



Activities in Michigan



ATSDR in Partnership With Michigan

The Agency for Toxic Substances and Disease Registry (ATSDR) is the lead public health agency responsible for implementing the health-related provisions of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). ATSDR is an Atlanta-based federal agency with more than 400 employees and an annual budget for 2003 of approximately \$82 million. ATSDR is responsible for assessing the presence and nature of health hazards at specific Superfund sites, helping to prevent or reduce further exposure and illnesses resulting from those hazards, and expanding the knowledge base about the health effects of exposure to hazardous substances.

ATSDR works closely with state agencies to carry out its mission to serve the public by using the best science, taking responsive public health actions, and providing trusted health information to prevent harmful exposures and disease related to toxic substances. ATSDR provides funding and technical assistance to states and other partners through cooperative agreements and grants to identify and evaluate environmental health threats to communities. These resources enable state and local health departments and other grantees to further investigate environmental health concerns and to educate communities. From **fiscal years 1987 through 2003**, ATSDR awarded more than **\$14.3 million**—more than **\$1.3 million** in the last 2 years—in direct funds and services to **Michigan** for comprehensive support of its environmental health unit. In addition to direct funds and services, ATSDR staff provides technical and administrative guidance for state-conducted site activities.

ATSDR Site-Related Activities Public Health Assessment-Related Activities

One of the agency's important mandates is to conduct **public health assessments** of all National Priorities List (NPL) sites and of other sites where a significant threat to public health might exist. **Eighty-seven** sites have been designated to the NPL in **Michigan**.

A **public health assessment** is a written, comprehensive evaluation of available data and information on the release of

hazardous substances

into the environment in a specific geographic area.

Such releases are assessed for current or future impact on public health. ATSDR, in collaboration with public health and environmental officials from **Michigan**, has conducted **134** health assessments in the state, including the following recent example.

- **Wurtsmith Air Force Base (WAFB)**—WAFB is a former aviation support facility in **Oscoda**. While the base was in operation, hazardous materials were released to the environment, resulting in environmental contamination at many locations, including on-base and off-base water supplies, surface water, and sediment. ATSDR analyzed 58 areas of potential contamination to determine whether past, current, or future public health hazards are associated with those areas. For most sites, no public health hazards were identified.

A **health consultation** is a written or oral response from ATSDR to a specific request for information about health risks related to a specific site, chemical release, or hazardous material. It is a more limited response than a public health assessment is. To date, **200** documented health consultations have been conducted at **148** sites in **Michigan**, including the following recent examples.

- **Continental Aluminum**—In December 2001, ATSDR received a petition asking for a public health assessment of the emissions from the Continental Aluminum Corporation, an aluminum recycling foundry in **New Hudson**. The petitioners asked that the health assessment focus on air, water, and soil contamination. The petition letter listed a number of chemicals of interest in the waste products from the foundry being released to the air directly and to surface waters and soil indirectly. The letter also listed concerns about potentially contaminated locally grown commercial produce, worker safety

ATSDR awarded more than \$1.3 million in the last 2 years in direct funds and services to Michigan.

violations, complaints issued through local and state agencies, and the involvement of political representatives.

Although air dispersion modeling performed by the **Michigan Department of Environmental Quality (MDEQ)** indicates that emissions of chlorine, hydrogen chloride, and hydrogen fluoride are not above state screening levels, neighbors of the facility allege that they are experiencing adverse health effects and attribute those effects to process emissions.

In a health consultation released in March 2003, the site is categorized as an indeterminate public health hazard on the basis of community health concerns and available stack testing data. Further characterization of stack emissions during odor events is necessary to determine any correlation with health effects reported by the community.

- **Midland**—In May 2001, a **Midland** resident and two Michigan-based environmental organizations petitioned ATSDR to conduct a public health assessment of dioxin contamination in Midland and in adjacent communities.

A health consultation released for public comment in March 2002 addresses soil contamination in the Midland area. The data necessary to determine whether dioxin-contaminated soil in the Midland area poses a public health risk are not available; therefore, the site poses an indeterminate public health hazard. Further site-specific evaluation is necessary to determine whether dioxin contamination in Midland soil presents a public health hazard.

A second health consultation released for public comment in March 2002 addresses floodplain soil contamination in the Tittabawassee River watershed downstream from the city of Midland. The data necessary to determine whether dioxin-contaminated floodplain soil in the Tittabawassee River watershed poses a public health risk are not available; therefore, the site poses an indeterminate public health hazard. Additional soil sampling is necessary to determine whether nearby residential properties

are contaminated with dioxin, and to determine the extent and severity of dioxin contamination in the floodplain areas.

