

ENVIRONMENTAL AND OCCUPATIONAL HEALTH

Note to readers and users of the *Healthiest Wisconsin 2020* Profiles: This *Healthiest Wisconsin 2020* Profile is designed to provide background information leading to collective action and results. This profile is a product of the discussions of the Focus Area Strategic Team that was convened by the Wisconsin Department of Health Services during September 2009 through November 2010. The objectives from this Focus Area have been recognized as objectives of *Healthiest Wisconsin 2020*. (Refer to Section 5 of the *Healthiest Wisconsin 2020* plan.) A complete list of *Healthiest Wisconsin 2020* Focus Area Strategic Team Members can be found in Appendix A of the plan.

Definition

Environmental and occupational health includes the broad and diverse suite of interrelated regulatory and educational programs and services needed in every Wisconsin community to prevent, identify, and mitigate illnesses and injuries resulting from hazards in the natural, built, and work environments. Environmental and occupational health practice requires close collaboration with environmental and public health system partners to achieve and maintain the healthy places required for healthy living. Environmental and occupational health activities include but are not limited to the following:

- Identifying, evaluating and controlling chemical, radiological, and biological hazards in the air, water, soil, food, and built environment.
- Assuring a safe and healthy food supply that considers the “farm to fork” concept.
- Assuring basic sanitation and safety in hotels, pools, campgrounds, and other public places and workplaces.
- Monitoring the safe use and handling of radioactive materials in health care and industry.
- Ensuring that Wisconsin’s workers are adequately protected from the range of physical, chemical, biological and psychosocial hazards associated with work.
- Preparing for and responding to natural and manmade disasters, including those potentially exacerbated by global climate change.
- Conducting surveillance of occupational and environmental hazards and relevant health outcomes to provide evidence needed to take action in local, regional, and statewide communities.

Importance of the Focus Area

More and more clear associations and linkages are emerging to demonstrate the ways human health is affected by the environments where people live and work. The air we breathe, water we drink, communities where we live and food we eat are increasingly recognized as underlying determinants of health. In response, the fields of environmental and occupational health have expanded into a diverse area of work with the main focus to protect people from exposures (e.g., lead, contaminated water, asthma triggers, toxic waste) that cause health problems. Additionally, there is increased recognition that the relationships between these exposures and human health are the result of a complex set of interactions between people, their behavior choices, conditions in the physical environment, and regulatory programs and policies. In the past, many of these factors were evaluated and addressed individually. It is now accepted that a systematic integration of information and data from the many interacting forces will have a greater impact on health than continuing to independently respond to individual factors.

This work is further supported by the emergence of technological advances that enhance the ability to use data in a way that helps delineate the most significant issues and prioritize efforts to resolve such problems. As this is a relatively new approach, there is a pressing need to improve the utility of existing data as well as develop new data to better understand the many interacting components of environmental and occupational health. Recent trends have shown the usefulness of combining environmental and occupational health indicators into a single score calculated from a variety of independent measures. This approach allows for the tracking of a single index over time that is sensitive to changes in the overall state of natural, built and work environments. In addition, the scores on each of the independent measures provide the basis for identifying which specific areas of environmental and occupational health should be prioritized, statewide and in local communities, to boost the overall index score. As scores increase, exposures and their negative health effects are reduced.

The underlying assumption of an indexing approach is that it will improve assessments of the individual components, such as unsafe work environments or contaminated drinking water. These more focused assessments will assist the state and communities to set environmental and occupational health priorities and promote more efficient use of resources to address threats to health and safety. To accomplish the objectives by 2020, the process to develop an environmental and occupational health index will be evaluated in three phases for each of two objectives. One index focuses on improved health across the life span and the other focuses on improved health equity and the reduction of disparities in environmental health issues related to people's homes.

Index Development - Phase I and Phase II

- Phase I involves the development of the composite index that can be used to assess the overall quality and safety of the food supply and natural, built and work environments in Wisconsin. Index development will be complete by the end of 2012. This index will be calculated from individual measures reflecting work in a number of different environmental and occupational health programs.

