevance to people on the ground in New Orleans who wanted to get back to their homes,” said Solomon.

NRDC worked with community groups to set up stands on street corners, particularly in the city’s hard-hit ninth ward, where local residents could pick up protective gear free of charge.

They also strove to educate local residents on the effectiveness—or lack thereof—of popular cleaning methods. While rumors circulated that scrubbing walls with bleach was sufficient to kill mold, the researchers had found otherwise. In fact, studies in the published literature on mold and remediation indicated that relatively high mold concentrations can persist in homes

months after they’ve been completely remediated.

Mold has been linked, indirectly, to upper respiratory tract conditions, including coughing and asthma, and at least one large epidemiological study has forged a direct link between mold exposure and asthma onset in children.

The NRDC has not obtained funding to do a follow-up study to investigate such effects in New Orleans. But Solomon said she plans to collaborate with Tulane University researchers who are studying the long-term effects of mold in the city. 🌍

*Solomon, G.M., Hjelmroos-Koski, M., Rotkin-Ellman, M., & Hammond, S.K. (2006). Airborne mold and endotoxin concentrations in New Orleans, Louisiana, after flooding, October through November 2005. Environmental Health Perspectives, 114(9), 1381-6.*

# COEH Faculty Testify at Senate Hearing on EPA Standards

While many air pollutants have decreased in recent years, Environmental Protection Agency (EPA) records show that tiny particle pollution has increased. Last year, ignoring their own science advisors, the EPA made a decision to cut its budget for measuring these particles—a decision among several others that has sparked a good deal of controversy over how the current administration regards the role of science in determining environmental and public health policy.

On February 6th, **John Balmes** and **Gina Solomon** both COEH faculty, appeared before a Senate hearing led by California Democrat Barbara Boxer on oversight of recent EPA decisions.

Balmes' and Solomon's testimony argued against the EPA's recent reductions—characterized as a series of “rollbacks” of environmental health protections and reductions in public information. Among these rollbacks are the closing of several EPA libraries, the weakening of the Toxic Release Inventory, the elimination of perchlorate testing for tap water, reduction of scientific review in the process of setting air quality standards, repealing the Lead Air Quality Standard, and weakening rules on toxic air pollution.

According to Balmes, reducing the review of EPA guidelines reflects a diminished regard for science in shaping public policy. “These actions by the EPA indicate a distinct anti-science bias on the part of the Administration in determining environmental health regulations.”

Recent studies have shown that the health effects of particle pollution may be more far reaching than previously understood, affecting the cardiovascular system and lungs, and trigger-

ing heart attacks and strokes. There is also a large fraction of the population at risk, as demonstrable health effects of particle pollution and ozone have been found to occur at levels below the current standards.

With recent changes in Congress, there has been more interest among elected officials in addressing the environmental and public health impact of these and other policy decisions made under the current administration – as well as the opportunity for scientists to ensure that the EPA remains accountable in addressing public health issues.

“We all are suffering from the pain of foresight. When we look into the future with these EPA rollbacks in place, we see communities breathing dirtier air, children exposed to more toxic lead, pregnant women unknowingly drinking thyroid-disrupting rocket fuel, scientists sidelined, and information vanishing,” said Solomon. “I am hopeful that after today’s hearing EPA will heed our combined urging to re-focus their efforts where they should be—on protecting public health.” 🙏

*Balmes gave testimony on behalf of the American Lung Association and Solomon for the National Resources Defense Council*

## THE DECEMBER 2006 EPA ROLLBACKS AT A GLANCE:

### WEAKENING THE TOXIC RELEASE INVENTORY

The EPA made the decision in December to weaken the *Community Right to Know* rules for toxic chemicals used and released in communities across the country. This decision quadruples the amount of toxic pollutants companies can release before they are required to tell the public, and will reduce the amount of public information on long-lasting toxins that can build up in the body, such as lead.

### CLOSING EPA LIBRARIES

Last year the EPA closed or cut access to libraries in at least 7 EPA regions covering 31 states.

