## Health Priority: Environmental and Occupational Health Hazards

### Objective 1: Microbial or Chemical Contamination (Logic Model)

**Long-term (2010) Subcommittee Outcome Objective:**
By 2010, decrease the incidence of illness resulting from microbial or chemical contamination of food and drinking water.

1a: By 2010, reduce CDC risk factor violations for food and water by 25%, based on a 2004 baseline.

1b: By 2010, the incidence of E.coli 0157.H7 infection will be three per 100,000 population.

1c: By 2010, the incidence of Salmonellosis will be eight per 100,000 population.

1d: By 2010, the incidence of Shigellosis will be four per 100,000 population.

1e: By 2010, the incidence of Campylobacteriosis will be eleven per 100,000 population.

1f: By 2010, the incidence of Hepatitis A will be one per 100,000 population.

1g: By 2010, increase the awareness of health threats from arsenic in private water supplies, mercury in sports fish, and methemoglobinemia, by 50% in each case, over a 2002 (or future) baseline.

Long-term outcome objective updated as of: Sept 2004

NOTE: E.coli, Salmonellosis, Shigellosis, Campylobacteriosis, and Hepatitis A are also Long-term Subcommittee Outcome Objectives under Existing, Emerging, and Re-emerging Communicable Diseases, Objective 3: Foodborne and Waterborne Disease Control.

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<tbody>
<tr>
<td>Staff resources</td>
<td>Sound public policy</td>
<td>Education of consumers, business and industry groups and policy makers on the importance of safe and wholesome drinking water and food supplies.</td>
<td>Increased analytical testing of food and drinking water supplies.</td>
<td>Reduced illness associated with food and drinking water.</td>
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<tr>
<td>Government/Industry partnerships</td>
<td>Strong coalitions</td>
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<tr>
<td>Financial resources</td>
<td>Sound business practices</td>
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<tr>
<td>Technology</td>
<td>Certified food managers</td>
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<tr>
<td>Education/training</td>
<td>Educated and knowledgeable workforce</td>
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<tr>
<td>Staff training</td>
<td>Improved training resources</td>
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<td>Coalition building</td>
<td>Multilingual training materials</td>
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</table>
## Health Priority: Environmental and Occupational Health Hazards

### Objective 1: Microbial or Chemical Contamination (Logic Model)

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<tbody>
<tr>
<td>Laboratory analysis</td>
<td>Consumer education</td>
<td>Home owners, Industry</td>
<td>Increased capacity among local public health departments to administer drinking water and food safety programs.</td>
<td></td>
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<tr>
<td>Comprehensive private well test for every pregnant woman</td>
<td>Informed consumers and health care providers</td>
<td>Health agencies, Tribes</td>
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<tr>
<td>Consumer information</td>
<td>Hazardous material substitution &amp; minimization</td>
<td>tribes, Federal government, Laboratory staff, Food Handlers, Well drillers, Facility operators</td>
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<td>Clear messages</td>
<td>Sound waste handling practices</td>
<td>Improved data on indicators for food and water quality.</td>
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<tr>
<td>Sound public policy</td>
<td>Data collection, analysis and dissemination</td>
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<td>Data systems</td>
<td>More frequent facility inspections and sampling</td>
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<tr>
<td>Technology</td>
<td>Improved facility operator training</td>
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<td>Facility inspections</td>
<td>Well head protection programs</td>
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<td>Health care provider education</td>
<td>Safe facilities</td>
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<tr>
<td>Decreasing per capita use of water</td>
<td>Improved chemical and waste handling practices</td>
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<tr>
<td>Improved disease prevention and early intervention activities</td>
<td>Educated business and industry</td>
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<tr>
<td>Environmental indicator data</td>
<td>Educated and informed consumers and policy makers</td>
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<tr>
<td>Disease surveillance</td>
<td>Educated policy makers</td>
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<tr>
<td>Health education</td>
<td>Educated business and industry</td>
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<td>Health alerts</td>
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<td></td>
<td>Disease surveillance information</td>
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</tbody>
</table>
### Health Priority: Environmental and Occupational Health Hazards

**Objective 5: Environmental Health Indicators for Air, Land, and Water (Logic Model)**

**Long-term (2010) Subcommittee Outcome Objective:** By 2010, enhance the quality of life in Wisconsin through improvements in environmental health indicators for air, land, and water.

Long-term outcome objective updated as of: Sept 2004

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<tbody>
<tr>
<td>State Agencies:</td>
<td></td>
<td>Increase the capacity and motivation of individuals to contribute positively to environmental preservation.</td>
<td>Citizens</td>
<td>Improve attitudes toward individual behaviors that contribute positively to environmental quality.</td>
<td>Increase use of integrated pest management techniques.</td>
<td>Preserve and protect wetlands and forested, agricultural and recreational land.</td>
</tr>
<tr>
<td>• Wisconsin Department of Health and Family Services</td>
<td></td>
<td>Increased motivation to take individual action to preserve public health by maintaining environmental quality.</td>
<td>Healthcare providers</td>
<td>Increase awareness of health concerns related to decreased environmental quality.</td>
<td>Increase use of environmentally-friendly consumer packaging.</td>
<td>Reduce industrial and transportation-related air pollution.</td>
</tr>
<tr>
<td>• Wisconsin Department of Agriculture, Trade and Consumer Protection</td>
<td></td>
<td>Increased local understanding and input on groundwater quality efforts.</td>
<td>Policymakers</td>
<td>Promote creation of local groundwater protection advisory committees.</td>
<td>Increase use of pollution prevention practice in industry (e.g., waste minimization, alternative chemicals, etc.).</td>
<td>Preserve and protect groundwater, surface water and recreational water resources.</td>
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<tr>
<td>• Wisconsin Department of Natural Resources</td>
<td></td>
<td>Increased ability to identify and critically investigate relationships between health outcomes and environmental exposures.</td>
<td>Public institutions</td>
<td>Increase use of Geographical Information Systems to link environmental and epidemiological data.</td>
<td>Increase use and capacity of public transportation.</td>
<td>Preserve and protect species diversity.</td>
</tr>
<tr>
<td>• Wisconsin Department of Commerce</td>
<td></td>
<td>Increase quality and quantity of environmental data available for health-related analysis.</td>
<td>Private/non-profit business</td>
<td>Increase collection and analysis of environmental data.</td>
<td>Increase use of alternative fuels.</td>
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<tr>
<td>Federal agencies</td>
<td></td>
<td>Decreased dependence on chemical pesticides in the agricultural community.</td>
<td>Schools</td>
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<tr>
<td>University of Wisconsin-Extension</td>
<td></td>
<td>Decreased disposal of product packaging in Wisconsin landfills.</td>
<td>Faith-based communities</td>
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<tr>
<td>Industry</td>
<td></td>
<td>Reduced emission of industrial chemicals.</td>
<td>Home owners</td>
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<tr>
<td>Federal, state, tribal, and local governments</td>
<td></td>
<td>Decreased transportation-related air pollution.</td>
<td>Industry</td>
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<tr>
<td>Legislature</td>
<td></td>
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<td>Health agencies</td>
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<tr>
<td>Regional and local planning agencies</td>
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<td>Tribes</td>
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<td>Federal government</td>
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<td>Laboratory staff</td>
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<td>Individuals</td>
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<td>Legislators</td>
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Logic Model – Health Priority: Environmental and Occupational Health Hazards – Objective 5
## Health Priority: Environmental and Occupational Health Hazards
### Objective 5: Environmental Health Indicators for Air, Land, and Water (Logic Model)

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Activities</th>
<th>Participation/Reach</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal and state agricultural agencies</td>
<td>Decreased transportation- and energy-related air pollution.</td>
<td>2002-2004</td>
<td>Reduce non-point sources of water pollution. Increase capacity of local governments to assess land, water, and air quality issues.</td>
</tr>
<tr>
<td>Academic institutions</td>
<td>Increased consideration of environmental concerns in local and regional planning efforts.</td>
<td>2008-2010</td>
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<tr>
<td>Water utilities</td>
<td>Eliminate decline in water tables in Wisconsin.</td>
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<tr>
<td>Local planning and zoning agencies</td>
<td>Decreased contribution of non-point pollution to surface water and groundwater.</td>
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<tr>
<td>Industrial sector</td>
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<tr>
<td>Media</td>
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<tr>
<td>Health and environmental educators</td>
<td>Increased ability of localities to comprehensively address declining environmental indicators.</td>
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<tr>
<td>Community-based organizations</td>
<td>Ability to effectively sustain land resources for full range of current and anticipated recreational and commercial uses.</td>
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<tr>
<td>State and local health agencies</td>
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<tr>
<td>Academic institutions</td>
<td>Reduction of air pollution below levels which may contribute to existing, anticipated and unanticipated adverse health outcomes.</td>
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<td>Local governments</td>
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Logic Model – Health Priority: Environmental and Occupational Health Hazards – Objective 5
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<td>Ability to sustain pollutant and natural contaminant levels in surface water and groundwater at levels that contribute to existing, anticipated and unanticipated adverse health outcomes.</td>
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<td>Sustain current range of animal, plant, and microbial species that provide biological and ecological infrastructure for human health.</td>
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</tbody>
</table>
Health Priority: Environmental and Occupational Health Hazards
Objective 1: Microbial or Chemical Contamination (Template)

Long-term (2010) Subcommittee Outcome Objective:
By 2010, decrease the incidence of illness resulting from microbial or chemical contamination of food and drinking water.

1a: By 2010, reduce CDC risk factor violations for food and water by 25%, based on a 2004 baseline.

1b: By 2010, the incidence of E.coli 0157.H7 infection will be three per 100,000 population.

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1g: By 2010, increase the awareness of health threats from arsenic in private water supplies, mercury in sports fish, and methemoglobinemia, by 50% in each case, over a 2002 (or future) baseline.

NOTE: E.coli, Salmonellosis, Shigellosis, Campylobacteriosis, and Hepatitis A are also Long-term Subcommittee Outcome Objectives under Existing, Emerging, and Re-emerging Communicable Diseases, Objective 3: Foodborne and Waterborne Disease Control.

Wisconsin Baseline Wisconsin Sources and Year
---

1a. Baseline data are being gathered in 2004. This form of inspection was initiated in 2004. 1a. Bureau of Environmental Health Division of Public Health, DHFS/Food Safety and Recreational Licensing Section/CDC Risk Factor Violations Data

1b. Six per 100,000 population (four-year average, 1999-2002) 1b. Bur. of Communicable Diseases, Division of Public Health, DHFS/Epidemiology Section/Acute & Communicable Disease Case Reports (4151) (J. Archer)

1c. Sixteen per 100,000 population (four-year average, 1999-2002) 1c. Bur. of Communicable Diseases, Division of Public Health, DHFS/Epidemiology Section/Acute & Communicable Disease Case Reports (4151) (J. Archer)

1d. Eight per 100,000 population (four-year average, 1999-2002) 1d. Bur. of Communicable Diseases, Division of Public Health, DHFS/Epidemiology Section/Acute & Communicable Disease Case Reports (4151) (J. Archer)

1e. Two per 100,000 population (four-year average, 1999-2002) 1e. Bur. of Communicable Diseases, Division of Public Health, DHFS/Epidemiology Section/Acute & Communicable Disease Case Reports (4151) (J. Archer)

1f. Mercury in sports fish health issues awareness: “From a sample of 596 Wisconsin women, 26% self-reported being aware of fish advisories in the state (“do you know if your state issues an advisory on eating sport-caught fish contaminated with mercury?”); Arsenic in private water supplies: developmental; Methemoglobinemia: developmental. 1f. Bur. of Communicable Diseases, Division of Public Health, DHFS/Epidemiology Section/Acute & Communicable Disease Case Reports (4151) (J. Kazmierczak)

Refer to Appendix B for additional detail.
<table>
<thead>
<tr>
<th>Federal/National Baseline</th>
<th>Federal/National Sources and Year</th>
</tr>
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<tbody>
<tr>
<td>85% of persons served by community water systems received drinking water that met Safe Drinking Water Act (Public Law 93-523) regulations in 1995. Target: 95 percent</td>
<td>Healthy People 2010, November 2000, USDHHS cites the following sources for this baseline data: Potable Water Surveillance System (PWSS) and Safe Drinking Water Information System (SDWIS), Environmental Protection Agency (EPA)</td>
</tr>
<tr>
<td>6 outbreaks per year originated from community water systems (1987-96 average). Target: 2 outbreaks.</td>
<td>Healthy People 2010, November 2000, USDHHS cites the following sources for this baseline data: State Reporting Systems, Centers for Disease Control and Prevention (CDC), National Center for Infectious Diseases (NCID)</td>
</tr>
<tr>
<td>See Appendix A - Reduction in Infections Caused by Microorganisms baseline and target data.</td>
<td>Healthy People 2010, November 2000, USDHHS cites the following sources for this baseline data: Foodborne Disease Active Surveillance Network (FoodNet), CDC, NCID, Food and Drug Administration (FDA), Center for Food Safety and Applied Nutrition (CFSAN); Food Safety and Inspection Service (FSIS), Office of Public Health and Science (OPHS); and State Agencies. Potential data source: Toxoplasmosis data – National Notifiable Diseases Surveillance System (NNDSS), CDC, NCID.</td>
</tr>
<tr>
<td>See Appendix A - Reduction in Infections Caused by Foodborne Bacteria baseline and target data.</td>
<td>Healthy People 2010, November 2000, USDHHS cites the following sources for this baseline data: Foodborne Disease Outbreak Surveillance System, CDC, NCID</td>
</tr>
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</table>

### Related USDHHS Healthy People 2010 Objectives

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Goal</th>
<th>Objective Number</th>
<th>Objective Statement</th>
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</thead>
<tbody>
<tr>
<td>8 – Environmental Health</td>
<td>Promote health for all through a healthy environment.</td>
<td>8-5</td>
<td>Increase the proportion of persons served by community water systems who receive a supply of drinking water that meets the regulations of the Safe Drinking Water Act.</td>
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<td>8-6</td>
<td>Reduce waterborne disease outbreaks arising from water intended for drinking among persons served by community water systems.</td>
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<td>8-10</td>
<td>Reduce the potential human exposure to persistent chemicals by decreasing fish contaminant levels</td>
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<tr>
<td>10 – Food Safety</td>
<td>Reduce foodborne illnesses.</td>
<td>10-1</td>
<td>Reduce infections caused by key foodborne pathogens.</td>
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<td>10-2</td>
<td>Reduce outbreaks of infections caused by key foodborne bacteria.</td>
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<td>10-5</td>
<td>Increase the proportion of consumers who follow key food safety practices</td>
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</table>
**Rationale:**
In Wisconsin and nationally, providing clean drinking water and a safe food supply has been one of the success stories of public health. However, much remains to be done. Although the environmental health community recently marked the 25th anniversary of the Safe Drinking Water Act, microbial contaminants such as *E. coli* and *Cryptosporidium*, and naturally occurring chemical contaminants such as radon and arsenic represent a threat to public and private water supplies. Groundwater, the resource providing drinking water to approximately two-thirds of Wisconsin residents, is susceptible to microbial and chemical contamination from poor residential, agricultural and industrial waste management practices, leaking underground storage tanks and abandoned landfills.

In Wisconsin, and nationally, the issue of the safety of the food supply has emerged as an important issue for consumers and a priority for the public health community and its many partners in the government and private sectors. Contamination by pathogenic bacteria and viruses, parasitic microorganisms, food allergens and residues of persistent chemicals and animal drugs continue to represent significant concerns to the food industry and consuming public. In addition, changes in approach to food production and processing such as the global nature of the food supply and increasing...
consumer demand for fresh or lightly processed foods will present additional challenges to the public health community.

**Outcomes:**

**Short-term Outcome Objectives (2002-2004)**
- Education of consumers, business and industry groups and policy makers on the importance of safe and wholesome drinking water and food supplies.
- Improved education for food handlers, and the well drilling and water treatment operator workforce on safe drinking water and food safety issues.
- Increased capacity among local public health departments to administer drinking water and food safety programs.
- Improved data systems for water quality and disease reporting.
- Improved data systems for facility inspections and food borne risk information.
- Improved reporting of food and water borne disease.

**Inputs:** *(What we invest – staff, volunteers, time money, technology, equipment, etc.)*
- Staff resources
- Training efforts
- Government/Industry partnerships
- Financial resources
- Staff training
- Technology
- Education/training
- Coalition building

**Outputs:** *(What we do – workshops, meetings, product development, training. Who we reach--community residents, agencies, organizations, elected officials, policy leaders, etc.)*

**Activities:**
- Sound public policy
- Strong coalitions
- Informed consumers
- Sound business practices
- Certified food managers
- Educated and knowledgeable workforce
- Improved training resources
- Multilingual training materials
- Local public health capacity
- Comprehensive integrated data systems
- Knowledgeable and responsive laboratories and health care providers

**Participation/Reach:**
- Citizens
- Health care providers
- Policy makers
- Public institutions
• Private/non-profit
• Schools
• Faith Communities
• Home owners
• Industry
• Health agencies
• Tribes
• Federal government
• Laboratory staff
• Food Handlers
• Well drillers
• Facility operators
• Agricultural industry
• Business owners

Medium-term Outcome Objectives (2005-2007)
• Increased analytical testing of food and drinking water supplies.
• Increased number of individuals who act on adverse analytical results.
• Improved agricultural and industrial chemical and waste handling practices.
• Improved data on indicators of food and water quality.
• Improved compliance with food and water safety regulations.
• Improved disease surveillance systems.

Inputs: (What we invest – staff, volunteers, time money, technology, equipment, etc.)
• Training/education
• Laboratory analysis
• Comprehensive private well test for every pregnant woman
• Consumer information
• Clear messages
• Sound public policy
• Industry/government collaboration
• Training/education
• Data systems
• Technology
• Facility inspections
• Health care provider education

Outputs: (What we do – workshops, meetings, product development, training. Who we reach--community residents, agencies, organizations, elected officials, policy leaders, etc.)

Activities:
• Consumer information and product labeling
• Consumer education
• Facilities inspected and sampled
• Informed consumers and health care providers
• Hazardous material substitution & minimization
- Sound waste handling practices
- Data collection, analysis and dissemination
- More frequent facility inspections
- Improved facility operator training
- Well head protection programs

**Participation/Reach:**
- Citizens
- Health care providers
- Policy makers
- Public institutions
- Private/non-profit
- Schools
- Faith Communities
- Home owners
- Industry
- Health agencies
- Tribes
- Federal government
- Laboratory staff
- Food Handlers
- Well drillers
- Facility operators
- Agricultural industry
- Business owners

**Long-term Outcome Objectives (2008-2010)**
- Reduced illness associated with food and drinking water.
- Decreasing concentrations of contaminants in food and drinking water supplies.
- Increased knowledge of the relationships between contaminated food and drinking water and illness.

**Inputs:** (What we invest – staff, volunteers, time money, technology, equipment, etc.)
- Facility inspections
- Training/education
- Industry/government collaboration
- Laboratory analysis
- Data systems
- Decreasing per capita use of water
- Improved disease prevention and early intervention activities
- Technology
- Environmental indicator data
- Disease surveillance
- Clear messages
- Sound public policy
- Health education
Outputs: *(What we do – workshops, meetings, product development, training. Who we reach--community residents, agencies, organizations, elected officials, policy leaders, etc.)*

Activities:
- Educated consumers
- Safe facilities
- Improved chemical and waste handling practices
- Sound public policy
- Educated business and industry
- Data collected, analyzed and disseminated
- Educated consumers and policy makers
- Informed consumers
- Educated policy makers
- Educated business and industry
- Health alerts
- Disease surveillance information

Participation/Reach:
- Citizens
- Health care providers
- Policy makers
- Public institutions
- Private/non-profit
- Schools
- Faith Communities
- Home owners
- Industry
- Health agencies
- Tribes
- Federal government
- Laboratory staff
- Food Handlers
- Well drillers
- Facility operators
- Agricultural industry
- Business owners

Evaluation and Measurement:
The Annual Summary of Food and Water Borne Outbreak Investigations, prepared by the Division of Public Health, Bureau of Communicable Disease, is a data source that can be used to measure progress toward the desired outcome of reducing disease. The Environmental Sanitation System (ESS), and similar data from agent health departments, can provide information on frequency of facility inspections, food borne disease risk factors, and certification of food managers. The Departments of Natural Resources and Agriculture, Trade and Consumer Protection maintain databases on drinking water and groundwater resources that can used as indicators of water quality. Similarly, limited data from state and federal sources are available which characterize persistent chemicals such as
polychlorinated biphenyls (PCBs), mercury, and pesticide residues in foods. Survey tools would have to be developed to measure the effectiveness of education efforts aimed at consumers and other audiences.

**Crosswalk to Other Health and System Priorities in Healthiest Wisconsin 2010**

*Existing, Emerging, and Re-emerging Communicable Diseases:* Food and waterborne illness prevention relates directly to the subcommittee dealing with “Existing, emerging and re-emerging communicable diseases.”

*Integrated Electronic Data and Information Systems:* Also, the importance of integrated data systems to assess indicators of environmental quality and provide linkages to disease surveillance suggests an important crosswalk with the subcommittee addressing the infrastructure goal of “Integrated electronic data and information systems.”

*Community Health Improvement Processes and Plans:* Environmental health issues must be incorporated into the community needs assessment process. State and local public health partners need to collaborate in the development of environmental health capacity in Wisconsin’s local public health departments.

*Coordination of State and Local Public Health System Partnerships:* The desired outcome of increasing capacity of local public health departments to administer food and water safety programs may link with the work being done by the subcommittees addressing “Coordination of state and local public health system partnerships” and “Equitable, adequate and stable financing.”

*Sufficient, Competent Workforce:* The workforce needed to adequately staff state and local environmental health programs indicates a linkage with “Sufficient, competent workforce.”

*Equitable, Adequate, and Stable Financing:* The desired outcome of increasing capacity of local public health departments to administer food and water safety programs may link with the work being done by the subcommittees addressing “Coordination of state and local public health system partnerships” and “Equitable, adequate and stable financing.”

**Significant Linkages to Wisconsin’s 12 Essential Public Health Services**

*Monitor health status to identify community health problems:* Indicators of environmental health need to be examined as a part of the community needs assessment process.

*Identify, investigate, control, and prevent health problems and environmental health hazards in the community:* Timely and competent remediation of environmental health hazards and prevention of new hazards is critical to the protection of Wisconsin’s food and water supplies.

*Educate the public about current and emerging health issues:* Educating Wisconsin’s citizens about food safety practices and protection of water supplies can play an important role in the reduction of food and waterborne disease.

