NIOSH eNews

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From the Director's Desk

Honoring a Milestone in Mine Health and Safety

One of the great milestones in NIOSH's history preceded the official creation of the Institute under the Occupational Safety and Health Act of 1970.

A year before Congress passed the 1970 legislation, it enacted the Federal Coal Mine Health and Safety Act of 1969. Building on previous laws and policies, the 1969 Act established a strategic federal program to prevent work-related illnesses, injuries, and deaths in coal mining. Research, an important component of the program, was entrusted to agencies that later were incorporated into NIOSH. As 1970 began, those agencies geared up to meet their mandate under the new law.

From those beginnings 35 years ago, great advancements in coal mine safety and health occurred. Many programs and practices now regarded as everyday features in underground coal mining – from roof bolting for securing overhead rock, to nationwide monitoring of coal workers' pneumoconiosis or black lung disease – were stimulated by the 1969 law.

We at NIOSH are gratified that coal mining has become significantly safer, and that this progress is due in part to our research and that of our forerunners. Three factors have contributed to that success, thanks to the hard work and vision of NIOSH staff and their diverse partners:

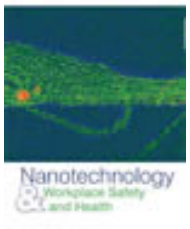
- *A profound understanding of the underground coal mining environment.* It might be a cliché to say that our scientists and engineers know underground coal mines as well as they know the backs of their hands, but it is also a fact.
- *A talent for innovation.* Time and again, NIOSH researchers have been inventive and ingenious in

devising new and better solutions to safety and health problems. A recent example is the Personal Dust Monitor, which won a prestigious national engineering award in 2004.

- *Respect for our partners and stakeholders in the coal mining community.* Our contributions to coal mine safety and health are based on our recognition that coal mining is not simply an industry; it is also a way of life that often spans generations of families.

More information on NIOSH's accomplishments in the 35 years since enactment of the 1969 law can be found at http://www.cdc.gov/niosh/topics/surveillance/ords/CoalMineHealthSafetyAct35Years.html. Although the U.S. has made significant progress in reducing injuries, illnesses, and deaths in coal mining, more remains to be done. NIOSH continues to keep pace with the safety and health needs of this industry as it and we enter the 21 st Century.

Nanotechnology Strategic Plan Notes Key NIOSH Role



NIOSH's key role in conducting and partnering in research on occupational exposures to nanomaterials is noted in a new strategic plan under the National Nanotechnology Initiative, the interagency consortium overseeing the federal government's widespread nanotechnology activities. *The National Nanotechnology Initiative Strategic Plan: December 2004* charts the vision, goals, and plans by which NIOSH and partner agencies will work to expedite the responsible advancement of nanotechnology over the next 5 to 10 years, and to ensure that the U.S. will remain a world leader in nanotechnology research and development.

NIOSH is advancing research to better understand the ways in which people may be exposed to nanoparticles in the production and use of nanomaterials, and whether those exposures may result in health effects. In the interim, as the new strategic plan notes, NIOSH plans to issue recommendations in 2005 on "safe working practices when producing and handling nanoscale materials." The strategic plan is available at http://www.nano.gov/NNI_Strategic_Plan_2004.pdf. More information on NIOSH's research program is available at http://www.cdc.gov/niosh/topics/nanotech.

NIOSH and ASSE Renew Partnership

NIOSH Director Dr. John Howard MD and ASSE President Gene Barfield co-sign partnership agreement renewal

On December 17, 2004, NIOSH and the American Society of Safety Engineers (ASSE) signed an agreement extending their formal partnership to improve workplace safety and health in the U.S. NIOSH and ASSE pledge continued collaboration to provide outreach, communication and professional development opportunities, and to facilitate the transfer and use of effective workplace injury prevention measures. The original agreement established a one-year formal partnership. The new agreement extends the partnership for an additional three years, demonstrating that NIOSH and ASSE have been pleased with the results of their collaboration. For example, as a result of the initial agreement signed on October 23, 2003, ASSE members participated in the NIOSH *Steps to a HealtherUS Workforce Symposium* held earlier this year, and ASSE has appointed a NIOSH representative to serve on the ASSE Foundation Research Subcommittee that reviews and recommends research proposals for funding by the Foundation. More information on the agreement can be found at http://www.cdc.gov/niosh/updates/upd-12-17-04.html.