### ELIMINATING PERCHLORATE TESTING

The EPA issued a rule reversing a 1999 decision that tap water be tested for perchlorate. This toxin has been found in millions of Americans' drinking water. Perchlorate interferes with the thyroid and is especially risky to pregnant women and newborns.

### CUTTING SCIENTISTS OUT OF SETTING AIR QUALITY STANDARDS

After a decades-long policy of involving key scientists in working closely with EPA experts on the development of clean air standards, new EPA policy reduces scientific input into the review process.

### AIR QUALITY STANDARD FOR LEAD

The EPA announced that it is considering revoking the National Ambient Air Quality Standard for lead. The lead acid battery industry has urged this step.

### INCREASING TOXIC AIR POLLUTION

The EPA has proposed rule changes weakening controls on toxic air pollution. These rules apply to thousands of sources, including refineries, chemical plants and steel mills.

## Michael Jerrett

**M**ichael Jerrett integrates the fields of geography and public health in his work, bringing together individual characteristics affecting health—lifestyle, occupation or genetics, for example—with geographic data to reveal the spatial aspects of health and disease.

Jerrett grew up in Ottawa, Canada, and completed his graduate work at the University of Toronto. He came to the United States in 2003, when the University of Southern California recruited him as an associate professor of preventive medicine. Last year, he was invited to apply for his current position as associate professor of environmental health sciences at the School of Public Health.

“I was attracted to Berkeley by the campus’s outstanding reputation,” says Jerrett, “and the chance to be a faculty member at one of the world’s greatest research institutions.”

Jerrett continues to collaborate with many of his Canadian and southern California colleagues. In one of several studies on which he is currently working, he is examining the relationship between obesity and factors in the built environment—including proximity to grocery stores, fast-food chains or parks—in 11,000 children in 16 communities in southern California.

To date, most research on the subject has been cross-sectional in nature, says Jerrett. “Our study adds the question of longitudinal progression toward obesity,” he says. It follows what he calls the children’s “obesogenic trajectory” as they go through adolescence.

He is also collaborating on a prospective cohort study investigating the association between air pollution and asthma incidence in children—a subject he has explored with his Canadian colleagues as well. Jerrett is also studying the progression of atherosclerosis in the same cohort of children. He was a coauthor on the first study to link carotid artery thickness in adults to air

pollution, published in *Environmental Health Perspectives* in 2005. This work is congruent with his other studies showing large effects from air pollution on circulatory mortality.

“The longitudinal design of these studies is important in showing that exposure may be causally linked to disease,” Jerrett explains.

Canada’s universal single-payer health care system offers excellent opportunities to assemble large data sets on patient characteristics, and Jerrett’s research continues to take advantage of this. He is currently examining the effects of air pollution on mortality and the risk of Parkinson’s disease. The manganese in MMT, an anti-knock agent added to gasoline in Canada since the 1970s, produces symptoms similar to those of Parkinson’s disease. “This has implications not just for Canada but for the U.S. and beyond—anywhere MMT is available or could be widely used.”

In a separate study examining the relationship between air pollution exposure and mortality in small geographic areas, Jerrett and colleagues have had striking findings: data from Ontario and Hamilton showed that living within 50 meters of a major road or 100 meters of a freeway essentially nudges a person’s life expectancy down by two-and-a-half years. “That gives society and policymakers something to ponder about the health effects of traffic,” he says.

On top of a busy research schedule, Jerrett is leading the environmental health doctoral seminar in the Spring 2007 semester and hopes to offer a Geographic Information Systems (GIS) course at the School of Public Health. He also has ambitious plans to establish a GIS Health Exposure Analysis Lab on the Berkeley campus. Jerrett hopes the lab will improve research opportunities not just for public health students, but for students across campus. And within years, Jerrett says, he hopes the lab will be the “premier GIS lab in the country, if not the world.” 🌍



Michael Jerrett, PhD

## Meredith Minkler



Meredith Minkler, DrPH, MPH

**M**eredith Minkler is Professor of Health and Social Behavior at Berkeley, and founding director of the UC Berkeley Center on Aging. Her own education at Berkeley goes back a few years: she earned her bachelors degree, MPH and DrPH at Berkeley from the late sixties through the mid-seventies.

