



# Activities in Oklahoma



## ATSDR in Partnership With Oklahoma

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 a budget for 2004 of approximately \$73 million. ATSDR assesses the presence and nature of health hazards at specific Superfund sites, helps to prevent or reduce further exposure and illnesses resulting from those hazards, and expands 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. Through cooperative agreements and grants, ATSDR provides funding and technical assistance to states and other partners 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. In **fiscal years 1991–2004**, ATSDR awarded more than **\$1.9 million** in direct funds and services to **Oklahoma** for financial support of specific environmental health activities. In addition to direct funds and services, ATSDR provides technical and administrative guidance for state-conducted site activities.

## ATSDR Site-Specific Activities Public Health Assessment-Related Activities

One of ATSDR'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. A public health

assessment is a written, comprehensive evaluation of available data and information about the release of hazardous substances into the environment in a specific geographic area. Such releases are assessed for past, current, or future impact on public health. ATSDR, in collaboration with public health and environmental officials from **Oklahoma**, has conducted **16** public health assessments in the state, including the following recent examples.

- **Tar Creek**—The Tar Creek NPL site is in **Ottawa County**, Oklahoma. It covers an area of approximately 40 square miles and includes the five mining communities of **Picher, Cardin, Quapaw, Commerce, and North Miami**. The site also includes lands belonging to 10 tribal nations.

From the early 1900s until the 1970s, the Tri-State Mining District, which included the Tar Creek site, was mined extensively for lead and zinc. Years of mining activities resulted in the accumulation of large amounts of tailings and other mining wastes. The tailings, locally known as chat, were stored in huge piles. Chat is a gravel-like material ranging in particle size from fine-grained to 3/8 inch.

Approximately 75 million tons of chat (50% of the chat produced) remains on the surface of the ground. Chat is used locally in industrial, commercial, recreational, and residential products. Children who live or play near chat piles might ingest or inhale lead-contaminated dust.

In 1993, after lead screening at the Indian Health Service (IHS) clinic in Ottawa County indicated that 35% of children tested had elevated blood lead levels, ATSDR conducted an exposure investigation. This investigation evaluated lead levels in soil, paint, dust, and water at nine houses identified by IHS as homes to children who had

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blood lead levels of 10 micrograms per deciliter ( $\mu\text{g}/\text{dL}$ ) or greater. Investigation results indicated elevated levels of lead in paint and dust or soil in two homes, but no other substantial sources of lead were found.

In 1995, ATSDR provided technical assistance and resources to the **Oklahoma State Department of Health (OSDH)** to conduct blood lead

level screening in all children who live in Ottawa County and are impacted by the Tar Creek site. ATSDR also has worked with U.S. Environmental Protection Agency (EPA) to provide health recommendations for clean-up plans under consideration for the site.

Since 1998, through an interagency agreement with EPA, ATSDR has funded additional blood lead screening and health education activities by the **Ottawa County Health Department**. In 2003, ATSDR began to compile and review environmental and human biologic sampling data. Analysis of these data will provide a better understanding of potential sources contributing to the elevated blood lead levels in children and will identify areas for further inquiry.

To determine potential sources contributing to increased blood lead levels and assess possible public health hazards at the Tar Creek site, ATSDR is compiling and reviewing all available blood lead data from 1995 through 2002 for children aged 6 years and younger in Ottawa County; comparing data on lead levels in residential soil and OSDH blood lead data to evaluate potential exposure pathways; gathering and evaluating information about tribal health concerns; continuing to provide cooperative agreement funding to the Ottawa County Health Department for blood lead screening and health education activities; providing public health input to the Army Corps of Engineers on its watershed management project; and reviewing available data and providing recommendations to EPA Region 6 on aspects of its work at the site.



*Chat piles at the Tar Creek NPL site.*

ATSDR is committed to addressing public health concerns of the communities affected by the Tar Creek site. ATSDR will evaluate available

environmental data, health effects data, and community health concerns and will develop recommendations to address concerns about exposure to hazardous substances and other potential hazards.

#### ■ **Imperial Refining**—The

Imperial Refining Company in **Ardmore** was a crude oil refinery from 1917 to 1934, when it declared bankruptcy. All tanks and storage equipment were dismantled by 1948. Tank-bottom materials apparently were dumped out onto site soils during the dismantling. Although the property has changed ownership several times since the tanks and storage equipment were dismantled, no clear evidence shows further operations occurring on the site.

Several areas of the site are covered with asphalt or tarlike wastes. At least one waste area also contains several abandoned, partially crushed 55-gallon drums. The drums are rusty and appear to be empty. An intermittent stream and several wetlands areas are on the site. Ponds on the site could have been highway fill “borrow pits” or reservoirs during operation of the refinery. Access to the site is unrestricted.

In a public health assessment released in December 2001, ATSDR concluded that past or current exposures are not likely to lead to adverse health effects, and categorized the site as no apparent public health hazard. Rusted drums and broken glass on the site may pose physical hazards, especially for children who play on the site. Off-site contaminant migration has not been determined for the site; however, any off-site contaminant levels would not likely lead to adverse health effects.

ATSDR recommended that EPA complete its characterization of contamination at the site. This should include measuring contamination in the soil,

shallow groundwater, surface water, and sediment. Soil-gas sampling and fish-tissue sampling also may be warranted.

