

**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

Wisconsin Baseline	Wisconsin Sources and Year
4a. There are 120,000 dwellings in Wisconsin with lead hazards present and occupied by children that require rehabilitation.	(1) Wisconsin Department of Health and Family Services, Division of Public Health, Bureau of Environmental and Occupational Health /Childhood Lead Poisoning Prevention Program (<i>Lead Elimination Plan</i>); (2) Website: www.hud.gov/utilities/intercept.cfm?/offices/lead/techstudies/LeadPaintHousingSurvey.pdf (3) US Census Bureau. 2000 Decennial Census, Summary Tape File 3
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.	Wisconsin Department of Health and Family Services, Division of Public Health, Bureau of Environmental and Occupational Health/Wisconsin Childhood Lead Poisoning Prevention Program

Wisconsin Baseline	Wisconsin Sources and Year
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%.	Wisconsin Department of Health and Family Services, Division of Public Health, Bureau of Environmental and Occupational Health/Wisconsin Childhood Lead Poisoning Prevention Program
4d. Developmental data	Wisconsin Department of Health and Family Services, Division of Public Health, Bureau of Environmental and Occupational Health/Wisconsin Childhood Lead Poisoning Prevention Program
4e. Developmental data	Wisconsin Department of Health and Family Services, Division of Public Health, Bureau of Environmental and Occupational Health/Radon Program
4f. National data available; Wisconsin data will be obtained.	Wisconsin Department of Health and Family Services, Division of Health Care Financing, Bureau of Health Information/Mortality Database
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).	<i>Wisconsin Behavioral Risk Factor Survey, 2000.</i> Department of Health and Family Services, Division of Health Care Financing/Bureau of Health Information <i>Wisconsin Youth Tobacco Survey, 2000.</i> Department of Health and Family Services, 2000 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	Federal/National Sources and Year
4.4% of children aged 1 to 6 years had blood lead levels exceeding 1µg/dL during 1991-94. Target 0%.	<i>Healthy People 2010</i> , 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)
See Appendix A - Allergen baseline and target data.	<i>Healthy People 2010</i> , 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

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%.	<i>Healthy People 2010</i> , 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.	<i>Healthy People 2010</i> , November 2000, USDHHS cites the following sources for this baseline data: National Association of Home Builders Research Center Survey. National Association of Home Builders

Related USDHHS Healthy People 2010 Objectives			
Chapter	Goal	Objective Number	Objective Statement
8 – Environmental Health	Promote health for all through a healthy environment.	8-11	Eliminate elevated blood lead levels in children.
		8-16	Reduce indoor allergen levels.
		8-18	Increase the proportion of persons who live in homes tested for radon concentrations.
		8-19	Increase the number of new homes constructed to be radon resistant.

Definitions	
Term	Definition
Lead-safe	Lead-safe means no lead-based paint hazards were found during a lead-safe investigation of the property.
Lead-free	Lead-free means no lead-based paint was found during a lead-free inspection of the property.

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 addressed 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:

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<http://www.hud.gov/utilities/intercept.cfm?/offices/lead/techstudies/LeadPaintHousingSurvey.pdf>

APPENDIX A

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

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

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:

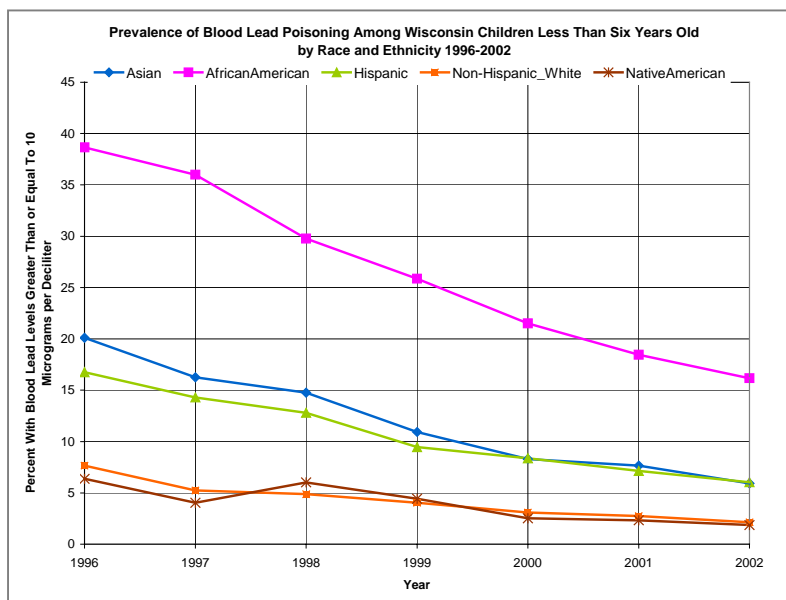
The public's health, particularly its environmental health, depends on the interaction of many factors. *Healthy People 2010* states that "more than 6 million housing units across the country meet the Federal Government's definition of substandard housing. Many factors—including air quality; lead-based 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 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* (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*)
- (2) <http://www.hud.gov/utilities/intercept.cfm?/offices/lead/techstudies/LeadPaintHousingSurvey.pdf>
- (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.

