Activities in Missouri

ATSDR in Partnership With Missouri

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 1983 through 2003**, ATSDR awarded more than **$10.8 million**—more than **$1.2 million** in the last 2 years—in direct funds and services to **Missouri** 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-Specific 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. **Thirty-two** sites have been designated to the NPL in **Missouri**.

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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 **Missouri**, has conducted **38** health assessments in the state, including the following recent examples.

- **Riverfront**—The Riverfront site consists of six operational units (OUs) located throughout the city of **New Haven** and at the old city dump. The contaminants of concern at this site are tetrachloroethylene (TCE) and its breakdown products. ATSDR and the **Missouri Department of Health and Senior Services** (**MDHSS**) have distributed pertinent toxicological information about TCE and its breakdown products to residents and attended community meetings and public availability sessions to discuss health effects of exposure to the contaminants of concern. The U.S. Environmental Protection Agency (EPA) sampled private wells to determine whether unsafe levels of contaminants were present in the wells. At the recommendation of ATSDR and MDHSS, whole-house filtration systems have been installed in residences at which contaminant levels exceeded the EPA maximum contaminant level (MCL). MDHSS has written a health assessment that has been released for public comment; the document should be finalized in 2004.
- **Oak Grove Village Well**—The **Oak Grove Village** Well site is an uncontrolled and undefined plume of trichloroethylene (TCE)-contaminated groundwater. TCE contamination was originally detected in the well in 1986 by the **Missouri**

Department of Natural Resources (**MDNR**) at levels above the EPA MCL.

MDHSS, in cooperation with ATSDR, evaluated the public health impact of the site. A health assessment released for public comment in August 2003 assessed past, current, and future exposure to the contaminated groundwater at the site. At EPA's request, the health assessment also considered the health implications of Oak Grove Village reactivating its well for public use until a new well can be drilled and put into operation.

The health assessment concluded that this site is an indeterminate public health hazard because it is not known whether the well will need to be reactivated and because the future levels of TCE contamination in the old Oak Grove Village well, the new well, or any other wells are not known.

A health consultation is also being written for **La Jolla Springs**, which runs through **Meramec Caverns** and is being contaminated by the same plume that is affecting Oak Grove Village.

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, **528** documented health consultations have been conducted at **155** sites in **Missouri**, including the following recent examples.

- **Herculaneum Lead Smelter**—**MDOH** and ATSDR have conducted several health-related activities at the 52-acre Herculaneum Lead Smelter site in **Herculaneum**. The facility has been in operation for more than 100 years. Test results have determined that lead exposures to community residents pose an unacceptable public health hazard. In February 2002, screening conducted by **MDHHS** and ATSDR determined that 28% of children in the area had elevated blood-lead levels. This represents an urgent public health hazard.

  In March 2003, MDHSS, in cooperation with ATSDR, presented preliminary results of all known blood-lead data collected from **Herculaneum** residents in 2002 to the **Herculaneum Community Advisory Group**. A health consultation released in August 2003 further evaluated those data and compared them to the 2001 blood-lead data. This health consultation also evaluated the blood-lead data collected for children under 72 months of age who were serially tested in both 2001 and 2002.

  The blood lead data reviewed indicate that exposures have occurred, are occurring, and are likely to occur in the future and that these exposures may have an adverse impact on human health. Consequently, this site has been classified as a public health hazard.

- **Riverfront**—ATSDR and **MDHSS** have completed several health consultations to address specific health-related issues at individual OUs at the Riverfront site in **New Haven**. One health consultation was instrumental in the decision to provide whole-house filtration systems to affected residents to prevent further exposure. Another health consultation was instrumental in EPA's decision to test indoor air at residences near contaminant plumes to determine whether vapor intrusion of contaminants was occurring at unsafe levels. ATSDR determined that vapor intrusion of contaminants at this site does not pose a health threat at this time. ATSDR and EPA are developing an indoor air sampling plan for OU4.

- **John Garland Park Landfill**—The contaminants of concern at this site in **Kansas City** are methane gas and TCE and its breakdown products. Methane gas is being released from the landfill into the air via a landfill gas collection system. In addition, a plume of TCE is migrating off-site toward an industrial park adjacent to the landfill. Several health consultations have been completed at this site. The most recent draft health consultation recommends the following: conducting ambient air monitoring in the neighborhood adjacent to the landfill to determine whether unsafe levels of landfill gas are being released into the community; collecting soil samples at landfill leachate sites to determine whether landfill contaminants are present at unsafe levels; and defining the extent of the groundwater contaminant plume and determining whether any industrial wells are threatened by the plume.

  This site has been proposed for Brownfield redevelopment as a park. ATSDR will continue to coordinate health-related activities with EPA to determine whether the site can be safely redeveloped as a park.

- **Minker/Stout/Romaine Creek (M/S/RC) Site**—The M/S/RC site is one of the many sites in Missouri that was contaminated indirectly with 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) from spraying waste oil for dust suppression. The waste oil had been mixed with TCDD-contaminated sludge from a hexachlorophene production facility in **Verona**. The TCDD-contaminated waste oil was sprayed as a dust suppressant at a horse arena near **Imperial** in June 1971, after which some horses died and others got sick. In March 1973, the contaminated soil was removed and used to fill a ravine that had developed next to the former Minker residence. The contaminated fill material in the ravine eroded across other properties and eventually made its way to Romaine Creek. The Minker portion of the site discussed in this health consultation is a residential site that includes the Minker residence and neighboring properties. EPA asked MDHSS, in cooperation with ATSDR, to complete this health consultation to assess whether the remedial actions taken at the Minker portion of the site are protective of public health. A similar determination was previously provided for other portions of the M/S/RC site.

