CDC

MMWR

Morbidity and Mortality Weekly Report

Weekly — April 29, 2005 / Vol. 54 / No. 16

Workers' Memorial Day — April 28, 2005

Workers' Memorial Day, April 28, was established in 1989 as an international day of remembrance for workers who died or were injured on the job. This day also commemorates the 34th anniversary of the National Institute for Occupational Safety and Health and the Occupational Safety and Health Administration, both of which were created by the U.S. Occupational Safety and Health Act.

On average, in the United States, nearly 11,000 workers are treated in emergency departments each day, and approximately 200 of these workers are hospitalized (*1*). An estimated 6,300 private-sector workers require time away from their jobs (*2*), 15 workers die from their injuries (*3*), and 134 die from work-related diseases (*4*). These losses account for nearly $73 billion in workers' compensation (*5*). International and national prevention practices during the preceding 3 decades have reduced these losses, but morbidity and mortality from occupational hazards are still a major social and economic burden.

This issue of *MMWR* includes reports on occupational safety and health in recognition of Workers' Memorial Day. Additional information about this day is available at http://www.ilo.org/public/english/protection/safework and http://www.aflcio.org/issuespolitics/toolkit/fliers.cfm. Information on workplace safety and health is available at http://www.cdc.gov/niosh/homepage.html or by telephone, 800-356-4674.

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Silicosis Mortality, Prevention, and Control — United States, 1968–2002

Silicosis is a preventable occupational lung disease caused by inhaling dust containing crystalline silica (*1*); no effective treatment for silicosis is available. Deaths from inhalation of silica-containing dust can occur after a few months' exposure (*1*). Crystalline silica exposure and silicosis have been associated with work in mining, quarrying, tunneling, sandblasting, masonry, foundry work, glass manufacture, ceramic and pottery production, cement and concrete production, and work with certain materials in dental laboratories. To describe patterns of silicosis mortality in the United States, CDC analyzed data from the National Institute for Occupational Safety and Health (NIOSH) National Occupational Respiratory Mortality System (NORMS) for 1968–2002. This report summarizes the results of that analysis, which indicated a decline in silicosis mortality during 1968–2002 and suggested that progress has been made in reducing the incidence of silicosis in the United States. However, silicosis deaths and new cases still occur, even in young workers. Because no effective treatment for silicosis is available, effective control of exposure to crystalline silica in the workplace is crucial.

NORMS contains national mortality data obtained annually since 1968 from the National Center for Health Statistics (NCHS) for asthma, chronic obstructive pulmonary disease, silicosis, pneumoconiosis, tuberculosis, and other respiratory diseases and conditions (*2*). For this report, silicosis deaths were identified during 1968–2002, the most recent years for which complete data were available, and include any death

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Additional industries with elevated PMRs involved miscellaneous nonmetallic and stone products and pottery and related products. The pottery industry deals with silica-containing clay, which is the raw material for manufacturing crockery, pottery, and flint.

The geographic patterns of silicosis offer some guidance for intervention. By county, the greatest age-adjusted mortality rates were clustered in western states, northeastern states, and north Atlantic states. The mortality rates in counties in these states were often associated with mining or construction industries. For example, the high age-adjusted death rate in Lawrence County, South Dakota (38.3 per million persons aged ≥15 years), might be associated with gold mining in that area. A study of 3,328 gold miners exposed to silica in South Dakota reported an increased risk for silicosis (*9*).

The findings in this report are subject to at least five limitations. First, accuracy of the coding of usual industry and occupation on death certificates was not verifiable because individual work histories are not listed on death certificates. Second, codes for usual industry and occupation were available only for the period 1985–1999 for 26 states; thus, these data might not be nationally representative. Twenty-four states do not provide decedents' employment data to NCHS. Third, the state of residence at death is not always the state in which decedents' exposures occurred. Fourth, no exposure information is listed on death certificates. Therefore, no silica exposure-response relationship was evaluated. Finally, physicians might have misclassified or underreported silicosis deaths.

Despite these limitations, NORMS can provide useful information on silicosis by location, industry, and occupation, suggesting ways to target preventive intervention. The decreased silicosis mortality trends suggest that considerable progress has been made toward elimination of silicosis since 1968. However, silicosis deaths and new cases are still occurring, even in young workers in the United States. Because no effective treatment for silicosis is available, primary prevention (i.e., engineering or other control of exposure) should be maintained or improved to reduce worker morbidity and mortality.

Acknowledgments

The findings in this report are based, in part, on contributions by JM Wood, MS, G Syamlal, MPH, Div of Respiratory Disease Studies, National Institute for Occupational Safety and Health, CDC.