The main focus of Minkler's work for the past thirty years has been organizing communities around health and social issues. She has also conducted extensive research on aging, disparities in disability, and community based participatory research (CBPR).

For the last fifteen years, her CBPR work has involved engaging a wide range of community groups, workers among them, around issues that community members themselves identify, rather than outside researchers.

Most recently, Minkler's work has taken on a more distinct occupational health angle. She is currently the principal investigator of a NIOSH funded ecological study of restaurant workers in San Francisco's Chinatown.

The study is a collaboration with the Chinese Progressive Association, a local community based organization; UCSF's Division of Occupational and Environmental Medicine; the San Francisco Department of Health; and COEH's Labor Occupational Health Program (LOHP). Minkler and her collaborators began meetings in Chinatown in mid-May, while also determining foundation interest in possible additional grant support to enable them to plan for the later action phase of the work.

The diversity of collaborators has already proven useful. The San Francisco health department has given the researchers access to all 131 restaurants in Chinatown by permitting them to

add additional questions and observation items, pertaining to worker health and safety, to the city's restaurant food safety inspection questionnaires.

"So we're not looking at the possible risks to patrons, or customers, (which the health department already does very well) but rather to workers," Minkler explained. "We think we'll have a great deal of information, certainly more in-depth than any that has been collected to date on workplace injuries and illnesses and the potential for prevention at the restaurant level."

This particular study is not Minkler's first foray into worker health. She has worked with LOHP before, on a study of homecare workers, and she has consulted with NIOSH on a separate study involving homecare workers. Her community based work has in the past addressed occupational health concerns and involved risk mapping in the workplace. Her co-edited book (with Nina Wallerstein), *Community Based Participatory Research for Health*, contains selections on using CBPR to address worker health issues.

Minkler also has a considerable list of courses under her belt, having taught public health at Berkeley since 1975. She has routinely invited occupational health specialists as guest lecturers in her courses, to cover how to study worker health and safety in collaboration with workers and how to organize workers around work safety concerns, in part using techniques such as workplace risk mapping.

Minkler has also seen many of her community health students go on to work in occupational health. Several, in fact, of LOHPs coordinators got their start in one of Minkler's courses at Berkeley. 🌐

## Dara O'Rourke

As a Berkeley graduate student in the 1990s, **Dara O'Rourke** sought advisors all across campus, from the departments of public health and sociology to city planning and engineering. The cross-disciplinary approach has been a defining characteristic of his subsequent career, in which he has focused on the environmental, health, labor and social effects of global production systems.

"In academia, people who study labor almost never talk to people who study the environment, which in the real world is crazy," said O'Rourke. "It doesn't make any sense."

O'Rourke completed his PhD in Berkeley's Energy and Resources Program in 1999. He went on to a tenure-track position as assistant professor in the Environmental Policy Group at Massachusetts Institute of Technology's Department of Urban Studies and Planning.

After four years at MIT, however, O'Rourke decided to return to Berkeley, taking a position as associate professor in the Department of Environmental Science, Policy and Management.

O'Rourke cited some personal reasons for returning to Berkeley (the weather was on his list), but overall he said he was drawn back by Berkeley's strength in a wide variety of disciplines.

"Berkeley offers a better environment for doing the work I want to do, work that brings together labor, health and economic issues," O'Rourke said. "My work crosses academic disciplines, so I don't fit into any traditional departments."

O'Rourke has several research projects underway at the moment. In mid-summer, he was in Guangdong province in southern China, studying shifts in factory manufacturing systems. The

changes have implications for worker health and the environment, and O'Rourke is working with colleagues to document evolving ergonomic needs, toxic exposures, worker stress levels, and waste production, to name a few.