*Enforce laws and regulations that protect health and insure safety:* The role of the state and local environmental health workforce in enforcing Wisconsin’s state statutes, administrative codes, and local ordinances plays an integral role in the protection of food and water supplies and systems.
Assure a diverse, adequate, and competent workforce to support the public health system:
Environmental health, like the other disciplines within public health, is experiencing a shortage of qualified practitioners. Additional efforts are necessary to attract individuals to the profession. Collaboration is necessary with Wisconsin’s educational institutions to ensure that quality resources are available for education of environmental health professionals.

Connection to the Three Overarching Goals of Healthiest Wisconsin 2010

Protect and promote health for all: Assuring the safety of food and drinking water supplies, a basic need of every Wisconsin resident, will address the overarching goal of “Promote and Protect Health for All.”

Eliminate health disparities: Increased emphasis on reduction of contaminants in food, for example persistent chemicals in sport fish, can reduce exposure to minority and economically disadvantaged populations who tend to rely on this food source.

Transform Wisconsin’s public health system: The necessity of increased collaboration with other government, private and non-profit sector partners to achieve progress toward this objective will require a transformed public health system.

Key Interventions and/or Strategies Planned:
A major intervention will be an increase in the frequency of facility (food establishments, well and septic installations) inspections by developing capacity for these programs within Wisconsin’s local public health departments. Another major intervention proposed is significant education efforts aimed at business/industry (facility owners, operators, and employees) and consumers for increased recognition and prevention of risk factors associated with food and water borne illness. A set of environmental quality indicators will be identified and tracked to monitor progress toward the reduction of contaminants in food and water supplies. This information, together with more effective disease surveillance systems, will provide focus for disease prevention and early intervention activities by the public health system.

References:


U.S. Environmental Protection Agency. *Groundwater and Drinking Water.*
http://www.epa.gov/safewater/dwinfo


Wisconsin Department of Health and Family Services, Division of Public Health, Bureau of Communicable Diseases, Epidemiology Section; *Acute & Communicable Disease Case Reports* (4151); John Archer

Wisconsin Department of Health and Family Services, Division of Public Health, Bureau of Communicable Diseases, Epidemiology Section; *Acute & Communicable Disease Case Reports* (4151); Jim Kazmierczak

Wisconsin Department of Health and Family Services, Division of Public Health, Bureau of Environmental and Occupational Health, Food Safety and Recreational Licensing Section; CDC Risk Factor Violations Data.

Wisconsin Department of Natural Resources. *Groundwater Retrieval Network.*
http://www.dnr.state.wi.us
APPENDIX A

*Healthy People 2010*, November 2000, USDHHS cites the following baseline and target data:

<table>
<thead>
<tr>
<th>Reduction in Infections Caused by Microorganisms:</th>
<th>1997 Baseline (Cases per 100,000)</th>
<th>2010 Target (Cases per 100,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(10-1a) Campylobacter species</td>
<td>24.6</td>
<td>12.3</td>
</tr>
<tr>
<td>(10-1b) Escherichia coli O157:H7</td>
<td>21.1</td>
<td>1.0</td>
</tr>
<tr>
<td>(10-1c) Listeria monocytogenes</td>
<td>0.5</td>
<td>0.25</td>
</tr>
<tr>
<td>(10-1d) Salmonella species</td>
<td>13.7</td>
<td>6.8</td>
</tr>
<tr>
<td>(10-1e) cyclospora cayetanensis</td>
<td>Developmental</td>
<td>Developmental</td>
</tr>
<tr>
<td>(10-1f) Postdiarrheal hemolytic uremic syndrome</td>
<td>Developmental</td>
<td>Developmental</td>
</tr>
<tr>
<td>(10-1g) Congenital Toxoplasma gondii</td>
<td>Developmental</td>
<td>Developmental</td>
</tr>
</tbody>
</table>

*Healthy People 2010*, November 2000, USDHHS cites the following baseline and target data:

<table>
<thead>
<tr>
<th>Reduction in Infections Caused by Foodborne Bacteria:</th>
<th>1997 Baseline (Number of Outbreaks per Year)</th>
<th>2010 Target (Number of Outbreaks per Year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(10-2a) Escherichia coli O157:H7</td>
<td>22</td>
<td>11</td>
</tr>
<tr>
<td>(10-1d) Salmonella serotype Enteritidis</td>
<td>44</td>
<td>22</td>
</tr>
</tbody>
</table>
APPENDIX B

Perspectives on the outcome objectives for Objective 1 from the Bureau Environmental and Occupational Health, Division of Public Health, Department of Health and Family Services, April 2004.

2010 Outcome Subobjectives

Progress towards this long-term objective will be addressed with the following seven subobjectives.

Subobjective EOHH1a: By 2010, reduce CDC risk factor violations for food and water by 25%, based on a 2004 baseline.

Data Source: Bureau of Environmental Health/Food Safety and Recreational Licensing Section/CDC Risk Factor Violations Data

Baseline Data: Baseline data are being gathered in 2004. This form of inspection was initiated in 2004.

Target: A 25% reduction of the 2004 baseline.

Comment: This approach to retail food facility inspection relies more on an examination of scientifically determined risk factors for food- and water-borne diseases, rather than just the perceived cleanliness of a facility. We believe that this approach will help to reduce water- and food-borne disease outbreaks in Wisconsin. We anticipate that there will be a relatively high number of risk factors cited, at first, due to the change in focus. Over time, as operators better focus on minimizing their risk factors, with the assistance of staff, we anticipate that these potential violations will decline.

Subobjective EOHH1b: By 2010, the incidence of E. coli O157:H7 infection will be 3 per 100,000 population.

Data Source: Bureau of Communicable Diseases/Epidemiology Section/John Archer

Baseline Data: Six per 100,000 population (four-year average, 1999-2002)

Target: Three per 100,000 population

Comment: The Bureau of Environmental Health is utilizing the data and resources of the Bureau of Communicable Diseases to set this objective and monitor its implementation. It is felt that if State and local environmental health professionals perform their functions well, then we would anticipate a drop in disease and disease outbreaks across Wisconsin in retail food establishments. Additionally, these outbreaks tend to be episodic, with few predictable patterns. The number of outbreaks in any given year is highly variable and dependent upon accurate diagnosis and reporting. Therefore, primary prevention is extremely important.
**Subobjective EOHH1c:** By 2010, the incidence of salmonellosis will be eight per 100,000 population.

**Data Source:** Bureau of Communicable Diseases/Epidemiology Section/John Archer

**Baseline Data:** Sixteen per 100,000 population (four-year average, 1999-2002)

**Target:** Eight cases per 100,000 population.

**Comment:** The Bureau of Environmental Health is utilizing the data and resources of the Bureau of Communicable Diseases to set this objective and monitor its implementation. It is felt that if State and local environmental health professionals perform their functions well, then we would anticipate a drop in disease and disease outbreaks across Wisconsin in retail food establishments. Additionally, these outbreaks tend to be episodic, with few predictable patterns. The number of outbreaks in any given year is highly variable and dependent upon accurate diagnosis and reporting. Therefore, primary prevention is extremely important.

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**Subobjective EOHH1d:** By 2010, the incidence of shigellosis will be four per 100,000 population.

**Data Source:** Bureau of Communicable Diseases/Epidemiology Section/John Archer

**Baseline Data:** Eight per 100,000 population (four-year average, 1999-2002)

**Target:** Four per 100,000 population

**Comment:** The Bureau of Environmental Health is utilizing the data and resources of the Bureau of Communicable Diseases to set this objective and monitor its implementation. It is felt that if State and local environmental health professionals perform their functions well, then we would anticipate a drop in disease and disease outbreaks across Wisconsin in retail food establishments. Additionally, these outbreaks tend to be episodic, with few predictable patterns. The number of outbreaks in any given year is highly variable and dependent upon accurate diagnosis and reporting. Therefore, primary prevention is extremely important.
**Subobjective EOHH1e:** By 2010, the incidence of campylobacteriosis will be eleven per 100,000 population.

**Data Source:** Bureau of Communicable Diseases/Epidemiology Section/John Archer

**Baseline Data:** Twenty two per 100,000 population (four-year average, 1999-2002)

**Target:** Eleven per 100,000 population

**Comment:** The Bureau of Environmental Health is utilizing the data and resources of the Bureau of Communicable Diseases to set this objective and monitor its implementation. It is felt that if State and local environmental health professionals perform their functions well, then we would anticipate a drop in disease and disease outbreaks across Wisconsin in retail food establishments. Additionally, these outbreaks tend to be episodic, with few predictable patterns. The number of outbreaks in any given year is highly variable and dependent upon accurate diagnosis and reporting. Therefore, primary prevention is extremely important.

![Wisconsin Campylobacteriosis Incidents due to Food-borne Outbreaks](image1)

**Subobjective EOHH1f:** By 2010, the incidence of hepatitis A will be one per 100,000 population.

**Data Source:** Bureau of Communicable Diseases/Epidemiology Section/John Archer

**Baseline Data:** Two per 100,000 population (four-year average, 1999-2002)

**Target:** One per 100,000 population

**Comment:** The Bureau of Environmental Health is utilizing the data and resources of the Bureau of Communicable Diseases to set this objective and monitor its implementation. It is felt that if State and local environmental health professionals perform their functions well, then we would anticipate a drop in disease and disease outbreaks across Wisconsin in retail food establishments. Additionally, these outbreaks tend to be episodic, with few predictable patterns. The number of outbreaks in any given year is highly variable and dependent upon accurate diagnosis and reporting. Therefore, primary prevention is extremely important.

![Wisconsin Hepatitis A Incidents due to Food-borne Outbreaks](image2)
**Subobjective EOHH1g:** By 2010, increase the awareness of health threats from arsenic in private water supplies, mercury in sports fish, and methemoglobinemia, by 50% in each case, over a 2002 (or future) baseline.

**Data Source:** Bureau of Environmental Health/Epidemiology Section/Behavioral Risk Factor Survey

**Baseline Data:**
*Mercury in sports fish health issues awareness:* From a sample of 596 Wisconsin women, 26% self-reported being aware of fish advisories in the state ("do you know if your state issues an advisory on eating sport-caught fish contaminated with mercury?").

Arsenic in private water supplies health issues: developmental; baseline not currently measured. The goal is that there should be no cases of arsenic poisoning or methemoglobinemia due to drinking water.

Arsenic and Methemoglobinemia health issues awareness: developmental

**Target:** Fifty percent increase
Mercury in sports fish: 39%
Arsenic in private water supplies: developmental
Methemoglobinemia: developmental

**Comment:** BEH believes that these are major issues of importance to Wisconsin citizens that will help to illustrate the larger objective.
Health Priority: Environmental and Occupational Health Hazards
Objective 2: Respiratory Diseases (Logic Model)

**Long-term (2010) Subcommittee Outcome Objective:**
By 2010, reduce the incidence of illness and death from respiratory diseases related to or aggravated by environmental and occupational exposures.

- **2a:** By 2010, reduce the asthma hospitalization rate to 8.5 per 10,000 from the 2000 baseline asthma hospitalization rate of 10.6 per 10,000.
- **2b:** Reduce public exposures to indoor radon in all buildings with radon concentrations >4 pCi/L in occupied spaces.
- **2c:** By 2010, reduce occupational mesothelioma illness and death by 30 percent, below the 2000 baseline.
- **2d:** By 2010, reduce occupational pneumoconiosis illness and death by 30 percent, below the 2000 baseline.

Long-term outcome objective updated as of: Sept 2004

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Health educators</td>
<td>Development and dissemination of information for residential service industry professionals to provide for appropriate guidance and intervention.</td>
<td>Citizens</td>
<td>Increase recognition of occupational and environmental respiratory disease hazards in the residential dwelling service industry (e.g., realtors, lenders, inspectors, construction trades).</td>
<td>Increase the number of buildings constructed and operated to meet indoor air quality guidelines.</td>
<td>Reduce exposure to environmental and occupational determinants that contribute to respiratory disease.</td>
</tr>
<tr>
<td>Partners in residential service industry</td>
<td></td>
<td>Healthcare and child care providers</td>
<td></td>
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<tr>
<td>State and local health departments</td>
<td>Provide useful comparative information on equality of benefit in reducing risk associated with radon and other contaminants.</td>
<td>Policymakers</td>
<td>Increase motivation to reduce risks to naturally occurring or man-made contaminants.</td>
<td>Reduce excesses of occupational and environmental standards through voluntary and enforcement efforts.</td>
<td>Increase the percentage of people with respiratory disease who manage their disease in accordance with recommended practices.</td>
</tr>
<tr>
<td>Tribes</td>
<td></td>
<td>Public institutions</td>
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<tr>
<td>State legislature and local units of government</td>
<td>Increased willingness to use legislative process to bring about steps to reduce occupational and environmental respiratory disease.</td>
<td>Private and non-profit organizations</td>
<td>Increase awareness of policymakers and the public.</td>
<td>Increase appropriate use of engineering controls and personal protective equipment.</td>
<td>Increase accurate and appropriate diagnosis or occupational and environmental respiratory disease.</td>
</tr>
<tr>
<td>Media</td>
<td></td>
<td>Business</td>
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<tr>
<td>K-12 and preschool educators</td>
<td>Improved curriculum emphasis and improved staff training on</td>
<td>Schools</td>
<td>Increase awareness among targeted populations such as schools.</td>
<td>Increase awareness of occupational and</td>
<td>Achieve full integration of data on respiratory</td>
</tr>
<tr>
<td>Educational administrators</td>
<td></td>
<td>Faith communities</td>
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<td></td>
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<td>Home owners</td>
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<td></td>
<td></td>
<td>Industry</td>
<td>Establish a comprehensive asthma surveillance program.</td>
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</table>

Logic Model – Health Priority: Environmental and Occupational Health Hazards – Objective 2
# Health Priority: Environmental and Occupational Health Hazards
## Objective 2: Respiratory Diseases (Logic Model)

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<tbody>
<tr>
<td>State and local public health staff</td>
<td>Health agencies</td>
<td>Health agencies</td>
<td>Increase awareness of engineering controls and personal protective equipment.</td>
<td>environmental respiratory disease among communities, healthcare providers, and individuals.</td>
<td>hazards and occupational and environmental respiratory disease to accomplish optimal surveillance.</td>
</tr>
<tr>
<td>Resources to carry out surveillance activities</td>
<td>Federal government</td>
<td>Federal government</td>
<td>Increase the number of contact hours in medical, nursing, and related curricula on occupational and environmental respiratory disease.</td>
<td>Increase access to knowledgeable healthcare providers and information sources.</td>
<td>Reduce the number of communities disproportionately affected by respiratory hazards.</td>
</tr>
<tr>
<td>Labor unions</td>
<td>Tribes</td>
<td>Tribes</td>
<td>Develop a comprehensive state asthma plan.</td>
<td>Increase the adoption of practice guidelines for occupational and environmental respiratory disease.</td>
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</tr>
<tr>
<td>Public and private sector employers</td>
<td>Laboratory staff</td>
<td>Laboratory staff</td>
<td>Increase the availability of scientific information written to be accessible to the public.</td>
<td>Increase the use of uniform case definition and diagnostic protocols for respiratory disease.</td>
<td></td>
</tr>
<tr>
<td>Federal and state agencies</td>
<td>Labor unions</td>
<td>Labor unions</td>
<td>Increase the role of occupational and environmental respiratory disease as an evaluation component in assessing community health needs.</td>
<td>Increase timely availability of data relevant to respiratory hazards and diseases.</td>
<td></td>
</tr>
<tr>
<td>Academic partners</td>
<td></td>
<td></td>
<td></td>
<td>Increase the use and availability of disease and hazard coding systems relative to occupational and environmental respiratory diseases.</td>
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<tr>
<td>Department of Regulation and Licensing</td>
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<tr>
<td>Community-based organizations</td>
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<tr>
<td>Building inspectors</td>
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<td>Construction trade workers</td>
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<tr>
<td>State and local agencies</td>
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<tr>
<td>Tribes</td>
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</tbody>
</table>
## Health Priority: Environmental and Occupational Health Hazards
### Objective 2: Respiratory Diseases (Logic Model)

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</thead>
<tbody>
<tr>
<td>Federal, state, and local government</td>
<td>Better coordination in assessing community health needs related to occupational and environmental respiratory disease.</td>
<td></td>
<td></td>
<td>Increase local and regional public health capacity and training relative to occupational and environmental respiratory disease.</td>
<td></td>
</tr>
<tr>
<td>Federal and state agencies</td>
<td>Decrease exposure to contaminants, conditions, and organisms associated with respiratory disease and illness.</td>
<td></td>
<td></td>
<td>Increase community access to knowledgeable healthcare providers and information sources.</td>
<td></td>
</tr>
<tr>
<td>Industries</td>
<td>Fewer workers and citizens at risk of respiratory disease from elevated exposure.</td>
<td></td>
<td></td>
<td>Increase use of accurate and precise methods for assessing cumulative health risk from respiratory hazards.</td>
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<tr>
<td>Agricultural organizations</td>
<td>Reduce consumption of materials and products associated with respiratory disease risks.</td>
<td></td>
<td></td>
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<tr>
<td>American Lung Association</td>
<td>Reduce in exposure to persons exposed to occupational and residential settings.</td>
<td></td>
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<tr>
<td>Resources to disseminate the message to the public</td>
<td>Formulate public health messages targeted to appropriate populations.</td>
<td></td>
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<tr>
<td>Healthcare providers</td>
<td>Increase quality and quantity of information on occupational and environmental health for guidance and intervention and to</td>
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<tr>
<td>Healthcare practitioners</td>
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<tr>
<td>Professional healthcare organizations</td>
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<tr>
<td>Physicians and other healthcare practitioners</td>
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<td>State health department</td>
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<tr>
<td>Academic sector</td>
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### Health Priority: Environmental and Occupational Health Hazards
### Objective 2: Respiratory Diseases (Logic Model)

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Activities</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wisconsin Department of Natural Resources Laboratories</td>
<td>the public on occupational and environmental respiratory disease.</td>
<td>Participation/Reach</td>
</tr>
<tr>
<td>Hospitals and healthcare organizations</td>
<td>Achieve consensus on guidance for diagnosing and managing occupational and environmental respiratory disease.</td>
<td>Short-term 2002-2004</td>
</tr>
<tr>
<td>Local and regional planners</td>
<td>Increase confidence by data users in morbidity data on occupational and environmental respiratory disease.</td>
<td>Medium-term 2005-2007</td>
</tr>
<tr>
<td></td>
<td>Increase ability to track respiratory disease and related exposures in Wisconsin.</td>
<td>Long-term 2008-2010</td>
</tr>
<tr>
<td></td>
<td>Strengthen ability of data systems to capture respiratory disease diagnoses with accuracy and specificity.</td>
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<tr>
<td></td>
<td>Improve capacity for guidance and intervention on occupational and environmental respiratory disease in Wisconsin localities.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improve quality and quantity of information provided to the public on occupational and environmental respiratory disease.</td>
<td></td>
</tr>
</tbody>
</table>
### Health Priority: Environmental and Occupational Health Hazards

**Objective 2: Respiratory Diseases (Logic Model)**

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Outputs</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activities</strong></td>
<td><strong>Participation/Reach</strong></td>
<td><strong>Short-term 2002-2004</strong></td>
</tr>
<tr>
<td>Improve methodology for health and environmental analyses on which to base community decisions about respiratory hazards.</td>
<td></td>
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</tr>
<tr>
<td>Reduction in mean and peak exposures to determinants of occupational and environmental respiratory disease.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fewer emergency room and acute care visits related to asthma and other respiratory diseases.</td>
<td></td>
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</tr>
<tr>
<td>Increased compliance with medication and exposure avoidance strategies.</td>
<td></td>
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<tr>
<td>Greater percentage of affected individuals with access to appropriate treatment.</td>
<td></td>
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<tr>
<td>Increased ability to detect and intervene when acute exposures of concern arise.</td>
<td></td>
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<tr>
<td>Increased ability to identify, specify and quantify exposure-response relationships in populations at risk for respiratory disease.</td>
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<td>--------</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Reduce burden of respiratory disease in communities most seriously affected.</td>
</tr>
</tbody>
</table>
Health Priority: Environmental and Occupational Health Hazards
Objective 2: Respiratory Diseases (Template)

Long-term (2010) Subcommittee Outcome Objective:
By 2010, reduce the incidence of illness and death from respiratory diseases related to or aggravated by environmental and occupational exposures.

2a: By 2010, reduce the asthma hospitalization rate to 8.5 per 10,000 from the 2000 baseline asthma hospitalization rate of 10.6 per 10,000.

2b: Reduce public exposures to indoor radon in all buildings with radon concentrations >4 pCi/L in occupied spaces.

2c: By 2010, reduce occupational mesothelioma illness and death by 30 percent, below the 2000 baseline.

2d: By 2010, reduce occupational pneumoconiosis illness and death by 30 percent, below the 2000 baseline.

