

Environmental and Occupational Health Hazards

The Environmental and Occupational Health Hazards priority has five sets of objectives: decreasing illness from microbial or chemical contamination of food and drinking water; reducing illness and death from respiratory diseases; reducing occupational injury, illness and death; reducing illness and death related to chemical and biological contaminants in the home; and improving environmental health indicators for air, land, and water in Wisconsin.

Progress in Meeting Objectives—Specific Findings

Microbial or chemical contamination. This objective seeks to reduce illness from contaminated food and drinking water. The incidence of E. coli 0157:H7 infection in Wisconsin decreased nearly every year from 2000 to 2004, from a high of 6.8 cases per 100,000 population in 2000 to 2.5 per 100,000 in 2004 (**2010 target:** 3 per 100,000). In contrast, the incidence of salmonellosis increased during this period, from 14.3 per 100,000 population in 2000 to 18.2 per 100,000 in 2004 (**2010 target:** 8 per 100,000).

The incidence of shigellosis decreased each year from 2000 through 2003, from 6.2 to 2.4 per 100,000 population, but increased in 2004 to 6.1 (**2010 target:** 4 per 100,000). There has been no significant change in the incidence of campylobacteriosis, which occurred at a rate of 22.5 per 100,000 population in 2000 and 23.9 per 100,000 population in 2004 (**2010 target:** 11 per 100,000). The reported incidence of hepatitis A fluctuated during this period, reaching a high of 3.6 per 100,000 in 2002 and a low of 0.8 per 100,000 in 2003; it was 2.3 per 100,000 in 2004 (**2010 target:** 1 per 100,000).

Respiratory diseases. The age-adjusted rate of asthma hospitalizations where asthma was the principal diagnosis declined from 2000 (10.9 per 10,000 population) to 2002 (9.8 per 10,000). On the other hand, the rate of asthma hospitalizations where asthma was any of the listed diagnoses increased, from 52.6 per 10,000 in 2000 to 60.4 per 10,000 in 2002.

Mesothelioma is a rare form of lung cancer that is almost always the result of occupational exposure to asbestos. The age-adjusted rate of mesothelioma incidence was 1.5 new cases per 100,000 population in 2002, the same rate as in 2001 and 2000. The age-adjusted death rate for mesothelioma was 1.0 per 100,000 in 2000 and 1.1 per 100,000 in 2004. (The **2010 target** is to reduce mesothelioma incidence and death rates by 30% below the 2000 baseline.)

Pneumoconiosis is a lung disease caused by chronic exposure to coal dust or other particles. The age-adjusted rate of hospitalization for pneumoconiosis where it was the principal diagnosis was 0.3 hospitalizations per 100,000 population in 2002, nearly identical to the 2000 rate (0.2). The age-adjusted death rate for pneumoconiosis (where it was either the underlying cause or a contributing cause of death) was 0.6 deaths per 100,000 population in 2004, slightly higher than the 2000 rate (0.4). (The **2010 target** is to reduce pneumoconiosis incidence and death rates by 30% below the 2000 baseline.)

Occupational injury, illness, and death. The age-adjusted rate of deaths from occupational injury was 1.7 deaths per 100,000 population in 2004, slightly lower than the rate in 2000 (1.9).

As reported by the Wisconsin Department of Workforce Development, the incidence rate of nonfatal occupational illness and injury was 6.4 per 100 full-time workers in 2003, a decrease from the 2000 rate (9.0). (The **2010 target** is to reduce occupational illness, injuries and death by 30% below the 2000 baseline.)

Chemical and biological contaminants in the home. This objective seeks to assure that all children in Medicaid receive age-appropriate blood lead tests, and to eliminate new cases of lead poisoning among all Wisconsin children age six and younger. In 2004, 28.9% of Medicaid/BadgerCare recipients under age six received a blood lead test during the year; this was higher than the percentage in 2000 (26.7%). The percentage receiving a blood lead test during the year was highest among one-year-olds (55.9% in 2004, up from 45.3% in 2000). The proportion of tested Medicaid/BadgerCare children who had a positive test (10 mcg/dl or higher) decreased every year from 2000 (11.1% positive) to 2004 (5.3% positive).

Among all Wisconsin children under age six who received a blood lead test, 3.9% tested positive in 2004; this continued a series of annual decreases since 2000, when 7.5% tested positive. This annual decline in the percent of positive tests was found in every racial/ethnic group. The percentage of African American children under age six who tested positive declined by nearly half, from 21.5% in 2000 to 11.7% in 2004.

