Damage of Second-Hand Smoke Measured in a Minute

When it comes to second-hand smoke (SHS) exposure, minutes count, suggests a new study co-authored by Suzaynn Schick, assistant professor in the Division of Occupational and Environmental Medicine in the UCSF School of Medicine.

Published in the May 2014 Oxford Journal of Nicotine & Tobacco Research, the study found that even brief exposures to low-level concentrations, similar to those found in restaurants that allow smoking, may reduce endothelial function, a marker of cardiovascular health.

In a previous study, the authors showed how a 20 to 30 minute exposure to second-hand-smoke temporarily impaired arterial flow-mediated dilation (FMD), a clinical indicator of vascular endothelial function. Their latest findings are the first to report that exposures as short as a minute are sufficient for SHS to take a toll.

In a controlled chamber, Schick and colleagues measured FMD changes in rats exposed to real-world levels of SHS for 30 minutes, 10 minutes, one minute, and roughly 15 seconds, or four breaths of air. They found one minute of exposure to low-level concentrations of SHS, similar to those found in public areas where people smoke, significantly impaired FMD. Study subjects restored to healthy levels of FMD within thirty minutes, the authors noted.

Read the paper: http://www.ncbi.nlm.nih.gov/pubmed/24302638
The voters of California soundly defeated an attempt by corporate coal and oil interests to impede the implementation of AB32, the landmark 2006 (AB32) that empowers CARB from putting the transportation fuel sector under the carbon cap. The oil companies will then be required to either reduce carbon emissions or pay for carbon credits to compensate for their emissions. The costs are estimated to go up from 13 percent -20 percent, but could be higher. A legislative effort to block AB32 by putting the transportation fuel sector under the carbon cap has so far been unsuccessful to date, but there has been intense lobbying from the Western States Petroleum Association in support of this effort.

If Californians want to be serious about climate change mitigation then we need to reduce carbon emissions from our motor vehicles. Even with the low carbon fuel standard and the cap on transportation fuels are important programs that are directly addressing this need. If gas prices increase as a result of these programs, this is not necessarily a bad thing because it will lead to reduced use of gasoline-powered cars. Rather than trying to block these programs, I respectfully suggest to our state representatives that they craft legislation to help low-income Californians who must drive to work deal with the inevitable rise in gas prices.

About COEH

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.

COEH is an Education and Research Center (ERC) of the National Institute for Occupational Safety and Health (NIOSH).
LOHP Builds Environmental Leadership in Richmond’s Latino Community

Following the Richmond Chevron refinery explosion in August 2012, Dinorah Barton-Antonio from the Labor Occupational Health Program (LOHP) helped organize local awareness trainings designed to give voice to community concerns. A Richmond resident, Barton-Antonio had watched first-hand as the smoke from the fire enveloped the area above her home. At the many meetings organized locally, though, Barton-Antonio saw few of her Latino neighbors, despite the fact that 40 percent of Richmond is Latino.

Barton-Antonio, coordinator of Public Programs at LOHP, felt outreach was necessary to engage that community. With the support of LOHP director, she decided to launch a Spanish language train-the-trainer program for Latino community leaders to help organize environmental justice issues in their neighborhoods and to support community activism. Her goal was to recruit 15 leaders who could in-turn educate others. To her surprise, over 38 people showed up.

“People spend a majority of their day at work, and yet work and working conditions are often overlooked in real-world issues and cutting-edge interventions,” Suzanne Teran explained. “This is about exposure to specific health and safety hazards, but it’s also about power, control, and respect and the challenges faced by people’s economic and social opportunities. Students will look at work and labor dynamics and learn about a variety of strategies to improve working conditions and workers’ health.”

Teran and Charlotte Chang from the Labor Occupational Health Program (LOHP) will focus on mid- to large-sized farming enterprises, which represent 50 percent of employment in the agricultural industry. The authors believe the part-time, seasonal nature of farm work contributes to the undercount, as does the industries’ reliance on undocumented workers who may be reluctant to report injuries to their employer. The authors argue the desire to reduce worker’s compensation premiums may also lead to willful underreporting by employers.

The study underscores how the undercounting of accidents and illnesses agricultural reduces the government’s ability to identify and address health and safety problems in one of the most hazardous industries in the United States.

The study, partially funded by the National Institute for Occupational Safety and Health, included co-investigators Juan Du of Old Dominion University and Stephen McCurdy in the Department of Public Health Sciences at UC Davis.

The results of their report provided a critical step in unraveling the link between breast cancer and chemical exposures. Now, key findings from their research are available to advocates in a new booklet and factsheet. Freely available online, the materials support community members advocating for better chemical testing with the goal of understanding which chemicals may contribute to breast cancer and how to prevent future disease.