Wisconsin Baseline | Wisconsin Sources and Year
--- | ---
2a. The 2000 age-adjusted asthma hospitalization rate for Wisconsin Residents is 10.6 asthma hospitalizations per 10,000 population. | 2a. 1990-2002 Inpatient Hospital Discharge Data, Bureau of Health Information, Division of Health Care Financing, Department of Health and Family Services (DHFS)

2b. All data are estimates, as there is not a formal data collection program for this issue. Data are voluntarily gathered from radon-mitigation contractors. | 2b. Bureau of Environmental Health and Occupational Health, Division of Public Health, DHFS/Radon Program http://www.dhfs.wisconsin.gov/dph_beh/RadonProt

2c. The incidence rate for mesothelioma in 2000 was 18 per million residents. | 2c. Bureau of Environmental Health and Occupational Health, Division of Public Health, DHFS /Hospital Discharge Data; Tumor Registry

2d. The occupational population adjusted total hospitalization rate for pneumoconiosis in 2000 was 50 per million residents. | 2d. Bureau of Environmental Health and Occupational Health, Division of Public Health, DHFS /Hospital Discharge Data

Federal/National Baseline | Federal/National Sources and Year
--- | ---
See Appendix A - Reduction in air pollutants baseline and target data. | Healthy People 2010, November 2000, USDHHS cites the following sources for this baseline data: Aerometric Information Retrieval System, Environmental Protection Agency, Office of Air and Radiation

See Appendix A - Allergen baseline and target data. | Healthy People 2010, November 2000, USDHHS cites the following sources for this baseline data: National Survey of Lead and Allergens in Housing, National Institute of Environmental Health Sciences, and U.S. Department of Housing and Urban Development

Refer to Appendix B for additional detail.
<table>
<thead>
<tr>
<th>Federal/National Baseline</th>
<th>Federal/National Sources and Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,928 pneumoconiosis deaths among persons aged 15 years and older occurred in 1997.</td>
<td><em>Healthy People 2010</em>, November 2000, USDHHS cites the following sources for this baseline data: National Surveillance System for Pneumoconiosis Mortality (NSSPM), Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health</td>
</tr>
<tr>
<td>See Appendix A – Reduce asthma deaths baseline and target data</td>
<td><em>Healthy People 2010</em>, November 2000, USDHHS cites the following sources for this baseline data: National Vital Statistics System (NVSS), CDC, National Center for Health Statistics (NCHS)</td>
</tr>
<tr>
<td>27% of children aged 6 years and under lived in a household where someone smoked inside the house at least 4 days per week in 1994. Target: 10%</td>
<td><em>Healthy People 2010</em>, November 2000, USDHHS cites the following sources for this baseline data: National Health Interview Survey (NHIS), CDC, NCHS</td>
</tr>
<tr>
<td>65% of nonsmokers aged 4 years and older had a serum cotinine level above 0.10 ng/mL in 1988-94 (age adjusted to the year 2000 standard population.</td>
<td><em>Healthy People 2010</em>, November 2000, USDHHS cites the following sources for this baseline data: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS</td>
</tr>
</tbody>
</table>

**Related USDHHS Healthy People 2010 Objectives**

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Goal</th>
<th>Objective Number</th>
<th>Objective Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 – Environmental Health</td>
<td>Promote health for all through a healthy environment.</td>
<td>8-1</td>
<td>Reduce the proportion of persons exposed to air that does not meet the U.S. Environmental Protection Agency’s health-based standards for harmful air pollutants.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8-16</td>
<td>Reduce indoor allergen levels.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8-17</td>
<td>(Developmental) Increase the number of office buildings that are managed using good indoor air quality practices.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8-20</td>
<td>(Developmental) Increase the proportion of the Nation’s primary and secondary schools that have official school policies ensuring the safety of students and staff from environmental hazards, such as chemicals in special classrooms, poor indoor air quality, asbestos, and exposure to pesticides.</td>
</tr>
</tbody>
</table>
### Related USDHHS Healthy People 2010 Objectives

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Goal</th>
<th>Objective Number</th>
<th>Objective Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>20- Occupational Safety and Health</td>
<td>Promote the health and safety of people at work through prevention and early intervention.</td>
<td>20-4</td>
<td>Reduce pneumoconiosis deaths.</td>
</tr>
<tr>
<td>24- Respiratory Diseases</td>
<td>Promote respiratory health through better prevention, detection, treatment, and education efforts.</td>
<td>24-1</td>
<td>Reduce asthma deaths.</td>
</tr>
<tr>
<td>27 – Tobacco Use</td>
<td>Reduce illness, disability, and death related to tobacco use and exposure to secondhand smoke.</td>
<td>27-9</td>
<td>Reduce the proportion of children who are regularly exposed to tobacco smoke at home.</td>
</tr>
<tr>
<td>27-10</td>
<td>Reduce the proportion of nonsmokers exposed to environmental tobacco smoke.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergen</td>
<td>A substance capable of inducing allergy or specific hypersensitivity.</td>
</tr>
<tr>
<td>Cumulative health risk</td>
<td>Health risk associated with exposures of concern occurring by multiple simultaneous routes of exposure, such as inhalation, ingestion of food, water, or soil, and dermal uptake.</td>
</tr>
<tr>
<td>Hypersensitivity pneumonitis</td>
<td>Inflammation of the lungs characterized by an exaggerated response to a foreign agent; this condition is commonly found in agricultural workers.</td>
</tr>
<tr>
<td>MSHA</td>
<td>Mine Safety and Health Administration, an agency within the U.S. Department of Labor.</td>
</tr>
</tbody>
</table>
Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration, an agency within the U.S. Department of Labor.</td>
</tr>
<tr>
<td>Respiratory diseases - pneumoconiosis</td>
<td>Respiratory condition characterized by tissue fibrosis caused by permanent deposition of inorganic particulate matter in the lungs; this condition is most frequently encountered among persons occupationally exposed to dust containing asbestos, coal, and/or silica.</td>
</tr>
<tr>
<td>Toxic release inventory (TRI)</td>
<td>Federal database compiled by the U.S. Environmental Protection Agency containing information on toxic chemical releases and other waste management activities reported annually by some industrial sectors and federal facilities.</td>
</tr>
</tbody>
</table>

Rationale:
Despite advances in exposure assessment, diagnosis and treatment, respiratory disease continues to be a major contributor to illness and death related to exposures in the workplace and from environmental sources. While the numbers of new cases of many of the respiratory diseases chiefly associated with occupational dust exposure have declined in recent decades, the incidence of asthma has increased, most notably among urban populations.

Asthma is a chronic condition marked by intense, recurrent attacks of bronchial contraction. Described by one five-year-old asthma sufferer as feeling like “a fish with no water,” asthma attacks can be fatal. While asthma symptoms can arise with little or no provocation, they are often associated with particular triggers, such as exercise, exposure to a biological or chemical irritant or sensitizer, or psychological stress. Commonly encountered asthma triggers include exposure to particulate matter, ozone, insect antigens, and environmental tobacco smoke. It has been estimated that 7 percent of adults and 9 percent of children have been told by a physician that they have asthma (DHFS, 1999). According to national data, the asthma-related mortality rate doubled between 1975 and 1994 (MMWR, 1998). Reducing mortality and hospitalization rates from asthma represent critical goals for Wisconsin in assessing progress in decreasing the burden of respiratory disease. Data collected during the 1996 Summer Olympics in Atlanta suggests that reducing pollution from motor vehicle traffic can lower the incidence of asthma-related health events (Freidman, 2001). However, it is also clear that a sustained reduction in hospitalization and mortality from asthma is likely to be achieved by increasing the availability of appropriate primary healthcare among asthmatics and those populations most at risk for asthma.

The number of new cases of fibrotic dust-related lung diseases such as silicosis and asbestosis have declined in recent decades. The national mortality rate for asbestosis, however, has continued to increase over the past two decades, and the mortality rate for silicosis has remained relatively unchanged in recent years, according to national data (NIOSH, 1999). Surveillance efforts at the Marshfield Clinic have generated useful insights into the occurrence of hypersensitivity pneumonitis among Wisconsin farm workers. There is a growing body of literature documenting the prevalence of acute and chronic respiratory diseases and dysfunction among poultry and swine workers from exposures in animal confinement facilities (ISU/UI Study Group, 2002). These findings demonstrate the value of a statewide surveillance system for...
respiratory diseases, especially among farmers whose work-related symptoms are generally not reported to the Occupational Safety and Health Administration because of the small number of employees per operation.

Cancer of the lung remains one of the most lethal forms of the disease, and exposures in the workplace and from the environment are important contributors. Exposure to radon—a colorless, odorless gas that occurs naturally in homes across Wisconsin and elsewhere—is the leading modifiable cause of lung cancer among non-smokers. Given the important focus on tobacco use as the chief cause of lung cancer, convincing homeowners to test their homes for radon and take remediative action to reduce levels of radon in indoor air is a difficult task for the environmental health community. New regulations from the U.S. Environmental Protection Agency for radon in drinking water have taken an innovative approach: encouraging utilities to lead campaigns to reduce radon in indoor air (to which radon in water is a small contributor) in the homes of their customers. Novel regulatory approaches such as this may bring about desired reductions in health risk that can have appreciable benefit within the public health system.

In addition to these conditions and contaminants, new opportunities for preventing respiratory disease remain on the horizon. Issues such as health risks associated with asbestos-containing vermiculite insulation, the relationship between environmental and indoor air contaminants and cardiovascular mortality, and concerns about air quality in commercial air travel pose challenges that typify the work ahead in recognizing and addressing determinants of respiratory disease in our communities.

Outcomes:
Short-Term Outcome Objective (2002-2004)

- Increase recognition of occupational and environmental respiratory disease hazards in the residential dwelling service industry (e.g., realtors, lenders, inspectors, construction trades).
- Increase motivation to reduce risks to naturally occurring or man-made contaminants.
- Increase awareness of policymakers and the public.
- Increase awareness among targeted populations such as schools.
- Establish a comprehensive asthma surveillance program.
- Increase awareness of engineering controls and personal protective equipment.
- Increase the number of contact hours in medical, nursing, and related curricula on occupational and environmental respiratory disease.
- Develop a comprehensive state asthma plan.
- Increase the availability of scientific information written to be accessible to the public.
- Increase the role of occupational and environmental respiratory disease as an evaluation component in assessing community health needs.

Inputs: (What we invest – staff, volunteers, time, money, technology, equipment, etc.)

- Health educators
- Partners in residential service industry
- State and local health departments
- Tribes
- State legislature and local units of government
• Media
• K-12 and preschool educators
• Educational administrators
• State and local public health staff
• Resources to carry out surveillance activities
• Labor unions
• Public and private sector employers
• Federal and state agencies
• Academic partners
• Department of Regulation and Licensing
• Community-based organizations

Outputs: (What we do – workshops, meetings, product development, training. Who we reach-community residents, agencies, organizations, elected officials, policy leaders, etc.)

Activities:
• Development and dissemination of information for residential service industry professionals to provide for appropriate guidance and intervention.
• Provide useful comparative information on equality of benefit in reducing risk associated with radon and other contaminants.
• Increased willingness to use legislative process to bring about steps to reduce occupational and environmental respiratory disease.
• Improved curriculum emphasis and improved staff training on air pollutants.
• Increased quality and quantity of data on statewide asthma prevalence.
• Increased inclination to use product substitution, worker isolation, ventilation and respiratory protection when appropriate as hazard control strategies.
• Heightened awareness and competence with occupational and environmental respiratory disease and associated risk factors among healthcare practitioners.
• Organized framework for developing and assessing asthma prevention and intervention efforts.
• Increased effectiveness in disseminating information among individuals and communities.
• Better coordination in assessing community health needs related to occupational and environmental respiratory disease.

Participation/Reach:
• Citizens
• Healthcare and child care providers
• Policymakers
• Public institutions
• Private and non-profit organizations
• Business
• Schools
• Faith communities
• Home owners
• Industry
• Health agencies
• Federal government
• Tribes
• Laboratory staff
• Labor unions

Medium-Term Outcome Objective (2005-2007)
• Increase the number of buildings constructed and operated to meet indoor air quality guidelines.
• Reduce excesses of occupational and environmental standards through voluntary and enforcement efforts.
• Reduce industrial use and discharge of respiratory hazards.
• Increase appropriate use of engineering controls and personal protective equipment.
• Increase awareness of occupational and environmental respiratory disease among communities, healthcare providers, and individuals.
• Increase access to knowledgeable healthcare providers and information sources.
• Increase the adoption of practice guidelines for occupational and environmental respiratory disease.
• Increase the use of uniform case definition and diagnostic protocols for respiratory disease.
• Increase timely availability of data relevant to respiratory hazards and diseases.
• Increase the use and availability of disease and hazard coding systems relative to occupational and environmental respiratory diseases.
• Increase local and regional public health capacity and training relative to occupational and environmental respiratory disease.
• Increase community access to knowledgeable healthcare providers and information sources.
• Increase use of accurate and precise methods for assessing cumulative health risk from respiratory hazards.

Inputs: *(What we invest – staff, volunteers, time money, technology, equipment, etc.)*
• Building inspectors
• Construction trade workers
• State and local agencies
• State and local health departments
• Tribes
• Public and private sector employers
• Labor unions
• Federal, state, and local government
• Federal and state agencies
• Industries
• Public and private sector employers
• Agricultural organizations
• Health education staff
• Community-based organizations (e.g., American Lung Association)
• Resources to disseminate the message to the public
• Healthcare providers
• Healthcare practitioners
• Professional healthcare organizations
• Physicians and other healthcare practitioners
• State health department
• Academic sector

**Outputs:** *(What we do – workshops, meetings, product development, training. Who we reach–community residents, agencies, organizations, elected officials, policy leaders, etc.)*

**Activities:**
• Decrease exposure to contaminants, conditions, and organisms associated with respiratory disease and illness.
• Fewer workers and citizens at risk of respiratory disease from elevated exposure.
• Reduce consumption of materials and products associated with respiratory disease risks.
• Reduce in exposure to persons exposed to occupational and residential settings.
• Formulate public health messages targeted to appropriate populations.
• Increase quality and quantity of information on occupational and environmental health for guidance and intervention and to the public on occupational and environmental respiratory disease.
• Achieve consensus on guidance for diagnosing and managing occupational and environmental respiratory disease.
• Increase confidence by data users in morbidity data on occupational and environmental respiratory disease.
• Increase ability to track respiratory disease and related exposures in Wisconsin.
• Strengthen ability of data systems to capture respiratory disease diagnoses with accuracy and specificity.
• Improve capacity for guidance and intervention on occupational and environmental respiratory disease in Wisconsin localities.
• Improve quality and quantity of information provided to the public on occupational and environmental respiratory disease.
• Improve methodology for health and environmental analyses on which to base community decisions about respiratory hazards.

**Participation/Reach:**
• Citizens
• Healthcare and child care providers
• Policymakers
• Public institutions
• Private and non-profit organizations
• Business
• Schools
• Faith communities
• Home owners
• Industry
• Health agencies
• Tribes
• Federal government
• Laboratory staff
• Labor unions

Long-term Outcome Objectives (2008-2010)

• Reduce exposure to environmental and occupational determinants that contribute to respiratory disease.
• Increase the percentage of people with respiratory disease who manage their disease in accordance with recommended practices.
• Increase accurate and appropriate diagnosis or occupational and environmental respiratory disease.
• Achieve full integration of data on respiratory hazards and occupational and environmental respiratory disease to accomplish optimal surveillance.
• Reduce the number of communities disproportionately affected by respiratory hazards.

Inputs: *(What we invest – staff, volunteers, time money, technology, equipment, etc.)*

• Federal, state, and local government
• Labor unions
• Local health departments
• Community-based organizations
• Professional organizations
• Healthcare providers
• K-12 educators and administrators
• Professional healthcare organizations
• Academic sector
• State and local health departments
• Tribes
• Wisconsin Department of Natural Resources
• Laboratories
• Hospitals and healthcare organizations
• Local and regional planners

Outputs: *(What we do – workshops, meetings, product development, training. Who we reach-community residents, agencies, organizations, elected officials, policy leaders, etc.)*

Activities:

• Reduction in mean and peak exposures to determinants of occupational and environmental respiratory disease.
- Fewer emergency room and acute care visits related to asthma and other respiratory diseases.
- Increased compliance with medication and exposure avoidance strategies.
- Greater percentage of affected individuals with access to appropriate treatment.
- Increased ability to detect and intervene when acute exposures of concern arise.
- Increased ability to identify, specify and quantify exposure-response relationships in populations at risk for respiratory disease.
- Reduce burden of respiratory disease in communities most seriously affected.

**Participation/Reach:**
- Citizens
- Healthcare and child care providers
- Policymakers
- Public institutions
- Private and non-profit organizations
- Business
- Schools
- Faith communities
- Home owners
- Industry
- Health agencies
- Tribes
- Federal government
- Laboratory staff
- Labor unions

**Evaluation and Measurement**
Progress toward this objective may be measured to a limited degree by monitoring existing data sources on hospital discharges, asthma mortality, toxic release inventory, and federal OSHA and MSHA inspection data. Development of new systems to track data on asthma incidence and occupational and environmental exposures to respiratory hazards will be required in order to assure that substantive progress toward the achievement of this objective.

**Crosswalk to Other Health and System Priorities in Healthiest Wisconsin 2010**

*Tobacco Use and Exposure:* Restriction on the use of tobacco in public places, for example, may impact the respiratory health of individuals who are currently exposed to tobacco smoke in the workplace. The risk of lung cancer from radon and asbestos is significantly increased among smokers.

*Integrated Electronic Data and Information Systems:* Developing data systems that capture information on respiratory disease and related exposures will be critical in identifying exposure-response relationships related to environmental and/or occupational determinants.
**Significant Linkages to Wisconsin’s 12 Essential Public Health Services**
This objective relates most directly to two essential public health services: the identification, investigation, control, and prevention of environmental health hazards; and the enforcement of laws and regulations related to health and safety.

**Identify, investigate, control, and prevent health problems and environmental health hazards in the community:** Given the direct relationship between environmental and occupational exposures such as radon, environmental tobacco smoke, silica and asbestos, and respiratory disease, environmental intervention is essential if the burden of respiratory disease is to be reduced.

**Enforce laws and regulations that protect health and insure safety:** While effective occupational and environmental standards exist for many substances and work practices, the enforcement of these standards remains wholly too inadequate to protect those most at risk for respiratory disease.

**Connection to the Three Overarching Goals of Healthiest Wisconsin 2010**

*Protect and promote health for all:* The importance of reducing respiratory disease to promote and protect health for all is illustrated in a study demonstrating that reduction in air pollution from motor vehicle traffic in Atlanta during the 1996 Summer Olympics corresponded to a 40 percent reduction in asthma acute care events (Friedman, 2001). These results and similar findings elsewhere demonstrate that reduction in respiratory hazards can equate to a population-wide improvement in health.

*Eliminate health disparities:* Like other types of conditions, respiratory disease is unevenly distributed across the state’s population. The presence of particularly heavy burdens of respiratory disease in urban settings, areas with higher-than-average air pollution rates, and in certain high-risk industries offers opportunity to eliminate disparities.

*Transform Wisconsin’s public health system:* Developing new, comprehensive data systems and bringing in important new partners to address respiratory health issues are high-level goals that will require substantive effort and a transformation in structure across existing boundaries.

**Key Interventions and/or Strategies Planned:**
A reduction in the burden of occupational and environmental respiratory disease will be brought about by stressing enhanced management of respiratory disease by both individuals and their healthcare providers. Educational intervention is stressed for individuals when it is necessary to bring about change in risk-related behavior for individuals and for healthcare providers and public health staff in assessing patient and client exposures to respiratory hazards. Finally, improving statewide capacity for the collection, analysis, and dissemination of data on respiratory diseases and their occupational and environmental causes will shed new light on effective means of recognizing, evaluating, and controlling respiratory disease.
References:


Wisconsin Department of Health and Family Services, Division of Health Care Financing, Bureau of Health Information. (1990-2002). Inpatient Hospital Discharge Data.

Wisconsin Department of Health and Bureau of Environmental Health and Occupational Health, Division of Public Health, DHFS/Radon Program. Available at: http://www.dhfs.wisconsin.gov/dph_beh/RadonProt

Bureau of Environmental Health and Occupational Health, Division of Public Health, DHFS /Hospital Discharge Data; Tumor Registry
APPENDIX A

Healthy People 2010, November 2000, USDHHS cites the following baseline and target data:

<table>
<thead>
<tr>
<th>Reduction in Air Pollutants.</th>
<th>1997 Baseline (Percent)</th>
<th>2010 Target (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(8-1a) Ozone*</td>
<td>43</td>
<td>0</td>
</tr>
<tr>
<td>(8-1b) Particulate matter*</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>(8-1c) Carbon monoxide</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>(8-1d) Nitrogen dioxide</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>(8-1e) Sulfur dioxide</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>(8-1f) Lead</td>
<td>&lt;1</td>
<td>0</td>
</tr>
<tr>
<td>(8-1g) Total number of people</td>
<td>119,803,000</td>
<td>0</td>
</tr>
</tbody>
</table>

* The targets of zero percent for ozone and particulate matter are set for 2012 and 2018, respectively.

Healthy People 2010, November 2000, USDHHS cites the following baseline and target data:

<table>
<thead>
<tr>
<th>Allergen</th>
<th>1998-99 Baseline (Number of Homes - in millions)</th>
<th>2010 Target (Number of Homes - in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(8-16a) Group 1 dust mite allergens that exceed 2 micrograms per gram of dust in the bed.</td>
<td>36.3</td>
<td>29.0</td>
</tr>
<tr>
<td>(8-16b) Group 1 dust mite allergens that exceed 10 micrograms per gram of dust in the bed.</td>
<td>18.6</td>
<td>14.9</td>
</tr>
<tr>
<td>(8-16c) German cockroach allergens that exceed 0.1 microgram per gram of dust in the bed.</td>
<td>4.7</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Healthy People 2010, November 2000, USDHHS cites the following baseline target data:

<table>
<thead>
<tr>
<th>Reduce asthma deaths – Age Group</th>
<th>1998 Baseline (Rate per Million)</th>
<th>2010 Target (Rate per Million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(24-1a) Children under age 5</td>
<td>2.1</td>
<td>1.0</td>
</tr>
<tr>
<td>(24-1b) Children aged 5 to 14 years</td>
<td>3.3</td>
<td>1.0</td>
</tr>
<tr>
<td>(24-1c) Adolescents and adults aged 15 to 34 years.</td>
<td>5.0</td>
<td>2.0</td>
</tr>
<tr>
<td>(24-1d) Adults aged 35 to 64 years</td>
<td>17.8</td>
<td>9.0</td>
</tr>
<tr>
<td>(24-1e) Adults aged 65 years and older</td>
<td>86.3</td>
<td>60.0</td>
</tr>
</tbody>
</table>
APPENDIX B

Environmental and Occupational Health Hazards, Objective 2: Respiratory Diseases

Long-Term (2010) Subcommittee Outcome Objective: By 2010, reduce the incidence of illness and death from respiratory diseases related to or aggravated by environmental and occupational exposures.

Overview:
Despite advances in exposure assessment, diagnosis and treatment, respiratory disease continues to be a major contributor to illness and death related to exposures in the workplace and from environmental sources. While the numbers of new cases of many of the respiratory diseases chiefly associated with occupational dust exposure have declined in recent decades, the prevalence of asthma has increased.

Asthma is a chronic lung condition marked by ongoing airway inflammation that results in recurring acute episodes (attacks) of breathing problems such as coughing, wheezing, chest tightness, and shortness of breath. Described by one five-year-old asthma sufferer as feeling like “a fish with no water,” asthma attacks can be fatal. While asthma symptoms can arise with little or no provocation, they are often associated with particular triggers, such as exercise, weather changes, exposure to a biological or chemical irritants or stress. Commonly encountered asthma triggers include exposure to particulate matter, mold, ozone, insect and pet antigens, and environmental tobacco smoke. It has been estimated that 8 percent of Wisconsin residents have been told by a physician that they have asthma (Burden of Asthma Report). According to national data, the asthma-related mortality rate doubled between 1975 and 1994 (MMWR, 1998). Reducing asthma emergency department visits and hospitalization rates represent critical goals for Wisconsin in assessing progress in decreasing the burden of respiratory disease. Data collected during the 1996 Summer Olympics in Atlanta suggests that reducing pollution from motor vehicle traffic can lower the incidence of asthma-related health events (Freidman, 2001). The Institute of Medicine’s “Clearing the Air” also identifies indoor air contaminants that cause or exacerbate asthma. In addition to addressing these indoor and outdoor pollutants, a sustained reduction in asthma hospitalization and mortality can be achieved by increasing the availability and use of appropriate primary healthcare by people with asthma and improving asthma self-management.

