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Direct Reading Methods (DRM)

From the Director's Desk

As the story goes, Dr. Francis Crick walked into a pub one night in 1953. "We have discovered the secret of life," he announced.

He and Dr. James Watson had just mapped the structure of DNA, in one of the fundamental scientific breakthroughs of the 20th Century. Among many other applications, this discovery opened the door to astonishing advances in medicine. It would be difficult to argue the profound benefits of these new tools, which have given doctors and scientists the ability to detect, diagnose, treat, and prevent disease before symptoms appear or adverse effects make headway.

At the same time, this progress has raised understandable concerns about the use of genetic information in individually detrimental ways. In the arena of work, the debate has centered on the use of tests for new hires to identify genetic traits and susceptibility to hazardous substances in the workplace. A 2004 study by the American Management Association showed that nearly 63 percent of U.S. companies require medical testing of current employees or new hires. In addition, 15.1 percent conduct tests for susceptibility to workplace hazards, 3 percent for breast and colon cancer, and 2 percent for sickle-cell anemia; 3.2 percent collect information about family medical history. The American Management Association survey, "2004 Medical Testing Survey," is available through the association's archives page at http://www.amanet.org/research/archive.htm.

In practice, such tests often forced individuals to make a difficult choice: "Would you take a genetic test if you knew that the information about your genetic makeup would be used against you -- to deny you employment or health coverage?"

Sen. Olympia Snowe (R-Maine) noted the dilemma in essentially those words last year, when she introduced the bipartisan Genetic Information Nondiscrimination Act (also called "GINA"). http://frwebgate.access.gpo.gov/cgi-bin/getpage.cgi?dbname=2007_record&page=S846&position=all On May 21, 2008, the President signed the final bill into law. http://www.whitehouse.gov/news/releases/2008/05/20080521-7.html The long-awaited law, which has been under consideration in Congress for 13 years, was enacted to protect Americans against discrimination based on their genetic information when it comes to health insurance and employment. The history of GINA's passage is outlined on genome.gov, the National Human Genome Research Institute's government web page http://www.genome.gov/24519851.

GINA's passage provides a timely opportunity to consider the intersection of genetics and occupational health, and the challenges that genetic science and medicine pose for occupational health scientists and physicians.

While GINA's passage is intended to be a critical step in preventing discrimination, there are still important reasons for considering genetics in protecting workers from occupational disease. Genetic factors contribute to the variable responses of workers to occupational hazards—particularly chemical hazards and some biological and physical agents. Although, increasingly, workplace exposures are being controlled to lower concentrations, workers with susceptible genetic profiles may still be at unacceptably high risk. A broad range of published studies show that genetic variations can lead to differential occupational disease risks in exposed workers. Clearly, genetic technology has been useful in these studies of occupational disease and chemical exposures.

The greatest contributions thus far have involved understanding mechanisms and modes of action.

Detecting genetic variations can also lead to identifying susceptible subgroups in exposed populations. This however, raises many questions. If susceptible subgroups are identified, should government agencies use the information, e.g., in risk assessments or in setting standards? For example, how might the Occupational Safety and Health Administration use genetic information when setting standards (to the extent economically and technically feasible) that are intended to assure that ". . . no employee will suffer material impairment of health and functional capacity even if such employee has regular exposure to the hazard dealt with by the standard for the period of his working life." 29 U.S.C. § 655(b)(5). No good examples exist in which occupational exposure limits (OELs) have been based on genetic characteristics or risk in a population subgroup. Nor are there examples of one OEL for the general working population and a different one for a specific genetic subgroup.

An important area of continued research involves identifying genetically high-risk groups with exposure to widely prevalent workplace chemicals. Examples include exposure to substances such as benzene, ethylene oxide, polycyclic aromatic hydrocarbons (PAHs), beryllium, and silica. Including genetic information in quantitative risk assessments could be on the horizon in the future. The inclusion of genetic information in risk assessments does not mean that workers will need genetic tests. Rather, it means that research on genetic characteristics in some workers will be used in modeling risks and determining safe levels of occupational exposure.