The booklets, “Chemicals and Breast Cancer: Better Ways to Detect Toxic Chemicals,” highlights disturbing disparities in the rates of breast cancer among Asians, African Americans, and Caucasians. Asian women born in the United States have higher rates of breast cancer compared to those born in China, the authors explain, providing evidence that the environment plays an important role in the disease.

Available in four languages, the factsheet identifies the need to improve chemical testing to systematically detect chemical contributors to breast cancer. For example, a way of example of what is known, it highlights three common chemicals out of more than 200 known to cause breast tumors in animals: vinyl chloride, used in production of halocarbons, such as shower curtains, flooring, and children’s toys; 3,4-butanediene, found in rubber products like nitrile gloves; and acrylamide, used to make paper, dye, and plastics. Many of these are primarily workplace hazards for the people involved in the manufacture of these common items.

The factsheet, funded by the California Breast Cancer Research Program, points readers to additional websites that illustrate how certain chemicals can limit their exposure to cancer-causing substances at home and at work.

Schwarzman and Janssen have two papers in press resulting from their research. The first will appear in an upcoming special edition of Environmental Health Perspectives.

For more information, contact Suzanne Teran at steran@berkeley.edu or Charlotte Chang at cychang@berkeley.edu.
COEH’s 2014 Lela Morris Symposium brought together climate change experts from government, public health, and environmental justice at an annual gathering held in May to raise awareness of the near and long-term consequences of climate change and to identify mitigation and adaptation strategies to aid Californians most at risk.

Keynote presenter Mary Nichols, chair of the California Air Resources Board (ARB), spoke on her agency’s mission to protect public health by improving air quality. Nichols is responsible for implementing California’s landmark greenhouse gas emissions legislation, the Global Warming Solutions Act of 2006 (AB32), as well as setting the air pollution standards for motor vehicles, fuels, and consumer products. AB32 requires California to reduce its GHG emissions to 1990 levels by 2020.

“In the last decade, our mandate has come to include cutting carbon pollution as well, first with passage of the Pavley vehicle greenhouse gas emissions standard of 2002 (AB1493) and later with the passage of AB32 and SB375,” Nichols said. “This is,” said Nichols, “the same sources of pollution are contributing to both toxic air pollution and to global warming. We want to use the same technologies, and to a very considerable degree the same policies, will serve to address both issues. For example, since we began targeting diesel exhaust in the 1980s, we have cut particulate emissions by over 90%.

Research from Scripps at UC San Diego shows that if the world replicated California’s success on black carbon, global warming would slow by 15%, Nichols remarked in her keynote, “giving us room as a planet to develop more durable policies dealing with longer-lived pollutants.” California is considered a ‘beacon of light’ because of its political will to take on the issue, noted Nichols, with the standards set in California picked up by other states and nations in the world. She said ARB’s historic success and continued focus on smog is the result of programs built on the best available data and science, which also rewarded innovation.

State agencies are working in tandem to direct their efforts toward the most disadvantaged communities, Nichols pointed out. Proceeds from AB32’s Cap and Trade program for GHG emissions, for example, helped spur CalEnviroScreen, the new public health tool launched by Cal/EPA’s Office of Environmental Health Hazard Assessment. The tool scores cumulative exposures in geographical areas of high pollution while taking into account socioeconomic factors that increase the population’s susceptibility to adverse changes in the environment.

Nichols recognized that water is on the front of everyone’s agenda. Her keynote touched on California’s sustainability plans for water conservation, land preservation, and state-of-the-art high-speed rail transportation as part of an ambitious agenda to produce quick and important benefits for climate and health.

Presentations by Kristie Ebi from Stanford University, Marc Schenker from UC Davis, and Bart Ostro, chief of the Air Pollution Epidemiology Section in the Office of Environmental Health Hazard Assessment at Cal/EPA, continued the symposium’s focus on the public health effects of extreme heat.

Ebi characterized the spatial variability of climate change, emphasizing that what happens elsewhere on the planet affects California. Melting permafrost in northern hemispheres releases methane, for example, a powerful greenhouse gas that influences global warming in the United States. She predicted that, by mid-century, temperatures that occurred once every 20 years will occur every year. And because warmer air holds more water, humidity will increase in areas of high humidity, and places with more moisture in the air will experience more rain and heavier downpours, while areas of California that lack moisture will become drier.

Workers not acclimatized to extreme temperatures are highly susceptible to heat stress, reported Marc Schenker.

