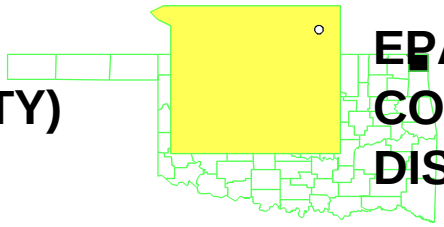
TAR CREEK (OTTAWA COUNTY)



EPA REGION 6 CONGRESSIONAL DISTRICT 02

OKLAHOMA

EPA ID# OKD980629844

Ottawa County

Updated: August 19, 2002

Site Description

Location: The Tar Creek Superfund Site (hereinafter "the Site") is part of the Tri-State Mining District which includes northeastern Oklahoma, southeastern Kansas, and southwestern Missouri. Specifically, the Site includes the Old Picher Field lead and zinc mining area located in northeastern Ottawa County.

Population: Approximately 30,000 people live in the surrounding area.

Setting: The Site consists of five mining cities, Picher, Cardin, Quapaw, Commerce, and North Miami, and other areas within Ottawa County. Approximately 80% of the land in the mining area is owned by the Quapaw Tribe and its members. Chat piles are located throughout the communities in close proximity to homes.

Hydrology: The principal groundwater-bearing units within the Site are the Mississippian Boone Formation and the Cambro-Ordovician Roubidoux Formation. The shallow Boone Aquifer is contaminated. The deep Roubidoux Aquifer, the drinking water source for the area, meets drinking water standards.

The headwaters of Tar Creek are located in Cherokee County, Kansas; the creek flows southward through the Site and into the Neosho River. Lytle Creek is a major tributary of Tar Creek. The headwaters of Beaver Creek are located north of Quapaw; the creek flows through the Quapaw powwow grounds and into the Spring River. Tar Creek and Beaver Creek are impacted by acid mine drainage.

Wastes and Volumes

- The principal pollutants are lead, cadmium, and zinc.
- Approximately 76,000 acre-feet of shallow ground water is contaminated.
- Approximately 75 million tons of chat remain on the surface of the ground.
- Flotation ponds (wet or dry ponds containing mine tailings) cover approximately 800 acres.