The number of new cases of fibrotic dust-related lung diseases such as silicosis and asbestosis have declined in recent decades. The national mortality rate for asbestosis, however, has continued to increase over the past two decades, and the mortality rate for silicosis has remained relatively unchanged in recent years, according to national data (NIOSH, 1999). Surveillance efforts at the Marshfield Clinic have generated useful insights into the occurrence of hypersensitivity pneumonitis among Wisconsin farm workers. There is a growing body of literature documenting the prevalence of acute and chronic respiratory diseases and dysfunction among poultry and swine workers from exposures in animal confinement facilities (ISU/UI Study Group, 2002). These findings demonstrate the value of a statewide...
surveillance system for respiratory diseases, especially among farmers whose work-related symptoms are generally not reported to the Occupational Safety and Health Administration because of the small number of employees per operation.

Cancer of the lung remains one of the most lethal forms of the disease, and exposures in the workplace and from the environment are important contributors. Exposure to radon – a colorless, odorless gas that occurs naturally in homes across Wisconsin and elsewhere – is the leading modifiable cause of lung cancer among non-smokers. Given the important focus on tobacco use as the chief cause of lung cancer, convincing homeowners to test their homes for radon and take remedial action to reduce levels of radon in indoor air is a difficult task for the environmental health community. Proposed regulations from the U.S. Environmental Protection Agency for radon in drinking water have taken an innovative approach: encouraging utilities to lead campaigns to reduce radon in indoor air (to which radon in water is a small contributor) in the homes of their customers. Novel regulatory approaches such as this may bring about desired reductions in health risk that can have appreciable benefit within the public health system.

In addition to these conditions and contaminants, new opportunities for preventing respiratory disease remain on the horizon. Issues such as health risks associated with asbestos-containing vermiculite insulation, the relationship between environmental and indoor air contaminants and cardiovascular mortality, and concerns about air quality in commercial air travel pose challenges that typify the work ahead in recognizing and addressing determinants of respiratory disease in our communities.

2010 Outcome Objectives
Progress towards this long-term objective will be addressed with the following four subobjectives.

Outcome Objective 2a: By 2010, reduce the asthma hospitalization rate to 8.5 per 10,000 from the 2000 baseline asthma hospitalization rate of 10.6 per 10,000.

Data Source: 1990-2002 Inpatient Hospital Discharge Data, Bureau of Health Information, Division of Health Care Financing, Wisconsin Department of Health and Family Services
Baseline Data: The 2000 age-adjusted asthma hospitalization rate for Wisconsin Residents is 10.6 asthma hospitalizations per 10,000 population.
Target: An asthma hospitalization rate to 8.5 per 10,000 by 2010.

Source: Burden of Asthma in Wisconsin, 2004; WDHFS PPH 45055 (02/04)

Comment: Wisconsin DHFS’s Asthma Program is collaboratively working with a wide variety of Wisconsin partners through the Wisconsin Asthma Coalition to address the asthma issue. The report Burden of Asthma in Wisconsin (2004) has been produced, and the Coalition finalized the Wisconsin Asthma Plan in 2003.
Burden of Asthma Report:
http://dhfs.wisconsin.gov/eh/asthma/pdf/boawi04.pdf

Asthma Plan:  http://www.chawisconsin.org/asthma.htm
Outcome Objective 2b: Reduce public exposures to indoor radon in all buildings with radon concentrations >4 pCi/L in occupied spaces.

Data Source: Bureau of Environmental and Occupational Health/Radon Program (http://www.dhfs.wisconsin.gov/dph_beh/RadonProt)

Baseline Data: All data are estimates, as there is not a formal data collection program for this issue. Data are voluntarily gathered from radon-mitigation contractors.

Target: By 2010, reduce the fraction of homes with elevated indoor radon from about 7 percent to 5 percent, and increase the fraction of new construction built with radon-resistant features from a current small percentage to 15 percent.

Comment: The Wisconsin DHFS Radon Program is working through a variety of channels to improve public awareness of:

- the lung cancer risk from radon;
- radon testing in homes;
- retrofit mitigation of existing homes with elevated radon concentrations; and,
- new homes built with radon-resistant features.

Retrofits of approximately 2,000 homes are performed each year to mitigate radon risks, thus addressing an estimated 2 percent of the 100,000 homes in Wisconsin that are estimated to exceed the USEPA’s risk guideline of 4 pCi/L of radon in living areas. Without radon-resistant new construction, the number of new homes with elevated radon that will be added to the state’s housing stock roughly equals the number of existing homes that will be retrofitted.

Outcome Objective 2c: By 2010, reduce occupational mesothelioma injury, illness and death by 30 percent, below the 2000 baseline.

Data Source: Bureau of Environmental and Occupational Health/Hospital Discharge Data; Tumor Registry

Baseline Data: The incidence rate for mesothelioma in 2000 was 18 per million residents.

Target: A 30 percent reduction below the 2000 baseline; therefore, a numerical target of 12.6 mesothelioma hospitalizations.

Comment: DHFS monitors trends in mesothelioma cases, watching for unusual patterns of this disease. When patterns are detected, staff will delve into the situation more closely to determine cause and other issues so that we might better protect the health of Wisconsin’s workers and citizens.
**Outcome Objective 2d:** By 2010, reduce occupational pneumoconiosis injury, illness and death by 30 percent, below the 2000 baseline.

**Data Source:** Bureau of Environmental and Occupational Health/Hospital Discharge Data

**Baseline Data:** The occupational population adjusted total hospitalization rate for pneumoconiosis in 2000 was 50 per million residents.

**Target:** A 30 percent reduction below the 2000 baseline; therefore, a numerical target of total pneumoconiosis hospitalizations per million residents is established.

**Comment:** DHFS monitors trends in pneumoconiosis cases, watching for unusual patterns of this disease. When patterns are detected, staff will delve into the situation more closely to determine cause and other issues so that we might better protect the health of Wisconsin’s workers and citizens.
### Long-term (2010) Subcommittee Outcome Objectives:

By December 31, 2010, the incidence of occupational injury, illness, and death will be reduced by 30 percent.

Long-term outcome objective updated as of: Sept 2004

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Unions</td>
<td>Development of a training program for local public health departments regarding occupational health and safety issues in order to facilitate access to resources and referrals for workers and employers within their communities.</td>
<td>Create ongoing training programs regarding occupational health issues for local public health departments as a part of a comprehensive safety and health program.</td>
<td>Facilitate the development of multilingual written and verbal occupational health and safety education services.</td>
<td>Provide information to employees and employers related to workplace violence.</td>
</tr>
<tr>
<td>Employees</td>
<td>Increased community access to local public health department occupational safety and health programs.</td>
<td>Increase worker knowledge through community-based occupational health and safety training for Wisconsin residents with a special emphasis on youth and other “at risk” populations.</td>
<td>Address literacy and language barriers that can affect safety and health at work.</td>
<td>Provide information to employees and employers regarding working conditions or practices.</td>
</tr>
<tr>
<td>Employers</td>
<td>Creation of an occupational safety and health education program for all secondary schools based upon Department of Public Instruction guidelines.</td>
<td>Provide safety training will in all secondary schools.</td>
<td>Promote the use of incentives such as decreases in liability and workers’ compensation premiums for voluntary health and safety inspections/evaluations of work sites.</td>
<td>Increased knowledge by employees regarding workers’ compensation benefits and how to file for benefits if injured on the job.</td>
</tr>
<tr>
<td>Trade/industry groups</td>
<td>Increased community access to local public health department occupational safety and health programs.</td>
<td>Develop an active surveillance system for identifying and reporting occupational health injury, illness, and death.</td>
<td>Promote activities which would lead to greater public awareness of workplace safety practices in Wisconsin.</td>
<td>Increased utilization of regulatory resources and referrals by employees and employers in order to reduce workplace hazards.</td>
</tr>
<tr>
<td>State legislature and local units of government</td>
<td>Incorporation of occupational health and safety curriculums into all post-secondary healthcare education programs.</td>
<td>Increase occupational health and safety training provided in health professional curriculums (e.g., MD, RN,</td>
<td>Establish a comprehensive non-regulatory based repository of occupational safety information and resources for employers and employees.</td>
<td>Increased number of employees reporting non-workers’ compensation situations</td>
</tr>
<tr>
<td>K-12, technical, and college education leaders</td>
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<tr>
<td>Health/safety educators</td>
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<tr>
<td>Community based organizations</td>
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<tr>
<td>Public health scientists</td>
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<td></td>
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</tr>
<tr>
<td>Occupational health/primary care providers</td>
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</tbody>
</table>
### Health Priority: Environmental and Occupational Health Hazards

**Objective 3: Occupational Injury, Illness, and Death (Logic Model)**

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<tr>
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</thead>
<tbody>
<tr>
<td>Workers’ compensation and business liability insurance carriers</td>
<td>Development of an active occupational safety and health surveillance program. Development of healthcare guidelines for occupational health histories.</td>
<td>Healthcare providers, Policymakers, Employers, Schools (primary and secondary)</td>
<td>EMTs, other health professionals. Increase awareness among health care providers to include a complete occupational health history during medical evaluations. Increase worker knowledge regarding occupational health and safety issues. Increase worker knowledge regarding appropriate agencies and methods in which to report incidents of possible workplace hazards, “near misses”, injury, illness or death. Develop occupational health and safety materials and make available to employers and employees. Increase education, outreach and consultation for agricultural worksites/employers.</td>
<td>Utilize the surveillance system for occupational health injury, illness, and death to develop comprehensive safety and health management programs. Promote activities which would lead to increased public support for enforcement activities for the prevention of occupational injuries, illness, and death in Wisconsin. Promote worker input and involvement on health/safety issues within their workplace. Occupational health histories will be incorporated into medical evaluations. Use of the media to educate citizens in work-related injury, illness, or deaths. Promote increased use of safety equipment/devices (e.g., rollover protection devices, guarding, personal protective equipment).</td>
<td>and near-miss situations to employers. Increased numbers of referrals made to appropriate occupational health medical providers. Increased use of hazard analysis data for disease prevention activities and recognition of emerging occupational hazards and risk groups. Improved interagency coordination and integration of data resources so occupational issues affecting multiple programs can be dealt with in a coordinated effort. Integrating the National Institute for Occupational Safety and Health core variables recommended for all state occupational surveillance programs.</td>
</tr>
</tbody>
</table>

| Local law enforcement | | | | | |
| State and federal occupational law enforcement | | | | | |
| State and local health departments | Increased occupational risk reduction counseling and safety education for all Wisconsin workers. Increased employee reporting of potential or actual “near misses,” hazards, injury, illness, or death to employers and regulatory agencies. Increased access to occupational safety and health education, outreach and consultation for agricultural worksites/employers. | | | | |
| Tribes | | | | | |
| State regulation and licensure agencies | | | | | |
| Technology | | | | | |
| Leadership (local, state, and federal) | | | | | |
| Funding (local, state, and federal) | Creation of workplace remedies to provide improved work behaviors and physical surroundings. Some examples could be: decreases or elimination of mandatory overtime; best practices | | | | |
| Sound public policy (local, state, and federal) | | | | | |
# Health Priority: Environmental and Occupational Health Hazards

**Objective 3: Occupational Injury, Illness, and Death (Logic Model)**

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Outputs</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Activities</td>
<td></td>
</tr>
<tr>
<td>Healthcare resources</td>
<td>regarding shift work and shift rotation; following mandatory rest period laws for employees such as truck drivers and flight attendants; and providing employees with a safe, nonhazardous work environment that is ergonomically sound.</td>
<td></td>
</tr>
<tr>
<td>Media</td>
<td>Increased reporting of occupational injuries and illnesses (including eligible workers’ compensation illness/injury/death cases) by employees to their employers.</td>
<td></td>
</tr>
<tr>
<td>State and local public health staff</td>
<td>Increased utilization of regulatory resources to provide for an overall reduction of hazards encountered by employees in the workplace.</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Increased numbers of employees reporting noncompensatable workers’ compensation situations, hazards, and near-miss situations (when an accident almost occurred) to employers.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increased prompt treatment for occupationally related injury or illness from appropriate healthcare medical providers.</td>
<td>Medium-term 2005-2007: protective equipment) by agricultural work sites/employers.</td>
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</tr>
<tr>
<td></td>
<td>Activities Participation/Reach</td>
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<tr>
<td></td>
<td>Utilization of hazard analysis information for disease prevention activities and for hazard recognition and identification of worker groups at risk in order to reduce work-related injury, illness, and death.</td>
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<tr>
<td></td>
<td>Increase interagency coordination and integration of data resources so that accurate assessments of problem areas and most effective interventions will take place.</td>
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</tr>
<tr>
<td></td>
<td>Integrate the National Institute for Occupational Safety and Health core variables into the Wisconsin occupational health surveillance program.</td>
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</tbody>
</table>
Health Priority: Environmental and Occupational Health Hazards
Objective 3: Occupational Injury, Illness, and Death (Template)

Long-term (2010) Subcommittee Outcome Objective:
By December 31, 2010, the incidence of occupational injury, illness, and death will be reduced by 30 percent.
Long-term outcome objective updated as of: Sept 2004

<table>
<thead>
<tr>
<th>Wisconsin Baseline</th>
<th>Wisconsin Sources and Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>For all industries, state and local government included, age-Adjusted* incidence rate** of occupational death was 25 per million in 2000.</td>
<td>Wisconsin Census of Fatal Occupational Injuries, 2000 From Workers Compensation, Department of Workforce Development (DWD)</td>
</tr>
<tr>
<td>For all industries, state and local government included, the incidence rate** of occupational injuries was 8.3 per 100 full-time workers in 2000.</td>
<td>Table 6, Incident rate of nonfatal occupational injuries and illnesses by industry and selected case types for 2000, Occupational Injuries and Illnesses, collected from employers' Occupational Safety and Health Administration (OSHA) records by workers comp research and statistics unit. From Workers Compensation, DWD</td>
</tr>
<tr>
<td>For all industries, state and local government included, the incidence rate** of occupational illness was 0.7 per100 full-time workers in 2000.</td>
<td>Table 6, Incident rate of nonfatal occupational injuries and illnesses by industry and selected case types for 2000, Occupational Injuries and Illnesses, collected from employers' OSHA records by workers comp research and statistics unit. From Workers Compensation, DWD</td>
</tr>
<tr>
<td>For all industries, state and local government included, the incidence rate** of occupational injuries and illness was 9.0 per100 full-time workers in 2000.</td>
<td>Table 6, Incident rate of non fatal occupational injuries and illnesses by industry and selected case types for 2000, Occupational Injuries and Illnesses, collected from employers' OSHA records by workers comp research and statistics unit. From Workers Compensation, DWD</td>
</tr>
</tbody>
</table>

* Standardization to year 2000 US population
** Incidence rate = (N/EH) X 200,000 where
N = number of injuries or illness cases
EH = total hours worked by all employees during the calendar year
200,000 = base for 100 equivalent full-time workers working 40 hours per week, 50 weeks per year.

Note: Division of Workforce Development (DWD) is the sole data source for evaluating occupational objective-3. Due the potential elimination of workers compensation research unit and the federal bureau of labor statistics annual survey in Wisconsin, we may have difficulty in the future in the evaluation of this objective.
<table>
<thead>
<tr>
<th>Federal/National Baseline</th>
<th>Federal/National Sources and Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>See Appendix A - Reduction in Deaths From Work-Related Injuries baseline and target data.</td>
<td>Healthy People 2010, November 2000, United States Department of Health and Human Services cites the following sources for this baseline data: Census of Fatal Occupational Injuries (CFOI), U.S. Department of Labor, Bureau of Labor Statistics.</td>
</tr>
<tr>
<td>See Appendix A - Reduce deaths from work-related homicide baseline and target data.</td>
<td>Healthy People 2010, November 2000, United States Department of Health and Human Services cites the following sources for this baseline data: Census of Fatal Occupational Injuries, U.S. Department of Labor, Bureau of Labor Statistics.</td>
</tr>
<tr>
<td>See Appendix A - Reduce work-related assaults baseline and target data.</td>
<td>Healthy People 2010, November 2000, United States Department of Health and Human Services cites the following sources for this baseline data: National Crime Victimization Survey, U.S. Department of Justice, Bureau of Justice Statistics.</td>
</tr>
<tr>
<td>See Appendix A - Reduce the number of persons who have elevated blood lead concentrations from work exposure baseline and target data.</td>
<td>Healthy People 2010, November 2000, United States Department of Health and Human Services cites the following sources for this baseline data: Adult Blood Lead Epidemiology and Surveillance Program, Centers for Disease Control and Prevention, National Institute of Occupational Safety and Health.</td>
</tr>
<tr>
<td>See Appendix A - Reduce occupational skin diseases or disorders among full-time workers baseline and target data.</td>
<td>Healthy People 2010, November 2000, United States Department of Health and Human Services cites the following sources for this baseline data: Annual Survey of Occupational Injuries and Illnesses, U.S. Department of Labor, Bureau of Labor Statistics.</td>
</tr>
</tbody>
</table>

### Related USDHHS Healthy People 2010 Objectives

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Goal</th>
<th>Objective Number</th>
<th>Objective Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 – Occupational Safety and Health</td>
<td>Promote the health and safety of people at work through prevention and early intervention.</td>
<td>20-1</td>
<td>Reduce deaths from work-related injuries.</td>
</tr>
</tbody>
</table>
## Related USDHHS Healthy People 2010 Objectives

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Goal</th>
<th>Objective Number</th>
<th>Objective Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>20-2</td>
<td>Reduce work-related injuries resulting in medical treatment, lost time from work, or restricted work activity.</td>
</tr>
<tr>
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<td>20-3</td>
<td>Reduce the rate of injury and illness cases involving days away from work due to overexertion or repetitive motion.</td>
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<td>20-4</td>
<td>Reduce pneumoconiosis deaths.</td>
</tr>
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<td>20-5</td>
<td>Reduce deaths from work-related homicides.</td>
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<td>20-6</td>
<td>Reduce work-related assaults.</td>
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<td>20-7</td>
<td>Reduce the number of persons who have elevated blood lead concentrations from work exposures.</td>
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<td>20-8</td>
<td>Reduce occupational skin diseases or disorders among full-time workers.</td>
</tr>
<tr>
<td>20 – Occupational Safety and Health (continued)</td>
<td></td>
<td>20-9</td>
<td>Increase the proportion of worksites employing 50 or more persons that provide programs to prevent or reduce employee stress.</td>
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<td>20-10</td>
<td>Reduce occupational needlestick injuries among healthcare workers.</td>
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<td>20-11</td>
<td>(Developmental) Reduce new cases of work-related noise-induced hearing loss.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition*</th>
</tr>
</thead>
<tbody>
<tr>
<td>All other occupational illnesses</td>
<td>Example: Anthrax, brucellosis, infectious hepatitis, malignant and benign tumors, food poisoning, histoplasmosis, and coccidioidomycosis.</td>
</tr>
<tr>
<td>Disorders associated with repeated trauma</td>
<td>Example: Conditions due to repeated motion, vibration, or pressure, such as carpal tunnel syndrome; noise-induced hearing loss; synovitis, tenosynovitis, and bursitis, and Raynaud's phenomena.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition*</td>
</tr>
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<td>----------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Disorders due to physical agents (other than toxic materials)</td>
<td>Example: Heatstroke, sunstroke, heat exhaustion, and other effects of</td>
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<td>environmental heat; freezing, frostbite, and effects of ionizing radiation</td>
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<td>(isotopes, X-rays, radium); effects of nonionizing radiation (welding flash,</td>
</tr>
<tr>
<td></td>
<td>ultraviolet rays, microwaves, sunburn).</td>
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<tr>
<td>Dust diseases of the lungs</td>
<td>Example: Silicosis, asbestosis and other asbestos-related diseases, coal</td>
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<tr>
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<td>worker's pneumoconiosis, byssinosis, siderosis, and other pneumoconiosis.</td>
</tr>
<tr>
<td>Event or exposure</td>
<td>Event or exposure signifies the manner in which the injury or illness was</td>
</tr>
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<td>produced or inflicted, for example, overexertion while lifting or fall from</td>
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<td>ladder.</td>
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<tr>
<td>Lost workday cases</td>
<td>Lost workday cases are cases, which involve days away from work or days of</td>
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<td>restricted work activity, or both.</td>
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<tr>
<td>Lost workday cases involving days away from work</td>
<td>Lost workday cases involving days away from work are those cases which result</td>
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<td>in days away from work, or a combination of days away from work and days of</td>
</tr>
<tr>
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<td>restricted work activity.</td>
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<tr>
<td>Lost workday cases involving restricted work activity</td>
<td>Lost workday cases involving restricted work activity are those cases, which</td>
</tr>
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<td>result in restricted work activity only.</td>
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<tr>
<td>Median days away from work</td>
<td>Median days away from work are the measure used to summarize the varying</td>
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<td>lengths of absences from work among the cases with days away from work. Half</td>
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<td>the cases involved more days, and half involved less days than a specified</td>
</tr>
<tr>
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<td>median.</td>
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<tr>
<td>Nature of injury or illness</td>
<td>Nature of injury or illness names the principal physical characteristic of a</td>
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<td>disabling condition, such as sprain/strain, cut/laceration, or carpal tunnel</td>
</tr>
<tr>
<td></td>
<td>syndrome.</td>
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<tr>
<td>Occupational illness</td>
<td>Occupational illness is any abnormal condition or disorder, other than one</td>
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<td></td>
<td>resulting from an occupational injury, caused by exposure to factors</td>
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<td>associated with employment. It includes acute and chronic illnesses or disease,</td>
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<tr>
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<td>which may be caused by inhalation, absorption, ingestion, or direct contact.</td>
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<tr>
<td>Occupational injury</td>
<td>Occupational injury is any injury such as a cut, fracture, sprain, amputation,</td>
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<td>etc., which results from a work-related event or from a single instantaneous</td>
</tr>
<tr>
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<td>exposure in the work environment.</td>
</tr>
<tr>
<td>Occupational skin diseases or disorders</td>
<td>Example: Contact dermatitis, eczema, or rash caused by primary irritants and</td>
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<td>sensitizers or poisonous plants; oil acne; chrome ulcers; chemical burns; or</td>
</tr>
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<td></td>
<td>inflammations.</td>
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<tr>
<td>Part of body affected</td>
<td>Part of body affected is directly linked to the nature of injury or illness</td>
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<tr>
<td></td>
<td>cited, for example, backs sprain, finger cut, or wrist and carpal tunnel</td>
</tr>
<tr>
<td></td>
<td>syndrome.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition*</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Poisoning (systemic effects of toxic materials)</td>
<td>Example: Poisoning by lead, mercury, cadmium, arsenic, or other metals; poisoning by carbon monoxide, hydrogen sulfide, or other gases; poisoning by benzol, carbon tetrachloride, or other organic solvents; poisoning by insecticide sprays such as parathion and lead arsenate; poisoning by other chemicals such as formaldehyde, plastics, and resins.</td>
</tr>
<tr>
<td>Respiratory condition due to toxic agents</td>
<td>Example: Pneumonitis, pharyngitis, rhinitis, or acute congestion due to chemicals, dusts, gases, or fumes; farmer’s lung.</td>
</tr>
<tr>
<td>Respiratory diseases – pneumoconiosis</td>
<td>Respiratory condition characterized by tissue fibrosis caused by permanent deposition of inorganic particulate matter in the lungs; this condition is most frequently encountered among persons occupationally exposed to dust containing asbestos, coal and/or silica.</td>
</tr>
<tr>
<td>Source of injury or illness</td>
<td>Source of injury or illness is the object, substance, exposure, or bodily motion that directly produced or inflicted the disabling condition cited. Examples are a heavy box, a toxic substance, fire/flame, and bodily motion of injured/ill worker.</td>
</tr>
</tbody>
</table>

* All definitions are according to the U.S. Bureau of Labor Statistics.

