



Recent Accomplishments

Protecting Reproductive Health at Work

Although the total number of workers exposed to reproductive hazards is difficult to estimate, three-quarters of employed women and an even greater proportion of employed men are of reproductive age. NIOSH is conducting both laboratory research and worker studies to develop tools to measure adverse reproductive effects and assess the magnitude of specific hazards. NIOSH scientists have developed laboratory methods to detect abnormalities in human sperm. Researchers from around the U.S. have been trained to use these laboratory methods to study effects on male fertility. NIOSH studies are assessing the effects of lead and pesticides on male reproductive function, PCB exposures on the sperm of fishermen, and radiation and time zone changes on female pregnancy and ovulatory function in female flight attendants.

Reducing Asphalt Fumes Through Control Technology

Groundbreaking guidelines jointly developed by industry, labor, and government for implementing engineering controls were recently finalized in the asphalt paving industry. This has resulted in an agreement with the industry to install ventilation systems — designed and tested by NIOSH — on all new highway-class paving machines. These systems will reduce the dangerous fumes emitted closest to the worker by as much as 80%.

Solvents and Hearing Loss

More than 9 million workers are exposed to a combination of hazardous noise and chemicals in U.S. industries. Recent NIOSH studies identified solvent exposure and hearing loss as an emerging occupational health problem. The studies found that exposure to toluene, a solvent, can cause hearing losses similar in severity to that caused by exposure to hazardous levels of noise.

Antimony and the Heart

NIOSH estimates that 250,000 workers may be exposed to antimony in the manufacture of paints, glass, fire retardants and semiconductors. Reports of cardiovascular disease among humans exposed to antimony led NIOSH researchers to conduct further research. NIOSH examined heart cells exposed to antimony compounds and found that antimony can block entry of calcium into heart cells, inhibiting contraction of the heart. This study has important implications for the role chemicals may play in heart disease.

Occupational Asthma - A Growing Problem

Seven million workers in more than 300 occupations are exposed to one or more substances that can cause asthma. Over the last decade, occupational asthma has become the leading occupational respiratory disease and the largest source of respiratory disease compensation claims. Investigators at NIOSH developed new techniques to diagnose and monitor occupational asthma. Currently, researchers are conducting field studies of occupational exposures and are developing a technique for measuring airborne substances that cause allergic reactions.

Protecting Health Care Workers

Compliance with safe work practices is an important issue for the more than six million U.S. health care workers potentially exposed to blood-borne pathogens. NIOSH evaluated compliance with universal precautions at hospitals in three states. Results showed that a combination of engineering controls, management commitment to safety, and employee involvement was most effective in achieving compliance. As a result of this study, NIOSH designed a needle stick prevention strategy that reduced these injuries in one hospital by 38%.

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Beryllium in the Workplace and the Home

NIOSH recently discovered that workers at a machining plant in Alabama were not only being exposed to beryllium, but were also carrying it home on their work clothes and shoes. As a result, spouses and children were potentially exposed. Beryllium exposure can lead to a chronic lung disease that develops from a few months to 40 years after initial contact. NIOSH provided company management with specific recommendations for reducing take-home exposures and implemented a preventive health communication program designed to notify workers about the levels of take-home exposures and how they can help to reduce these levels. NIOSH continues to work with both employees and management to address this problem.

Labor/Management Teams Reduce Back Injuries

Working with NIOSH, four rural nursing homes established employee-management advisory teams to work together to reduce back injuries resulting from lifting patients. The teams concentrated on training employees in ergonomic principles and devices for minimizing strain while lifting and handling patients. The program has resulted in reductions in workers' compensation by 75%.

Benzene and Blood Cell Suppression

Benzene can cause leukemia and has long been recognized at high doses to cause other blood disorders. NIOSH researchers analyzed blood tests taken over a 35-year period from 657 benzene workers and found that at even low levels, benzene exposure was strongly related to a low white blood cell count and related to a lesser extent to a low red blood cell count. People with very low blood counts may have increased susceptibility to infectious diseases and experience other health effects. Although the low blood counts observed in this study were not low enough to cause obvious health effects, they may serve as a marker or warning that benzene is having a toxic effect on the body. The results of this study support the need to monitor the blood levels for benzene-exposed workers to detect excessive levels before workers suffer irreversible effects.

R&D Award

In 1997, NIOSH scientists won a prestigious award that recognizes the 100 most technologically significant new products as judged by R&D Magazine. NIOSH received the award for developing a device to measure methane in rock samples. Methane is a serious hazard in the mining industry which can cause explosions in underground mines. The NIOSH invention will potentially reduce the risk of mine explosions and improve the safety of underground mine workers.

Controlling Hazards in Commercial Printing Operations

About 1.5 million workers are employed in commercial printing establishments and 85% of printing shops have fewer than 20 employees. Health concerns were raised regarding excessive exposures to solvents used for cleaning printing equipment. These solvents can cause neurotoxic effects, cardiovascular disease, and reproductive disorders. NIOSH engineers designed a system that reduces vapors and dusts by approximately 80%.

Preventing Tractor Injuries on the Farm

Tractor-related injuries are the leading cause of agricultural machinery-related fatalities. NIOSH researchers are developing a new protection system that automatically deploys in the event of a tractor roll-over. The new device will be effective in low-clearance areas such as orchards or animal confinement buildings, where traditional designs have been too tall. The new design is automatic and will provide protection in situations where tractor operators may not manually raise traditional folding ROPS.

Measuring Lead Exposure in the Field

Portable monitoring methods for measuring worker exposure at the workplace greatly improve the ability to identify hazardous exposure levels by providing instant feedback. NIOSH has developed three field methods which have been approved by the American Society for Testing and Materials for analyzing lead samples.