New Youth Employment Rules from the U.S. Department of Labor

On December 16, 2004, the U.S. Department of Labor published final regulations in the Federal Register changing some employment rules for youth ages 14-17. The rules become effective February 14, 2005. The changes include:

- Incorporating into regulations a 1996 amendment to the Fair Labor Standards Act (FLSA) permitting 16- and 17-year olds to load, but not operate or unload scrap paper baling and compacting equipment, and expanding the previous regulation to include machines that compact non-paper materials, such as metals and plastics.
- Incorporating into regulations a 1998 amendment to the FLSA outlining conditions and criteria under which 17-year olds may drive automobiles and trucks on public roadways on the job. The regulation also prohibits those under 17 years of age from driving automobiles and trucks on public roadways on the job.
- Modifying the regulation regarding the types of cooking and cooking-related duties that 14- and 15-year olds may perform, including provisions limiting the equipment that 14- and 15-year olds can work with and specifying allowable surface temperatures of equipment and liquids.
- Modifying the regulation that prohibits 16- and 17-year olds from roofing occupations to include all work on or about roofs.

NIOSH played a critical role in the revised regulations including providing comments and recommendations on the proposed changes, epidemiological data, statistics and fatality investigation findings to the Department of Labor. The rule change was considered by the Office of Management and Budget as a "significant regulatory action" with NIOSH research and findings cited among the justifications for the rule changes. The final rules can be accessed on the Federal Register at http://www.gpoaccess.gov/fr/index.html.

Publication of this rule is part of the Department of Labor's ongoing efforts to promote positive, safe work experiences for youth, while ensuring necessary and effective safety protections. As part of this ongoing rule, the Department of Labor contracted with NIOSH to review available data and make recommendations for changes to regulations that prohibit 16- and 17-year olds from performing especially hazardous work. NIOSH provided DOL with these recommendations in 2002: http://www.cdc.gov/niosh/docs/NIOSHRecsDOLHaz/. This rule substantially incorporates four of the NIOSH report recommendations. The Department of Labor continues to consider additional recommendations in the NIOSH report.

Fatal and Nonfatal Injuries from Wood Chippers

From 1992-2002, 31 occupational injury deaths were attributable to mobile wood chippers, according to the December 10 issue of CDC's *Morbidity and Mortality Weekly Report (MMWR)*. Data for the analysis came from the Bureau of Labor Statistics (BLS) *Census of Fatal Occupational Injuries*. Between 1992 and 2001, roughly 2,042 nonfatal injuries resulted from working with the chippers, an average of 204 per year, according to data from the BLS Survey of Occupational Injuries and Illnesses. Mobile wood chippers shred branches and tree trimmings into mulch through rotating blades and therefore, pose potential dangers to operators who can become caught in the feed mechanism and pulled into the rotating chipper knives or struck by the hood of the machine. The full MMWR citation can be accessed at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5348a2.htm.

Deadline Approaches for 2005 ACTE Safety Competition Submissions

The Association for Career and Technical Education (ACTE), a NIOSH partner since 1997, described NIOSH as the Nation's premier occupational safety and health institute in the October 2004 issue of their official trade magazine, *Techniques,* http://www.acteonline.org/members/techniques/oct04_dept3.cfm. The article highlighted NIOSH educational grants, the free publications, the new school safety CD-ROM *NIOSH Safety Checklist Program for Schools*, and the national safety competition among teachers in vocational-technical education.

The article included information about the upcoming 2005 safety competition and its criteria http://www.acteonline.org/about/awards/awards-niosh.cfm. The deadline for the call for papers is January 26, 2005 . The winning entry will be selected by a judging committee from the NIOSH Education and Information Division on February 11, 2005. The award will be presented at ACTE's National Policy Seminar on March 6–8, 2005.