As with any new legislation, questions of implementation, administration, interpretation, and compliance are likely to follow. However, under GINA as enacted by Congress and the President this past month, workers are provided more protection against genetic discrimination. At the same time, the occupational safety and health community will have to add another topic to its basic skill set--understanding the new world of occupational genetics. At NIOSH, we intend to devote ongoing attention to the challenge of occupational genetics--a challenge that is on the frontiers of science and ethics.

I want to thank Dr. Paul Schulte, Director of the NIOSH Education and Information Division, for his contribution to this month's column and for his ongoing work in the field of occupational genetics. I look forward to revisiting this topic with you in the future.

High Fatality Rates, Persistent Risk Disparity for Hispanic Workers Found in Study

Work-related fatality rates for Hispanic workers in the U.S. exceeded those for all workers during 1992-2006, and that the disparity of risk was persistent over time, NIOSH scientists and outside colleagues found in a new study published in the June 6 issue of the U.S. Centers for Disease Control and Prevention's (CDC) *Morbidity and Mortality Weekly Report*. The article examines important aspects of the data and recommends interventions to prevent fatal injuries among this growing segment of the U.S. work force. The article is on line at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5722a1.htm.

2008 Fire/EMS Safety, Health and Survival Week

NIOSH is partnering with the International Association of Fire Chiefs (IAFC) and the International Association of Fire Fighters (IAFF) to promote 2008 Fire/EMS Safety, Health and Survival Week, June 22-28, 2008. The goal is to institute a strong culture of health and safety



within the fire/EMS service. More information about this important activity can be found at http://www.iafc.org/safetyweek or by contacting Tim Merinar at TMerinar@cdc.gov.

Director's Desk Follow-Up: NIOSH Posts Draft Control Banding Document for Public Comment and Review

On May 13, NIOSH posted a draft document about Control Banding for public review and comment. This draft document, *Qualitative Risk Characterization and Management of Occupational Hazards (Control Banding [CB]): A Literature Review and Critical Analysis*, describes the evolution and concepts of control banding, a qualitative approach for assessing and managing hazards associated primarily with chemical exposures in the workplace. The public review and comment period is open until July 11, 2008. The draft document is available for viewing at http://www.cdc.gov/niosh/review/public/138.



Special Issue of the Journal of Agricultural Safety and Health

The Journal of Agricultural Safety and Health (2008 Volume 14, Number 2) released a special issue featuring articles from the September 2006 Western Center for Agricultural Health and Safety Conference "Health and Safety in Western Agriculture: Research to Practice." The Western Center for Agricultural Health and Safety, located at the University of California, Davis is one of ten NIOSH-funded Ag Centers across the U.S., http://www.cdc.gov/niosh/agctrhom.html. Abstracts of the seven articles are available at http://asae.frymulti.com/toc_journals.asp?volume=14&issue=2&conf=j&orgconf=j2008.



Addressing the Hazards to Reproductive Organs from Occupational Cycling

Researchers from the Division of Applied Research and Technology, culminated eight years of studies on the health effects of occupational cycling with the publication entitled "Cutting Off the Nose to Save the Penis." The paper will be in the August 2008 issue of the *Journal of Sexual Medicine* and is currently available as an "online early" article (http://www.blackwell-synergy.com/doi/abs/10.1111/j.1743-6109.2008.00867.x). The paper describes an intervention study to assess the effectiveness of no-nose (noseless) saddles in alleviating the pressure on the groin and health effects caused by the traditional (nosed) bicycle saddle. No-nose saddles were demonstrated to be an effective intervention for bicycling police officers. These results indicate that no-nose saddles may alleviate discomfort and maintain sexual health for men who ride bicycles as part of their job as well as for the 5 million recreational cyclists. Next: communicating the findings of the research and translating them into practice.

NIOSH Dockets Updated

The following NIOSH Dockets have been updated with the latest public comments.

- Docket #110: Truck Driver Safety http://www.cdc.gov/niosh/docket/nioshdocket0110.html
- Docket #123: Positive-Pressure Closed Circuit Self-Contained Breathing Apparatus http://www.cdc.gov/niosh/docket/nioshdocket0123.html

REMINDERS

Save the Date: NIOSH To Host DREAM Workshop in November

NIOSH will host the "DREAM (Direct Reading Exposure Assessment Methods) Workshop" on November 13 – 14, 2008, in Arlington, VA. The workshop will bring together stakeholders from academia, labor, management, method development and research, government and manufacturing to discuss research needs in the area of direct reading methods for assessing occupational exposures. Input from the workshop will be used to set research priorities for the methods. Information on the workshop will be available on the NIOSH Web page, http://www.cdc.gov/niosh/topics/drm.

