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## **From the Director's Desk**



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## **NIOSH, OSHA, Roadway Work Zone Safety and Health Coalition Ally to Improve Roadway Work Zone Safety**

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## From the Director's Desk

The New Year is always heralded with press articles about the first baby born at midnight on January 1. Statistically, it is more likely than not that the first baby of 2004 was born to a working mother or father. In 2002, 55% of children were born to working mothers and 65% of working men and women were of reproductive age. These statistics illustrate the large potential for occupational hazards to affect the reproductive health of working individuals, who spend roughly a third of their lives at work. Addressing this concern, the Reproductive Health Team of NIOSH scientists and outside colleagues under the National Occupational Research Agenda (NORA) has focused on four primary data gaps: a national system for tracking birth defects; human studies of high priority reproductive toxicants; understanding the extent of occupational exposure to high priority substances and new laboratory approaches to understand mechanisms of action. This edition of eNews focuses on the NIOSH Reproductive Health Research Program. The following initiative highlights several of the key components.

### Surveillance of Birth Defects

NIOSH scientists are collaborating with the National Cancer Institute (National Institutes of Health) and the National Center on Birth Defects and Developmental Disabilities (Centers for Disease and Control and Prevention) to conduct an occupational exposure assessment using parental occupational information from the National Birth Defects Prevention Study (NBDPS). The NBDPS is an ongoing case-control study that covers an annual birth population of 482,000 and includes cases identified from birth defect surveillance systems or registries in eight states. By integrating occupational exposure assessment into this large surveillance effort, scientists will have the opportunity to examine the potential role of chemical and physical agents. Information on the NBDPS can be found at <http://www.cdc.gov/ncbddd/bd/documents/NBDPSarticle.pdf>.

### Pregnancy and Women's Reproductive Health

NIOSH conducts studies of pregnancy outcomes among female workers as well as biomarker studies of female reproductive hormones.

- The Flight Crew Research Program. Over 172,000 U.S. flight personnel work in commercial aircraft cabins with potential exposure to a variety of hazards. In partnership with the Federal Aviation Administration, the National Cancer Institute, the Department of Health and Human Services Office of Women's Health and the Department of Defense Women's Health Research Program, NIOSH has established a program of research among flight attendants and pilots. Our research has shown that air crews are more highly exposed to radiation than most radiation workers in the US, that flight attendants' sleep is more disturbed than a comparison population's, and that flight attendants have more respiratory illnesses than other working women. Studies underway are examining the implications of these findings for pregnancy outcomes, fertility, cancer, physical demands and overall mortality. More information on this research program may be found at <http://www.cdc.gov/niosh/bodyclock.html>.
- The Nurses Health Study. Over 2.5 million registered nurses are employed in the U.S., 95% of whom are female. Female nurses may be at increased risk of adverse reproductive outcomes through exposure to a wide variety of known and potential reproductive hazards including chemical and biological agents, physical demands, shift work, and psychological stress. NIOSH, in partnership with Harvard University, is conducting a study to better understand the impact of shift work and physical demands on reproductive health, especially spontaneous abortion, pre-term delivery, and infant birth weight. The data are currently being analyzed.
- Exposure to Jet Fuel. NIOSH studies in collaboration with the University of Cincinnati and the Department of Defense revealed that higher aliphatic hydrocarbon exposures were associated with a 33% reduction in preovulatory luteinizing hormone among women who worked at several U.S. Air Force bases. Included were women in exposed (flightline, fuel handling, jet maintenance), and non-exposed (non-fuels) job categories, with the former having higher aliphatic hydrocarbon levels in their exhaled breath. This finding suggests that compounds found in fuels and some solvents may act as endocrine disruptors. Previous research by NIOSH and the National Institute of Environmental Health Sciences (NIH) has shown that a reduction in this

hormone is associated with reduced fertility in women; however, this study of effects in hormones was not designed to investigate conception or birth rates among this population of female employees. The authors recommended additional studies to explore the effects of exposure, including potential effects on the ability to conceive.

- Nickel Exposure in Russian Refineries. NIOSH, in collaboration with McMaster University (Canada), Kola Research Laboratory of Occupational Health (Russia) and Tromsø University (Norway), assessed the reproductive toxicity of nickel at the Severonickel refinery in Monchegorsk, Russia. Results of semen analysis and serum endocrine analyses will be available soon. These results will address the occupational health concern of Russian workers and will provide a better understanding of the potential effects of occupational nickel exposures in the U.S.

## Male Reproductive Health

NIOSH has developed several sperm and semen assessment methods over recent years for use in field investigations.