DSHEFS Deputy Director Named

Larry Reed has accepted the position of Deputy Director for the NIOSH Division of Surveillance, Hazard Evaluations and Field Studies (DSHEFS). Larry has a wealth of experience at NIOSH beginning in 1977 when he began work as a Research Industrial Engineer in the former Division of Physical Sciences and Engineering. From 1981 to the present, Larry has held research, policy, and management positions in several NIOSH Divisions including DSHEFS, the Division of Safety Research, the Division of Applied Research and Technology and the former Division of Biomedical and Behavioral Science. He will begin his new position effective January 3.

NIOSH-Funded Study Reveals Multidrug Resistant Bacteria at Swine Feeding Facilities

Results from a NIOSH Education Research Center funded study reveal the potential for exposure to antibiotic-resistant bacteria from breathing the air from concentrated swine feeding facilities. Researchers at the Johns Hopkins Bloomberg School of Public Health detected bacteria resistant to at least two antibiotics in air samples collected from inside a large-scale swine operation in the Mid-Atlantic region of the U.S. The study increased understanding of pathways in which humans could be exposed to antibiotic-resistant bacteria. Workers at the swine-feeding facilities are at greatest risk for airborne exposure to the bacteria and may become reservoirs for the drug-resistant bacteria that could be spread to their family and community. Additionally, the study raises questions concerning the spread via ventilation fans and by the application of manure from feeding operations to off-site fields. The article is published in the online edition of *Environmental Health Perspectives* and can be accessed by http://ehp.niehs.nih.gov/docs/2004/7473/abstract.html.

NIOSH-Funded Survey Elicits Safety Views from Alaska Pilots, Operators

Alaska air commuter and air taxi operators and pilots, in a survey funded by NIOSH, generally agreed that better weather information and more training on regional air hazards would help prevent crashes in their high-hazard industry. The survey was part of NIOSH's ongoing partnership with employers, employees, and other groups to reduce work-related fatalities and injuries in aviation and other Alaskan industries. Aviation crashes are a leading cause of occupational fatalities in Alaska.

NIOSH reported the results of the survey as "Alaska Air Carrier Operator and Pilot Safety Practices and Attitudes: A Statewide Survey," in the November 2004 issue of *Aviation, Space, and Environmental Medicine*, Vol. 75, No. 11, pp. 984-991. Further information on the findings is available at www.cdc.gov/niosh/updates/upd-12-7-04.html. More information on NIOSH research and partnerships to prevent job-related deaths and injuries in Alaskan aviation, including results of studies and recommendations for improving safety, can be found at http://www.cdc.gov/niosh/injury/traumaaviation.html.

NIOSH Standards Development Process Presented to Global Partners

Employees from the NIOSH National Personal Protective Technology Laboratory (NPPTL) participated in the 12th International Conference of the International Society of Respiratory Protection (ISRP) held in Yokohama, Japan on November 8-12. The conference, *Respiratory Protection of Workers and Citizens*, was organized by the Asian Section of the ISRP. NPPTL Director Rich Metzler presented the keynote address on chemical, biological, radiological and nuclear (CBRN) respirator standards development in the U. S. highlighting the NIOSH process for developing standards for powered air purifying respirators, self-contained breathing apparatus, self-contained escape respirators and air-purifying escape respirators. Bill Newcomb discussed total inward leakage and summarized the assigned protector factors proposed by the Occupational Safety and Health Administration. Ziqing Zhuang described facial anthropometrics and John Kovac presented standards concepts for respirators and breathing apparatus used to protect emergency responders. During the conference, Rich Metzler, former ISRP President, received the Revoir Award for his contributions to the society.

NIOSH Researches the Human Cough

NIOSH researchers are developing an innovative cough recording machine. They are conducting tests to determine whether the computerized device will detect work related lung disorders by recognizing differences in human coughs.