Nominations Being Accepted for First "Safe in Sound" Award

NIOSH and the National Hearing Conservation Association (NHCA) have established a new award to be given each year to companies or organizations that exemplify Excellence in



Hearing Loss Prevention. The first "Safe in Sound" award will be presented at the NHCA annual conference in February 2009 and will recognize organizations that document measurable achievements in hearing loss prevention programs, obtain information on their real-world successes, and widely disseminate information on how others can use these successful strategies or benchmark their own programs. Additional information and submission details can be found at http://www.safeinsound.us. Nominations will be accepted until September 1, 2008.

NIOSH Science Blog

Be sure to check out and comment on the latest NIOSH Science Blog topics.

- The May 12, 2008 posting by Robert Randolph of the NIOSH Pittsburgh Research Laboratory asks "Are your ears really protected?" and describes a NIOSH-developed online tool, QuickFitWeb, for checking hearing protection in a minute or less. http://www.cdc.gov/niosh/blog/nsb051208_quickfit.html.
- Posted on May 20, 2008, "Nanotechnology: Should carbon nanotubes be handled in the workplace like asbestos?" follows two recent international reports which continue the debate comparing nanotube and asbestos fibers. The Blog was posted by Dr. Vladimir Murashov, Special Assistant for Nanotechnology to the NIOSH Director. http://www.cdc.gov/niosh/blog/nsb052008_nano.html.

r2p Corner

NIOSH Technical Assistance on Silicosis Prevention Highlighted

The April 2008 issue of the *International Occupational Hygiene Association (IOHA) Newsletter* highlights silicosis prevention in a series of short articles. The articles describe activities and leadership by NIOSH, national, and international experts to control silica exposures. Articles presented approaches suitable to stone cutters, ceramics workers, and to construction workers in the U.S. and in other countries. Training is another focus of the newsletter, with articles about the status of development and review of International Occupational Hygiene Training Modules intended for quality teaching globally, the World Health Organization document on prevention and control of dust, and the Fogarty and Work and Health in Southern Africa (WAHSA) programs in South Africa. The article is available online at http://www.ioha.net/images/johanewsletterapril08.pdf.

NORA

NORA Early Registration Ending Soon

Early registration will be open through June 15 for the NORA Symposium 2008: Public Market for Ideas and Partnerships, July 29 in Denver, Colorado. Regular registration will be open through July 20. For more information or to register, click on "registration" in the right-hand menu on http://www.cdc.gov/niosh/nora/symp08.

NORA Liaison Committee Meeting

NORA Liaison Committee meetings have afforded an opportunity for representatives of organizations with a national scope (employers, unions, professional associations and others) to learn about the progress of NORA and identify possible partnerships with each other or NIOSH to further enhance the success of NORA. The next public meeting, "Partnerships to Advance the National Occupational Research Agenda," will be held on June 19, and includes an option for online participation so more organizations may participate without having to travel to Washington, DC. For more information on the meeting, go to http://edocket.access.gpo.gov/2008/E8-10753.htm. To attend the meeting, please pre-register by emailing the NORA Coordinator noracoordinator@cdc.gov.

Around NIOSH

Safety Advisory: Aerial Ladder Truck Waterways

On May 8, 2008, the NIOSH Fire Fighter Fatality Investigation and Prevention Program posted a Safety Advisory urging fire departments to take immediate steps to ensure that procedures for setting-up waterways on aerial ladder trucks are consistent with manufacturer recommendations, that fire fighters are thoroughly trained on these procedures, and that correct set-up is verified before the waterways are used. This Safety Advisory was prompted by an ongoing NIOSH investigation of an April 8, 2008 fire fighter fatality and is available at http://www.cdc.gov/niosh/fire/SafetyAdvisory05052008.html. On May 12, 2008, the manufacturer of the aerial ladder involved in the April 8 incident mailed a notice to all of its customers alerting them of this incident and referencing the NIOSH Safety Advisory and recommendations to prevent similar incidents. Contact Tim Merinar at TMerinar@cdc.gov for additional information.