An **exposure investigation** collects information on specific human exposures through biologic sampling, personal monitoring, related environmental assessment, and exposure-dose reconstruction. ATSDR staff members have conducted **two** exposure investigations in **Michigan**, including the following recent example.

- **Mercury Spill**—In May 2002, staff from the **Michigan Department of Community Health (MDCH)**, the **Genesee County Health Department**,

and the U.S. Environmental Protection Agency (EPA) responded to a mercury release at a home on Princeton Avenue in **Flint**. About 6 fluid ounces of mercury were found in the home's forced-air furnace by a repair technician. Because the mercury, whose source is unknown, was in the unit for an unknown length of time, the potential exists for significant chronic inhalation exposure.

Breathing-zone concentrations of mercury were several times greater than the recommended ATSDR action level of 1 microgram per cubic meter ($\mu\text{g}/\text{m}^3$). MDCH considered the situation an urgent public health hazard requiring immediate action.

Residents of the home were evacuated during clean-up and restoration activities. After the cleanup, the home's indoor air was tested using a National Institute of Occupational Safety and Health 8-hour test for mercury vapor concentrations in air. Test results indicated that mercury concentrations were less than the action level and the home was cleared for occupancy. No public health hazard currently exists in this home.

Health Education and Community Activities

Michigan has been a participant in ATSDR's cooperative agreement program since **1987**. Under this program, **MDCH** has received funding and technical assistance for the development of community education and activities associated with human exposure to hazardous substances in the environment. In the last 2 years, MDCH has developed more than 25 educational tools related to



Mercury release in a home furnace on Princeton Avenue in Flint.

human environmental health issues and distributed more than 7,700 copies of those tools. More than 1,000 Michigan residents have attended 13 environmental health education seminars, workshops, or town meetings.

“Thermometer Safe,” an innovative MDCH program, enlisted the support of Michigan health care providers in reducing accidental exposure to mercury vapors among pregnant women and young children. Recognizing that these groups are most often exposed when a mercury thermometer breaks, MCDH developed a simple, practical method to safely package mercury thermometers in the home pending proper disposal. After a short explanation about the dangers associated with mercury, providers gave “Thermometer Safe” kits to patients. Local health departments provided information on proper disposal procedures.

Mercury spill prevention and clean-up has been a high priority for MDCH. In June 2003, staff from MDCH, MDEQ, EPA, the **Ingram County Health Department**, the **Children’s Hospital, Detroit Poison Control Center**, and industry conducted a 9-hour workshop for contractors, health agency responders, and industrial hygienists. Topics addressed included health effects, clean-up techniques, testing, and proper equipment.

In January 2003, Core Curriculum in Environmental Health, a 1-day regional workshop providing an overview of environmental health hazards in the home, workplace, and community, was presented in **Kalamazoo**. Developed by the American Association of Occupational Health Nurses through a national cooperative agreement with ATSDR, the workshop was designed to increase the knowledge base and skills of occupational and environmental health nurses, nurse educators, family nurse practitioners, school nurses, and community health nurses.

Health Studies

Health studies are investigations conducted to determine the relationships between exposures to hazardous substances and adverse health effects. They also define health problems that require further investigation through, for example, health surveillance or an epidemiologic study. Following is an example of a health study or investigation that ATSDR conducted or supported in the state of **Michigan**.

- **Linking Chronic Disease and Environmental Data Sources**—ATSDR awarded a cooperative agreement to **MDCH** to conduct research on the potential impact of environmental exposures on chronic disease outcomes. The purpose of this

program is to allow for the development of pilot programs to (1) link existing environmental data and existing chronic disease data to evaluate the potential contribution of environmental exposures to chronic disease outcomes, (2) provide scientific information about the association between environmental exposures and chronic disease, and (3) develop and apply a methodology that could serve as a useful model for other organizations when responding to questions about the potential impact of environmental exposures to chronic disease outcomes. This program was developed to address issues related to the Pew Environmental Health Commission’s recommendation to establish a Nationwide Health Tracking Network.