When someone coughs into the machine, the sound pressure wave and airflow patterns are recorded. Based on these measurements, several cough parameters are calculated and the difference between parameters of normal subjects and subjects with lung disorders are used to train a computerized system called a neural network classifier. The trained classifier can then be used to distinguish between newly tested normal subjects and subjects with lung disease. The system is currently scheduled to be evaluated as a new method for detecting lung disease in the workplace. For further information on this ongoing research, contact Jeremy Day, NIOSH Health Effects Laboratory Division, at JDay2@cdc.gov.

Two NIOSH Employees Named Federal Engineer of the Year

Two NIOSH engineers are recipients of the 2005 Federal Engineer of the Year award presented by the Professional Engineers in Government, a division of the National Society of Professional Engineers. Jeff Whyatt and Cherie Estill are being recognized for their achievements and accomplishments. Jeff Whyatt's contribution in mining engineering has earned him the honor of engineer of the year in the category of Civil Servant. Mr. Whyatt is a mining engineer at the Spokane Research Laboratory (SRL). He has improved engineering of mine structural safety, extending engineering techniques from engineered to natural materials. Furthermore, he has made significant contributions to engineering of mines for stability and safe operation, meanwhile devoting time to support education of current and future engineers at all levels. Mr. Whyatt received his B.S. and M.S. from the University of Idaho and he received his Ph.D. from the University of Minnesota.

Cherie Estill's expertise in the engineering field has earned her recognition as engineer of the year in the category of Commissioned Officer of the U.S. Public Health Service. CDR Estill is co-chair for NIOSH Human Subject Review Board comprised of 16 individuals who are internal employees and local citizens. She leads the project, "Improved Environmental Exposures Sampling Methods for Bioterrorism Response." Mrs. Estill reviews research studies and gives her expertise on programs. Mrs. Estill received her B.S. in Industrial engineering at Purdue University and received her M.S. from Virginia Polytechnic Institute and State University.

Look for us

Stop by and chat with the NIOSH staff at the NIOSH Exhibit Booth at these upcoming conferences.

- The *Ninth Mine Health and Safety Seminar*, January 19-20, 2005 in Lehigh Valley, Pa.http://www.egee.psu.edu/safetysem9/index.html.
- The *2005 Society for Mining, Metallurgy and Exploration* Annual Meeting and Exhibit, February 28-March 2, 2005 in Salt Lake City, Utah. http://www.smenet.org/meetings/AnnualMeeting2005/index.cfm.

News From Our Partners

John Henshaw, Assistant Secretary for the Occupational Safety and Health Administration (OSHA), announced his resignation from the agency on December 8, 2004. During his administration, OSHA extended programs in enforcement, outreach and education and compliance assistance to reduce the number of work-related fatalities, injuries and illnesses. The agency created hundreds of alliances and partnerships with business, labor and community groups to advance safety and health including more than 1,100 sites in OSHA's Voluntary Protection Program, more than 200 Strategic Partnerships Program sites and nearly 200 Alliances. Mr. Henshaw has worked closely with NIOSH Director Dr. John Howard to strengthen the relationship between the two agencies. Working together, Mr. Henshaw and Dr. Howard established the OSHA-NIOSH Issues Exchange Group to foster greater working collaborations between the two agencies. "I am grateful to Mr. Henshaw for supporting NIOSH-OSHA collaborations and I wish him much success with the next chapter of his distinguished career in occupational safety and health," said Dr. Howard. Upon Mr. Henshaw's departure on December 31, 2004, Jonathan Snare assumed the duties of Acting Assistant Secretary for OSHA. The OSHA Press Release can be found at http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=NEWS_RELEASES&p_id=11155.

NORA

Focus on Women's Health and Safety

What are the potential benefits and consequences of alternative work arrangements for women? How does globalization impact women and work organization? How does gender discrimination affect women's health and safety at the workplace? These questions are among the topics NORA's Organization of Work and Women's Health Team discussed during an expert meeting held in Cincinnati, Ohio on December 3, 2004. Scholars from a broad range of disciplines identified current research gaps in the study of work organization and women's health. Discussion from the meeting will be used to develop an Organization of Work and Women's Health Research agenda. For more information, please contact Naomi Swanson at nsw3@cdc.gov or Jeannie Nigam at zgy1@cdc.gov.

