

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.

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.

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.

Long-term outcome objective updated as of: Sept 2004

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.

Federal/National Baseline	Federal/National Sources and Year
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	<i>Healthy People 2010</i> , 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)
6 outbreaks per year originated from community water systems (1987-96 average). Target: 2 outbreaks.	<i>Healthy People 2010</i> , 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)
See Appendix A - Reduction in Infections Caused by Microorganisms baseline and target data.	<i>Healthy People 2010</i> , 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.
See Appendix A - Reduction in Infections Caused by Foodborne Bacteria baseline and target data.	<i>Healthy People 2010</i> , November 2000, USDHHS cites the following sources for this baseline data: Foodborne Disease Outbreak Surveillance System, CDC, NCID

Related USDHHS Healthy People 2010 Objectives			
Chapter	Goal	Objective Number	Objective Statement
8 – Environmental Health	Promote health for all through a healthy environment.	8-5	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.
		8-6	Reduce waterborne disease outbreaks arising from water intended for drinking among persons served by community water systems.
		8-10	Reduce the potential human exposure to persistent chemicals by decreasing fish contaminant levels
10 – Food Safety	Reduce foodborne illnesses.	10-1	Reduce infections caused by key foodborne pathogens.
		10-2	Reduce outbreaks of infections caused by key foodborne bacteria.
		10-5	Increase the proportion of consumers who follow key food safety practices

Related USDHHS Healthy People 2010 Objectives			
Chapter	Goal	Objective Number	Objective Statement
10 – Food Safety (continued)		10-6	Improve food employee behaviors and food preparation practices that directly relate to foodborne illnesses in retail food establishments
		10-7	Reduce human exposure to organophosphate pesticides from food.

Definitions	
Term	Definition
Certified food managers	The operator or manager of a food establishment that has been certified by the Department of Health and Family Services and has demonstrated by examination proficiency in the safe preparation and handling of food.
Community water system	A public water system that provides water to at least 15 service connections used by year round residents or that regularly serves at least 25 year round residents.
Foodborne disease outbreak	Two or more cases of similar illness resulting from eating the same food.
Persistent chemicals	Chemicals such as organochlorine compounds that remain in the environment for a long time and can accumulate in the fat of people and animals exposed to them.
Retail food establishments	Food vending operations, grocery stores, and food service in restaurants and institutions.
Waterborne disease outbreak	Two or more cases of similar illness resulting from drinking the same water.

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
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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 be 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. Centers for Disease Control and Prevention. *Food Related Illness and Death in the United States*. October, 1999.

U.S. Department of Health and Human Services. (2000). *Healthy People 2010*. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health 2 vols. Washington, DC: U.S. Government Printing Office.

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

U.S. Food and Drug Agency. *Annual Report from FDA's Pesticide Residue Monitoring Program*. 1993-1999.

Wisconsin Department of Health and Family Services. *Annual Report of Disease Outbreak Investigations*.

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:

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

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

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

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.

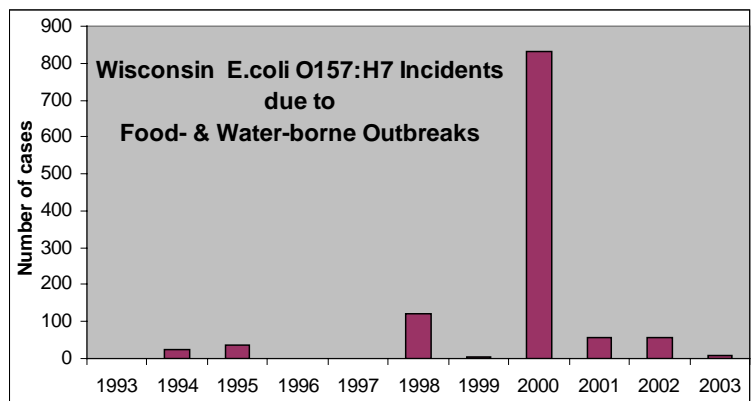
Subobjective EOHH1b: *By 2010, the incidence of E. coli O157:H7 infection will be 3 per 100,000 population.*

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.