**Rationale:**
Occupational injury, illness, and death are preventable events with enormous costs in financial, social, and personal terms. The impact of an occupational condition affects both the individual, as well as their family, employer, and community. Reducing the incidence of cases of work-related injury, illness, and death directly benefits Wisconsin communities, citizens, and businesses.

**Outcomes:**

**Short-term Outcome Objectives (2002-2004)**
- Create ongoing training programs regarding occupational health issues for local public health departments as a part of a comprehensive safety and health program.
- Increase worker knowledge through community-based occupational health and safety training for Wisconsin residents with a special emphasis on youth and other “at risk” populations.
- Provide safety training will in all secondary schools.
- Develop an active surveillance system for identifying and reporting occupational health injury, illness, and death.
- Increase occupational health and safety training provided in health professional curriculums (e.g., MD, RN, EMTs, other health professionals).
- Increase awareness among health care providers to include a complete occupational health history during medical evaluations.
- Increase worker knowledge regarding occupational health and safety issues.
Increase worker knowledge regarding appropriate agencies and methods in which to report incidents of possible workplace hazards, “near misses”, injury, illness or death.

Develop occupational health and safety materials and make available to employers and employees.

Increase education, outreach and consultation for agricultural worksites employers.

**Inputs:** *(What we invest – staff, volunteers, time, money, technology, equipment, etc.)*

- Unions
- Employees
- Employers
- Trade/industry groups
- State legislature and local units of government
- K-12/technical/college education leaders
- Health/safety educators
- Community based organizations
- Public health scientists
- Occupational health/primary care providers
- Workers’ compensation and business liability insurance carriers
- Local law enforcement
- State and federal occupational law enforcement
- State and local health departments
- Tribes
- State regulation and licensure agencies
- Technology
- Leadership (local, state, and federal)
- Funding (local, state, and federal)
- Sound public policy (local, state, and federal)
- Healthcare resources
- Media
- State and local public health staff
- Time

**Outputs:** *(What we do – workshops, meetings, product development, training. Who we reach – Community residents, agencies, organizations, elected officials, policy leaders, etc.)*

**Activities:**

- Development of a training program for local public health departments regarding occupational health and safety issues in order to facilitate access to resources and referrals for workers and employers within their communities.
- Increased community access to local public health department occupational safety and health programs.
- Creation of an occupational safety and health education program for all secondary schools based upon Department of Public Instruction guidelines.
Incorporation of occupational health and safety curriculums into all post-secondary healthcare education programs.
Development of an active occupational safety and health surveillance program.
Development of healthcare guidelines for occupational health histories.
Increased occupational risk reduction counseling and safety education for all Wisconsin workers.
Increased employee reporting of potential or actual “near misses,” hazards, injury, illness, or death to employers and regulatory agencies.
Increased access to occupational safety and health education, outreach and consultation for agricultural worksites/employers.

**Participation/Reach:**
- Coroners/medical examiners
- Employees working in high risk jobs
- Racial/ethnic minority groups
- Tribes
- Young workers, older workers, farmers
- Special populations at risk
- General public
- Labor unions
- Public sector workers
- Health and safety educators
- Workers’ compensation and business liability insurance carriers
- Healthcare providers
- Policymakers
- Employers
- Schools (primary and secondary)

**Medium-term Outcome Objectives (2005-2007)**
- Facilitate the development of multilingual written and verbal occupational health and safety education services.
- Address literacy and language barriers that can affect safety and health at work.
- Promote the use of incentives such as decreases in liability and workers’ compensation premiums for voluntary health and safety inspections/evaluations of work sites.
- Promote activities which would lead to greater public awareness of workplace safety practices in Wisconsin.
- Establish a comprehensive non-regulatory based repository of occupational safety information and resources for employers and employees.
- Utilize the surveillance system for occupational health injury, illness, and death to develop comprehensive safety and health management programs.
- Promote activities which would lead to increased public support for enforcement activities for the prevention of occupational injuries, illness, and death in Wisconsin.
- Promote worker input and involvement on health/safety issues within their workplace.
- Occupational health histories will be incorporated into medical evaluations.
• Use of the media to educate citizens in work-related injury, illness, or deaths.
• Promote increased use of safety equipment/devices (e.g., rollover protection devices, guarding, personal protective equipment) by agricultural work sites/employers.

**Inputs:** *(What we invest – staff, volunteers, time, money, technology, equipment, etc.)*
- Unions
- Employees
- Employers
- Trade/industry groups
- State legislature and local units of government
- K-12/technical/college education leaders
- Health/safety educators
- Community-based organizations
- Public health scientists
- Occupational health/primary care providers
- Workers’ compensation and business liability insurance carriers
- Local law enforcement
- State and federal occupational law enforcement
- State and local health departments
- Tribes
- State regulation and licensure agencies
- Technology
- Leadership (local, state, and federal)
- Funding (local, state, and federal)
- Sound public policy (local, state, and federal)
- Healthcare resources
- Media
- State and local public health staff
- Time

**Outputs:** *(What we do – workshops, meetings, product development, training. Who we reach - community residents, agencies, organizations, elected officials, policy leaders, etc.)*

**Activities:**
- Development of multilingual occupational health and safety information will be available for employers.
- Availability of educational programs/materials for employees who cannot read or who have difficulty reading, by employers, so that job-related health and safety information can be provided to these employees.
- Implementation of voluntary health and safety worksite inspections/evaluations by employers in order to reduce occupational injuries/illnesses.
Increased public awareness of occupational safety and health practices for the prevention of occupational injuries, illness, and death.
Create a resource center for information and assistance on occupational health issues.
Increased public awareness for the need of occupational safety and health enforcement activities for the prevention of occupational injuries, illness and death.
Increased worker input and involvement into workplace occupational safety and health programs.
Increased use of the media to provide occupational safety and health information to the general public.
Encourage the use and promotion of agricultural workplace safety equipment.

Participation/Reach:
- Coroners/medical examiners
- Employees working in high risk jobs
- Racial/ethnic minority groups
- Tribes
- Young workers, older workers, farmers
- Special populations at risk
- General public
- Labor unions
- Public sector workers
- Health and safety educators
- Workers’ compensation and business liability insurance carriers
- Healthcare providers
- Policymakers
- Employers
- Schools (primary and secondary)

Long-term Outcome Objectives (2008-2010)
- Provide information to employees and employers related to workplace violence.
- Provide information to employees and employers regarding working conditions or practices.
- Increased knowledge by employees regarding workers’ compensation benefits and how to file for benefits if injured on the job.
- Increased utilization of regulatory resources and referrals by employees and employers in order to reduce workplace hazards.
- Increased number of employees reporting non-workers’ compensation situations and near-miss situations to employers.
- Increased numbers of referrals made to appropriate occupational health medical providers.
- Increased use of hazard analysis data for disease prevention activities and recognition of emerging occupational hazards and risk groups.
- Improved interagency coordination and integration of data resources so occupational issues affecting multiple programs can be dealt with in a coordinated effort.
• Integrating the National Institute for Occupational Safety and Health core variables recommended for all state occupational surveillance programs.

**Inputs:** *(What we invest – staff, volunteers, time, money, technology, equipment, etc.)*
- Unions
- Employees
- Employers
- Trade/industry groups
- State legislature and local units of government
- K-12/technical/college education leaders
- Health/safety educators
- Community-based organizations
- Public health scientists
- Occupational health/primary care providers
- Workers’ compensation and business liability insurance carriers
- Local law enforcement
- State and federal occupational law enforcement
- State and local health departments
- Tribes
- State regulation and licensure agencies
- Technology
- Leadership (local, state, and federal)
- Funding (local, state, and federal)
- Sound public policy (local, state, and federal)
- Healthcare resources
- Media
- State and local public health staff
- Time

**Outputs:** *(What we do – workshops, meetings, product development, training. Who we reach – community residents, agencies, organizations, elected officials, policy leaders, etc.)*

**Activities:**
- Creation of workplace remedies to provide improved work behaviors and physical surroundings. Some examples could be: decreases or elimination of mandatory overtime; best practices regarding shift work and shift rotation; following mandatory rest period laws for employees such as truck drivers and flight attendants; and providing employees with a safe, nonhazardous work environment that is ergonomically sound.
- Increased reporting of occupational injuries and illnesses (including eligible workers’ compensation illness/injury/death cases) by employees to their employers.
- Increased utilization of regulatory resources to provide for an overall reduction of hazards encountered by employees in the workplace.
• Increased numbers of employees reporting noncompensatable workers’ compensation situations, hazards, and near-miss situations (when an accident almost occurred) to employers.
• Increased prompt treatment for occupationally related injury or illness from appropriate healthcare medical providers.
• Utilization of hazard analysis information for disease prevention activities and for hazard recognition and identification of worker groups at risk in order to reduce work-related injury, illness, and death.
• Increase interagency coordination and integration of data resources so that accurate assessments of problem areas and most effective interventions will take place.
• Integrate the National Institute for Occupational Safety and Health core variables into the Wisconsin occupational health surveillance program.

Participation/Reach:
• Coroners/medical examiners
• Employees working in high risk jobs
• Racial/ethnic minority groups
• Tribes
• Young workers, older workers, farmers
• Special populations at risk
• General public
• Labor unions
• Public sector workers
• Health and safety educators
• Workers’ compensation and business liability insurance carriers
• Healthcare providers
• Policymakers
• Employers
• Schools (primary and secondary)

Evaluation and Measurement:
Progress toward this objective will be measured by monitoring State Workers’ Compensation data, hospital discharge data, clinic visit data, emergency room visit data, death certificate data, and hazard analysis data from the Wisconsin OSHA Consultation program. Development of new systems to track data regarding occupational health and worker exposure to hazards will be required in order to assure that progress toward achieving this objective is occurring.

Crosswalk to Other Health and System Priorities in Healthiest Wisconsin 2010
Intentional and Unintentional Injuries and Violence: The toll of workplace unintentional injuries and workplace violence is significant. The impact of occupational injuries and violence can be felt not only with the individual employees and their families, but also by employers and their communities.
Social and Economic Factors that Influence Health: Certain populations of workers are more likely to experience increased risks of diseases and injuries in the workplace as a result of biologic, social, and/or economic characteristics such as age, race, genetic susceptibility, disability, language, literacy, culture, and low income.

Integrated Electronic Data and Information Systems: Developing data and reporting systems will be critical to establish baseline information about occupational morbidity and mortality in order to measure intervention efforts to reduce hazards in the workplace.

Sufficient, Competent Workforce: As the United States workforce grows to approximately 147 million by the year 2005, it will become older and more racially diverse. By the year 2005, minorities will represent 28 percent of the workforce and women will constitute approximately 48 percent. These changes will present new challenges to protecting worker safety and health. Workplace safety is vital in order to maintain a healthy and productive workforce in Wisconsin.

Significant Linkages to Wisconsin’s 12 Essential Public Health Services
Identify, investigate, control, and prevent health problems and environmental health hazards in the community: Occupational health and safety issues need to be identified, investigated, controlled, and prevented in order to maintain a healthy and productive workforce in Wisconsin. Injuries and illnesses affect not only the individual workers and their families, but also have a direct financial impact on their employers and the communities where they live.

Enforce laws and regulations that protect health and insure safety: Occupational health and safety laws need to be enforced so those employees remain healthy and productive throughout their lives.

Conduct research to seek new insights and innovative solutions to health problems: The economic shift from manufacturing to services along with changes in new processes, materials, equipment and chemicals creates new challenges regarding employee health and safety. Research studies provide important new information regarding our changing workplace environment and effective health and safety interventions.

Connection to the Three Overarching Goals of Healthiest Wisconsin 2010
Protect and promote health for all: Occupational injury and illness can have a major impact for workers and employers (National Occupational Research Agenda, 1996). Each day in the United States, an average of 137 people die from work-related diseases, and an additional 16 die from injuries on the job (National Occupational Research Agenda, 1996). Every 5 seconds a worker is injured and every 10 seconds a worker is temporarily or permanently disabled (National Occupational Research Agenda, 1996). In 1994, occupational injuries alone cost $121 billion in lost wages and productivity; administrative expenses; healthcare; and other costs (National Occupational Research Agenda, 1996). In Wisconsin, motor vehicle crashes killed 29 people while they worked in 1998 and another 19 died from machinery or other objects (Department of Workforce Development, 1999). Almost 20,000 cases of back injuries are attributed annually to Wisconsin workplace activities (Department of Workforce Development, 1999). The total economic burden to Wisconsin has not been calculated, but in 1997, over $186 million was paid
to workers who suffered non-fatal injuries in addition to the cost of medical services to treat their injuries (Department of Workforce Development, January 1999).

**Eliminate health disparities:** Occupational hazards are known to be distributed differently and workers with specific biologic, social, and/or economic characteristics are more likely to have increased risks of work-related diseases and injuries. The relative proportions of these special populations (such as older workers, women, minorities, and youth) in the workforce is increasing, and it is important to focus on these populations because they have been largely underserved in the past. Surveillance and research to determine the nature and magnitude of risks experienced and to develop appropriate intervention and communication strategies will be necessary in order to eliminate these disparities.

**Transform Wisconsin’s public health system:** Developing new comprehensive occupational health surveillance programs will provide valuable information regarding the type of occupational health conditions suffered by Wisconsin workers. Partnering with private, state, and federal agencies and organizations will also be necessary to decrease the incidence of occupational illness and injury for Wisconsin employees.

**Key Interventions and/or Strategies Planned:**
A reduction in occupational injury, illness, and death will occur through a variety of interventions. A state occupational surveillance program will be developed in order to improve the collection, analysis, and dissemination of occupational health data. A comprehensive and integrated state occupational injury, disease, and fatality prevention program will also be developed. Working with partners throughout the State; training and technical assistance programs, and educational materials will be created. These programs/materials will be made available to employees, employers, educators, healthcare providers, and the general public regarding ways to prevent occupational injury and disease. Resources will also be provided to those who may have questions or concerns regarding occupational issues.
References:

Centers for Disease Control and Prevention. (January, 2002). State Injury Indicators Report


National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, April 1996.


National Institute for Occupational Safety and Health. (September, 2000). Worker Health Chartbook


Wisconsin Division of Public Health. Data from the Wisconsin Fatality Assessment and Control Evaluation (FACE) Program.
APPENDIX A

Healthy People 2010, November 2000, USDHHS cites the following baseline and target data:

<table>
<thead>
<tr>
<th>Reduction in Deaths From Work-Related Injuries</th>
<th>1998 Baseline (Deaths per 100,000 Workers Aged 16 Years and Older)</th>
<th>2010 Target (Deaths per 100,000 Workers Aged 16 Years and Older)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(20-1a) All industry</td>
<td>4.5</td>
<td>3.2</td>
</tr>
<tr>
<td>(20-1b) Mining</td>
<td>23.6</td>
<td>16.5</td>
</tr>
<tr>
<td>(20-1c) Construction</td>
<td>14.6</td>
<td>10.2</td>
</tr>
<tr>
<td>(20-1d) Transportation</td>
<td>11.8</td>
<td>8.3</td>
</tr>
<tr>
<td>(20-1e) Agriculture, forestry, and fishing</td>
<td>24.1</td>
<td>16.9</td>
</tr>
</tbody>
</table>

Healthy People 2010, November 2000, USDHHS cites the following baseline and target data:

<table>
<thead>
<tr>
<th>Reduction in Work-Related Injuries Resulting in Medical Treatment, Lost Time From Work, or Restricted Activity</th>
<th>1998 Baseline (Injuries per 100 Full-Time Workers Aged 16 Years and Older)</th>
<th>2010 Target (Injuries per 100 Full-Time Workers Aged 16 Years and Older)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(20-2a) All industry</td>
<td>6.2</td>
<td>4.3</td>
</tr>
<tr>
<td>(20-2b) Construction</td>
<td>8.7</td>
<td>6.1</td>
</tr>
<tr>
<td>(20-2c) Health Services</td>
<td>7.9 (1997)</td>
<td>5.5</td>
</tr>
<tr>
<td>(20-2d) Agriculture, forestry, and fishing</td>
<td>7.6</td>
<td>5.3</td>
</tr>
<tr>
<td>(20-2e) Transportation</td>
<td>7.9 (1997)</td>
<td>5.5</td>
</tr>
<tr>
<td>(20-2f) Mining</td>
<td>4.7</td>
<td>3.3</td>
</tr>
<tr>
<td>(20-2g) Manufacturing</td>
<td>8.5</td>
<td>6.0</td>
</tr>
<tr>
<td>(20-2h) Adolescent workers</td>
<td>4.8 (1997)</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Healthy People 2010, November 2000, United States Department of Health and Human Services cites the following baseline and target data:

**Reduce Pneumoconiosis deaths.**
Target: 1,900 deaths
Baseline: 2,928 pneumoconiosis deaths among persons aged 15 years and older in 1997.
Target setting method: 10 percent less than the number of pneumoconiosis deaths projected for 2010 based on a 15-year trend (1982-1997).

**Reduce deaths from work-related homicides.**
Target: 0.4 deaths per 100,000 workers.
Baseline: 0.5 deaths per 100,000 workers aged 16 years and older were from work-related homicides in 1998.
Target setting method: 20 percent improvement (Better than the best will be used when data are available)
Reduce work-related assault.
Target: 0.60 assaults per 100 workers
Baseline: 0.85 assaults per 100 workers aged 16 years and older were work-related during 1987-1992.
Target setting method: 29 percent improvement (Better than the best will be used when data are available)

Reduce the number of persons who have elevated blood lead concentrations from work exposures.
Target: 0 per 1 million
Baseline: 93 million persons aged 16 to 64 years (25 states) had blood lead concentrations of 25 µg/dL or greater in 1998.
Target setting method: Total elimination.
Health Priority: Environmental and Occupational Health Hazards

Objective 4: Chemical and Biological Contaminants in the Home (Logic Model)


4a: By 2010, rehabilitate 120,000 dwellings in Wisconsin with lead hazards present and occupied by children under 6 years old.

4b: One hundred percent of Wisconsin children enrolled in Medicaid will receive age-appropriate blood lead tests.

4c: By the end of 2010, among all Wisconsin children age 6 or younger, there will be no children newly identified with lead poisoning.

4d: By 2010, increase the capacity of local health departments to address environmental health issues in the home.

4e: Reduce public exposures to indoor radon in all buildings with radon concentrations >4 pCi/L in occupied spaces.

4f: By 2010, there will be no unintentional carbon monoxide poisoning fatalities in Wisconsin.

4g: By 2010, there will be no unwanted environmental tobacco smoke exposure in homes.