  A health consultation released in June 2003 categorized the Minker portion of the M/S/RC site as no public health hazard for current exposures for TCDD contamination.

- **Washington County (Waco) Landfill—MDHSS**, under a cooperative agreement with ATSDR, prepared a health consultation to address health-related concerns with regards to the construction permit application for the Waco Landfill in **Richwoods**. In August 2002, Safe Handling of Waste Managed Environmentally (SHOW-ME), a coalition of concerned citizens, petitioned ATSDR requesting a health assessment.

  Because this landfill has not yet begun operation and no release of contamination has occurred, a health assessment was not conducted. However, a health consultation released in May 2003 provided a limited review of the potential public health concerns related to the site. This limited consultation concluded that as long as the facility is constructed, operated, and maintained as described in the permit, this facility will not pose a threat to public health.

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

- **Herculaneum**—In September 2001, ATSDR released a report for an exposure investigation (EI) conducted for the Doe Run Smelter in **Herculaneum**. This investigation focused on identifying sources of lead exposure in children who had elevated blood lead concentrations. With the assistance of the **Missouri Department of Health** (**MDOH**), ATSDR recruited two families for the EI.

  ATSDR collected biological samples (blood, urine) from the family members and environmental samples (water, soil, dust, air, paint) from the houses. These samples were analyzed for lead and stable lead isotopes. The results of these analyses were used to identify possible sources of lead exposure in the children.

  ATSDR concluded that lead contamination from the smelter has made a substantial contribution to lead contamination in air, windowsill dust, and house dust in one of the houses. Lead from smelter emissions is the most likely source of lead recontamination of soil in the yard of that house.

Health Education and Community Activities

Missouri has been a participant in ATSDR's cooperative agreement program since 1989. Under this program, **MDH** has received funding and technical assistance for the development of community education and activities associated with human exposure to hazardous substances in the environment. Lead Day at West Elementary in **Park Hills** featured a special appearance by Leadosaurus, MDHSS's lead-education mascot. Lead Day featured six teams of health educators rotating among classes and presenting a comprehensive lead-education program developed for elementary-school students.

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 are examples of health studies or investigations that ATSDR conducted or supported in **Missouri**.

- **Hazardous Substances Emergency Events Surveillance System (HSEES)**—HSEES was established by ATSDR in 1990 to collect and analyze information about releases of hazardous substances that need to be cleaned up or neutralized according to federal, state, or local law, as well as threatened releases that result in a public health action, such as an evacuation. The goal of HSEES is to reduce the morbidity and mortality of first responders, employees, and the general public resulting from hazardous substances emergencies. Fifteen state health departments, including **Missouri**, currently participate in HSEES. HSEES captures data on over 5,000 events annually. Of these, 80% occur at fixed facilities, and 20% are transportation-related events. Most events occur between 8:00 AM and 5:00 PM on Monday through Friday. Persons most often injured are employees.

- **Multiple Sclerosis and the Amoco Refinery in Sugar Creek**—Residents of **Sugar Creek**, a small community near Kansas City that is adjacent to an Amoco oil refinery, have indicated their concern about the rate of multiple sclerosis (MS) in their community. Anecdotal information suggested a twofold to fourfold elevation in MS prevalence above the U.S. figures. The **Jackson County Health Department** (**JCHD**) entered into a cooperative agreement with ATSDR in September 2000 to more fully explore MS prevalence in the area. This research activity includes the development of methods for case ascertainment and case confirmation and the estimation of MS prevalence for Sugar Creek and the surrounding community of **Independence**. These two communities have a combined population of almost 120,000 persons.

- **Study of Childhood Blood-Lead Levels Following Environmental Cleanup—MDH** was awarded a grant to conduct a follow-up study of childhood blood-lead levels following environmental cleanup. The objective of the study was to evaluate whether interventions (soil remediation and community and professional health education) in the area since 1991 reduced the mean blood-lead levels of all children, thereby reducing the proportion of children with elevated blood-lead levels.

  Census activities started in February 2000 in the **Joplin** area and in March 2000 in areas outside of Joplin. More than 9,000 households were visited during the census; 847 households were found to have children aged 6 to 72 months living near the **Jasper County Superfund Site** at least 60 days before the beginning of the study. Blood samples were obtained from 216 children in the original study area and 71 children in the expanded area. Environmental sampling was conducted. A parent or guardian of each of the children involved in the study responded to questions about behavioral risk factors associated with blood-lead levels. Study results indicated that interventions to reduce blood lead levels of children living in the mining waste and smelter area of Jasper County have been effective. Only 2% of the children tested in 2000 had blood lead levels greater than 10 micrograms per deciliter. A final study report was published September 2002.

- **Determining the Prevalence of MS and Amyotrophic Lateral Sclerosis (ALS) in Communities Living Around Hazardous Waste Sites**—In fiscal year 2002, ATSDR awarded a cooperative agreement to **MDHSS** for a cross-sectional prevalence study and a cluster investigation in **Herculaneum** and **Jefferson County** to address community concerns of excess ALS and MS and to define the epidemiologic characteristics of cases. MDHSS will analyze medical records to ascertain all MS and ALS cases treated since January 1, 1998. Medical records of cases will be abstracted by professional abstractors and verified by a neurologist consultant. Prevalence estimates for ALS and MS will be calculated and the possibility of clustering will be evaluated using geographical statistical techniques.

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.