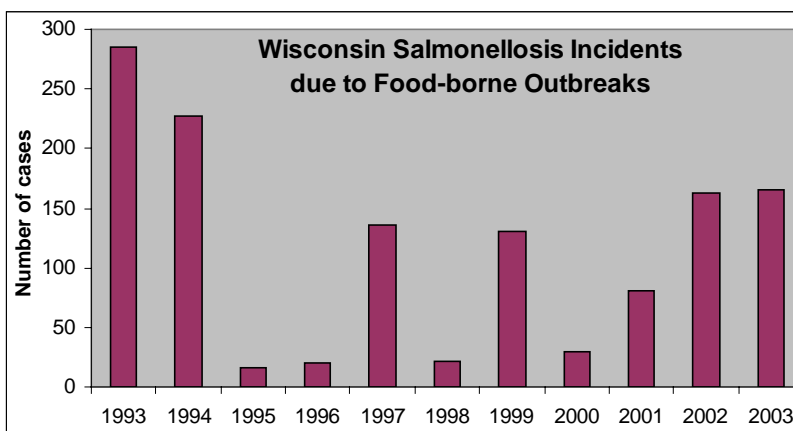
Data Source: Bureau of Communicable Diseases/Epidemiology Section/John Archer

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.



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

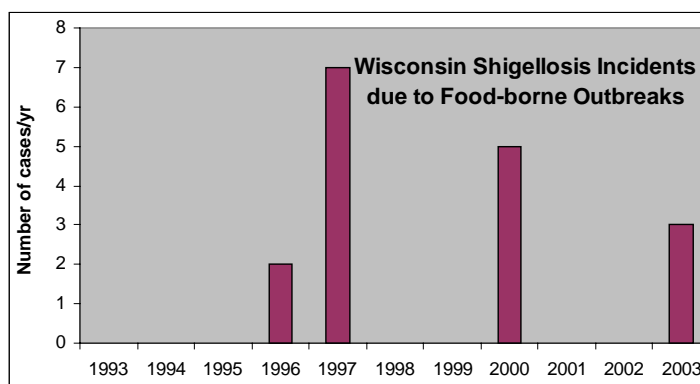
Data Source: Bureau of Communicable Diseases/Epidemiology Section/John Archer

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.

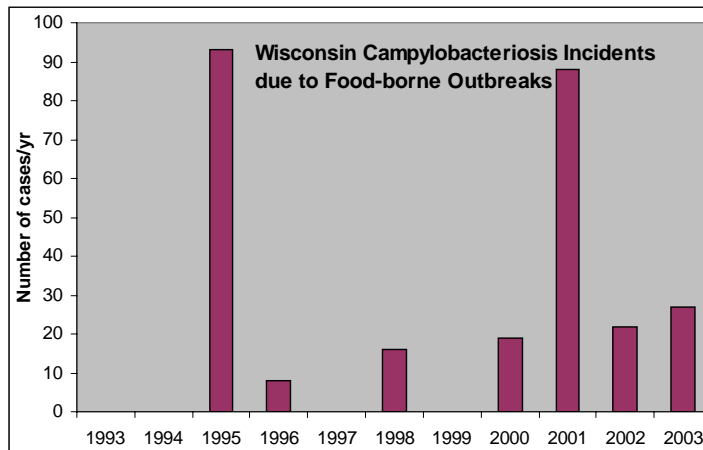
Data Source: Bureau of Communicable Diseases/Epidemiology Section/John Archer

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.



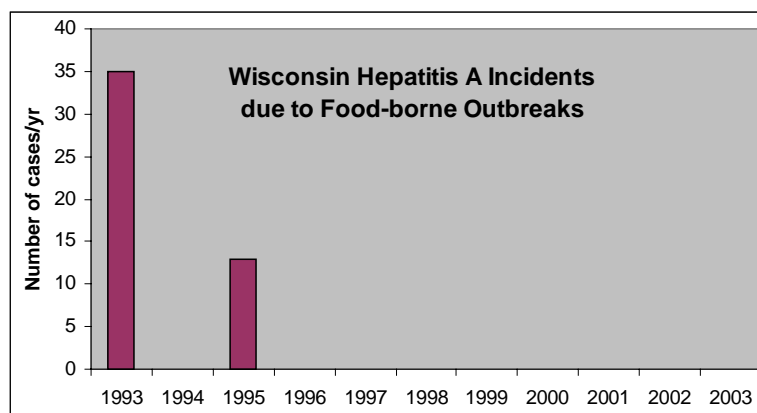
Subobjective EOHH1f: By 2010, the incidence of hepatitis A will be one per 100,000 population.

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.



Subobjective EOHHi1g: *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.