A Cal/OSHA investigation of heat illness cases in the year 2005 found 80 percent of employees had been on the job less than four days. Dehydrated, workers often return home to no air conditioning, exacerbating their inability to cool core body temperatures overnight. Employees in agriculture and construction rank among the most at exposed, according to the Intergovernmental Panel on Climate Change report released in March 2014.

Afternoon presentations by Kathleen Navarro, John Balmes, and Art Reingold from the UC Berkeley School of Public Health, David Sedlak from the UC Berkeley Department of Civil and Environmental Engineering, and Gina Solomon, Cal/EPA’s deputy secretary for Science and Health, characterized the multiple health impacts of climate change.

Global warming will affect the frequency and intensity of wildland fires in California, reported Balmes and Navarro. Pollution emissions from wildland fires worsen air quality for fire-fighting crews and nearby communities. Balmes recognizes health agencies need to prepare for increased medical care use due to respiratory illness and morbidity among sensitive populations such as asthmatics, people with heart and lung disease, infants, children, and the elderly. The symposium closed with a panel discussion on possible solutions to mitigate global warming. Panelist Max Auffhammer from the Department of Agricultural and Resource Economics at UC Berkeley presented the latest clean energy strategies, while Sonia Yeh, a research scientist in the UC Davis Institute of Transportation Studies, broke down the environmental and economic costs of our dependence on fossil fuels. To reach California’s GHG goals for 2050, we must tap the potential of clean vehicles and low carbon fuels through market and policy mechanisms, Yeh concluded.

Public transit, street design, bike facilities, and mixed land use make it possible to reduce car trips and increase health in communities, said Susan Handy from UC Davis. There is no ‘silver bullet’ to reduce car dependence, Handy argued. Rather, it will take a menu of policy interventions from all levels of government to lower vehicle use and transport-related emissions, a major cause of GHG in the state.

Azibuike Akaba, an environmental policy analyst for the Regional Asthma Management and Prevention program at the Public Health Institute, highlighted how smart growth planning methods can transform neighborhoods. Freight
2014 Lela Morris COEH Symposium
continuing from page 7

transport, or the movement of goods on trucks and ships, however, remains a critical environmental justice issue in communities close to ports and truck routes. These residents often suffer a double jeopardy – higher exposure to diesel pollution and noise combined with a greater susceptibility to respiratory illnesses such as asthma.

Kent Pinkerton from UC Davis concluded the panel discussion by identifying research needs on the health effects of climate change. To view Pinkerton’s findings and other symposium presentations, please visit: http://coeh.berkeley.edu/symposium.

Sadie Costello received the 2014 COEH M. Donald Whorton Writing award for her paper, “Metallurgical Fluids and Malignant Melanoma in Autoworkers,” published in the journal, Epidemiology. The award, in honor of the late Dr. Whorton, recognizes important new voices in occupational and environmental research. For the paper, Costello studied the rate of cancer in a cohort of over 14,000 autoworkers from 1983 through 2004. She found that oil-based metalworking fluids, particularly straight mineral oils, were associated with the incidence of malignant melanoma.


2014 Lela Morris COEH Symposium

FOR THE EVENT

At the symposium, Sadie Costello, John Bates, and Diana Donovsky, spouse of the late M. Donald Whorton.

Audience members enjoy the symposium presentations.

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COEH celebrated Mark’s retirement with a party held at the David Brower Center in February 2014. The event, filled with music, food, and friends, capped off two decades of service with the University of California.

Edward Zellers, professor of Environmental Health Sciences in the School of Public Health at the University of California, Berkeley, and Mark Nicas’ former student, commented on his retirement. “For the paper, Costello studied the rate of cancer in a cohort of over 14,000 autoworkers from 1983 through 2004. She found that oil-based metalworking fluids, particularly straight mineral oils, were associated with the incidence of malignant melanoma. Read the paper: http://www.ncbi.nlm.nih.gov/pubmed/24075563.

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COEH BRIDGES | SUMMER 2014

Profile: OEHN PhD Student Julia Buss
As a regional director for the American Heart Association, Julia Buss observed that her colleagues at nurses and doctors conducting secondary prevention for heart disease and stroke were constantly prioritizing their patient’s well-being, but did not always look after their own health. She wrote a book, “Your Care Plan: A Nurses Guide to Healthy Living,” because she felt nurses’ working conditions did not necessarily support healthy eating and placed them at risk of weight gain. “I realized I was giving nurses advice about what they could do as an individual, but I began to ask, what were the external factors at play, such as work-related stress, long shifts, or feeling secure on the job?”