NIOSH Information Provided to Professional Piercers

Informational post cards from the NIOSH Body Art occupational health and safety project were distributed at a national conference last month hosted by the Association of Professional Piercers (APP). NIOSH staff worked with the Regional Resource Coordinator from the US Department of Health and Human Services National HIV Testing Mobilization Campaign to supply copies of the "Good, Clean Art" and "Look Sharp" post cards for the conference. More information is available on the NIOSH Body Art topic page, http://www.cdc.gov/niosh/topics/bbp/bodyart, or by contacting Everett (Chip) Lehman at ELehman@cdc.gov or Amy Mobley at Amanuecommons.org/lehman@cdc.gov.

Presentations

Presentations on NIOSH Nanotechnology Research

Several representatives from the NIOSH Nanotechnology Research Center made technical presentations and conducted a hands-on measurement workshop for the Central Ohio American Industrial Hygiene Association in Columbus, OH, on April 25. They provided an overview of the NIOSH nanotechnology research projects and demonstrated the Nanoparticle Emission Assessment Technique (NEAT) for close to 70 participants. For more information about the NIOSH nanotechnology research program, please visit http://www.cdc.gov/niosh/topics/nanotech.

NIOSH Hispanic Worker Outreach Efforts

Michael Flynn of the NIOSH Education and Information Division described recent NIOSH efforts to reach Hispanic workers at the 54th Information Seminar for the Ventanillas de Salud (Health Windows) program sponsored by the Institute for Mexicans Abroad and the Mexican Ministry of Health. The presentation focused on a pilot study by NIOSH and the Institute for Mexicans Abroad to develop and disseminate occupational safety and health information on priority topics at select consulates with the Ventanillas de Salud (Health Windows) program. If successful, this pilot project will lay the foundation for establishing occupational safety and health as an integral part of the Mexican consular network's health promotion programs and could be used as a model for collaborating with the Ventanillas de Salud on a national level regarding other health topics as well.

Hazards to Outdoor Workers

NIOSH representatives presented a workshop, "Hazards to Outdoor Workers," at the 24th Annual Kentucky Governor's Safety and Health Conference and Exposition in Louisville. Workshop sessions included an overview of outdoor worker hazards, a review and update on vector-borne diseases, and dermal hazards with a focus on contact dermatitis. EID has an ongoing informational effort addressing outdoor worker hazards including the development of Web pages with recommendations for protecting outdoor workers from physical and biological hazards. The NIOSH topic page for hazards to outdoor workers was recently posted at http://www.cdc.gov/niosh/topics/outdoor.

New Appointments and Awards

Congratulations to:

Dr. Naomi Swanson, named to the position of Chief, Organizational Science and Human Factors
Branch. Since joining NIOSH in 1987, Dr. Swanson has been a leader in collaborative studies in the
areas of job stress and office ergonomics.

- Dr. Kathleen Kreiss, recipient of the Edward J. Baier Technical Achievement Award from the American Industrial Hygiene Association. The award is presented is recognition of the most significant contribution to industrial hygiene in recent years. Dr. Kreiss was recognized for her research on occupational exposures to beryllium and butter flavoring chemicals.
- Several NIOSH Commissioned Corps Officers who were recognized for their outstanding achievements or service to public health on May 15 at the 56th Annual Centers for Disease Control and Prevention/Agency for Toxic Substances Disease Registry Honor Awards ceremony. The Meritorious Service Medal was presented to Captain Mark A. Toraason. Outstanding Service Medal recipients include: Captain Mary E. Birch, Lieutenant Commander Lauralynn T. McKernan, Lieutenant Commander Bruce R. Newton, Captain Gregory M. Piacitelli, and Captain Laurie A. Piacitelli.
- Rick Davis and Mary Ann Butler who received a FY 2008 funding award for Public Health Genomics
 Research from the National Office of Public Health Genomics. The award supports research that will
 contribute to integrating genomics into public health research, policy, and programs. The project,
 entitled "Genetic Modulation of Worker Susceptibility to Noise-Induced Hearing Loss," proposes to
 identify and characterize genetic variants that may increase susceptibility to noise induced hearing
 loss.
- James Kesner, Research Biologist, on receiving the 2008 Dr. Marvin Mills Award for Workplace
 Diversity presented by the NIOSH Cincinnati Equal Employment Opportunity Advisory Council. Since
 1996, Dr. Kesner has mentored 11 separate interns selected from the Project: IMHOTEP for African
 American undergraduate students and from the Hispanic Association of Colleges and Universities
 (HACU) Internship Program. He has worked closely with Dr. Mills and others through the years to
 coordinate these minority student programs.
- Dr. Bon-Ki Ku who received the 2008 CDC Engineer of the Year Award in recognition of his
 outstanding research that has contributed to the advancement of aerosol instrument design,
 development of more accurate monitoring methods, and characterizing the physical properties of
 engineered nanoparticles.