This objective also seeks to eliminate all unintentional carbon monoxide poisoning fatalities in Wisconsin. There were 10 such deaths in 2004, 12 in 2003, 14 in 2002, 10 in 2001, and 18 in 2000.

Finally, this objective seeks to eliminate all unwanted environmental tobacco smoke exposure in homes. In 2000, 28% of Wisconsin adults were exposed to tobacco smoke at home in the past 30 days; more recent data is not yet available. African American adults were more likely to be exposed to smoke at home (44%) than were white adults (27%).

Based on the Wisconsin Youth Tobacco Survey, 41% of Wisconsin middle school and high school students were living with a smoker in 2004, down slightly from 44% in 2000. Based on combined data for 2002 and 2004, American Indian students were most likely to be living with a smoker (60%), followed by African American students (54%), Hispanic students (51%), white students (41%), and Asian students (28%); the overall percentage for middle and high school students in 2002/2004 was 43%.

Progress was not measured for several components of this priority's objectives; new indicators have now been developed.

Selected Accomplishments and DHFS Activities (organized by objectives for this health priority)

Objective: Reduce illness from contamination of food and drinking water.

- Proposed a plan to improve the health of children through a partnership with the Wisconsin Department of Public Instruction and the U.S. Department of Agriculture to inspect school lunch rooms and promote food safety.

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- Completed a statewide assessment of mercury exposure from fish consumption. Fish consumption information and advisory awareness was assessed among more than 4,000 participants in the 2004 Behavioral Risk Factor Survey. Additionally, hair samples and fish consumption questionnaires were provided by 2,028 study volunteers. Each volunteer received a letter that explained their test result as well as a brochure that explained how to select fish that are low in mercury. Study recruitment involved a series of press releases as well as TV and radio interviews which were intended to increase public awareness of this issue.
- Targeted education and outreach efforts related to fish consumption to several minority groups, including the Hmong and Hispanic women who use the WIC program.
- Provided training to several thousand volunteer food service workers at seasonal events as a primary strategy to prevent food poisoning.
- Provided training and information to hundreds of swimming pool operators as part of their obtaining Certified Pool Operator credentials.
- Worked with the Wisconsin State Laboratory of Hygiene to develop statewide capability to collect and ship water samples for analysis from any municipal water supply.
- Revised the Wisconsin administrative rule on food safety and provided standardization training in food safety inspections and maintenance to 50% of the public health food inspection workforce throughout Wisconsin. DHFS partners with the Department of Agriculture, Trade, and Consumer Protection and the U.S. Food and Drug Administration to promote consistent and uniform inspections based on the latest science and technology.
- Revised the administrative rule pertaining to the safety and operation of public swimming pools. When passed, this will be one of the most modern and comprehensive performance-based pool codes in the country. The revised rule includes the rapidly growing water attraction industry, thus helping Wisconsin maintain its reputation as the Water Park Capital of the World.
- Collaborated with state and local governments to create a more efficient and effective system of notification to all parties in the event a business or community experiences unsafe drinking water.
- Investigated 40 reported cases of contaminated drinking water wells due to adjacent hazardous waste sites or a chemical spill or incident.
- Developed an “Agent Handbook” to assist local public health departments in assuming agent status for the restaurant, lodging and recreational facility regulation and licensing program.
- Worked with the DNR to establish a model for regulation of new systems designed to remove radioactivity from municipal public water systems.

Objective: Reduce illness and death from respiratory diseases related to environmental and occupational exposures.

- Established an automated connection to the Wisconsin Children’s Hospital Poison Center comprehensive database, particularly for surveillance of carbon monoxide poisonings and pesticide poisonings.
- Received funding from CDC to investigate racial disparities and rural/urban concerns related to the air contaminants of ozone and fine particulate matter and the impact of such contaminants on asthma and cardiovascular disease.