Long-term outcome objective updated as of: Sept 2004

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<tr>
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<tbody>
<tr>
<td>Wisconsin Department of Health and Family Services will provide resources to create and support a task force to increase public awareness.</td>
<td>The Wisconsin Department of Health and Family Services will create a statewide taskforce of public agency and private participants to develop and implement a public awareness campaign.</td>
<td>Wisconsin residents/families</td>
<td>By December 31, 2003, 50 percent of Wisconsin residents will be informed about household hazards associated with lead, radon, asbestos, carbon monoxide, volatile organic compounds, other chemicals, and allergens such as mold, dust mites, and cockroaches.</td>
<td>By December 31, 2005, 75 percent of the children at-risk will be screened for elevated blood lead levels.</td>
<td>By December 31, 2008, 75 percent of homes at-risk will have been inspected for lead hazards and there will be a 25 percent increase for those inspected for radon and other environmental hazards.</td>
<td></td>
</tr>
<tr>
<td>Wisconsin Department of Health and Family Services will provide the resources to initiate a strong educational campaign.</td>
<td>A consortium of state and local health departments, tribes, and healthcare providers will have been formed to implement a strong educational campaign on the</td>
<td>Policymakers</td>
<td>By December 31, 2003, 50 percent of Wisconsin residents will be informed about household hazards associated with lead, radon, asbestos, carbon monoxide, volatile organic compounds, other chemicals, and allergens such as mold, dust mites, and cockroaches.</td>
<td>By December 31, 2005, 75 percent of the children at-risk will be screened for elevated blood lead levels.</td>
<td>By December 31, 2008, 75 percent of homes at-risk will have been inspected for lead hazards and there will be a 25 percent increase for those inspected for radon and other environmental hazards.</td>
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</tr>
<tr>
<td></td>
<td>Public health workforce and healthcare providers</td>
<td>Individuals at-risk (adults and children)</td>
<td>By December 31, 2003, 90 percent of the families with children at-risk for lead</td>
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<tr>
<td></td>
<td>Housing inspectors</td>
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</tbody>
</table>

Logic Model – Health Priority: Environmental and Occupational Health Hazards – Objective 4
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<tr>
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</thead>
<tbody>
<tr>
<td>Activities</td>
<td>Participation/Reach</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local public health agencies will partner with local private and public organizations to promote testing of children for lead.</td>
<td>Municipalities</td>
<td>poisoning will be informed of the importance of having their children tested at the appropriate ages.</td>
<td>By December 31, 2005, 100 percent of the healthcare providers will include residential histories on their patient charts.</td>
<td>By December 31, 2008, 100 percent of new construction will meet the criteria to have good indoor air quality.</td>
</tr>
<tr>
<td>Wisconsin Department of Health and Family Services and Wisconsin Department of Commerce will provide resources to initiate educational campaigns.</td>
<td>Professional environment staff</td>
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<tr>
<td>Wisconsin Department of Health and Family Services will allocate the resources to provide training.</td>
<td>Local health departments</td>
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<tr>
<td>Educational institutions will provide training.</td>
<td>Tribes</td>
<td></td>
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<tr>
<td>Funding to support developing a reporting system, data collection, and analysis.</td>
<td>Media</td>
<td></td>
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<tr>
<td>Wisconsin Department of Health and Family Services will have developed and initiated a reporting and data collection system for illness and deaths associated with environmental hazards in the home.</td>
<td>Social services agencies</td>
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<tr>
<td></td>
<td>Public and private laboratories</td>
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<tr>
<td></td>
<td>Residents’ homes identified as being “at-risk”</td>
<td></td>
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<tr>
<td></td>
<td>Residents’ homes that have been inspected for environmental hazards</td>
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<tr>
<td></td>
<td>Sites around Wisconsin where indoor air testing equipment is available</td>
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<tr>
<td></td>
<td>importance of testing children for lead poisoning.</td>
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<tr>
<td></td>
<td>The Wisconsin Department of Health and Family Services will initiate training of public health workforce and healthcare providers on the dangers of environmental hazards in the home environment.</td>
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<tr>
<td></td>
<td>A task force will be created consisting of state and local agencies, industry, and business representatives to develop and implement an educational effort for at-risk employees.</td>
<td></td>
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<tr>
<td></td>
<td>The Wisconsin Department of Health and Family Services will have developed and initiated a reporting and data collection system for illness and deaths associated with environmental hazards in the home.</td>
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<td></td>
<td>A training program directed to the building construction</td>
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</tbody>
</table>

Logic Model – Health Priority: Environmental and Occupational Health Hazards – Objective 4
## Health Priority: Environmental and Occupational Health Hazards
### Objective 4: Chemical and Biological Contaminants in the Home (Logic Model)

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</thead>
<tbody>
<tr>
<td>Services will allocate necessary resources to provide statewide training.</td>
<td>and maintenance work force will be developed and implemented by Wisconsin Department of Health and Family Services and Department of Commerce to promote strategies for a healthy indoor environment.</td>
<td>Building and housing inspectors</td>
<td>By December 31, 2004, 100 percent of laboratories in Wisconsin performing analysis of environmental samples collected from homes will be offered appropriate training for this testing.</td>
<td>By December 31, 2006, 100 percent of laboratories conducting testing for evaluation of contaminated homes will be using standardized protocol.</td>
<td>organic compounds, pesticides, and other chemical hazards as well as allergens such as mold, dust mites, and cockroaches.</td>
</tr>
<tr>
<td>Educational institutions will initiate appropriate outreach training.</td>
<td>The Wisconsin State Laboratory of Hygiene will have developed training programs and initiated training sessions across the state on testing of environmental samples collected from the home environment.</td>
<td>Wisconsin Environmental Association</td>
<td>By December 31, 2004, 100 percent of the laboratories conducting testing for evaluation of contaminated homes will be using standardized protocol.</td>
<td>By December 31, 2007, 100 percent of individuals conducting biological and chemical remediation practices will be trained on proper methods.</td>
<td></td>
</tr>
<tr>
<td>Wisconsin Department of Health and Family Services and Wisconsin Department of Commerce will jointly develop an information packet to encourage adoption of a housing maintenance and occupancy code.</td>
<td>One-hundred percent of municipalities with a population greater than 1,000 will have been provided information on the merits of adopting a &quot;Housing, Maintenance and Occupancy Code.&quot;</td>
<td>Wisconsin Public Health Association</td>
<td>By December 31, 2004, 100 percent of local policymakers will be aware of the benefits of adopting a &quot;Housing, Maintenance and Occupancy Code.&quot;</td>
<td>By December 31, 2007, there will be a 10 percent increase in the methods available to do hazard assessments in the home.</td>
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<tr>
<td>Local health departments will promote adoption of the code.</td>
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<tr>
<td>State health allocates resources.</td>
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</table>

Logic Model – Health Priority: Environmental and Occupational Health Hazards – Objective 4
### Health Priority: Environmental and Occupational Health Hazards

**Objective 4: Chemical and Biological Contaminants in the Home (Logic Model)**

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Local public health allocates resources.</td>
<td>- Increase in the number of homes inspected for environmental hazards.</td>
</tr>
<tr>
<td>- Private enterprise increases service level to do inspections.</td>
<td>- Literature will be developed by appropriate state agencies and partnerships will have been created for dissemination of the information.</td>
</tr>
<tr>
<td>- The Department of Health and Family Services allocate resources to provide training.</td>
<td>- Wisconsin Department of Health and Family Services will create a statewide collaborative initiative between the public and private sectors and itself with the charge of improving the numbers of children screened for elevated blood lead.</td>
</tr>
<tr>
<td>- State rule changes requiring certification for remediators will be considered.</td>
<td>- The Wisconsin Department of Health and Family Services will facilitate the process to have the public educational institutions and private training resources initiate a collaborative effort to meet the training requirements for doing environmental home assessments.</td>
</tr>
<tr>
<td>- Private remediators cooperation in receiving training.</td>
<td></td>
</tr>
<tr>
<td>- Educational institutions provide training on proper remediation.</td>
<td></td>
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<tr>
<td>- Wisconsin Department of Health and Family Services and Department of Agriculture, Trade and Consumer Protection allocate resources.</td>
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</tr>
</tbody>
</table>

**Activities**

- Increase in the number of homes inspected for environmental hazards.
- Literature will be developed by appropriate state agencies and partnerships will have been created for dissemination of the information.
- Wisconsin Department of Health and Family Services will create a statewide collaborative initiative between the public and private sectors and itself with the charge of improving the numbers of children screened for elevated blood lead.

**Participation/Reach**

- The Wisconsin Department of Health and Family Services will facilitate the process to have the public educational institutions and private training resources initiate a collaborative effort to meet the training requirements for doing environmental home assessments.
# Health Priority: Environmental and Occupational Health Hazards

## Objective 4: Chemical and Biological Contaminants in the Home (Logic Model)

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Outputs</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local public health and county extension offices disseminate education information.</td>
<td>The Wisconsin Department of Health and Family Services will develop and initiate a data reporting and retrieval system for residential histories on patients seen by healthcare providers.</td>
<td></td>
</tr>
<tr>
<td>Retail outlets provide information literature to customers.</td>
<td>The Wisconsin Department of Health and Family Services will initiate training for local health departments and make available equipment and laboratory testing necessary to conduct indoor air and other hazard assessments in the home.</td>
<td></td>
</tr>
<tr>
<td>Increased enforcement of testing by Department of Health and Family Services.</td>
<td>A collaborative effort coordinated by Wisconsin Department of Health and Family Services will be created to promote participation in the “Lead-safe or Lead-free Registry”.</td>
<td></td>
</tr>
<tr>
<td>Local public health agencies partnering with local healthcare providers, tribes, neighborhood associations, and other advocacy groups.</td>
<td>A collaborative effort to reduce chemical</td>
<td></td>
</tr>
<tr>
<td>The Wisconsin Department of Health and Family Services allocates resources.</td>
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<td></td>
</tr>
<tr>
<td>Local public health allocates resources.</td>
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</tbody>
</table>
### Health Priority: Environmental and Occupational Health Hazards

**Objective 4: Chemical and Biological Contaminants in the Home (Logic Model)**

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<tbody>
<tr>
<td></td>
<td>Poison control centers increase outreach.</td>
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<tr>
<td></td>
<td>Local collaborative efforts initiated by groups concerned with safety issues.</td>
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<td>Wisconsin State Legislature to adopt legislation to allocate funding.</td>
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<td></td>
<td>Technical colleges preparing and providing training.</td>
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<td></td>
<td>Institutions of higher education prepare and provide training.</td>
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<tr>
<td></td>
<td>Private training resources initiative programs to train individuals to do environmental hazard assessments in the home.</td>
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<tr>
<td></td>
<td>The Wisconsin Department of Health and Family Services develop reporting</td>
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<tr>
<td></td>
<td>poisoning in the home between state and local resources will be initiated by the Wisconsin Department of Health and Family Services.</td>
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<tr>
<td></td>
<td>The Wisconsin State Laboratory of Hygiene will have developed standard testing protocol for evaluation of contaminated homes.</td>
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<tr>
<td></td>
<td>The Wisconsin Department of Health and Family Services will collaborate with the Wisconsin university system and private enterprise to identify areas where improved methodologies are needed to improve environmental assessments in the home.</td>
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<td></td>
<td>The Wisconsin Department of Health and Family Services will conduct or require training sessions for remediators to become knowledgeable on proper remediation methods of environmental hazards in the home environment.</td>
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<td>Local healthcare providers complete data reporting criteria.</td>
<td>The Wisconsin Department of Commerce and Wisconsin Department of Health and Family Services will develop indoor air quality criteria for new construction and submit rule revision concerning indoor air quality for new construction to the legislature for their consideration.</td>
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<td>data reporting and collection system.</td>
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<td>Public and private assessments required to be submitted to Wisconsin Department of Health and Family Services.</td>
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<td>Wisconsin Department of Commerce and Wisconsin Department of Health and Family Services jointly develop indoor air quality criteria for new construction.</td>
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<td>State building code revisions.</td>
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<td>Wisconsin State Laboratory of Hygiene in cooperation with other state agencies will develop testing protocol.</td>
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### Inputs

**Activities**
- Collaborative efforts will be initiated by public and private sector to establish best available technology for remediating homes with environmental hazards.
- The Wisconsin Department of Health and Family Services promote additional research.
- Institutions of higher education and private enterprise collaborate on developing new testing methodologies.
- Wisconsin Department of Health and Family Services and local public health agencies promote the lead-safe or lead-free registry.
- Wisconsin Landlord Association promote participating in lead-safe or lead-free registry.

### Outputs

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### Outcomes

- Participation/Reach
- Short-term 2002-2004
- Long-term 2008-2010

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**Health Priority: Environmental and Occupational Health Hazards**

**Objective 4: Chemical and Biological Contaminants in the Home (Logic Model)**
<table>
<thead>
<tr>
<th>Inputs</th>
<th>Outputs</th>
<th>Outcomes</th>
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</thead>
<tbody>
<tr>
<td>Federal, state, tribes, and local government resources.</td>
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</table>
Health Priority: Environmental and Occupational Health Hazards
Objective 4: Chemical and Biological Contaminants in the Home (Template)

Long-term (2010) Subcommittee Outcome Objective:
By December 31, 2010, reduce by 50 percent the incidence of illness and death related to chemical and biological contaminants in the home.

4a: By 2010, rehabilitate 120,000 dwellings in Wisconsin with lead hazards present and occupied by children under 6 years old.

4b: One hundred percent of Wisconsin children enrolled in Medicaid will receive age-appropriate blood lead tests.

4c: By the end of 2010, among all Wisconsin children age 6 or younger, there will be no children newly identified with lead poisoning.

4d: By 2010, increase the capacity of local health departments to address environmental health issues in the home.

4e: Reduce public exposures to indoor radon in all buildings with radon concentrations >4 pCi/L in occupied spaces.

4f: By 2010, there will be no unintentional carbon monoxide poisoning fatalities in Wisconsin.

4g: By 2010, there will be no unwanted environmental tobacco smoke exposure in homes.

Long-term outcome objective updated as of: Sept 2004

<table>
<thead>
<tr>
<th>Wisconsin Baseline</th>
<th>Wisconsin Sources and Year</th>
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</thead>
<tbody>
<tr>
<td>4a. There are 120,000 dwellings in Wisconsin with lead hazards present and occupied by children that require rehabilitation.</td>
<td>(1) Wisconsin Department of Health and Family Services, Division of Public Health, Bureau of Environmental and Occupational Health/Childhood Lead Poisoning Prevention Program (Lead Elimination Plan); (2) Website: <a href="http://www.hud.gov/utilities/intercept.cfm/offices/lead/techstudies/LeadPaintHousingSurvey.pdf">www.hud.gov/utilities/intercept.cfm/offices/lead/techstudies/LeadPaintHousingSurvey.pdf</a> (3) US Census Bureau. 2000 Decennial Census, Summary Tape File 3</td>
</tr>
<tr>
<td>4b. As of 2002, 48.1% of Wisconsin 1- and 2-year old children enrolled in Medicaid received a blood lead test, although all such children should be tested according to current federal regulations.</td>
<td>Wisconsin Department of Health and Family Services, Division of Public Health, Bureau of Environmental and Occupational Health/Wisconsin Childhood Lead Poisoning Prevention Program</td>
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### Wisconsin Baseline vs. Wisconsin Sources and Year

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<thead>
<tr>
<th>Wisconsin Baseline</th>
<th>Wisconsin Sources and Year</th>
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<tr>
<td>4c. The national childhood lead poisoning average, at this time, is approximately 2.2% and declining, while Wisconsin’s rate among those children tested is 6.1%.</td>
<td>Wisconsin Department of Health and Family Services, Division of Public Health, Bureau of Environmental and Occupational Health/Wisconsin Childhood Lead Poisoning Prevention Program</td>
</tr>
<tr>
<td>4d. Developmental data</td>
<td>Wisconsin Department of Health and Family Services, Division of Public Health, Bureau of Environmental and Occupational Health/Wisconsin Childhood Lead Poisoning Prevention Program</td>
</tr>
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<td>4e. Developmental data</td>
<td>Wisconsin Department of Health and Family Services, Division of Public Health, Bureau of Environmental and Occupational Health/Wisconsin Childhood Lead Poisoning Prevention Program</td>
</tr>
<tr>
<td>4f. National data available; Wisconsin data will be obtained.</td>
<td>Wisconsin Department of Health and Family Services, Division of Health Care Financing, Bureau of Health Information/Mortality Database</td>
</tr>
</tbody>
</table>
| 4g. 27.9% of respondents stated that in the past 30 days, someone had smoked cigarettes, cigars, or pipes inside their home. 45.7% of middle-school children and 42.9% of high-school children/young adults stated that they lived with someone who smokes cigarettes. (Note: It should not be inferred that smoking occurs in the student’s home from this response). | Wisconsin Behavioral Risk Factor Survey, 2000. Department of Health and Family Services, Division of Health Care Financing/Bureau of Health Information  
Wisconsin Department of Health and Family Services, Division of Environmental and Occupational Health/Asthma Program/Burden of Asthma Report |

Refer to Appendices A and B for additional detail.

### Federal/National Baseline vs. Federal/National Sources and Year

<table>
<thead>
<tr>
<th>Federal/National Baseline</th>
<th>Federal/National Sources and Year</th>
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<tr>
<td>4.4% of children aged 1 to 6 years had blood lead levels exceeding 1µg/dL during 1991-94. Target 0%.</td>
<td>Healthy People 2010, November 2000, United States Department of Health and Human Services (USDHHS) cites the following sources for this baseline data: National Health and Nutrition Examination Survey (NHANES), Centers for Disease Control and Prevention (CDC)</td>
</tr>
<tr>
<td>See Appendix A - Allergen baseline and target data.</td>
<td>Healthy People 2010, November 2000, USDHHS cites the following sources for this baseline data: National Survey of Lead and Allergens in Housing, National Institute of Environmental Health Sciences, and U.S. Department of Housing and Urban Development</td>
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</table>
Federal/National Baseline | Federal/National Sources and Year
--- | ---
17% of the population lived in homes in 1998 that had been tested for radon (age adjusted to the year 2000 standard population). Target 20%. | Healthy People 2010, November 2000, USDHHS cites the following sources for this baseline data: National Health Interview Survey, CDC, National Center for Health Statistics

1.4 million new homes as of 1997. Target 2.1 million additional new homes. | Healthy People 2010, November 2000, USDHHS cites the following sources for this baseline data: National Association of Home Builders Research Center Survey. National Association of Home Builders

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Goal</th>
<th>Objective Number</th>
<th>Objective Statement</th>
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<tbody>
<tr>
<td>8 – Environmental Health</td>
<td>Promote health for all through a healthy environment.</td>
<td>8-11</td>
<td>Eliminate elevated blood lead levels in children.</td>
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<tr>
<td>8-16</td>
<td>Reduce indoor allergen levels.</td>
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<td>8-18</td>
<td>Increase the proportion of persons who live in homes tested for radon concentrations.</td>
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<td>8-19</td>
<td>Increase the number of new homes constructed to be radon resistant.</td>
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<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td>Lead-safe</td>
<td>Lead-safe means no lead-based paint hazards were found during a lead-safe investigation of the property.</td>
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<tr>
<td>Lead-free</td>
<td>Lead-free means no lead-based paint was found during a lead-free inspection of the property.</td>
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Rationale:
The public’s health, particularly its environmental health, depends on the interaction of many factors. Healthy People 2010 states that “more than 6 million housing units across the country meet the Federal Government’s definition of substandard housing. Many factors—including air quality; lead-based paint on walls, trim, floors, ceilings, etc.; and hazardous household substances such as cleaning products and pesticides—can affect health and safety.” (Healthy People 2010, page 8-7).

“Human exposures to hazardous agents in the air, water, soil, and food and to physical hazards in the environment are major contributors to illness, disability, and death worldwide. ... Poor environmental quality is estimated to be directly responsible for approximately 25 percent of all preventable ill health in the world, with diarrheal diseases and respiratory infections heading the
list.” (Healthy People 2010, page 8-4). Home environments can present hazardous conditions that contribute to morbidity and mortality in all age groups with children and the elderly being most susceptible.

To provide a healthy environment the places people spend the most time—their homes, schools, and offices—must be considered. Sufficient data and scientific studies exist that demonstrate children are being lead poisoned from their home environment; lung cancers are being caused by exposure to radon in the home; and that many adverse health conditions are occurring from exposure in the home environment to pesticides, carbon monoxide, other chemicals as well as to molds, dust mites, and cockroaches.

According to Healthy People 2010 “In 1984, between 2 million and 3 million children aged 6 months to 5 years had blood lead levels (BLLs) greater than 15 µg/dL, and almost a quarter of a million had BLLs above 25 µg/dL, a level that can affect vital organs and the brain…. However, despite the success achieved, more remains to be done before childhood lead poisoning becomes a disease of the past.”

“Since the mid-1980s, asthma rates in the United States have risen to the level of an epidemic. Asthma and other respiratory conditions often are triggered or worsened by substances found in the air, such as tobacco smoke, ozone, and other particles or chemicals. Based on existing data, an estimated 14.9 million people in the United States had asthma in 1995, including more than 5 million children aged 17 years and under. Between 1980 and 1993, the overall death rate for asthma increased 57 percent, from 12.8 to 20.1 deaths per million population for people aged 17 years and under, the death rate increased 67 percent, from 1.8 to 3.0 deaths per million population.” (Healthy People 2010, pp. 8-8 and 8-9).

Reducing morbidity and mortality caused by environmental hazards in the home environment requires appropriate recognition, assessment and control of the hazards that contribute to their incidence and severity. Healthiest Wisconsin 2010 recognizes that chemical and biological contaminants in the home can be a contributing factor to the State’s morbidity and mortality rate. Increased public awareness of this environmental health issue is a key factor in achieving this objective.

Outcomes:

Short-Term Outcome Objective (2002-2004)

- By December 31, 2003, 50 percent of Wisconsin residents will be informed about household hazards associated with lead, radon, asbestos, carbon monoxide, volatile organic compounds, other chemicals, and allergens such as mold, dust mites, and cockroaches.
- By December 31, 2003, 90 percent of the families with children at-risk for lead poisoning will be informed of the importance of having their children tested at the appropriate ages.
- By December 31, 2004, 100 percent of the individuals at-risk for taking home contaminants from their work place will be aware of the potential hazard to their families.
- By December 31, 2003, 100 percent of appropriate public health work force and healthcare providers will be aware of the dangers of environmental hazards in the home environment.
- By December 31, 2004, there will be a disease identification and reporting system associated with indoor environmental hazards in the home being utilized by healthcare providers.
• By December 31, 2004, 100 percent of the home inspectors, industrial hygienists, and remediators will be trained on recognizing environmental hazards in the home.
• By December 31, 2004, 100 percent of laboratories in Wisconsin performing analysis of environmental samples collected from homes will be offered appropriate training for this testing.
• By December 31, 2004, 100 percent of local policymakers will be aware of the benefits of adopting a "Housing, Maintenance and Occupancy Code."

**Inputs:** *(What we invest – staff, volunteers, time money, technology, equipment, etc.)*
- Wisconsin Department of Health and Family Services will provide resources to create and support a task force to increase public awareness.
- Wisconsin Department of Health and Family Services will provide the resources to initiate a strong educational campaign.
- Local public health agencies will partner with local private and public organizations to promote testing of children for lead.
- Wisconsin Department of Health and Family Services and Wisconsin Department of Commerce will provide resources to initiate educational campaigns.
- Wisconsin Department of Health and Family Services will allocate the resources to provide training.
- Educational institutions will provide training.
- Funding to support developing a reporting system, data collection, and analysis.
- Wisconsin Department of Health and Family Services will allocate necessary resources to provide statewide training.
- Educational institutions will initiate appropriate outreach training.
- Wisconsin State Laboratory of Hygiene will allocate resources to develop and implement training.
- Wisconsin Department of Health and Family Services and Wisconsin Department of Commerce will jointly develop an information packet to encourage adoption of a housing maintenance and occupancy code.
- Local health departments will promote adoption of the code.

**Outputs:** *(What we do – workshops, meetings, product development, training. Who we reach–community residents, agencies, organizations, elected officials, policy leaders, etc.)*

**Activities:**
- The Wisconsin Department of Health and Family Services will create a statewide taskforce of public agency and private participants to develop and implement a public awareness campaign.
- A consortium of state and local health departments, tribes, and healthcare providers will have been formed to implement a strong educational campaign on the importance of testing children for lead poisoning.
- The Wisconsin Department of Health and Family Services will initiate training of public health workforce and healthcare providers on the dangers of environmental hazards in the home environment.
A task force will be created consisting of state and local agencies, industry, and business representatives to develop and implement an educational effort for at-risk employees.

The Wisconsin Department of Health and Family Services will have developed and initiated a reporting and data collection system for illness and deaths associated with environmental hazards in the home.

A training program directed to the building construction and maintenance work force will be developed and implemented by Wisconsin Department of Health and Family Services and Department of Commerce to promote strategies for a healthy indoor environment.