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Update: Hydrogen Cyanamide–Related Illnesses — Italy, 2002–2004

Hydrogen cyanamide* is used in agriculture as a plant growth regulator and is applied to many deciduous plants to stimulate uniform budbreak after dormancy, resulting in uniform flowering and maturity. Hydrogen cyanamide is highly toxic, and adverse health effects from contact include severe irritation and ulceration of the eyes, skin, and respiratory tract (*1,2*). The substance also inhibits aldehyde dehydrogenase and can produce acetaldehyde syndrome (e.g., vomiting, parasympathetic hyperactivity, dyspnea, hypotension, and confusion) when exposure coincides with alcohol use. After Dormex® (Degussa AG, Trostberg, Germany), a pesticide product containing hydrogen cyanamide (49% by weight), was introduced in Italy in 2000, a total of 23 cases of acute illness associated with exposure to this chemical were identified in early 2001 (*3*). This led to a temporary suspension of sales and usage of Dormex on February 23, 2002, and strengthening of protective measures, as specified on the pesticide label when sales were resumed on June 20, 2003. This report describes 28 additional cases of hydrogen cyanamide–related illness that occurred during 2002–2004, 14 of which occurred after sales resumed. These illnesses suggest that the preventive measures

* Chemical Abstracts Service no. 420-04-2.

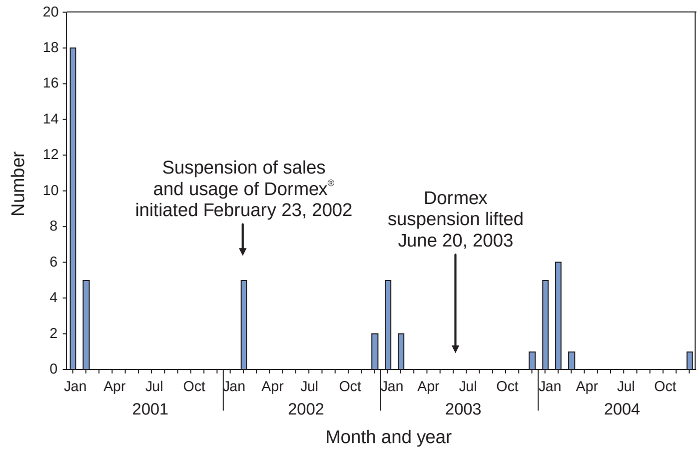
adopted in Italy in 2003 to protect workers using hydrogen cyanamide are inadequate. Workers exposed to hydrogen cyanamide should be provided adequate information, training, personal protective equipment (PPE), and engineering controls.

Public Health Surveillance

In 2000, a pilot pesticide-poisoning surveillance program was undertaken by the Italian National Institute of Health (INIH) in collaboration with the Milan Poison Control Center (MPCC) and the Ragusa Local Health Unit (RLHU). This program has identified symptomatic cases involving Dormex exposure during 2001–2004. A previous report described cases from 2001 (*3*); cases identified during 2002–2004 are described in this report. Cases were classified as definite, probable, possible, or suspicious on the basis of clinical interpretation of signs or symptoms reported by a physician or patient[†] and evidence of Dormex exposure (*4*). Illness severity[§] was also categorized for all cases (*5*).

A total of 28 hydrogen cyanamide–related illnesses were identified during 2002–2004. All cases were identified by MPCC, and three cases were detected by RLHU. Five cases were identified before the Dormex suspension was enacted, nine cases were identified during the suspension (whether workers used chemical purchased before the suspension or if an illegal purchase had occurred during the suspension is unknown), and 14 cases were identified after the suspension was lifted (Figure). All of the cases occurred in males; median age was 41 years (range: 25–65 years). All cases occurred from late December through early March of each year (Figure), which is the only period when Dormex is used in Italy. A total of 25 of the 28 cases occurred in persons who were exposed during application of Dormex. Another person was exposed while handling a Dormex packet found in the field and whose contents inadvertently spilled on the person, and one person was exposed from unintentional ingestion after the product was poured from its original container into a drinking bottle. For one case, no information on activity at time of exposure was available. Among the 25 cases involving exposure during application, 20 (80%) occurred in persons who were exposed while using a backpack sprayer, two (8%) while sitting in an open tractor cab, and one (4%) while crossing a treated field;

FIGURE. Number of cases of hydrogen cyanamide–related illness, by month and year — Italy, 2001–2004



information was not available for two cases (8%). Among the 21 cases with information available on use of PPE, only one involved a person who wore complete PPE (e.g., air-purifying respirator, goggles/face shield, chemical-resistant gloves, protective suit, and footwear). The majority (14 [66%]) of these persons used incomplete PPE (e.g., five reported using an air-purifying respirator but no other PPE), and six used no PPE. No deaths and no illnesses of high severity were identified. Eleven (40%) cases were classified as of moderate severity and 17 as low severity. Among the 14 cases that occurred after the Dormex suspension was lifted, seven (50%) were of moderate severity. The latency between exposure and onset of adverse effects ranged from 30 minutes to 30 hours. In 13 cases, signs or symptoms appeared immediately after alcohol consumption. Skin-related signs and symptoms occurred in most cases (Table).