- Phase II is the implementation of the index by local health departments and tribal jurisdictions in assessments that establish a baseline and identify priority areas to be addressed. Implementation will occur as a part of localized assessments by 2015 so that steps can be taken to improve the overall index by addressing areas deemed to be the most appropriate. This will result in an overall increase in the composite score that can be tracked during Phase III (from 2015 until 2020) to demonstrate improved environmental and occupational health. Notably, different jurisdictions will be able to address different problems while still improving the overall composite score. This reflects the strength of using several individual measures, so that jurisdictions are able to identify the most significant issues in their areas and effectively address them.
- The second index focuses on improved health equity and the reduction of disparities in environmental health issues related to people's homes. While there are a number of options for activities that would address environmental and occupational health equity and disparity reduction, it was determined that a focus on healthy homes is the priority for the next decade. Place matters. Where people live and work exerts a powerful influence on the health of individuals and families. Disparities in the quality of living spaces are often related to socioeconomic, racial/ethnic and income/education level factors. These factors often affect whether or not contaminants are detected and removed. By improving the construction and maintenance of healthy homes, including the immediate environment around the home, human exposures and health problems will be reduced. It is fully recognized that exposures also occur in the workplace; however, focusing on homes over the next decade will maximize the number of people that will directly benefit from outreach, prevention, and intervention strategies.
- The steps to address this objective are similar to those described above for improving health across the life span. Specifically, Phase I will be completed by 2012; this is the development of a composite score that defines a healthy home. Phase II, completed by 2015, is the implementation of the index to assess the number of healthy homes and identify specific issues to target. In Phase III, changes in health and safety index scores will be tracked from 2015 to 2020 to assess improvements.

Wisconsin Data Highlights

The data highlights that follow are documented in the Wisconsin Division of Public Health Report entitled: *Health Indicators Report: The State of Environmental and Occupational Health in Wisconsin – 2007*.

- Asthma is one of the most common chronic diseases of childhood. In 2003-2004, the lifetime asthma prevalence among children in Wisconsin was 10.9 percent and the current asthma prevalence was 8.7 percent.
- In the human health assessments and consultations conducted by the Wisconsin Division of Public Health in a two-year period (2004-2005), 50 percent involved indoor air concerns in commercial buildings or facilities, 21 percent were related to manufactured gas plant sites, and 14 percent were related to mercury spills in schools. Additionally, a clandestine drug (methamphetamine) lab was investigated and a rock quarry was assessed.

- Many Wisconsin rivers and lakes are covered by fish consumption advisories because of mercury contamination. Given that 85 percent of Wisconsin residents include fish in their diets and nearly half enjoy eating locally caught game fish, this remains an important source of exposure to harmful chemicals.
- In Wisconsin, 253 foodborne disease outbreaks were reported between 1995 and 2004. A minimum of 6,941 illnesses, 263 hospitalizations, and three deaths were associated with these outbreaks.
- About 30 percent of all homes in Wisconsin have lead-based paint hazards; children under the age of six live in about 80,000 of these homes.

- In 2005, 3.4 percent of Wisconsin children tested for blood lead were found to have lead poisoning, which is more than twice the national average of 1.6 percent.
- In August 2007, it was estimated that there were approximately 23 state inspectors and 142 local inspectors for public pools in Wisconsin. An estimated 65 percent of inspected pools are swimming pools, 19 percent are whirlpools, 7 percent are wading pools, and the remaining 10 percent are classified as combined, water attractions, wave, activity, plunge, lazy river, zero-depth entry, or other types of pools.

Number of Wisconsin Children Less Than Six Years Tested 1996 Through 2005 Who Had Blood Lead Levels of 10 Micrograms per Deciliter or Greater

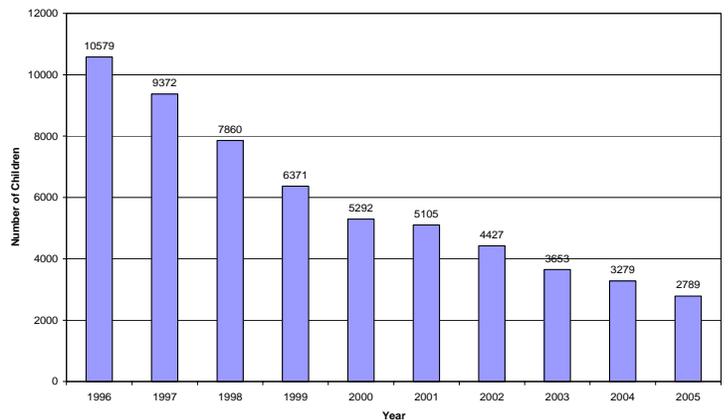


Figure 1: Number of children detected with lead poisoning 1996-2004

- Between 1993 and 2003, a total of 4,700 hazardous substance release events were identified and tracked in Wisconsin: 2,558 (54 percent) occurred in fixed facilities; 2,142 (46 percent) were in the transportation sector. Injury victims, totaling 1,281 people (including 5 deaths), were identified in 365 (8 percent) of the total events; and 41,314 evacuees were identified in 530 (11 percent) of total events.
- A primary public health concern related to indoor air quality in Wisconsin is mold. In 2003, a total of 43 mold-related hazard assessments were completed. Among these, approximately 43 percent were due to improper construction; 34 percent to heating, ventilation, and air conditioning; and 15 percent to roof leaks.
- The Radiation Protection Section registers approximately 4,800 facilities with 15,000 sources of ionizing radiation annually. The majority of registrants are medical and dental x-ray facilities.