Until the site is fully characterized, and to prevent injury from physical hazards at the site, ATSDR recommended restricting access by fencing the site or posting no-trespassing signs.

ATSDR also recommended characterizing off-site migration of site contamination if results of the remedial investigation warrant it.

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. A health consultation is a more limited response than a public health assessment. In **Oklahoma**, **25** health consultations have been conducted at **21** sites, including the following recent examples.

- **Dewey Mercury**—A health consultation released in December 2001 resulted from a request from the **Washington County Health Department in Bartlesville** concerning the reoccupation of an apartment previously contaminated with mercury. The original incident occurred in January 2001 when a 2-year old child was diagnosed with acute mercury poisoning. The poisoning resulted from contamination of the parents' bedroom with mercury. ATSDR responded to this incident previously and recommended additional sampling. In the December 2001 health consultation, ATSDR recommended not reoccupying the apartment. Although sampling data indicate indoor mercury levels do not pose a public health concern, confidence in the data collection methods is so low that ATSDR can only classify the apartment as an indeterminate health concern. ATSDR also recommended devising and implementing an appropriate sampling plan.
- **Moore Business Forms**—In 1997, a private citizen contacted ATSDR about air emissions from the former Moore Business Forms and Systems Division facility in **Stillwater**. In response to this concern, ATSDR issued a health consultation that evaluated ambient air concentrations of tetrachloroethylene at the fence line between the Moore facility and the adjoining neighborhood. The consultation concluded that concentrations of

tetrachloroethylene detected in ambient air near the Moore property do not pose a public health hazard. No recommendations were made.

In late 2002, the **Oklahoma Department of Environmental Quality (ODEQ)** contacted the ATSDR Region 6 office and the city of Stillwater about tetrachloroethylene groundwater contamination and past air emissions at the former Moore facility.

In September 2003, ATSDR released a health consultation that reviewed past environmental and emission data, present community health concerns, and the toxicity literature detailing health outcomes from exposure to tetrachloroethylene. This health consultation also examined whether past or ongoing exposures in the community could be leading to adverse health effects. ATSDR categorized the site as no apparent public health hazard.

ATSDR concluded that current and past exposure to tetrachloroethylene in water is not a hazard because no exposure pathway exists. Future exposure is unlikely because the groundwater plume is contained. Current exposure to tetrachloroethylene in air (from facility emissions) is not occurring because the facility is closed.

Past exposure to tetrachloroethylene in air occurred before 1999. Estimates of the magnitude of past exposures are complicated by many factors, especially the lack of real-time data. Modeling and estimations indicate that past exposure probably did not exceed minimal risk levels.

Reported health concerns within the community are not consistent with exposure to tetrachloroethylene. Tetrachloroethylene has been safely used as a human anesthetic in the past and was not associated with the types of health effects reported in community members living near the Moore facility. No current exposures are occurring in the community. Exposures may have occurred in the past, but at levels below those expected to cause adverse health outcomes.

## Health Studies

Health studies are investigations to determine the relations 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 **Oklahoma**.

- **Bartlesville Blood Lead Testing**—In 1992, ATSDR awarded funding to **OSDH** to conduct blood lead testing of **Bartlesville** residents. The objective of the study was to determine whether pregnant women and children between the ages of 6 and 72 months living in the area had elevated blood lead levels that constituted an immediate health hazard. Blood lead levels of 10 µg/dL or greater (the minimum level at which intervention is recommended) were found in 11% of the children; the highest level in children was 24 µg/dL. The highest adult blood lead level was 29 µg/dL. After residential yard cleanup, reductions in blood lead levels were found.
- **Tar Creek Lead Screening and Education**—In 1995, **OSDH** and the **Ottawa County Health Department** conducted a blood lead level testing program, with funds from ATSDR, in **Picher, Cardin, Commerce, Quapaw, and North Miami**. They tested children aged 6 to 72 months and pregnant women. Study results showed that 28.3% of children tested had blood lead levels equal to or greater to 10 µg/dL. All pregnant women tested showed results equal to or below 10 µg/dL. The final report was issued in July 1997.

The Ottawa County Health Department continues to screen children and pregnant women. Although reductions in blood lead levels have been found, elevations still exist.

## Resource Materials

ATSDR develops materials for public health professionals and medical care providers to use to assess the public health impacts of chemical exposures. These resources are available in print, on the ATSDR Web site, and on CD-ROM. For example, medical management guidelines are available for acute chemical exposures to more than 50 chemicals. These guidelines were designed to aid emergency department physicians and other emergency health care professionals, such as first responders, who manage acute exposures resulting from chemical incidents. ATSDR's toxicological

profiles comprehensively describe health effects; pathways of human exposure; and the behavior of more than 250 hazardous substances in air, soil, and water at hazardous waste sites. Health professionals at all levels use the toxicological profiles primarily as comprehensive resources. These profiles have been sent to requesters, including representatives of federal, state, and local health and environmental departments; academic institutions; private industries; and nonprofit organizations in **Oklahoma**. ATSDR also has developed extensive resources for community members.

*For more information, contact ATSDR toll-free at 1-888-42ATSDR (1-888-422-8737) or visit the ATSDR Web site at [www.atsdr.cdc.gov](http://www.atsdr.cdc.gov).*