State-based Occupational Health updates

States Develop Strategies to Combat an Old Occupational Disease

NIOSH, organizations involved in the NIOSH-funded Occupational Health Indicators Project, and partners, together with OSHA's New Jersey Silica Outreach and Research Alliance (SOAR) have developed a dust-suppression engineering control for jackhammers and are currently promoting its use through an outreach campaign. Additionally, the New Jersey Departments of Treasury and Transportation have incorporated silica health and safety language into their contract bidding process. These contract specifications require dust control methods, respiratory protection, a silica health and safety program which includes employee training, and an on-site competent person. For information about New Jersey's activities to prevent silicosis, contact the New Jersey Occupational Health Surveillance Program at surveillance@doh.state.nj, us or visit http://www.nj.gov/health/ohs/contact_surv.shtml.

News From Our Partners

OSHA Teen Summer Job Safety Campaign Launched on TODAY Show

On April 21, Secretary of Labor Elaine L. Chao launched OSHA's 2008 Teen Summer Job Safety Campaign on NBC's "Today" show. The campaign is part of OSHA's Young Worker Initiative, which provides information and resources to teenagers, parents, educators and employers to ensure safe and rewarding work experiences for these summer employees. More information about workplace safety for teens is available at http://www.osha.gov/teens.

Agriculture Partners Reveal Updated Web site

Be sure to check out the newly revised joint website of the North Carolina Agromedicine Institute and the Southern Coastal Agromedicine Center (SCAC), http://www.ncagromedicine.org. The SCAC is one of ten NIOSH funded Agricultural Centers.

National Safety Council's June webinars

- Hazard Communication Standard
 June 18, 2008, 10:00 11:00 AM CDT
 https://www114.livemeeting.com/lrs/nsconline_ccc/Registration.aspx?
 pageName=h028b62g474fxzm9
- Building a Safety Culture
 June 25, 2008, 10:00 11:00 AM CDT
 https://www114.livemeeting.com/lrs/nsconline_ccc/Registration.aspx?pageName=k8lsrf69gt7mxr9m

Communication Products

"Explosion Hazards from Methane Emissions Related to Geologic Features in Coal Mines" DHHS (NIOSH) Publication Number 2008-123. http://www.cdc.gov/niosh/mining/pubs/pubreference/outputid2936.htm.



Spanish version of this NIOSH publication and Web pages are now available

"NIOSH sobre entrenamiento en espirometria" ("NIOSH Spirometry Training Guide") DHHS (NIOSH) Publication Number 2004-154c. http://www.cdc.gov/spanish/niosh/docs/2004-154c_sp

Health Hazard Evaluation Report now available

Manufacturing Sector - Evaluation of potential ergonomic hazards. The NIOSH health hazard evaluation program responded to a union request at a piston and cylinder liner plant. The request concerned potential musculoskeletal hazards resulting from job tasks. The most common complaints were pain or discomfort in the low back and shoulders resulting from heavy lifting and awkward postures. NIOSH recommended that managers add adjustable lifts and tables to reduce bending and reaching and that they train workers to be aware of unsafe work practices. Investigators recommended that employees take the time to work safely and lift properly, as well as promptly report any injuries or unsafe work conditions to their supervisors. The final report is available at http://www.cdc.gov/niosh/hhe/reports/pdfs/2007-0124-3060.pdf.