- Provided funding (\$18,000) to the Menominee Tribe to initiate an asthma clinic at the Tribal Clinic. Four clinic staff were sent to an intensive asthma education workshop.
- Provided sustained funding, infrastructure, and leadership for the Wisconsin Asthma Coalition resulting in the creation of eight local asthma coalitions. Funded local community asthma coalitions: La Crosse Partnership, Marathon County, and Chippewa Falls. Also funded Fight Asthma Milwaukee Allies asthma coalition, which reached nearly 900 community members via outreach and education programs.
- Published an article on Wisconsin teens, asthma, and tobacco use for the *Wisconsin Medical Journal* (Vol. 104, No. 7.)
- Worked with the Wisconsin Environmental Public Health Tracking Program to better understand the relationship between ambient air quality indicators (ozone and particulate matter) and asthma hospitalizations.
- Collaborated with the Department of Natural Resources to improve public health messages associated with air quality alerts (ozone and particulate matter).
- Completed a study, "Indoor Air Quality Management in Wisconsin Public Schools: A Survey of Wisconsin Public School Districts 2005."
- Created a Web site to disseminate statewide asthma data and information.
- Through a partnership with the American Lung Association, 112 child-care providers and 40 teachers and school staff were trained to better care for children with asthma. The people who received this training care for approximately 350 children with asthma.
- Working with the University of Wisconsin Survey Center to begin a study of diagnosed cases of mesothelioma and exposure to asbestos found in vermiculite insulation.
- Provided emergency response and ongoing technical assistance to local health departments during the Watertown toluene diisocyanate environmental spill and tire fire.

Objective: Reduce occupational injury, illness, and death.

- Received a grant from the National Institutes of Occupational Safety and Health to enhance health surveillance of occupational morbidity and mortality in the workplace. The surveillance data will be used to design and implement injury reduction interventions by industry.
- Completed and prioritized eight reports on work-related deaths by the Fatality Assessment and Control Evaluation Program related to disparities in death rates.
- Identified a suite of occupational health indicators to track progress in achieving the objectives in the state health plan.
- Continued to oversee the training and certification of lead and asbestos workers, including over 400 lead-safe workers, over 800 certified asbestos abatement workers and 465 certified lead abatement firms.

Objective: Reduce illness and death from chemical and biological contaminants in the home.

- Approximately 15,000 housing units were made lead safe in Wisconsin in 2005. Worked to develop childhood lead poisoning elimination plans with the City of Racine and the City of Milwaukee, which represent high-risk communities for the prevention of lead poisoning in young children.

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- Provided technical assistance and support to local communities to secure grants from the U.S. Department of Housing and Urban Development and from the two Wisconsin medical school foundations to secure local planning and implementation resources to prevent lead poisoning.
- Developed lead poisoning “scorecard” profiles for physicians who receive Medicaid reimbursement.
- Submitted analysis and recommendations to the Secretary, Legislature, and Governor Doyle concerning the effectiveness of current laws to reduce lead poisoning.
- Held Wisconsin’s Annual Environmental Health/“Look Out for Lead” Conference, with an attendance of 300 local health staff and community partners.
- Developing a system to make blood lead test results available through the Wisconsin Immunization Registry.
- Collaborating with the Women, Infants and Children program (WIC) to target resources to increase lead testing and referral for uninsured children.
- Collaborating with the Wisconsin Apartment Association to introduce a “Window Bill” that would provide low-interest loans to replace windows – a source of lead poisoning for young children.
- Worked on the administrative rule revision to assure that no licensed day-care in Wisconsin has chipping lead paint in its environment. Provided regional training to all state and local day-care inspectors to identify and remediate potential lead paint hazards.
- Expanded the training of the home visitor component of the Kids First Initiative to increase awareness and referral of potential lead paint hazards in the home environment.
- Received an Indoor Radon Grant from the U.S. Environmental Protection Agency to maintain and expand public information and advisory assistance on radon, the second leading cause of lung cancer in Wisconsin. Public information and assistance helped make at least 3,000 homes radon-safe.
- Summarized carbon monoxide poisoning morbidity and mortality data from 1989-2002 to track patterns over time. Evaluated multiple data sources for inclusion in a module for routine tracking of accidental carbon monoxide poisonings.
- Completed 20 indoor air quality assessments in homes, schools, and municipal buildings.
- Built a strong partnership with the Wisconsin Department of Justice to address the extreme health and safety risks associated with makeshift methamphetamine laboratories in the home and to promote awareness and policy changes to protect children from home methamphetamine labs.
- Working with the Wisconsin Industrial Hygiene Association, developed and released the document, “Frequently Asked Questions on Mold.” Conducted mold inspections and provided remedial recommendations for over 20 properties.
- Working with the Oneida Nation to determine if ceremonial/museum items increase exposure to mercury and arsenical pesticides.
- Assisted with the inspection and development of remedial plans for five homes/offices where there were accidental mercury spills.

Objective: Improve environmental health indicators for air, land, and water.

- Completed a biomonitoring project to link sport fish consumption with methylmercury body burdens.