Association of Occupational and Environmental Clinics

Through a national cooperative agreement with the Association of Occupational and Environmental Clinics (AOEC), ATSDR supports five occupational and environmental health programs in **Michigan**. This support is provided to improve education and communication related to surveillance, diagnosis, treatment, and prevention of illness or injury related to exposure to hazardous substances. Four of the five programs in Michigan are associated with medical schools or schools of public health. Significant research in environmental areas include children and environmental cancers and arsenic in Michigan’s water table (**Center for Occupational and Environmental Medicine—Royal Oak**), radon and environmental cancer epidemiology (**Wayne State University—Detroit**), occupational asthma and respiratory disease (**University of Michigan—Ann Arbor**), chemical exposures from well water or living near industrial sites (**Michigan State University [MSU]—East Lansing**), and chemical exposures (**St. Lawrence Hospital Work and Health Institute—Lansing**).

Substance-Specific Applied Research

In 1997, ATSDR awarded cooperative agreement funds to five universities, including **Wayne State University**, to conduct research to assess health risk after exposure to mixtures of environmental chemicals. Results of this research will enable ATSDR staff to conduct toxicity assessments of chemical mixtures that affect public health; study the behavior of chemical mixtures; identify various end points that would be affected; evaluate target organs

that could be affected; study the mechanisms of action, initiation, progression, and repair of injury; identify biomarkers to determine the health of an organism; and develop qualitative and quantitative methods to assess multiple health effects.

The purpose of Wayne State University's research is to generate data to compare the advantages and limitations of various models used to evaluate joint toxic action; evaluate the role of mixing ratios on the toxicant interactions; identify the importance of model fitting to the performance of the models and the validity of the conclusions derived; and evaluate dose-dependent interactions. Previous studies have supported the conclusions that chemical interactions can play a critical role in the expression of the toxicity, and that the type of interactions changes as a function of dose.

Great Lakes Human Health Effects Research Program

In support of the Great Lakes Critical Programs Act, this program's six objectives are to (1) build on and extend the results from past and ongoing research in the Great Lakes region; (2) develop information databases or research methodology, or both, that will provide long-term benefits to the human health effects research efforts in the Great Lakes basin; (3) provide direction for future health effects research; (4) provide health information to state and local health officials, the concerned public, and their medical health care professionals; (5) increase public awareness about the potential health implications of toxic pollution in the Great Lakes; and (6) coordinate as necessary with relevant government research programs and activities to ameliorate adverse public health impacts of persistent toxic substances in the Great Lakes basin. The following studies in conducted in **Michigan** have assisted in achieving these objectives.

- **Health Risks From Consumption of Great Lakes Fish**—MSU received funds for an epidemiologic study to investigate methylmercury exposure via fish consumption in women of childbearing age living in the Great Lakes basin. This study involves three projects: determining body burden levels of mercury in pregnant women throughout the entire period of gestation, examining the relationship between methylmercury and early pregnancy loss in susceptible populations such as African Americans, and conducting a statewide pilot project to determine baseline mercury levels in Michigan women. Results from these studies will permit a

much better understanding of fish contamination and consumption as they relate to methylmercury exposure in women.

- **Assessing Effects of Human Reproductive Health of PCB Exposure via Consumption of Great Lakes Fish**—MSU received funds for an epidemiologic study to conduct a cross-sectional and longitudinal observational assessment of the effects of polychlorinated biphenyls (PCBs) exposure, both current and in utero, on reproductive health. The main goal of this project is to assess fecundability and reproductive success in two cohort studies of individuals selected from two source populations at elevated risk of exposure to PCBs via consumption of Great Lakes sport-caught fish.
- **Consortium for the Health Assessment of Great Lakes Sport Fish Consumption**—MDCH received funds to collaborate with six other Great Lakes state health departments to investigate the association between sport-caught fish consumption in the diet of Great Lakes residents and serum levels of PCBs, DDE, dioxins, and furans that have been detected in Great Lakes fish. The consortium is also examining the association between serum levels of these contaminants and adverse health outcomes such as reproductive, developmental, and disturbances in thyroid function. This consortium has also been instrumental in developing culturally appropriate fish consumption messages for vulnerable populations in the Great Lakes basin.

Educating Vulnerable Populations About Fish Advisories in Michigan

In fiscal year 2003, Congress authorized ATSDR to initiate a pilot program in Michigan for fish consumption advisories. The purpose of this program is to conduct community-based research to assess the knowledge of and adherence to fish health advisories in vulnerable populations who reside in the Upper Peninsula of the state of Michigan. These vulnerable populations would include such populations as American Indians, sport and subsistence anglers, pregnant women, young children, and the elderly. In fiscal year 2003, ATSDR funded research grants to **Michigan State University** and **Inter-Tribal Council of Michigan, Inc.** for this pilot program.

For more information, contact ATSDR toll-free at 1-888-42ATSDR (1-888-422-8737) or visit the ATSDR Web page at www.atsdr.cdc.gov.