- Radon is a gas produced by the breakdown of uranium. Bedrock in soil is one source. Approximately 10 percent of the total lung cancer deaths in Wisconsin are attributable to radon exposures. Elevated radon levels have been found in homes in every region of Wisconsin. Bedrock underlying homes is just one of a number of factors that determine the levels of radon indoors.
- In 2000, there were approximately 175,500 work-related injuries and illnesses, with nearly one-third resulting in days away from work.

Objective 1

By 2020, improve the overall quality and safety of the food supply and the natural, built and work environments.

Objective 1 Indicator

The proportion of local and tribal jurisdictions that have assessed, prioritized and improved performance on an environmental and occupational health index. (Indicator to be developed.)

Objective 1 Rationale

The breadth of the environmental and occupational health focus area can make it difficult to summarize a current state with any single indicator. The indicators for Objective 1 reflects the development of a summary statistic, the environmental and occupational health index, that will make it easier to routinely use data for prioritizing activities that promote improved quality in the food supply, and the natural, built and work environments. The use of the index will be tracked as a second indicator. Different health departments and tribal jurisdictions will focus on different components of the index as their priorities. Changes in any component will result in a change in the overall index score. The resulting changes in the index scores are evaluated as a measure of improved environmental and occupational health.

Objective 2

By 2020, increase the percentage of homes with healthy, safe environments in all communities. (Safe environments are free from lead paint hazards, mold or moisture damage, environmental tobacco smoke and safety hazards, and include carbon monoxide and smoke detectors, and radon testing and mitigation.)

Objective 2 Indicator

Proportion of local and tribal jurisdictions that have assessed, prioritized and improved performance on a home health and safety index. (Indicator to be developed.)

Objective 2 Rationale:

Currently there are a number of obstacles to the effective and efficient use of data for prioritizing environmental and occupational health activities. These indicators reflects the development of a tool, a healthy home index, that will make it easier to routinely use data for making decisions that promote the creation and maintenance of homes with healthy and safe environments. The use of the index will be tracked as a second indicator. Finally, as the

index is used to prioritize activities, the resulting changes in the number of homes with healthy and safe environments are evaluated.

Potential evidence- or science-based actions to move the focus area objectives forward over the decade

- Increase enforcement of workplace health and safety laws (Booske, et al., 2009).
- Include pedestrian- and transit-friendly provisions in community and neighborhood planning efforts (Project for Public Spaces, 2008).
- Implement groundwater stewardship programs to identify and remediate potential water contamination hazards (Booske, et al., 2009).
- Expand undergraduate and graduate education programs in environmental and occupational health (Booske, et al., 2009).
- Promote rollover protection structures for tractors to prevention injury among farm workers (Booske, et al., 2009).
- Increase availability of training materials for food service workers in their language of origin to ensure food safety (Hertzman, 2007).
- Increase availability of training materials for migrant and seasonal workers to ensure worker safety (Millard, 2004).
- Implement workplace-based exercise programs to prevent workplace injury (Booske, et al., 2009).
- Promote the Energy Star Program (Booske, et al., 2009).
- Implement green pricing utility programs (Booske, et al., 2009).
- Reduce indoor allergen and/or ambient air pollution exposure through low-cost and well-studied measures (e.g., eliminate environmental tobacco smoke, use mattress and pillow covers, reduce or eliminate exposure to pet dander) (Anderson, 2010).
- Use ozone action days to help people with asthma know when to stay indoors (Anderson, 2010).
- Reduce diesel bus idling (Booske et al., 2009).
- Disseminate best practices for home construction and renovation (American Lung Association, 2009).
- Conduct studies to help link available environmental data to asthma prevalence (Environment and Human Health, Inc., 2003).
- Make available inexpensive carbon monoxide detectors designed to sound an alarm well before levels pose any risk to health (Raub, 2000).

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