Research to Practice-r2p

Mine Rescue and Response - Technologies

U.S. miners often rely on emergency responders to save their lives in the event of an underground emergency, such as a fire, explosion, roof fall, or water inundation. Approximately 700 underground coal mines and 240 underground metal/nonmetal and stone mines continue to operate in the U.S. They employ a total workforce of 40,000 coal miners, and 14,000 metal/nonmetal/stone miners. Additionally, there are 4,700 underground contractors that are employed by these mines. A recent survey conducted by the Mine Safety and Health Administration (MSHA) indicated that there are 236 state and company mine rescue teams in the U.S.; 120 coal mine teams and 116 metal & nonmetal mine rescue teams with a total of about 1,700 rescue team members. This dedicated group of miners often put their lives in jeopardy to save others during a mine emergency. It is important that team members are provided with the latest personal protective equipment, be well trained, physically fit, and fully understand the hazards that may await them during rescue, exploration and recovery operations. Miners are often the first responders to a mine emergency, such as a fire, and must decide if they can fight the fire or evacuate the mine. Miners also need realistic training and adequate technology to safely and effectively conduct such operations.

Improved technologies for mine emergency responders are also being identified and evaluated. The technologies include chemical lightshapes, light vests, strobe lights, laser pointers, lifelines, wheeled stretchers, and thermal imaging cameras. These devices were shown to enhance the effectiveness and safety of mine rescue teams and evacuating miners in dark and smoke-filled passageways during realistic rescue and evacuation simulations at the NIOSH Lake Lynn Laboratory Mine and operating mines. Several mine rescue teams and coal mine operators have adopted the technologies.

Technology to enhance communications during mine emergencies has also been developed. When a rescue team explores complex underground passageways such as found in mines, a lifeline and reliable communication system are essential. Previous communication technology was based on a sound powered phone system that provided communication from only one team member to one other location, the underground fresh air base. Communication between team members required shouting through the breathing apparatus face pieces. NIOSH and Transtek, Inc. Pittsburgh, PA, collaborated in the development and evaluation of the Ron Conti Res-Q-Com System. This system is named after Ron S. Conti (deceased) to pay tribute to the NIOSH researcher who led its development. The Res-Q-Com is a self-contained, portable battery operated system that provides voice communication and a lifeline for rescue teams, such as those called out for an underground mine emergency. It is now commercially available.

These technologies have also been highlighted in the September 8 and September 15, 2003 issues of *International Longwall News*. The Res-Q-Com system was highlighted in the December 19, 2003 issue of *International Longwall News*. For more information contact Charles Lazzara at CLazzara@cdc.gov.

Communication Products

Workplace Solutions: Preventing Injuries when Working with Ride-On Roller/Compactors

A new NIOSH Workplace Solutions document provides safety recommendations to consider when working with ride-on roller/compactors. *Preventing Injuries When Working With Ride-On Roller/Compactors* (DHHS [NIOSH] Publication No. 2005-101) presents two cases studies where workers were fatally injured while participating in such exercises and provides recommendations for equipment operators, site workers, equipment manufacturers and equipment rental establishments. The document can be accessed at http://www.cdc.gov/niosh/docs/wp-solutions/2005-101.

Upcoming Events

International Beryllium Research Symposium-Be2005

NIOSH along with the Institut de Recherche Robert-Sauvé en Santé et en Sécurité du Travail (IRSST) and the National Jewish Medical and Research Center is cosponsoring the *International Beryllium Research Symposium* entitled *Be2005* to be held in Montreal, Quebec, Canada, on March 8–11, 2005. The conference will highlight the newest developments in the prevention, detection, diagnosis and treatment of beryllium sensitization and Chronic Beryllium Disease (CBC). The latest research on exposure, epidemiology, and clinical care as well as an international overview of beryllium sensitization and chronic beryllium disease will be presented. More information on this symposium can be found at http://www.irsst.qc.ca/en/intro-be-2005.html.