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Editorial Note: The findings in this report indicate that, despite reports of hydrogen cyanamide–related cases in 2001 and strengthening of protective measures (i.e., requirements for more protective PPE and prohibition of some application methods) in Italy in 2003, illnesses related to hydrogen cyanamide continue to be identified. A comparison of the findings in Italy with case data in the United States might be useful. The United States has several surveillance systems to track pesticide poisoning, including the Sentinel Event Notification System for Occupational Risks (SENSOR)-Pesticides program, the California Department of Pesticide

† The entire case definition is available at http://www.cdc.gov/niosh/topics/pesticides/pdfs/casedef2003_revAPR2005.pdf.

§ A low severity illness consists of minimally bothersome health effects that generally resolve rapidly. A moderate severity illness or injury consists of non–life-threatening health effects that are more pronounced, prolonged, or of a systemic nature, compared with a low severity illness. A high severity illness or injury consists of life-threatening health effects or those that result in substantial residual disability or disfigurement.

TABLE. Number* and percentage of workers with hydrogen cyanamide–related illness, by selected characteristics — Italy, 2002–2004

Characteristic	No.	(%)
Year of exposure		
2002	8	(29)
2003	7	(25)
2004	13	(46)
Case-definition category		
Definite	18	(64)
Probable	5	(18)
Possible	1	(4)
Suspicious	4	(14)
Region		
Sicily	12	(43)
Apulia	10	(36)
Calabria	6	(21)
Dermatologic signs and symptoms	21	(75)
Edema	2	(7)
Erythema	12	(43)
Dermatitis	10	(36)
Burn	2	(7)
Neurologic signs and symptoms	11	(39)
Dizziness	4	(14)
Agitation/Confusion	2	(7)
Delirium	2	(7)
Tremors	1	(4)
Weakness	1	(4)
Paresthesias	1	(4)
Sweating	1	(4)
Headache	1	(4)
Gastrointestinal signs and symptoms	5	(18)
Nausea/Vomiting	3	(11)
Heartburn	1	(4)
Oral cavity erythema	1	(4)
Throat irritation	1	(4)
Cardiovascular signs and symptoms	4	(14)
Tachycardia/Palpitations	3	(11)
Hypertension	1	(4)
Respiratory signs and symptoms	4	(14)
Dyspnea	3	(11)
Bronchospasm	1	(4)
Ocular signs and symptoms	4	(14)
Hyperemia/Conjunctivitis	3	(11)
Miosis	1	(4)
Other	1	(4)
Acetaldehyde syndrome	1	(4)

* N = 28.

Regulation (CDPR) system, and the Toxic Exposure Surveillance System (*4*). During 2000–2004, only one U.S. case of hydrogen cyanamide–related illness was identified. This case was identified by CDPR and involved a worker in California in January 2004 who developed a rash on his wrists, arms, and knees within 24 hours of mixing and loading hydrogen cyanamide. Overall amounts of hydrogen cyanamide used in California are higher than in Italy. In 2001, an estimated 248,000 pounds of hydrogen cyanamide were used in California, compared with 80,000 pounds sold in Italy (*6*; Degussa AG, unpublished data, 2005), where it is primarily used on grapes.

The number of illnesses identified since Dormex was reintroduced in Italy is lower than the number of illnesses observed in 2001 (14 from June 2003–December 2004 versus 23 in January–February 2001). Nevertheless, the number suggests that current preventive measures in Italy are not adequate. In particular, many workers did not use engineering controls or follow PPE requirements. Although the Italian pesticide label provides detailed information on PPE, the information on engineering controls is vague, with no mention of requiring closed systems. Efforts are needed to ensure the use of engineering controls (i.e., mixing, loading, and transferring of the chemical only in a closed system), which precludes the use of backpack sprayers. Of the 13 workers who became ill after the Dormex suspension was lifted, nine used backpack sprayers. Efforts are also needed to ensure appropriate use of PPE, which might require improved clarity of PPE information on the pesticide label and enhanced enforcement of PPE requirements. In addition, because many workers have onset of illness immediately after alcohol consumption, including eight workers after the Dormex suspension was lifted, the label language that warns against alcohol consumption might need to be strengthened. Because all of the cases were identified in three Italian regions (Table), these regions should be targeted with appropriate public health interventions. These interventions include educating growers and agricultural workers about hydrogen cyanamide–related health effects, ensuring that all exposed workers are provided with and trained to use appropriate PPE and promoting the adoption of engineering controls.