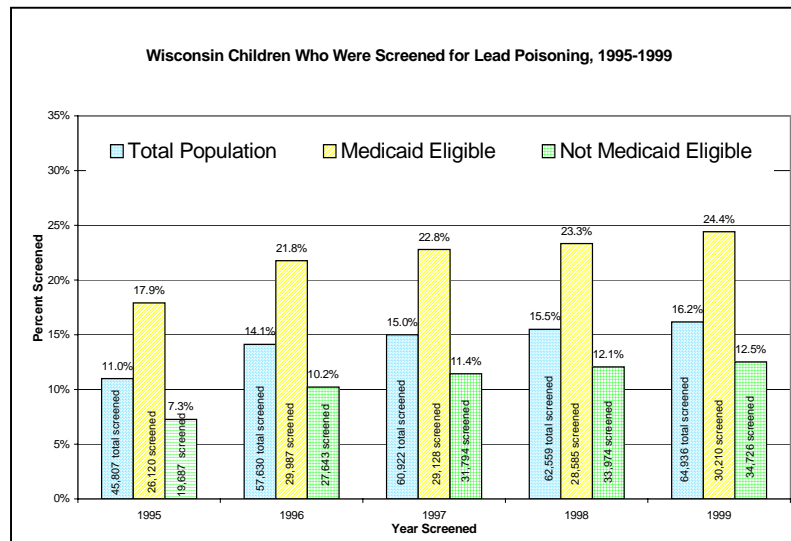
Comment: About 90 percent of Wisconsin children diagnosed with lead poisoning (1998-2002) lived in homes built before 1950. Wisconsin needs to strengthen communities to identify and correct lead hazards in housing before children become lead poisoned. Wisconsin also must continue to respond to lead poisoned 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.



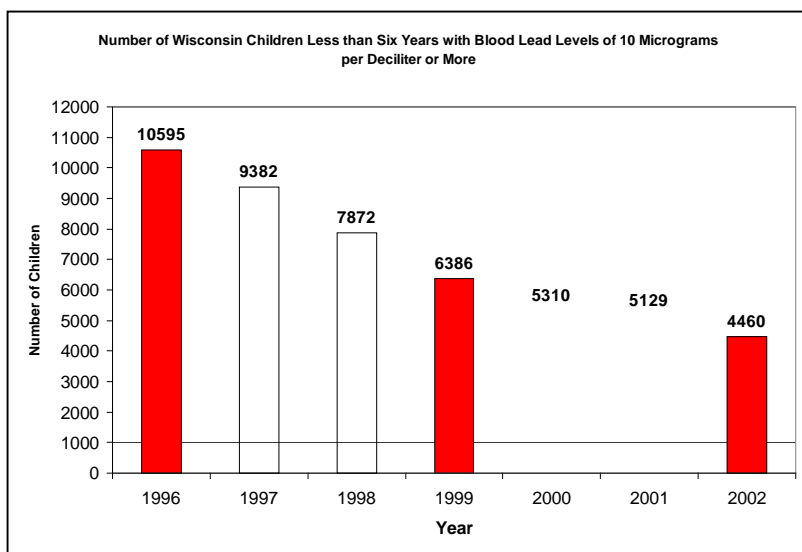
Outcome Objective 4c: By the end of 2010, among all Wisconsin children age 6 or younger, there will be no children newly identified with lead poisoning.

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.