Upcoming Events

Look for Us

"International Association of Fire Chiefs Fire Rescue International 2008"

August 14 – 16, 2008, Denver, CO. Booth #1372.

"Association of Occupational Health Professionals"

September 17 – 20, 2008, Denver, CO

"National Safety Council Expo"

September 22 - 24, 2008, Anaheim, CA

Call for Abstracts

"Fire Department Instructors Conference (FDIC) 2009"

April 20 – 25, 2009, Indianapolis, IN. Deadline is June 27, 2008. http://downloads.pennnet.com/fe/fdic2008/2009indycallforpapers.doc

"14th International Society for Respiratory Protection"

September 14 – 18, 2008, Dublin, Ireland. Deadline is June 30, 2008. http://www.isrp.com/dublin/

"National Safety Council's Annual Texas Safety Conference and Expo"

March 2 – 3, 2009, The Woodlands, TX. Deadline is July 11, 2008. https://www.nsctexexpo.com/ abstract submit.cfm

ASSE Professional Development Conference and Exposition "SAFETY 2009"

June 23 – July 1, 2009, San Antonio, TX. Deadline is July 18, 2008. http://www.asse.org

"29th Triennial Congress of the International Commission on Occupational Health (ICOH 2009)"

March 22 – 27, 2009, Cape Town, South Africa. Deadline is July 31, 2008. http://www.icoh2009.co.za

"Association of periOperative Registered Nurses Congress 2009"

March 15 – 19, 2008, Chicago, IL. Deadline is October 1, 2008. http://www.aorn.org/Education/EducationEvents/CallForProposals

Upcoming Conferences

American Society of Safety Engineers "SAFETY 2008" Professional Development Conference and Exposition

June 9 – 12, 2008, Las Vegas, NV. http://www.asse.org/speakerpage08

"12th US/North American Mine Ventilation Symposium"

June 11 – 18, 2008, Reno, NV. http://www.unr.edu/ventsymp2008

"National Institute for Farm Safety"

June 23 – 26, 2008, Lancaster, PA. http://www.eventsmeetingsandmore.com

"2008 Johnson Conference: Critical Issues in Monitoring Asbestos"

July 14 – 18, 2008, Burlington, VT. http://www.astm.org/cgi-bin/SoftCart.exe/filtrexx40.cgi?U+mystore
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"International Association of Fire Chiefs Fire Rescue International 2008"

August 14 – 16, 2008, Denver, CO. http://www.iafc.org

"International Society for Respiratory Protection (ISRP) 14th Conference"

September 14 – 18, 2008, Dublin, Ireland. http://www.isrp.com.au/

"2008 National Occupational Injury Research Symposium (NOIRS)"

October 21 – 23, 2008, Pittsburgh, PA. http://www.cdc.gov/niosh/noirs/2008

"PCIH 2008"

November 8 – 11, 2008, Tampa, FL. http://www.aiha.org/pcih08/

"8th Conference of the European Academy of Occupational Health Psychology"

November 12 – 14, 2008, Valencia, Spain. http://www.ea-ohp.org

"International Association of Emergency Managers (IAEM) 2008 Annual Conference"

November 15 – 20, 2008, Overland Park, KS. http://www.iaem.com

"International Roofing Expo"

February 3 – 5, 2009, Las Vegas, NV. http://www.theroofingexpo.com

"2009 SME Annual Meeting" and "CMA 111th Annual National Western Mining Conference"

February 22 – 25, 2009, Denver, CO. http://sme2009.abstractcentral.com

"19th International Symposium on Shiftwork and Working Time"

August 2 – 6, 2009, Venezia, Italy. http://www.shiftwork2009.it

Word of the Month

Direct-reading methods (DRM): Techniques that allow real-time or near real-time assessment of workplace exposures, including gases, vapors, aerosols, surface contamination, musculoskeletal disorders, noise and radiation. By applying DRM, health and safety professionals can quickly determine the potential for exposures and make more improved decisions on the type of environmental controls or personal protective technology needed to mitigate those exposures.

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