The Wisconsin State Laboratory of Hygiene will have developed training programs and initiated training sessions across the state on testing of environmental samples collected from the home environment.

One-hundred percent of municipalities with a population greater than 1,000 will have been provided information on the merits of adopting a "Housing Maintenance and Occupancy Code."

**Participation/Reach:**
- Wisconsin residents/families
- Policymakers
- Individuals at-risk (adults and children)
- Public health workforce and healthcare providers
- Housing inspectors
- Municipalities
- Professional environment staff
- Local health departments
- Tribes
- Media
- Social services agencies
- Public and private laboratories
- Residents’ homes identified as being “at-risk”
- Residents’ homes that have been inspected for environmental hazards
- Sites around Wisconsin where indoor air testing equipment is available
- Building and housing inspectors
- Agencies that access the data collection system

**Medium-Term Outcome Objective (2005-2007)**
- By December 31, 2005, 75 percent of the children at-risk will be screened for elevated blood lead levels.
- By December 31, 2005, effective training resources will be available to insure 100 percent access by building inspectors, industrial hygienists, remediators, and others that may do environmental assessments in the home.
- By December 31, 2005, 100 percent of the healthcare providers will include residential histories on their patient charts.
By December 31, 2005, 100 percent of local public health agencies will have the capacity to deal with indoor air problems and other hazards in the home environment.

By December 31, 2005, 50 percent of the homes at-risk will have participated in the “Lead-safe or Lead-free Registry.”

By December 31, 2006, 100 percent of the households in Wisconsin will have been provided information on safe pesticide and other chemical use.

By December 31, 2006, there will be a 50 percent reduction in the number of chemical poisonings in the home.

By December 31, 2006, 100 percent of the laboratories conducting testing for evaluation of contaminated homes will be using standardized protocol.

By December 31, 2007, 100 percent of individuals conducting biological and chemical remediation practices will be trained on proper methods.

By December 31, 2007, there will be a 10 percent increase in the methods available to do hazard assessments in the home.

**Inputs:** *(What we invest – staff, volunteers, time money, technology, equipment, etc.)*

- State health allocates resources.
- Local public health allocates resources.
- Private enterprise increases service level to do inspections.
- The Department of Health and Family Services allocate resources to provide training.
- State rule changes requiring certification for remediators will be considered.
- Private remediators cooperation in receiving training.
- Educational institutions provide training on proper remediation.
- Wisconsin Department of Health and Family Services and Department of Agriculture, Trade and Consumer Protection allocate resources.
- Local public health and county extension offices disseminate education information.
- Retail outlets provide information literature to customers.
- Increased enforcement of testing by Department of Health and Family Services.
- Local public health agencies partnering with local healthcare providers, tribes, neighborhood associations, and other advocacy groups.
- The Wisconsin Department of Health and Family Services allocates resources.
- Local public health allocates resources.
- Poison control centers increase outreach.
- Local collaborative efforts initiated by groups concerned with safety issues.
- Wisconsin State Legislature to adopt legislation to allocate funding.
- Technical colleges preparing and providing training.
- Institutions of higher education prepare and provide training.
- Private training resources initiative programs to train individuals to do environmental hazard assessments in the home.
- The Wisconsin Department of Health and Family Services develop reporting requirements to achieve uniformity.
- The Wisconsin Department of Health and Family Services develop and initiate data collection and reporting system.
• Local healthcare providers complete data reporting criteria.
• The Wisconsin Department of Health and Family Services provide training and technical resources.
• Local health departments allocate staff time and funding for training.
• State funding to support integrated data system.
• The Wisconsin Department of Health and Family Services develop standardized data reporting and collection system.
• Public and private assessments required to be submitted to Wisconsin Department of Health and Family Services.
• Wisconsin Department of Commerce and Wisconsin Department of Health and Family Services jointly develop indoor air quality criteria for new construction.
• State building code revisions.
• Wisconsin State Laboratory of Hygiene in cooperation with other state agencies will develop testing protocol.
• Legislative changes to implement minimum laboratory testing protocol.
• Collaborative efforts will be initiated by public and private sector to establish best available technology for remediating homes with environmental hazards.
• The Wisconsin Department of Health and Family Services promote additional research.
• Institutions of higher education and private enterprise collaborate on developing new testing methodologies.
• Wisconsin Department of Health and Family Services and local public health agencies promote the lead-safe or lead-free registry.
• Wisconsin Landlord Association promote participating in lead-safe or lead-free registry.

Outputs: (What we do – workshops, meetings, product development, training. Who we reach–community residents, agencies, organizations, elected officials, policy leaders, etc.)

Activities:
• The Wisconsin Department of Health and Family Services will begin an initiative to achieve an increase in the number of homes inspected for environmental hazards.
• Literature will be developed by appropriate state agencies and partnerships will have been created for dissemination of the information.
• Wisconsin Department of Health and Family Services will create a statewide collaborative initiative between the public and private sectors and itself with the charge of improving the numbers of children screened for elevated blood lead.
• The Wisconsin Department of Health and Family Services will facilitate the process to have the public educational institutions and private training resources initiate a collaborative effort to meet the training requirements for doing environmental home assessments.
The Wisconsin Department of Health and Family Services will develop and initiate a data reporting and retrieval system for residential histories on patients seen by healthcare providers.

The Wisconsin Department of Health and Family Services will initiate training for local health departments and make available equipment and laboratory testing necessary to conduct indoor air and other hazard assessments in the home.

A collaborative effort coordinated by Wisconsin Department of Health and Family Services will be created to promote participation in the “Lead-safe or Lead-free Registry”.

A collaborative effort to reduce chemical poisoning in the home between state and local resources will be initiated by the Wisconsin Department of Health and Family Services.

The Wisconsin State Laboratory of Hygiene will have developed standard testing protocol for evaluation of contaminated homes.

The Wisconsin Department of Health and Family Services will collaborate with the Wisconsin university system and private enterprise to identify areas where improved methodologies are needed to improve environmental assessments in the home.

The Wisconsin Department of Health and Family Services will conduct or require training sessions for remediators to become knowledgeable on proper remediation methods of environmental hazards in the home environment.

The Wisconsin Department of Health and Family Services will create a task force, with broad representation, with the charge to assess and recommend the best available technology for remediation of environmental hazards in the home.

The Wisconsin Department of Health and Family Services will have developed a reporting and data collection system for home hazard assessments.

The Wisconsin Department of Commerce and Wisconsin Department of Health and Family Services will develop indoor air quality criteria for new construction and submit rule revision concerning indoor air quality for new construction to the legislature for their consideration.

**Participation/Reach:**
- Wisconsin residents and families
- Policymakers
- Individuals at-risk (adults and children)
- Public health workforce and healthcare providers
- Housing inspectors
- Counties and municipalities
- Professional environmental staff
- Local health departments
- Tribes
- Media
- Social services agencies
- Public and private laboratories
- Residents' homes identified as being “at-risk”
• Residents' homes that have been inspected for environmental hazards
• Sites around Wisconsin where indoor air testing equipment is available
• Building and housing inspectors
• Agencies that access the data collection system
• Wisconsin Environmental Association
• Wisconsin Public Health Association

**Long-term Outcome Objectives (2008-2010)**

- By December 31, 2008, 75 percent of homes at-risk will have been inspected for lead hazards and there will be a 25 percent increase for those inspected for radon and other environmental hazards.
- By December 31, 2008, 100 percent of the data from home hazards assessments will be collected in a common data system.
- By December 31, 2008, 100 percent of new construction will meet the criteria to have good indoor air quality.
- By December 31, 2008, 100 percent of the homes remediated will be done by the best available technology.
- By December 31, 2010 there will be a 50 percent reduction in the incidence of illness and death related to health hazards associated with poor indoor air quality, lead, and chemical contaminants in the home.
- By December 31, 2010 there will be a 50 percent reduction in the number of homes with elevated environmental levels of lead, radon, asbestos, carbon monoxide, volatile organic compounds, pesticides, and other chemical hazards as well as allergens such as mold, dust mites, and cockroaches.

**Inputs:** *(What we invest – staff, volunteers, time, money, technology, equipment, etc.)*
- Federal, state, tribes, and local government resources.
- Collaborative partnerships between public and private sectors.
- Effective data reporting and collection system.
- Collaborative partnerships between public and private sectors.
- Regulatory standards and certifications.
- Training resources.
- Effective data reporting system for environmental assessments in the home environment.

**Outputs:** *(What we do – workshops, meetings, product development, training. Who we reach – community residents, agencies, organizations, elected officials, policy leaders, etc.)*

**Activities:**
- The Wisconsin Department of Health and Family Services will have had an effective data system in place for 5 years that will provide a measurement on the changes in morbidity and mortality from environmental hazards in the home environment.
- The Wisconsin Department of Health and Family Services will have had
an effective data system in place to track home environmental assessment data for the previous four years.

Participation/Reach:
- Wisconsin residents and families
- Policymakers
- Individuals at-risk (adults and children)
- Public health workforce and healthcare providers
- Housing inspectors
- Counties and municipalities
- Professional environmental staff
- Local health departments
- Tribes
- Media
- Social services agencies
- Public and private laboratories
- Residents' homes identified as being “at-risk”
- Residents' homes that have been inspected for environmental hazards
- Sites around Wisconsin where indoor air testing equipment is available
- Building and housing inspectors
- Agencies that access the data collection system
- Wisconsin Environmental Association
- Wisconsin Public Health Association

Evaluation and Measurement
Progress toward this objective may be measured to a limited degree by monitoring existing data sources on hospital discharges and asthma mortality. Development of new systems to track data on morbidity related to environmental hazards in the home will be required as well as for environmental assessments done in the home environment.

- Number of citizens served
- Number of policymakers educated on the dangers of biological contaminants.
- Number of public educated on the dangers of biological contaminants.
- Number of public awareness campaigns implemented throughout the state.
- Number of public health and healthcare providers who received training on the dangers of biological contaminants.
- Number of housing inspectors who receive information on biological contaminants.
- Number of individuals trained on the proper methodology of testing environmental samples.
- Number of municipalities who enact a housing and maintenance code.
- Number of at-risk children who have been screened for elevated blood lead.
- Number of professional environmental staff (e.g., building inspectors, housing inspectors, environmental sanitarians) who have been trained in environmental assessments.
- Number of local health departments who have the capacity to address indoor air issues.
- Number of media sent information on biological contaminants
- Number of social service agencies who are sent information on biological contaminants
- Number of public and private laboratories that conduct indoor air environmental testing using standardized protocol.
- Number of articles published in local newspapers that address chemical poisoning in the home.
- Number of homes identified as being “at-risk” for lead who have participated in the “Lead-free” or “Lead-safe” Registry.
- Number of homes that have been inspected for environmental hazards.
- Number of policymakers educated
- Number of pieces of literature that has been developed and disseminated to the public that addresses indoor air contamination.
- Number of local health departments that have received indoor air and hazard assessment training.
- Number of sites around the state where indoor air testing equipment is available for use by the local health departments and the public.
- Number of building and housing inspectors who utilize Department developed indoor air quality criteria for new construction.
- Number of agencies that access the data collection system for home hazard assessments.

Crosswalk to Other Health and System Priorities in Healthiest Wisconsin 2010

Significant links exist between this objective and topics addressed by subcommittees on intentional and unintentional injuries and violence as well as for integrated electronic data and information systems.

Access to Primary and Preventive Health Services: The association between biological contamination in a home and illness is an area in which many individuals in the medical community and local health departments feel uncertain about the cause and effect relationship. Physicians and healthcare providers are trained to treat the symptoms of illness associated with exposure to biological contamination but do not have the training or experience to ask the necessary questions regarding the cause of illness. On the other hand, many local health departments do not have trained staff or adequate knowledge, investigative experience, or skills in order to respond to a potential biological contamination of a home. As homes are being built tighter and the use of man-made chemicals and products that are used or installed within our homes increase, the incidence of biological or chemical related illness will increase. Adequate education of the medical community is necessary. Adequate education and staffing of the local health departments is a must. Lastly, adequate education of the public on the potential threat of potential biological contaminants in the home is required.

Adequate and Appropriate Nutrition: Eating food high in calcium and low in fat helps to keep a child from absorbing lead. Proper nutrition education and the introduction of high calcium, low
fat foods into a daily diet can play a vital role in helping reduce the incidence of lead poisoning in both children and adults.

*Intentional and Unintentional Injuries and Violence:* Assessments of home environments should be inclusive of injury hazards as well as environmental hazards. Cross-training of individuals doing home assessments or education of families will be more effective to achieve established objectives.

*Social and Economic Factors that Influence Health:* An individual’s income has a direct effect on the incidence of biological and chemical hazards found in an individual’s residence. Low income individuals usually reside in housing that is substandard, insect infested, in need of repair, and located in or adjacent to land occupied by industry and the by-products of production. As a result of their economic status, housing problems are many times not addresses or overlooked and associated health problems are evident. According to the Centers for Disease Control, 1 out of 6 low-income children, living in housing built before 1946, has lead poisoning. The cost to remove lead-contaminated surfaces is in many cases prohibitive for these individuals.

Insect infestations from cockroaches are a problem associated with economic status and location. Cockroach feces are known to cause allergic reactions in humans and is identified as a possible precursor to childhood asthma. Affordable housing for low-income individual is many times located in or adjacent to industrial production facilities. As a result of this close proximity, residents may be exposed to unacceptable levels of pollution from the air or soil.

*Tobacco Use and Exposure:* Secondhand smoke is estimated to cause as many as 1,200 additional lung cancer and heart disease deaths in Wisconsin. Household fires in Wisconsin caused by cigarettes killed an estimated 20 people in 2000. There is also evidence that shows that children of families who smoke have a higher incidence of upper respiratory infections than children of families who do not smoke. Education on the effects of smoking (both directly and via secondhand smoke) can have an impact on child morbidity and adult mortality.

*Integrated Electronic Data and Information Systems:* Developing data and reporting systems will be critical to establish a baseline information on morbidity caused by environmental hazards in the home and to measure successes of efforts to reduce those hazards.

*Coordination of State and Local Public Health System Partnerships:* Biological and chemical contamination of Wisconsin’s homes is a growing public health issue. With the advent of tightly built, highly insulated energy efficient buildings, the amount of indoor air complaints has increased. This increase in complaints has resulted in public health departments and the medical community being asked to respond. A partnership between the various state agencies that develop building codes and are current about chemical and biological hazards and their remediation is necessary.

*Sufficient, Competent Workforce:* Having a sufficient and well-trained workforce at the local and state level to address chemical and biological contamination issues is necessary to insure the protection of the public. Hiring new and training existing public health and medical staff on the
diagnoses and prevention of health problems associated with short and long-term exposure to chemical and biological contaminants in the home is necessary. The widely expanding field of health problems associated with an individual’s home environment needs to be investigated by professional staff who can provide technical assistance.

**Equitable, Adequate, and Stable Financing:** Acquiring and retaining adequate staff that can respond to environmental issues is necessary in order for public health. Currently, 34 of the 98 local public health departments in Wisconsin employ environmental health sanitarians. Many of these staff have received prior formal education and experience in biological and chemical hazards. The other 64 health departments may or may not have designated staff who are trained and available to respond to indoor housing complaints and issues. A system that provides funding or a resource to share among all public health departments is necessary.

**Significant Linkages to Wisconsin’s 12 Essential Public Health Services**

There are several essential public health services that this objective requires linkage. The strongest linkages are with the essential services “Identify, investigate, control, and prevent health problems and environmental health hazards in the community” and “Enforce laws and regulations that protect health and insure safety.”

**Identify, investigate, control, and prevent health problems and environmental health hazards in the community:** Interventions, consisting of the activities listed in this essential service, will be necessary to impact on the incidence of illnesses caused by environmental hazards in the home. The major strategies to achieve this objective will be based on education. However, achieving this objective will also require enforcement of appropriate standards to prevent or eliminate some environmental hazards in the home environment.

**Educate the public about current and emerging health issues:** The various media systems that society is exposed to on a daily basis has done a fairly good job of informing us on a number of biological and chemical problems in our home environment that either can or have the potential to cause illness and death. Unfortunately, the health problems associated with these environmental exposures usually cannot be corrected within a short time or have caused health problems that may be long term. The public needs to be better informed not only on the causes and effects of biological and chemical contaminants in the home but also on the remediation that may be necessary as well as the prevention of problems.

**Enforce laws and regulations that protect health and insure safety:** Interventions, consisting of the activities listed in the essential service “Identify, investigate, control, and prevent health problems and environmental health hazards in the community” will be necessary to impact on the incidence of illnesses caused by environmental hazards in the home. The major strategies to achieve this objective will be based on education. However, achieving this objective will also require enforcement of appropriate standards to prevent or eliminate some environmental hazards in the home environment.

**Connection to the Three Overarching Goals of Healthiest Wisconsin 2010**

*Protect and promote health for all:* Public health is defined as a system, a social enterprise, whose focus is on the population as a whole. Humans, in order to survive require three basic
elements: food, water and shelter. When a chemical or biological agent (natural or man-made) contaminates an individual’s shelter, the individual’s health can deteriorate as a result of this exposure. It is the role and responsibility of the medical profession, the community, and all levels of government to protect the health of its citizens. When a chemical or biological problem occurs that affects a basic element of survival, one’s home, that makes it unfit for living, measures must be taken to assure that assistance is provided along with the necessary follow-up and plan of correction.

Eliminate health disparities: Socially and economically disadvantaged populations in Wisconsin have a tendency to reside in homes that are older and in economically depressed areas of a community. The age of the home as well as its location are conducive to the pre-existing problems such as lead paint, chemical contamination of the environment, air pollution, asbestos, and insect infestations, as well as numerous other home-related problems. These problems have the potential to add to the already increased morbidity and mortality seen within this population. Society must make changes in how we address the housing issues and, in many cases, the subsequent health problems that are present in this population. Disparities in healthcare and how society responds to existing health problems needs to be addressed by responding to the problem as being a problem of human health and not a problem pre-determined by social or economic status.

Transform Wisconsin’s public health system: A competent, effective, well-trained healthcare and public health workforce is paramount as a means to transform Wisconsin’s healthcare system. Statewide access to knowledgeable and accessible public health and healthcare staff is necessary. A strong relationship between the medical community and public health to work toward the attainment of a shared vision of healthy communities means healthy people is key. More emphasis needs to be placed on primary prevention and education of the populace. Better communication and coordination between local and state agencies is also necessary so as to prevent unnecessary duplication of valuable resources.

Key Interventions and/or Strategies Planned:
A reduction in the burden of illness and death caused by environmental hazards in the home will be achieved by stressing education and partnerships. Education will be directed toward many sectors, such as the public health workforce, healthcare providers, inspectors, and builders. A second strategy consists of research into the effectiveness of home-based interventions in reducing health risks and the development of standards and accepted practices for hazard abatement and minimization in residential construction. Finally, intervention is called for in improving the collection, analysis, and dissemination of data on illnesses associated with environmental hazards in the home.
References:


Websites:
http://www.dhfs.state.wi.us/health/statehealthplan.

Healthy People 2010, November 2000, United States Department of Health and Human Services, cites the following baseline and target data:

<table>
<thead>
<tr>
<th>Allergen</th>
<th>1998-99 Baseline (Number of Homes - in millions)</th>
<th>2010 Target (Number of Homes - in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-16a. Group I dust mite allergens that exceed 2 micrograms per gram of dust in the bed</td>
<td>36.3</td>
<td>29.0</td>
</tr>
<tr>
<td>8-16b. Group I dust mite allergens that exceed 10 micrograms per gram of dust in the bed</td>
<td>18.6</td>
<td>14.9</td>
</tr>
<tr>
<td>8-16c. German cockroach allergens that exceed 0.1 microgram per gram of dust in the bed</td>
<td>4.7</td>
<td>3.8</td>
</tr>
</tbody>
</table>
APPENDIX B

Environmental and Occupational Health Hazards
Objective 4: Chemical and Biological Contaminants in the Home

Long-Term (2010) Subcommittee Outcome Objective: By December 31, 2010, reduce by 50 percent the incidence of illness and death related to chemical and biological contaminants in the home.

Overview:
The public’s health, particularly its environmental health, depends on the interaction of many factors. Healthy People 2010 states that “more than 6 million housing units across the country meet the Federal Government’s definition of substandard housing. Many factors—including air quality; lead-based paint on walls, trim, floors, ceilings, etc.; and hazardous household substances such as cleaning products and pesticides—can affect health and safety.” (Healthy People 2010, page 8-7).

“Human exposures to hazardous agents in the air, water, soil, and food and to physical hazards in the environment are major contributors to illness, disability, and death worldwide. Poor environmental quality is estimated to be directly responsible for approximately 25 percent of all preventable illness in the world, with diarrheal diseases and respiratory infections heading the list.” (Healthy People 2010, page 8-4). Home environments can present hazardous conditions that contribute to morbidity and mortality in all age groups with children and the elderly being most susceptible.

To provide a healthy environment, the places people spend the most time—their homes, schools, and offices—must be considered. Sufficient data and scientific studies exist that demonstrate children are being lead poisoned from their home environment; lung cancers are being caused by exposure to radon in the home; and that many adverse health conditions are occurring from exposure in the home environment to pesticides, carbon monoxide, other chemicals as well as to molds, dust mites and cockroaches.

According to Healthy People 2010 (a national public health strategic plan), “In 1984, between 2 million and 3 million children aged 6 months to 5 years had blood lead levels (BLLs) greater than 15 µg/dL, and almost a quarter of a million had BLLs above 25 µg/dL, a level that can affect vital organs and the brain…. However, despite the success achieved, more remains to be done before childhood lead poisoning becomes a disease of the past.”

“Since the mid-1980s, asthma rates in the United States have risen to the level of an epidemic. Asthma and other respiratory conditions often are triggered or worsened by substances found in the air, such as tobacco smoke, ozone, and other particles or chemicals. Based on existing data, an estimated 14.9 million people in the United States had asthma in 1995, including more than 5 million children aged 17 years and under. Between 1980 and 1993, the overall death rate for asthma increased 57 percent, from 12.8 to 20.1 deaths per million population for people aged 17 years and under, the death rate increased 67 percent, from 1.8 to 3.0 deaths per million population.” (Healthy People 2010, page 8-8).
Reducing morbidity and mortality caused by environmental hazards in the home environment requires appropriate recognition, assessment and control of the hazards that contribute to their incidence and severity. **Healthiest Wisconsin 2010** recognizes that chemical and biological contaminants in the home can be a contributing factor to the State’s morbidity and mortality rate. Increased public awareness of this environmental health issue is a key factor in achieving this objective.

**2010 Outcome Sub-Objectives**
Progress towards this long-term objective will be measured by the following four subobjectives.