- Boron and Male Fertility. What's a safe level of workplace exposure to boron? Boron is ubiquitous in nature, but animal toxicity data, limited epidemiologic data, and large numbers of exposed workers make it a high priority agent for an occupational male reproductive health effects study. With funding from a NIOSH grant under NORA, Dr. Wendie Robbins at UCLA is conducting a study of over 1,000 boron workers in China. Laboratory measurements of semen quality, blood hormones, and boron levels will contribute to an assessment of safe working boron levels for men.
- Workers and Bicycling. NIOSH studied male police officers who ride bicycles and found that they experience a higher incidence of symptoms of sexual dysfunction than a comparison group. The symptoms were associated with pressure from the projecting "nose" of the bicycle saddle. NIOSH is now conducting an intervention study of male police officers to assess the value of replacing traditional bicycle seats with recently developed saddles without a protruding nose. NIOSH is also collaborating with Albert Einstein School of Medicine and Yale University College of Medicine on a pilot study to assess the sexual function of women bicycle riders. More information on this topic can be found at <http://www.cdc.gov/niosh/topics/bikerepro/bikepagetop.html>.

Additional studies include evaluating the effects of workplace acrylamide exposure on male reproduction and neurobehavior and a collaborative study with the National Institute of Child Health and Human Development (National Institutes of Health), and the National Center for Environmental Health (CDC), evaluating the relationship of fertility and semen parameters with toxicants measured in blood, urine and seminal plasma among 800 couples attempting to become pregnant.

## Assessing Exposure to Potential Reproductive Hazards

Often, we need to better understand the nature and extent of exposure in the workplace before an epidemiologic study can be done to evaluate the risk of adverse effects. NIOSH is evaluating the extent of exposure to several chemicals with potential to cause reproductive harm. One study is evaluating worker exposure to three different phthalate compounds. Phthalates are used as plasticizers and solvents in many industrial and consumer goods, such as flexible polyvinyl chloride, nail polish, fragrances, adhesives, and lacquers. A second study is evaluating the extent of exposures to 1-bromopropane, a degreaser that is replacing ozone depleting solvents in some industries. 1-bromopropane has been associated with reproductive and hematologic problems among workers in Korea. The information discovered by these research studies will be useful to evaluate patterns of exposure and formulate recommendations for reducing exposure.

For more information on NIOSH reproductive health studies and publications, visit the NIOSH Topic Page <http://www.cdc.gov/niosh/topics/repro>.

## **NIOSH, OSHA, Roadway Work Zone Safety and Health Coalition Ally to Improve Roadway Work Zone Safety**

Improving roadway work zone safety and health is the goal of a new Alliance formed between NIOSH, the Occupational Safety and Health Administration (OSHA) and the Roadway Work Zone Safety and Health Coalition. The Alliance will develop hazard awareness training and educational programs on roadway work zone safety targeted to Spanish-speaking and "hard-to-reach" highway construction workers; disseminate information and case studies illustrating business and social value for reducing work zone injuries and fatalities; and share the latest research findings with the construction industry. Members of the Coalition include NIOSH, the National Asphalt Pavement Association, the American Road and Transportation Builders Association, the Laborers' International Union of North America, and the International Union of Operating Engineers. For more information on NIOSH research in preventing work zone and job-related motor vehicle injuries and deaths visit <http://www.cdc.gov/niosh/injury/traumazone.html>.

## **NIOSH Awards First Lifetime Achievement Award**

On December 18, 2003, NIOSH presented the first-ever NIOSH Lifetime Achievement Award in Occupational Safety and Health to Dr. Jorma Rantanen of Finland. The award honors Dr. Rantanen's four decades of service in occupational safety and health, including three decades in international leadership. Among Dr. Rantanen's achievements are serving as the Director General of the Finnish Institute of Occupational Health from 1974-2003, drafting both the International Labor Organization convention on Occupational Health Services and the World Health Organization Global Strategy on Occupational Health and being named the 2003 President of the International Commission on Occupational Health (ICOH). To read more about Dr. Rantanen visit <http://www.cdc.gov/niosh/pdfs/rantanen.pdf>.



## **NIOSH Seeking Nominees for National Occupational Safety and Health Teacher Award**

The NIOSH Education and Information Division funds and coordinates the efforts of a national occupational safety and health competition among teachers and instructors at vocational and technical schools and community colleges throughout the country. NIOSH and the Association of Career and Technical Education (ACTE) are seeking entries from ACTE members on this year's subject, "Promoting Safety and Health in Career and Technical Education." The 2004 winner will receive a \$750 award and plaque and his or her school will receive \$250. The deadline for submissions is February 6, 2004 with the award presentation at the ACTE National Policy Seminar in March. Information on submissions can be found at <http://www.acteonline.org/about/awards/awards-niosh.cfm> or by contacting John Palassis at [jop1@cdc.gov](mailto:jop1@cdc.gov).