Fourth International Conference on Work Environment and Cardiovascular Diseases

The *Fourth International Conference on Work Environment and Cardiovascular Diseases* will be held on March 9-11, 2005, in Newport Beach, Calif. The conference is presented under the auspices of the International Commission of Occupational Health, Scientific Committee on Cardiology in Occupational Health. NIOSH along with the University of California at Irvine Center for Occupational and Environmental Health, the University of California, Los Angeles Center for Occupational and Environmental Health, the Center for Social Epidemiology, the Mt. Sinai School of Medicine, the American Psychological Association and the Japan Association of Job Stress Research will cosponsor the event focusing on characterizing the changes occurring in work in both industrialized and developing nations. The role of globalization and the importance of social movements, including unions, will be explored. More information on the conference is available at http://www.coeh.uci.edu/ICOH.

2005 International Workshop on Environmental Monitoring and Silica Dust Exposure Assessment

NIOSH along with the Tongji Medical College, Huazhong University of Science and Technology will cosponsor the *2005 International Workshop on Environmental Monitoring and Silica Dust Exposure Assessment* on April 15-18, 2005 in Wuhan and Yichang, China. The conference will provide a forum for discussion of research needs, strategies, and opportunities for effective international collaboration on environmental dust monitoring methods and comparison, physical and chemical characteristics of silica dust, epidemiological perspectives on silica dust hazards, biomarkers of silica dust-induced lung cancer and silicosis. More information on the conference can be found at http://www.tjmu.edu.cn/gaojiao/work%20shop/symposium-2005.htm.

Call for Papers: *Work, Stress and Health 2006: Making a Difference in the Workplace*

NIOSH, the American Psychological Association, the National Institute of Justice, the National Institute on Disability and Rehabilitation Research, and the U.S. Department of Labor, will convene the sixth international conference on occupational stress and health, *Work, Stress, and Health 2006: Making a Difference in the Workplace* in Miami, Florida, on March 2-4, 2006, at the Hyatt Regency Miami Hotel. The conference is designed to address the constantly changing nature of work, and the implications of these changes for the health, safety, and well-being of workers. In keeping with the conference theme of “making a difference in the workplace,” there will be a particular focus on the translation of research to practice and workplace programs, policies, practices, case experiences, and other efforts to prevent stress in today’s workplace. The deadline to submit proposals is May 1, 2005. More information about the conference and the call for papers can be found at: http://www.apa.org/pi/work/callforpapers.html.

Occupational and Environmental Exposures of Skin to Chemicals-2005

NIOSH along with the Karolinska Institutet and the Stockholm County Council in Sweden is cosponsoring *Occupational and Environmental Exposures of Skin to Chemicals-2005* in Stockholm, Sweden on June 12-15, 2005. The conference will focus on practical ways to better prevent local and systemic injury and disease caused by exposing skin to chemicals. More information on the conference is available at http://www.cdc.gov/niosh/topics/skin/OEESC2/. The call for poster abstracts is open until February 28, 2005 and can be accessed at: http://www.cdc.gov/niosh/topics/skin/OEESC2/call.html.

Fifth International Symposium on Modern Principles of Air Monitoring

NIOSH along with the National Institute for Working Life, Sweden, and the National Institute of Occupational Health, Norway will cosponsor the *Fifth International Symposium on Modern Principles of Air Monitoring* on June 12-16, 2005 in Loen, Norway . The scientific program will feature the latest developments in exposure assessment and strategies as well as analytical air sampling and measurement/monitoring methodologies. New for the *Fifth International Symposium*, the topic of biomonitoring will be addressed. More information on the symposium can be found at http://www.airmon.org or by contacting Martin Harper at MHarper@cdc.gov.

Word of the Month

Anthropometrics is the measurement of the size and proportions of the human body, including parameters such as reach and visual range capabilities. It literally means man (anthro) measurements (metric). Source: Federal Aviation Administration http://www.hf.faa.gov/Webtraining/HFModel/Variance/anthropometrics1.htm.

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