As in other European countries, each pesticide product in Italy is assigned an overall risk category based on the toxicologic properties of the active ingredients in the product and their concentrations. When sales of Dormex were resumed in Italy in 2003, Italian authorities assigned a risk category of "toxic" to the product. Before Dormex sales were suspended in Italy in 2002, the product was assigned a risk category of "harmful," which is the equivalent of Environmental Protection Agency (EPA) toxicity category II[¶]. EPA classifies Dormex into the highest toxicity category (toxicity category I) because of its corrosive effects on the skin and eyes (*7*). EPA toxicity category I is equivalent to Italy's "toxic" category. In addition to the requirements imposed on all toxicity category I pesticides, EPA imposed additional restrictions to protect workers handling hydrogen cyanamide (e.g., consumption of alcoholic beverages is prohibited before, during, and 24 hours

[¶] EPA classifies all pesticide products into one of four toxicity categories on the basis of established criteria (40 CFR 156). Pesticides with the greatest toxicity are in category I, and those with the least are in category IV.

after handling this product). Hydrogen cyanamide is currently under regulatory review by European Union authorities (*8*).

The findings in this report are subject to at least two limitations. First, the reported cases likely provide a minimum estimate of the true magnitude of hydrogen cyanamide–related illnesses in Italy. Although several poison control centers operate in Italy, only MPCC provided data for this report. However, MPCC is the most frequently consulted poison control center in Italy. Second, although all of these cases involved illnesses that were consistent with the case-definition criteria, the possibility of false positives cannot be excluded. Given the nonspecificity of the clinical findings of hydrogen cyanamide poisoning and the lack of a "gold standard" diagnostic test, some illnesses temporally related to hydrogen cyanamide exposure might be coincidental and not exposure related.

The findings in this report demonstrate the value of using surveillance data to evaluate the effectiveness of an intervention. In addition, the findings illustrate the international nature of pesticide-related concerns and the usefulness of coordination of policies and requirements to protect worker health and safety.

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Progress Toward Interruption of Wild Poliovirus Transmission — Worldwide, January 2004–March 2005

In 1988, the World Health Assembly of the World Health Organization (WHO) resolved to eradicate poliomyelitis globally (*1*). Since then, substantial worldwide progress has been made toward that goal; the number of countries where polio is endemic declined from 125 in 1988 to six by the end of 2003. Further progress in 2004 toward interruption of transmission has continued in the three Asian countries where polio is endemic (Afghanistan, India, and Pakistan) (*2,3*). However, in 2003, two countries in Africa experienced a resurgence of polio cases; the resurgence continued to spread in 2004 from the Nigeria-Niger endemic reservoir to involve a total of 14 countries that had not reported polio ≥1 year. Local transmission of wild poliovirus (WPV) has been reestablished in six of these 14 countries, including Sudan, where a major outbreak occurred. This report describes global efforts to eradicate polio during January 2004–March 2005 and outlines remaining challenges to interrupting transmission in countries where polio remains endemic or transmission has been reestablished.

Routine Vaccination Activities

Throughout the world, routine vaccination coverage among infants with 3 doses of oral poliovirus vaccine (OPV3) was estimated at 78% in 2003, the most recent year with fully reported data. Estimated coverage varied substantially among WHO regions*, from 61% in the African Region to 91% in the European Region, with a wide range in estimates for individual countries. In countries where polio is endemic, estimated OPV3 coverage in 2003 was 39% in Nigeria, 51% in Niger, 54% in Afghanistan, 69% in Pakistan, 70% in India, and 98% in Egypt (*4*).

Supplementary Immunization Activities (SIAs)†

To raise population immunity to the level required to interrupt WPV transmission, SIAs to vaccinate children aged

* WHO has six designated regions: African (46 member states and areas), American (35), Eastern Mediterranean (22), European (52), Southeast Asian (11), and Western Pacific (27).

† Scheduled SIAs consist of 1) national immunization days (NIDs), which are nationwide mass campaigns during a limited number of days in which doses of OPV are administered to children (usually aged <5 years) regardless of previous vaccination history, with an interval of 4–6 weeks between doses, and 2) subnational immunization days (SNIDs), which are campaigns similar to NIDs but confined to certain parts of the country. Mopping-up SIAs are more intensified campaigns conducted in areas of poliovirus transmission.