## **NIOSH Researcher Named CDC Engineer of the Year for 2004**

Scott Earnest from NIOSH's Division of Applied Research and Technology has been selected by the National Society of Professional Engineers (NSPE) as the Centers for Disease Control and Prevention Engineer of the Year for 2004. The Federal Engineer of the Year Program, now in its twenty-fifth year, recognizes outstanding engineers within all federal agencies. Scott will receive the award at a luncheon in Washington, DC on January 15, 2004. The Top Ten finalists and the overall NSPE Federal Engineer of the Year for 2004 will also be announced at the luncheon. Congratulations to Scott on this fine achievement!

## NIOSH Advances Innovative Rollover Protective Structure (ROPS)

NIOSH is advancing the development and commercialization of a high-tech system to protect tractor operators from serious injury or death in a tractor rollover, the leading cause of occupational fatalities in agriculture. Auto-ROPS consists of a sensor wired to a protective metal bar or rollover protective structure (ROPS), shaped like a squared, upside-down U and mounted behind the tractor seat. When the sensor detects that a tractor is tilting on uneven terrain in a way likely to result in a turnover, the sensor signals the latches to release, deploying the rollover bar to a level higher than the operator's head. Instantaneously activated, the bar prevents the operator's head from fatally striking the ground or bearing the impact of the rollover. The Auto-ROPS prototype has been successfully field tested and has received approval from the farming community. NIOSH and FEMCO, a ROPS manufacturer, are now working with tractor and power equipment manufacturers to determine ways to bring the technology to commercial use through marketing in the agricultural industry. To learn more about this technology, contact Tony McKenzie at [elm6@cdc.gov](mailto:elm6@cdc.gov). To view video clips showing Auto-ROPS in field tests, visit <http://www.cdc.gov/niosh/updates/autorops.html>.



## NIOSH cited as “acoustic expert” by Wall Street Journal

An article in the December 12, 2003 issue of the Wall Street Journal on noise levels in regional jet aircraft cabins cited NIOSH as one of the three “acoustics experts” consulted by reporter Paula Szuchman for the article. The article quoted Randy Tubbs, a psychoacoustician in the NIOSH Hazard Evaluations and Technical Assistance Branch, on the role of noise as a stressor. Randy is the project officer for a NIOSH hazard evaluation assessing the occupational exposure of flight crews to cabin noise on regional jets. Information about NIOSH research and recommendations for occupational noise control and hearing loss prevention can be found at <http://www.cdc.gov/niosh/topics/noise>.

## NIOSH and OSHA Pursue Increased Collaboration

NIOSH and the Occupational Safety and Health Administration (OSHA) announced at the December 18, 2003 National Advisory Committee on Occupational Safety and Health (NACOSH) meeting that the two agencies will form six jointly-chaired discussion groups to exchange information on a range of safety and health issues. Kathleen Rest, NIOSH Deputy Director, explained that the meetings build on less formal meetings that the two agencies have had over the past several years. Topics for the six work groups include: strategic and emerging issues; standards and guidance; technology, respirator certification and usage, sampling and testing methodology; data quality evaluation and analysis; training and education; and social marketing and communication.

## Web Sightings

### X-ray Exposures from Airport Screening Machines

Results of an independent study conducted by NIOSH at the request of the Transportation Security Administration are now available online. The study results will be used to determine the potential radiation exposures to employees who operate x-ray generating machines. Results from additional assessments, including workplace practices, training information, and equipment and maintenance requirements, will be posted as they are completed. NIOSH will use the combined findings to make recommendations regarding the need for radiation badges for Transportation Security Administration employees. The website is <http://www.cdc.gov/niosh/topics/airportscreener>.



### 2003 NORA Partnering Award Nominee Summaries Available

The National Occupational Research Agenda (NORA) Partnering Award for Worker Health and Safety, which is presented biennially, honors organizations that have joined in research partnerships to develop new practices, products, procedures, equipment or policies for protecting workers from job-related injury, illness, or death. With assistance from the nominated partners, NIOSH has created project summaries to highlight the achievements of all ten of the 2003 NORA Partnering Award nominees. The summaries are available on the NORA Symposium website at: <http://www2a.cdc.gov/nora/symp03award.html>.