**Outcome Objective 4a:** By 2010, rehabilitate 120,000 dwellings in Wisconsin with lead hazards present and occupied by children under 6 years old.

**Data Sources:**
1. Bureau of Environmental Health/Wisconsin Childhood Lead Poisoning Prevention Program (*Lead Elimination Plan*)
3. US Census Bureau. 2000 Decennial Census, Summary Tape File 3

**Baseline Data:** There are 120,000 dwellings in Wisconsin with lead hazards present and occupied by children that require rehabilitation.

**Target:** Rehabilitate 120,000 dwellings by 2010.

**Comment:** About 90 percent of Wisconsin children diagnosed with lead poisoning (1998-2002) lived in homes built before 1950. Wisconsin needs to strengthen communities to identify and correct lead hazards in housing before children become lead poisoned. Wisconsin also must continue to respond to lead poisoned children. To meet the subobjective, Wisconsin needs to rehabilitate about 20,000 dwellings per year, but is only averaging about 3800 dwellings/year.

**Outcome Objective 4b:** 100 percent of Wisconsin children enrolled in Medicaid will receive age-appropriate blood lead tests.

**Data Source:** Bureau of Environmental Health/Wisconsin Childhood Lead Poisoning Prevention Program

**Baseline Data:** As of 2002, 48.1 percent of Wisconsin 1- and 2-year old children enrolled in Medicaid received blood lead tests although all such children should be tested according to current federal regulations.

**Comment:** Federal rules require that children enrolled in Medicaid receive tests at age appropriate intervals. Medicaid enrolled children should be tested at ages one and two years. Also if they have not been tested previously, Medicaid enrolled children should also receive blood lead tests at ages 3, 4, or 5 years old.
**Outcome Objective 4c:** By the end of 2010, among all Wisconsin children age 6 or younger, there will be no children newly identified with lead poisoning.

**Data Source:** Bureau of Environmental Health/Wisconsin Childhood Lead Poisoning Prevention Program

**Baseline Data:** The national childhood lead poisoning average, at this time, is approximately 2.2 percent and declining, while Wisconsin’s rate among those children tested is 6.1 percent.

**Target:** All children in Wisconsin will be protected from lead hazards.

**Comment:** This is consistent with the national goal set forth by the US Centers for Disease Control and Prevention to Eliminate Childhood Lead Poisoning by 2010.

### Number of Wisconsin Children Less than Six Years with Blood Lead Levels of 10 Micrograms per Deciliter or More

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>10595</td>
</tr>
<tr>
<td>1997</td>
<td>9382</td>
</tr>
<tr>
<td>1998</td>
<td>7872</td>
</tr>
<tr>
<td>1999</td>
<td>6386</td>
</tr>
<tr>
<td>2000</td>
<td>5310</td>
</tr>
<tr>
<td>2001</td>
<td>5129</td>
</tr>
<tr>
<td>2002</td>
<td>4460</td>
</tr>
</tbody>
</table>

**Outcome Objective 4d:** By 2010, increase the capacity of local health departments to address environmental health issues in the home.

**Data Source:** DHFS/DPH/Bureau of Environmental & Occupational Health

**Baseline Data:** Under development. A significant amount of data exist that may provide some focus on this issue, but these data have not been sufficiently evaluated at this time to consider as baseline data.

**Target:** All local health departments will have access to a sanitarian/environmental health official by 2010.

**Comment:** Effective and timely delivery of local environmental health services are preferable and more efficient than centralized options. Therefore, it is a subobjective of the DHFS to increase the capacities of local health departments so that there is effective and timely management of environmental health issues for Wisconsin’s citizens.

**Outcome Objective 4e:** Reduce public exposures to indoor radon in all buildings with radon concentrations >4 pCi/L in occupied spaces.

**Data Source:** Bureau of Environmental and Occupational Health/Radon Program (http://www.dhfs.wisconsin.gov/dph_beh/RadonProt)

**Baseline Data:** All data are estimates, as there is not a formal data collection program for this issue. Data are voluntarily gathered from radon-mitigation contractors

**Target:** By 2010, reduce the fraction of homes with elevated indoor radon from about 7 percent to 5 percent, and increase the fraction of new construction built with radon-resistant features from a current small percentage to 15 percent.

**Comment:** The Wisconsin DHFS Radon Program is working through a variety of channels to improve public awareness of:

- the lung cancer risk from radon;
- radon testing in homes;
- retrofit mitigation of existing homes with elevated radon concentrations; and,
- new homes built with radon-resistant features.

**Estimated Percent of Homes with Radon > 4 pCi/L, Main Floor Year Average**

48,000 Measurements, by Zip Code

4 pCi/L is the USEPA’s indoor air risk level...
Retrofits of approximately 2,000 homes are performed each year to mitigate radon risks, thus addressing an estimated 2 percent of the 100,000 homes in Wisconsin that are estimated to exceed the USEPA’s risk guideline of 4 pCi/L of radon in living areas. Without radon-resistant new construction, the number of new homes with elevated radon that will be added to the state’s housing stock roughly equals the number of existing homes that will be retrofitted.

**Outcome Objective 4f:** By 2010, there will be no unintentional carbon monoxide poisoning fatalities in Wisconsin.

**Data Source:** DHFS/Mortality Database

**Baseline Data:** National data are available (attached); Wisconsin data will be obtained.

**Target:** No unintentional carbon monoxide poisoning fatalities by 2010 (this target does not include self-inflicted CO poisoning fatalities).

**Comment:** The Bureau of Environmental Health believes that through its abilities and tools, and those of partners such as local health departments and the utility companies, we all will be able to better inform and educate Wisconsin citizens about carbon monoxide poisoning, its prevention, and encouraging the use of carbon monoxide detectors.

**Outcome Objective 4g:** By 2010, there will be no unwanted environmental tobacco smoke exposure in homes.

**Data Source:** DHFS/DPH/BEOH/Asthma Program/Burden of Asthma Report and the DHFS/DHCF/BHI/Wisconsin Behavioral Risk Factor Surveillance System

**Baseline Data:** According to the 2000 BRFS, 27.9 percent of respondents stated that in the past thirty days, someone had smoked cigarettes, cigars, or pipes inside their home. From the 2000 Wisconsin Youth Tobacco Survey, 45.7 percent of middle school children and 42.9 percent of high school children/young adults stated that they lived with someone who smokes cigarettes (Note: It should not be inferred that smoking occurs in the student’s home from this response).

<table>
<thead>
<tr>
<th>Number of Days of the Past Seven Days Spent in the Same Room as Someone who was Smoking by Asthma Attack Status, Middle School Children, Wisconsin, 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
</tr>
<tr>
<td>46</td>
</tr>
<tr>
<td>21</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>19</td>
</tr>
<tr>
<td>No Asthma</td>
</tr>
<tr>
<td>49</td>
</tr>
<tr>
<td>21</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>17</td>
</tr>
<tr>
<td>Asthma, No Attack</td>
</tr>
<tr>
<td>44</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>9</td>
</tr>
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<td>4</td>
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<td>23</td>
</tr>
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<td>Asthma, Attack</td>
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<tr>
<td>30</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>14</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>34</td>
</tr>
</tbody>
</table>

Source: *Burden of Asthma in Wisconsin, 2004; WDHFS PPH 45055 (02/04)*

**Target:** There will be no unwanted environmental tobacco smoke exposure in Wisconsin homes by 2010.

**Comment:** Environmental tobacco smoke (ETS) is a respiratory irritant for many and can be a deadly irritant for a small portion of Wisconsin residents, particularly those who have asthma, emphysema or are otherwise sensitized to ETS.
Health Priority: Environmental and Occupational Health Hazards
Objective 5: Environmental Health Indicators for Air, Land, and Water
(Template)

Long-term (2010) Subcommittee Outcome Objective:
By 2010, enhance the quality of life in Wisconsin through improvements in environmental health indicators for air, land, and water.
Long-term outcome objective updated as of: Sept 2004

<table>
<thead>
<tr>
<th>Wisconsin Baseline</th>
<th>Wisconsin Sources and Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is a developmental objective. Refer to Attachment I for an in depth discussion on the scope and measurement challenges of this objective.</td>
<td>Specific indicators under development.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Federal/National Baseline</th>
<th>Federal/National Sources and Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>See Appendix A - Reduction in Air Pollutants baseline and target data.</td>
<td>Healthy People 2010, November 2000, United States Department of Health and Human Services cites the following sources for this baseline data: Aerometric Information Retrieval System, Environmental Protection Agency, Office of Air and Radiation.</td>
</tr>
<tr>
<td>See Appendix A - Increase in Use of Alternative Modes of Transportation baseline and target data.</td>
<td>Healthy People 2010, November 2000, United States Department of Health and Human Services cites the following sources for this baseline data: Nationwide Personal Transportation Survey, U.S. Department of Transportation.</td>
</tr>
</tbody>
</table>

Related USDHHS Healthy People 2010 Objectives

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Goal</th>
<th>Objective Number</th>
<th>Objective Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 – Environmental Health</td>
<td>Promote health for all through a healthy environment.</td>
<td>8-1</td>
<td>Reduce the proportion of persons exposed to air that does not meet the U.S. Environmental Protection Agency’s health-based standards for harmful air pollutants.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8-2</td>
<td>Increase use of alternative modes of transportation to reduce motor vehicle emissions and improve the Nation’s air quality.</td>
</tr>
</tbody>
</table>

Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>None identified.</td>
<td></td>
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</tbody>
</table>

Template – Health Priority: Environmental and Occupational Health Hazards – Objective 5
Rationale:
Recent decades have spawned a vast body of knowledge on the close and complex relationships between changes in environmental quality and adverse human health outcomes. These relationships are grounded in the basic human necessity for air, water, and food that are both pure and plentiful, and the range of impacts that historical and recent environmental contamination has had on these resources. Acceleration in the decline in animal and plant species provides evidence that stresses in the environment are negatively affecting the ability to sustain the range of biological processes required to provide our own species with its necessary biological infrastructure. Recent discoveries of the effects of a wide array of chemical substances on the endocrine system and elevated burdens of dozens of contaminants in human tissue demonstrate that hazards in the present environment represent an aggregate health risk that defies our current capacity for definitive identification, evaluation, and control.

Unfortunately there are few data sources available that can be used to provide a comprehensive assessment of environmental problems as health hazards. There are few diseases for which clear environmental etiologies have been established. Environmental health assessment efforts need information not only for the diseases that are environmentally related, but also for the concomitant potential environmental hazards and exposures. We do not yet have biological markers that can tell us which disease may be caused by specific exposures. While we do have laboratory assays that are highly sensitive for measuring levels of a wide variety of chemicals and compounds in human blood and tissue, we do not yet have sufficient information on the adverse health effects of these chemicals when detected at low levels in humans.

One key step in advancing environmental public health is to develop indicators for environmental exposures and adverse health effects that will allow a quantitative and qualitative understanding of progress or decline. The National Research Council, in their 1999 report Health Performance Measurement in the Public Sector, noted that “Efforts to monitor environmental health risks and steps taken to control them…requires a mix of information on the hazards (e.g., specific air or water pollutants), the exposures (e.g., biological markers, such as blood lead levels) and health outcomes (e.g., asthma, birth defects, and cancer)…. A crucial factor for performance measurement is a lack of consensus on appropriate indicators of environmental health status or of capacity and processes in environmental health services.”

In a 1999 position statement, the Council of State and Territorial Epidemiologists underscored the seriousness of the barriers in delivering environmental health programs and services. “Rebuilding public heath environmental capacity will lead to a more credible, scientific basis for environmental and occupational regulation. Public health can assist in integrating advances in a variety of scientific disciplines to understand mechanisms, exposure and effects for environmental pollutants.”

Wisconsin must strengthen the links between fundamental science, toxicology, and epidemiology if we are to achieve and measure improvement in our quality of life.
Outcomes:
Short-Term Outcome Objective (2002-2004)
- Improve attitudes toward individual behaviors that contribute positively to environmental quality.
- Increase awareness of health concerns related to decreased environmental quality.
- Promote creation of local groundwater protection advisory committees.
- Increase use of Geographical Information Systems to link environmental and epidemiological data.
- Increase collection and analysis of environmental data.

Inputs: (What we invest – staff, volunteers, time money, technology, equipment, etc.)
- Media
- Health and environmental educators
- Community-based organizations
- State and local health agencies
- Tribes
- Academic institutions
- Wisconsin Department of Natural Resources
- Department of Agriculture, Trade and Consumer Protection.
- Local governments

Outputs: (What we do – workshops, meetings, product development, training. Who we reach – community residents, agencies, organizations, elected officials, policy leaders, etc.)

Activities:
- Increase the capacity and motivation of individuals to contribute positively to environmental preservation.
- Increased motivation to take individual action to preserve public health by maintaining environmental quality.
- Increased local understanding and input on groundwater quality efforts.
- Increased ability to identify and critically investigate relationships between health outcomes and environmental exposures.
- Increase quality and quantity of environmental data available for health-related analysis.

Participation/Reach
- Citizens
- Healthcare providers
- Policymakers
- Public institutions
- Private/non-profit
- Business
- Schools
- Faith-based communities
• Home owners
• Industry
• Health agencies
• Tribes
• Federal government
• Laboratory staff
• Individuals
• Legislators

**Medium-Term Outcome Objective (2005-2007)**

- Increase use of integrated pest management techniques.
- Increase use of environmentally-friendly consumer packaging.
- Increase use of pollution prevention practice in industry (e.g., waste minimization, alternative chemicals, etc.).
- Increase use and capacity of public transportation.
- Increase use of alternative fuels.
- Increase use of ‘no-till’ and other erosion control strategies.
- Develop and implement sound regional land use planning strategies.
- Reduce per capita water consumption.
- Reduce non-point sources of water pollution.
- Increase capacity of local governments to assess land, water, and air quality issues.

**Inputs:** *(What we invest – staff, volunteers, time money, technology, equipment, etc.)*

- State Agencies:
  - Wisconsin Department of Health and Family Services
  - Wisconsin Department of Agriculture, Trade and Consumer Protection
  - Wisconsin Department of Natural Resources
  - Wisconsin Department of Commerce
- Federal agencies
- University of Wisconsin-Extension
- Industry
- Federal, state, tribal, and local governments
- Legislature
- Regional and local planning agencies
- Federal and state agricultural agencies
- Community-based organizations
- Academic institutions
- Water utilities
- Local planning and zoning agencies
- Industrial sector
Outputs:  (What we do – workshops, meetings, product development, training.  Who we reach—community residents, agencies, organizations, elected officials, policy leaders, etc.)

Activities:
- Decreased dependence on chemical pesticides in the agricultural community.
- Decreased disposal of product packaging in Wisconsin landfills.
- Reduced emission of industrial chemicals.
- Decreased transportation-related air pollution.
- Decreased transportation- and energy-related air pollution.
- Decreased erosion of Wisconsin agricultural land.
- Increased consideration of environmental concerns in local and regional planning efforts.
- Eliminate decline in water tables in Wisconsin.
- Decreased contribution of non-point pollution to surface water and groundwater.
- Increase ability of localities to comprehensively address declining environmental indicators.

Participation/Reach:
- Citizens
- Healthcare providers
- Policymakers
- Public institutions
- Private/non-profit
- Business
- Schools
- Faith-based communities
- Home owners
- Industry
- Health agencies
- Tribes
- Federal government
- Laboratory staff
- Individuals
- Legislators

Long-term Outcome Objectives (2008-2010)
- Preserve and protect wetlands and forested, agricultural and recreational land.
- Reduce industrial and transportation-related air pollution.
- Preserve and protect groundwater, surface water and recreational water resources.
- Preserve and protect species diversity.
Inputs: *(What we invest – staff, volunteers, time money, technology, equipment, etc.)*
- State agencies:
  - Wisconsin Department of Health and Family Services
  - Wisconsin Department of Natural Resources
  - Wisconsin Department of Agriculture, Trade and Consumer Protection
  - Wisconsin Department of Commerce
  - Wisconsin Department of Transportation
- U.S. Department of Energy
- Community-based organizations
- Legislators
- Local and tribal governments
- Environmental Protection Agency, Department of Interior
- Industry
- Community-based organizations

Outputs: *(What we do – workshops, meetings, product development, training. Who we reach–community residents, agencies, organizations, elected officials, policy leaders, etc.)*
- Ability to effectively sustain land resources for full range of current and anticipated recreational and commercial uses.
- Reduction of air pollution below levels which may contribute to existing, anticipated and unanticipated adverse health outcomes.
- Ability to sustain pollutant and natural contaminant levels in surface water and groundwater at levels that contribute to existing, anticipated and unanticipated adverse health outcomes.
- Sustain current range of animal, plant, and microbial species that provide biological and ecological infrastructure for human health.

Participation/Reach:
- Citizens
- Healthcare providers
- Policymakers
- Public institutions
- Private/non-profit
- Business
- Schools
- Faith-based communities
- Home owners
- Industry
- Health agencies
- Tribes
- Federal government
- Laboratory staff
- Individuals
- Legislators
Evaluation and Measurement
Many of the environmental changes of concern addressed by this objective, such as air pollutant levels or surface water and groundwater contamination, can be directly monitored on an ongoing basis. Developmental work will be needed to fully assess success in maintaining the quality and quantity of wetlands, forested, agricultural, and recreational land. While means of assessing the maintenance of species diversity are available on a state and national basis, the manner in which relevant data are interpreted in the public health community has not been fully developed.

Crosswalk to Other Health and System Priorities in Healthiest Wisconsin 2010
There are significant relationships between this objective and nearly all the other priorities addressed by subcommittees. Environmental factors associated with air, water, land interact with all human activities and contribute actively and passively as disease modifiers. The environment can facilitate healthy behaviors or serve as a barrier to improving health status. Some specific crosswalks are discussed below.

Existing, Emerging, and Re-emerging Communicable Diseases: Environmental media such as water (drinking or recreational surface use), soil contamination (use of sewage sludge) and air contamination are likely to contribute as exposure routes for communicable diseases. Environmental megatrends such as global warming will also contribute.

Overweight, Obesity, and Lack of Physical Activity: Lack of access to environments that facilitate physical activity contributes to the national epidemic of obesity. The issue of urban sprawl with inadequate sidewalks, lack of urban bicycle trails, and recreational activities only accessible through the use of automobiles, are environmental factors which contribute barriers to the goals of this priority.

Integrated Electronic Data and Information Systems: The development of data systems that can integrate health data with environmental exposure information will be critical in identifying exposure-response relationships related to environmental and/or occupational determinants. Such data systems will be critical to allowing analyses that will support the need for environmental regulation and control.

Coordination of State and Local Public Health System Partnerships: Most of the environmental regulations and enforcement is done by agencies other than public health. It is especially important that public health partnerships be established in environmental health if these non-traditional public health areas are to be adequately addressed.

Significant Linkages to Wisconsin’s 12 Essential Public Health Services
Because this objective covers all environmental media it relates to all 12 essential public health services. However, the specifics of the objective relate most directly to two essential public health services: the identification, investigation, control and prevention of environmental health hazards and the enforcement of laws and regulations related to health and safety. Because much work is needed and current tools are inadequate, important components of the objective also relate to the research service “conduct research to seek new insights and innovative solutions to health problems.”
Identify, investigate, control, and prevent health problems and environmental health hazards in the community: Meeting this objective falls squarely in the domain of preventing health problems related to environmental health hazards and developing the tools to assess progress.

Enforce laws and regulations that protect health and insure safety: Effective occupational and environmental standards exist for many substances and work practices, the enforcement of these standards often remains inadequate to protect the most vulnerable. Tracking environmental health indicators will help determine the impact of regulatory failure and indicate where we have succeeded and where greater efforts or new approaches are needed.

Conduct research to seek new insights and innovative solutions to health problems: In addition, conducting research in seeking new insights into health problems that may be associated with environmental degradation will be important in assessing those environmental interventions that will be most beneficial in improving public health.

Connection to the Three Overarching Goals of Healthiest Wisconsin 2010

Protect and promote health for all: Protecting the quality of air, water, and agricultural land offers assurance that these basic resources will be protected and represent a population-wide public health assurance.

Eliminate health disparities: Because of statewide variations in the quality of air, water, and land resources, addressing this objective naturally represents an effort to eliminate health disparities in the state.

Transform Wisconsin’s public health system: Viewing species diversity and other environmental quality parameters as stand-alone public health determinants requires taking on a transformed public health paradigm and will accordingly require that new partners be identified and empowered.

Key Interventions and/or Strategies Planned:
Communicating the need to view environmental quality as a critical public health endpoint will require interventions among legislators and other high-level policymakers, local and regional planners as well as the general public. Legislators and policymakers will need data and new information as public health science becomes better informed on the impact of environmental changes on health outcomes. Making local and regional governments (e.g., land use planning and zoning agencies) aware of the public health implications of their decisions will be key to making progress on this objective. Finally, it will be necessary to bring about behavior change among consumers, commuters, well owners, and other sectors of the public if sustainable changes in environmental quality are to be made.
References:


**APPENDIX A**

*Healthy People 2010*, November 2000, United States Department of Health and Human Services cites the following baseline and target data:

<table>
<thead>
<tr>
<th>Reduction in Air Pollutants.</th>
<th>1997 Baseline (Percent)</th>
<th>2010 Target (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(8-1a) Ozone*</td>
<td>43</td>
<td>0</td>
</tr>
<tr>
<td>(8-1b) Particulate matter*</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>(8-1c) Carbon monoxide</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>(8-1d) Nitrogen dioxide</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>(8-1e) Sulfur dioxide</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>(8-1f) Lead</td>
<td>&lt;1</td>
<td>0</td>
</tr>
<tr>
<td>(8-1g) Total number of people</td>
<td>119,803,000</td>
<td>0</td>
</tr>
</tbody>
</table>

* The targets of zero percent for ozone and particulate matter are set for 2012 and 2018, respectively.

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*Healthy People 2010*, November 2000, United States Department of Health and Human Services cites the following baseline and target data:

<table>
<thead>
<tr>
<th>Increase in Use of Alternative Modes of Transportation</th>
<th>1995 Baseline (Percent)</th>
<th>2010 Target (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(8-2a) Trips made by bicycling</td>
<td>0.9</td>
<td>1.8</td>
</tr>
<tr>
<td>(8-2b) Trips made by walking</td>
<td>5.4</td>
<td>10.8</td>
</tr>
<tr>
<td>(8-2c) Trips made by transit</td>
<td>1.8</td>
<td>3.6</td>
</tr>
<tr>
<td>(8-2d) Persons who telecommute</td>
<td>Developmental</td>
<td>Developmental</td>
</tr>
</tbody>
</table>