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)

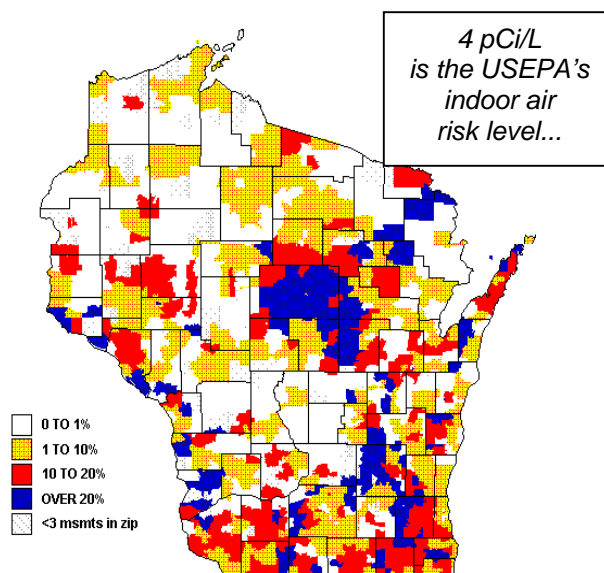
Baseline Data: All data are estimates, as there is not a formal data collection program for this issue. Data are voluntarily gathered from radon-mitigation contractors

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



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.

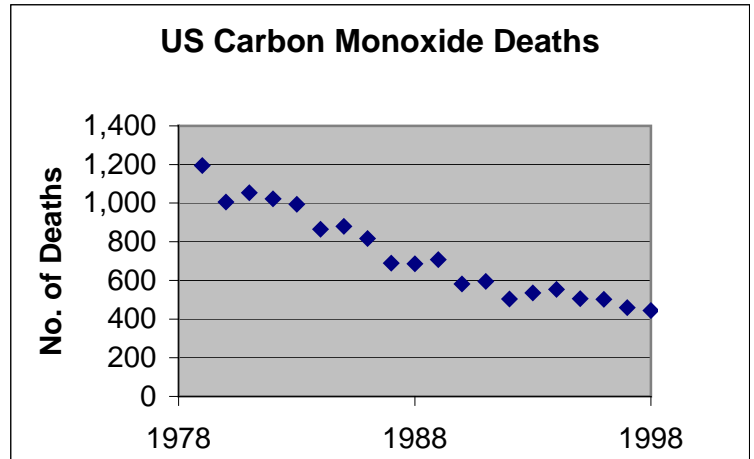
Outcome Objective 4f: By 2010, there will be no unintentional carbon monoxide poisoning fatalities in Wisconsin.

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).

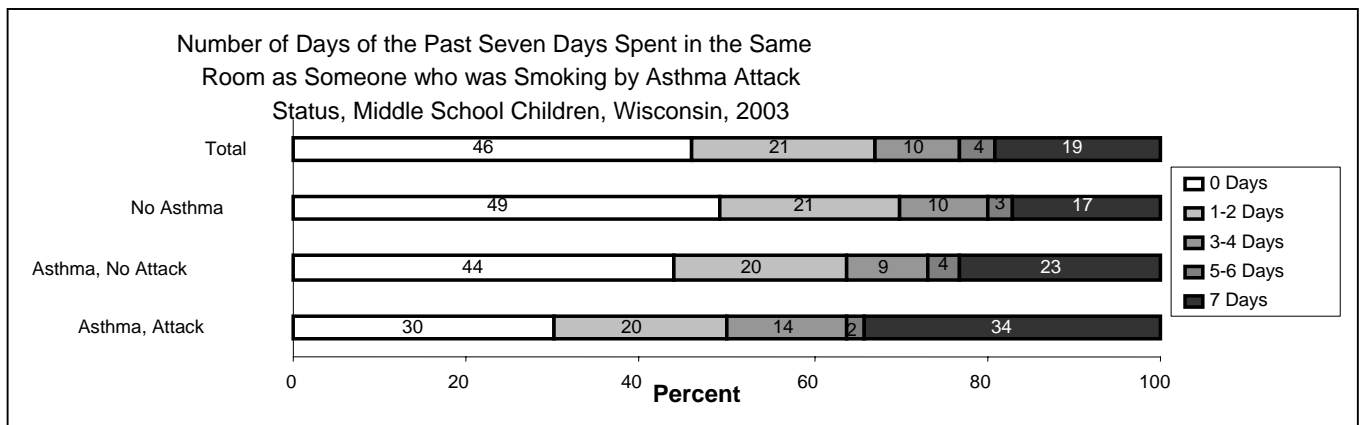
Comment: The Bureau of Environmental Health believes that through its abilities and tools, and those of partners such as local health departments and the utility companies, we all will be able to better inform and educate Wisconsin citizens about carbon monoxide poisoning, its prevention, and encouraging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



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.