"We're trying to bring together a number of disciplines to understand what the impacts are on the workers? We want to know, when you change your factory organization, what does that do to workplace hazards?" O'Rourke explained. "The next step of the research is, OK, what do we do about it? What do Nike or Adidas do? And what should governments be doing?"

O'Rourke has worked in several countries across Asia and Latin America, and is conducting similar research on manufacturing systems in garment factories in El Salvador.

His work has a domestic angle, too. In several communities in the Bay Area and Louisiana's "cancer alley," O'Rourke is studying community participation in environmental monitoring.

"We've been working with communities around large, petrochemical plants," O'Rourke noted, "using low and high technology strategies to involve community members in doing air sampling, and then taking that data and changing the dynamic between community and the [factory] and the local regulators."

Through his new affiliation with COEH, O'Rourke said he hopes to connect with colleagues on different campuses who are also thinking about occupational and environmental health in cross-disciplinary ways.

"Perhaps it will ultimately lead to some new collaborations," he said. "Of course," he added, "that's a long term process." 🧐



Dara O'Rourke, PhD

# Tobacco Smoke Increases Risk of TB Infection and Disease

Researchers have long suspected that smoking may increase the risk of TB infection and disease, but no one had quantified the relationship—until now.

By analyzing published epidemiological studies, researchers led by Berkeley environmental health sciences professor **Kirk Smith** and adjunct professor of epidemiology **Michael Bates** found that smoking increases an individual's risk of TB infection by 73 percent. In people who are already infected, smoking cigarettes increases their likelihood of developing active TB by 50 percent.

Tuberculosis is one of the top infectious diseases worldwide; roughly one in three adults is infected with the bacteria. Though many can become infected without developing active disease, nearly 9 million people currently suffer the symptoms of active TB, and the disease kills more than 1.5 million people each year.

The Berkeley group conducted their analysis to calculate the total impact of tobacco smoke on health. The question is particularly pressing in China, Smith said, where the health ministry's tobacco control efforts have been stymied by the reluctance of national and provincial governments to give up the tax and other revenues from tobacco enterprises.

When the group began searching the literature on tobacco and health, they found that something they had expected to find wasn't there—a systematic and thorough review of evidence of the association between smoking and tuberculosis.

"Smoking has been linked to heart disease and cancer, yes, but no good meta-analysis on tuberculosis had been conducted," Smith said.

Smith's research group, which focuses on indoor air quality and health, particularly in less developed countries, had another interest in drawing a link between smoking and TB. The group is undertaking four separate studies on the association between tuberculosis and indoor smoke from cookstoves that use biomass fuels. "If we're going to be able to convince people that tuberculosis is caused by indoor air pollution, then we better be able to show it's caused by smoking too", Smith added.

The present findings, published in the *Archives of Internal Medicine* in February, the sister journal of the *Journal of the American Medical Association*, have implications far beyond Smith's own research. In recent years, efforts to manage climbing tuberculosis rates have focused almost entirely on treatment and little on prevention.

"There have been mixed opinions on whether smoking has any relevance to TB," says Bates. "Our review and analysis of the research in this area indicates that there is a connection, and that smoking is a major risk factor for TB", says Bates

Treatment protocols are complicated, requiring patients to take as many as six drugs at a time for months on end without missing a dose. To ensure that patients comply, many countries have employed a treatment program known as DOTS, which stands for Directly Observed Therapy, Short-course. To make sure patients are effectively treated, the thinking goes, each one must be watched while taking every single pill prescribed—no small undertaking with millions infected.

DOTS does include an element of prevention: those who are effectively treated can't pass the disease on to others. But more can be done, Smith

said. Making people aware of the link between smoking and TB could well cut down on the number of cases that develop—or are exacerbated—because of tobacco use.