“It’s all very well to tell someone to go exercise an hour a day, but if you’re not dealing with these other issues, it’s not going to work. Writing the book motivated her to apply to UCSF’s doctoral program in Occupational and Environmental Health Nursing (OEHN). She hoped to learn more about the scientific evidence behind guidelines and recommendations for healthy living.

Last summer, Buss became the first OEHN nurse to complete the UCSF Clinical and Translational Research Fellowship Program (CTRFP). Students who wish to become Fellows must take a year off from their studies and commit one year (July-June) to clinical and translational research work under the guidance of a UCSF mentor. At the end of the research year, students participate in two events: a Posterpalooza at UCSF and an oral presentation of their work to mentors and program leader at the CTRFP Symposium.

Working closely with mentors Jennifer Daubenmier from the Osher Center for Integrative Medicine and Kathy Lee from the School of Nursing, Buss examined the role of ghrelin (a hormone that stimulates you to eat when hungry) in eating behaviors. For her Fellowship, Buss conducted a secondary prevention research data collected for a randomized control trial that investigated stress reduction as a technique to help women lose weight.

In the trial, researchers had measured ghrelin, calcitic stress, ghrelin levels, and eating attitudes in overweight and obese women. They also measured leucocyte telomere length, a marker for cell aging.

For her study, Buss examined associations between ghrelin and stress, food cravings, and eating, and examined whether the results were different in women who were overweight compared to women who were obese.

Her findings, published in the May 2014 issue of the journal Appetite, suggest resistance to the hormone ghrelin develops in obesity. They also found anti-aging effects that weaken with obesity. Buss presented the paper at a poster session at the Mayo Clinic.

Currently, Buss is looking at occupational stress and its effect on eating behaviors among nurses. “They work shifts, long hours, and have short breaks,” says Buss. “These are known risk factors for weight gain. Thrown in stress, how does that contribute?”

“There is evidence that 30 to 40 percent of people eat more when stressed,” says Buss. “There is also evidence that eating high fat, high sugar, and salty foods might even dampen the stress response physiologically.”

For her dissertation, the Academy of Medical-Surgical Nurses, the largest group of practicing professionals in the medical-surgical field, allowed Buss to survey members nationally about their eating patterns and stress at work, the COEH faculty OiSaeng Hong, professor and director of the UCSF Occupational and Environmental Health Nursing Graduate Program, received the 2014 Teaching Excellence Award from the School of Nursing.

The annual award is given to a faculty member who has made outstanding contributions to the education of students. The School of Nursing recognized Professor Hong for excellence in research mentoring because of her attention to students, her ability to provide students with a variety of research experiences, and her success at helping them achieve an independent research career.

COEH faculty OiSaeng Hong, professor and director of the UCSF Occupational and Environmental Health Nursing Graduate Program, received the 2014 Teaching Excellence Award from the School of Nursing.

COEH student Stella Beckman from UC Berkeley was one of four to receive an award for the best abstract submitted by a new investigator at the 24th International Epidemiology in Occupational Health Conference held in Chicago, Illinois, on June 26, 2014.

Her abstract, published in the June 2014 issue of Occupational and Environmental Medicine, supports previous findings that automotive workers exposed to metalworking fluids have an elevated risk of developing chronic obstructive pulmonary disease compared to those who were never directly exposed.

COEH co-authors on the abstract include Sadie Costello, Sally Picciotto, John Balmes, Katharine Hammond, and Ellen Eisen from the UC Berkeley School of Public Health.

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From March through April, the class met at the Latina Center in Richmond for three hours every Monday night. Volunteers provided childcare. The class – comprised of leaders from the Latina Center, teachers, hospital workers, and dedicated community members – listened to speakers from the Ecology Center in Berkeley and the State Environmental Health Investigations branch who spoke on climate change and environmental justice. Union workers from Chevron Richmond gave an overview of what it is like to work at the refinery and fielded questions from the class. Participants went on a six hour guided tour of 12 toxic sites in the cities of Richmond and San Pablo. The majority had no idea of the pollution sources in their neighborhood, Barton-Antonio discovered.

Barton-Antonio brought the class to a city council meeting, many for the first time. Participants spoke about the lack of green cover in their neighborhood compared to affluent areas in Richmond. Knowing they were coming, the mayor gave them a certificate of recognition for bringing their issues to city leaders.

“The class learned how they can improve conditions in their community, which was our goal,” says Barton-Antonio. Since graduating, participants have continued meeting in order to plan how they will continue volunteering in different activities, such as coastal clean-up days with the Watershed Project and starting a community garden, noted Barton-Antonio. They will conduct two Spanish language workshops at Community Health Worker conferences to continue their outreach.