## Publications

### New NIOSH Series: *Workplace Solutions*

NIOSH has recently developed a new series of publications titled *Workplace Solutions*. *Workplace Solutions* is an easy-to-understand, easy-to-access, and easy-to-implement way of turning NIOSH research into occupational safety and health practice. The new series replaces the Hazard Controls and Hazard ID series and is approximately three pages in length. *Workplace Solutions* disseminate a non-technical and concise version of NIOSH research to the end user, e.g., safety and health practitioner, employer, supervisor, operator, foreman, worker or worker representative. *Workplace Solutions* can be accessed at <http://www.cdc.gov/niosh/docs/wp-solutions>. There are currently two *Workplace Solutions* documents available.



- "Ground Fall Injuries in Underground Stone Mines," DHHS (NIOSH) Publication No. 2004–106. <http://www.cdc.gov/niosh/docs/wp-solutions/2004-106>.
- "Preventing Injuries When Working with Hydraulic Excavators and Backhoe Loaders," DHHS (NIOSH) Publication No. 2004–107. <http://www.cdc.gov/niosh/docs/wp-solutions/2004-107>.

## News From Our Partners

### OSHA Fact Sheets Now Available

The Occupational Safety and Health Administration (OSHA) recently issued two new fact sheets describing the agency's inspection process, as well as its role in investigating occupational deaths. The fact sheets are available on OSHA's web site, <http://www.osha.gov>. *OSHA Inspections* details inspection priorities and provides step-by-step details for on-site inspections. *OSHA's Role When a Worker Dies on the Job* highlights agency assistance available for families of workers killed on the job and also includes information on referring cases to the Justice Department for possible criminal prosecution.

### National Safety Council Seeking Nominations for the Robert W. Campbell Award

The National Safety Council invites organizations that demonstrate business excellence through effective safety, health and environmental management to submit their success stories to the Robert W. Campbell Award. Written submittals for the award are due May 31, 2004. Winning success stories will be shared and showcased at an awards banquet and various safety, health and environmental conferences. For more information and submission requirements, visit <http://www.CampbellAward.org>.

## Upcoming Events

### NIOSH B Reader Certification Program: Looking to the Future Open Meeting

An open meeting for the NIOSH B Reader Certification Program will be held on March 4, 2004 in McLean Virginia. For more information or to register for the meeting, visit <http://www2a.cdc.gov/drds/cwhsp/regform.html>.

### 7th Annual Applied Ergonomics Conference

NIOSH and the National Occupational Research Agenda (NORA) Musculoskeletal Disorders and Intervention Effectiveness teams are among the co-sponsors of the 7th Annual Applied Ergonomics Conference to be held on March 8-11, 2004 in Orlando, Florida. The conference, sponsored by the Institute of Industrial Engineers, will offer sessions around six educational tracks: manufacturing applications, services and support industries, office applications, engineering and design, ergonomics programs and potpourri. For more information on the conference, visit <http://appliedergonetwork.iienet.org/pages/index.cfm?pageid=133>.

### Long Working Hours, Safety, and Health: Toward a National Research Agenda

NIOSH, the University of Maryland School of Nursing, and the U.S. Department of Justice are cosponsoring the "Long Working Hours, Safety, and Health: Toward a National Research Agenda" Conference to be held April 29-30, 2004 on the University of Maryland campus in Baltimore, Maryland. This innovative conference will explore the sociological, economic, and health dimensions of long work hours. For more information on the conference, visit <http://nursing.umaryland.edu/longworkhours/index.htm>. There is still time to submit an abstract for the poster session; all submissions are due by January 23, 2004. For more information on the Call for Posters, visit [http://nursing.umaryland.edu/longworkhours/call\\_posters.htm](http://nursing.umaryland.edu/longworkhours/call_posters.htm).

### **American Industrial Hygiene Conference and Exposition (AIHce) 2004.**

The 2004 American Industrial Hygiene Conference and Exposition will be held May 8-13, 2004 at the Georgia World Congress Center in Atlanta, Georgia. The theme for this year's conference is "Discover New Ways of Promoting OEHS Excellence." For more information on the conference, visit <http://www.aiha.org/aihce04/aihce.htm>.

### **Corrections to December's eNews "e-errors"**

- It was incorrectly stated that researchers from the NIOSH Health Effects Laboratory Division are collaborating with scientists at the National Cancer Institute to examine genomic changes in malignant melanomas. NIOSH researchers are collaborating with the University of Arizona Cancer Center and the University of Pittsburgh Pathology Department in this effort.
- It was incorrectly reported in the *From the Director's Desk* spotlight on NIOSH International Activities that "...an estimated 170 million working children ages 5-17." The correct statistics are that an estimated 170 million children ages 5-17 work in hazardous conditions.
- It was incorrectly stated that Dr. James Merchant received the 2003 James P. Keogh award on September 11, 2003 at the Board of Scientific Counselors meeting. Dr. Merchant received the award at the April 23, 2003 Alice Hamilton awards ceremony