"TB has long been recognized as having environmental risk factors, but the focus has been largely on therapy," Smith said. "TB control should be expanded a bit to include prevention as well as treatment." 🤔

*Bates, M.N., Khalakdina, A., Pai, M., Chang, L., Lessa, F., & Smith, K.R. (2007). Risk of tuberculosis from exposure to tobacco smoke: a systematic review and meta-analysis. Archives of internal medicine, 167(4), 335-42.*

## Twenty Year Anniversary of the COEH Summer Institute

This summer marks the twentieth anniversary of the COEH Summer Institute for Continuing Education. It will take place July 30th to August 3rd in downtown Oakland.

The Institute was started in 1988 by **Lela Morris**, at a time when there was a perceived need for industrial hygiene training and certification among professionals. “Industrial hygienists used to travel around the country to continue their training—so putting this together seemed the right thing to do at the time.”

While there was a similar program in North Carolina -- this was the first attempt at establishing a training program on the west coast. Initial interest was high, and the institute has since continued to grow. Although industrial hygiene topics were the initial focus of the program, it is now a week-long event that includes ergonomics, occupational safety, occupational health nursing and medicine, toxicology, and management. The goal of the curriculum is to provide training both on standard occupational health and safety topics, emerging topics of interest, and regulatory changes. A well-recognized five-day class, “Comprehensive Review of Industrial Hygiene,” helps prepare practicing industrial hygienists to sit for certification exams offered by the American Board of Industrial Hygiene. This combination helps to bring new participants as well as maintain a regular group of attendees. The classes vary in length with one-day, two-day and five-day offerings.

“The Summer Institute has offered high quality continuing professional education to the occupational health and safety community of northern California for the past 20 years” said CE Program Director **Barbara Plog**. “We are especially pleased with the range of classes to be offered this year.”

**Linda Ellwood**, COEH continuing education coordinator, says a major accomplishment of the Summer Institute has been its ability to maintain a loyal audience after so many years. “We’ve been able to do this for 20 years because of quality course offerings, excellent speakers and strong COEH involvement.”

The Institute is part of the COEH Continuing Education Program, which is partially funded by The National Institute for Occupational Safety and Health. It has become a trusted provider of training for occupational safety and health and environmental health professionals over the years. It has grown as a result of participation by COEH faculty from all disciplines—including epidemiology, ergonomics, industrial hygiene, medicine, nursing, and safety. The institute has also been strengthened by strong ties with com-

munity partners, government agencies, and an external Advisory Committee. COEH is accredited by the Institute for Medical Quality/California Medical Association (IMQ/CMA) to provide continuing medical education for physicians. The CE program also provides professional accreditation for industrial hygienists, nurses, qualified medical evaluators, and safety professionals. 🧐

For more information on the COEH CE Summer Institute, and to see the list of course offerings, go to [www.coehce.org](http://www.coehce.org), or call (510) 643-7277

Current CE Advisory Committee Members include: Victor Toy, MPH, CIH (IBM), Patricia Quinlan, MPH, CIH (UCSF), Hank McDermott, CIH, CSP, PE (consultant), Marion Gillen, RN, MPH, PhD (COEH), Peter Rice, CIH, CSP, REA (ClickSafety), Brandon DeFrancisci, MPH, CIH (UC Berkeley), Jeffrey Jones MS, MPH, CIH (Port of Oakland), and Barbara Materna, PhD, CIH (CDHS)



Judy Village from the University of British Columbia, Canada, conducts a facility design ergonomics workshop at the 2006 Summer Institute



*Protecting workers and communities from occupational and environmental health hazards through teaching, research, and service*

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The Northern California Center for Occupational and Environmental Health (COEH), a multidisciplinary program of the University of California at Berkeley, Davis, and San Francisco, promotes health and safety in workplaces and communities by:

- Educating health professionals in epidemiology, ergonomics, industrial hygiene, medicine, nursing, toxicology, and related fields to be leaders in occupational and environmental health.
- Developing new knowledge through an interdisciplinary research agenda focused on preventing illness and injury.
- Responding to the needs of people affected by hazards in their workplaces or communities, with special attention to vulnerable populations.

Through these activities COEH supports federal, state, and local agencies, health and safety professionals, industry, labor, and community-based organizations in their efforts to prevent occupational and environmental disease and injury.

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