- Partnered with the Wisconsin Department of Natural Resources to implement a new air toxics modeling method for identifying areas of the state with the potential for cumulative exposure risks that could affect health.
- Revised the administrative rule on Radiation Protection to incorporate new federal requirements for radioactive materials and X-ray device safety.
- Conducted radiological emergency response training for state and local agency staff at the Argonne National Laboratory (Illinois) in cooperation with the U.S. Department of Energy and the Federal Bureau of Investigation.
- Successfully competed for funds from the following: Agency for Toxic Substances and Disease Registry Health Assessment Grant, the Vermiculite/Mesothelioma Grant, the Hazardous Substances Emergency Event Surveillance Grant, the EPA Endocrine Disruptor (Great Lakes Fish) Grant, and the EPA Ethnic Fishers Grant.
- Transferred management of the Wisconsin Registered Sanitarian Program to the Wisconsin Department of Regulation and Licensing (DRL). DRL will now implement this program to include continuing education, online registration and renewals, and maintenance of professional standards.
- Inspected 100% of the 253 mammography facilities that offer X-ray examination of the breast in Wisconsin.
- Received an official independent assessment by the U.S. Nuclear Regulatory Commission declaring that Wisconsin's radioactive material licensing and section program is adequate and compatible to protect public health and safety.
- Partnered with industry and medical experts to draft an effective "body art" administrative rule to ensure the safety of any person obtaining a piercing or tattoo.
- Deployed the Pediatric Cancer Rapid Reporting System, in collaboration with the University of Wisconsin-Division of Information Technology, to pilot the feasibility of a timely, automated, Web-based reporting system.
- Implemented cost-savings approaches with the Wisconsin State Laboratory of Hygiene to share and maintain environmental testing and monitoring equipment.
- Advocated for the creation of Environmental Health Consortia in local communities to assure environmental health protection for counties and municipalities that lack the resources to do this on their own.
- Provided environmental and occupational health expertise to the Wisconsin Public Health Association in the development of a draft bill to revise the Environmental Health statute (Chapter 254, Wis. Stats.).
- Piloted a limited agent program to promote environmental health capacity in four county health departments (Adams, Columbia, Juneau, and Sauk).
- Conducted over 25 health assessments and consultations on the public health risks presented by chemicals from hazardous waste sites and spills.
- Completed a cumulative report on chemical spills in Wisconsin for 1999-2004, showing their impact on human health and the environment.
- Linked data for childhood cancer cases to a number of environmental hazards including agricultural pesticides, air toxics, and contaminated sources of drinking water.
- Developed an algorithm (a logical sequence of steps) to rank areas of the state that exhibit potential for human exposure to agricultural pesticides.

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- Worked with 10 schools and colleges of nursing to provide lectures on environmental health, which included chemical exposure scenarios specific to each community.
- Developed chemical emergency protocols and operating procedures for state-level Chemical Exposure Assessment Teams.
- Released a report and began to conduct education and outreach activities concerning ammonia spills in Wisconsin.
- Created a Web site to disseminate statewide asthma data to assist in identifying and tracking progress in reducing the health disparities related to this disease.

New and Emerging Issues

- As homes are being constructed more tightly to save on heating and cooling costs, concern is growing about the impact of ambient air pollutants such as ozone and particulates on the indoor environment. DHFS has applied for funding from the U.S. Environmental Protection Agency to study their impact on human health in greater detail.
- Working with the Department of Natural Resources to develop guidelines for the installation and use of outdoor wood-fired boilers, whose use is increasing in response to rising costs of home heating fuels. This effort involves developing several models depicting plume/smoke dispersion and creating education and outreach materials for municipalities to use in developing ordinances. Staff is preparing a grant to the U.S. Environmental Protection Agency to enable further characterization of these devices.
- Lead arsenate was used extensively as an apple orchard pesticide from the early 1900's to the 1950's. There is widespread contamination of the soil where orchards once existed, and some of these properties are now being developed with homes. DHFS is working with the Department of Agriculture, Trade and Consumer Protection and the Department of Natural Resources to evaluate the potential impact and exposure risk presented by contaminated soil. Testing is being done and recommendations being provided to developers and landowners.
- Continue to link public health population-based data and information to the provision of clinical care. Population-based data provides value-added information to the clinical practice environment. For example, the Lead Program is working to create clinician scorecards on lead screening. Aggregated data on lead screening adds value to clinical practice. Scorecards provide insight into the degree to which a clinician is actually screening Medicaid children for lead poisoning. Such data foster quality improvements in clinical practice and clinical decision-making to prevent negative health outcomes. The data may also provide a competitive edge that can stimulate an increase in screening in the clinical setting for children at risk.