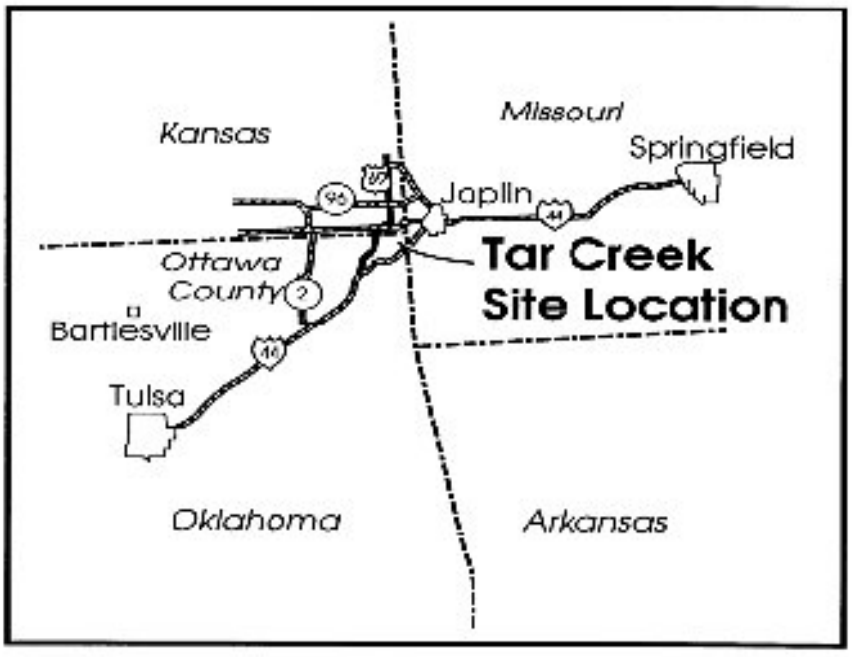
Present Status and Issues

- The EPA is negotiating with the 6 mining companies and Department of Interior (DOI) to perform and finance the RI/FS for OU4, the non-residential portion of the Site.
- Remediation of 457 residential properties will commence this fall (OU2).
- The EPA is planning an OU4 Remedial Investigation and Feasibility Study (RI/FS) which includes the chat piles and flotation ponds. Negotiations with the responsible parties to perform the RI/FS is underway.
- The EPA provided funding to the Quapaw Tribe and the Inter-Tribal Environmental Council (ITEC) to conduct an RI/FS for two industrial properties located in Cardin (OU4). This project is being funded as a pilot project. A draft RI has been prepared.
- The EPA provided funding to the Quapaw Tribe and ITEC to submit a Sampling and Analysis Plan for the Beaver Creek watershed (OU4). The SAP is scheduled to be submitted to the EPA in August 2002.
- The EPA provided funding to the U.S. Army Corps of Engineers (USACE) to perform an acid mine drainage study of Beaver Creek (OU4) and provide a recommendation for a passive treatment system design (e.g., constructed wetlands). A final report is scheduled to be submitted in March 2003.
- EPA is funding the ODEQ to conduct monitoring to determine if the poor quality of drinking water in several deep aquifer wells is due to acid mine water infiltrating directly into the aquifer from the Boone Formation, or if the acid mine water is migrating into the deep aquifer through deteriorated casings in the municipal water wells (OU1).
- Five new monitoring/water supply wells (three in the Picher-Cardin area, one in Commerce, and one in Quapaw) have been drilled into the deep aquifer. The Picher #5 and a Picher-Cardin well are producing good quality water. The wells drilled in Commerce and Quapaw are producing water high in iron and sulfate content. The ODEQ is planning additional testing to determine if the poor quality of the produced water is due to a well integrity problem (OU1).
- The ODEQ plans to plug 12 water wells to prevent the downward migration of acid mine water (OU1).
- The EPA is funding ATSDR and Ottawa County Health Department (OCHD) to provide community health education and blood lead screening for the five-city mining area. The OCHD also works with local health professionals including Indian Health Service physicians to provide education to the medical community.

Site Assessment and Ranking

National Priorities List (NPL) History
Site Hazard Ranking System Score: 58.15
Proposed Date: 7/27/81
Final Date: 9/08/83
NPL Update: No. 1

Site Map and Photographs*



Site photographs can be viewed on the internet at www.epa.gov/earth1r6/6sf/6sf-ok.htm.

The Remediation Process

Site History:

- Underground mining for lead and zinc by the room-and-pillar method began in 1891 and lasted through early 1970. As water filled the mines, the native sulfide minerals dissolved creating acid mine water. Acid mine drainage containing high concentrations of heavy metals began discharging into Tar Creek in 1979 from natural springs, boreholes, and open mine shafts.
- The Governor of the State of Oklahoma established the Tar Creek Task Force in 1980 to investigate the AMD into Tar Creek.
- In 1981, the Site was proposed to the National Priorities List (NPL).
- The Site was listed on the NPL in 1983.
- The EPA signed a Record of Decision (ROD) for Operable Unit 1 (OU1) in June 1984.
- Monitoring for OU1, initiated in 1987, consisted of surface water, acid mine water discharges, and mine water levels to assess the effectiveness of the diking and diversion. To assess the effectiveness of the well plugging operations, water samples from 21 deep Roubidoux wells located both inside and outside of the mining area were collected and analyzed in 1991 and 1992.
- The first Five Year Review was issued in April 1994.

- From August 1994 through July 1995, the EPA conducted sampling of soils in High Access Areas (e.g., day care centers, school yards, and playgrounds) and residential properties.
- In August 1997, the OU2 ROD was issued to address the residential areas.
- Remedial actions of these residential areas originally began in June 1996 as an emergency removal and continued in January 1998 as a remedial action. Approximately 1,542 lead-contaminated residential yards were remediated.
- The EPA issued the second Five Year Review report in April 2000. The full text for this report can be found at www.epa.gov/earth1r6/6sf/6sf-decisiondocs.htm
- From October 2001 to May 2002, 105 Indian-owned properties were remediated.
- Remediation of 8 schools and school properties (7 in Miami, 1 in Picher) was completed in August 2002.

Health Considerations

- Lead-contaminated soils and chat piles are a source of exposure to the population, especially to young children. A percentage of young children living in the five-city mining area are known to have blood lead levels in excess of the 10 µg/dL (micrograms per deciliter) standard set by the Center for Disease Control (CDC). The percentage of children with elevated blood lead levels remain well above state and national averages.
- Children are the most sensitive population for lead exposures. Chronic exposure can deleteriously affect the immune system, blood system, nervous system, and kidneys. Harmful effects include premature births, smaller babies, decreased mental ability in the infant, learning difficulties, and reduced growth in young children.

Record of Decision (ROD)

Operable Unit 1: ROD signed on June 6, 1984

Operable Unit 2: ROD signed on August 27, 1997

The OU1 ROD addressed (1) the surface water degradation by the discharge of acid mine water, and (2) the threat of contamination of the Roubidoux Aquifer, the regional water supply, by downward migration of acid mine water from the overlying Boone Aquifer through abandoned wells connecting the two. Recharge was to be prevented by utilizing diking and diversion structures to stop the surface water of Tar Creek from entering the two collapsed mine shafts in Kansas which were identified as the main inflow points. Additionally, the remedy called for preventing the downward migration of acid mine water into the Roubidoux Aquifer by plugging 66 abandoned wells. During remediation, an additional 17 wells were identified and addressed, bringing the total to 83 wells. Construction activities were concluded on December 22, 1986. (Additional information about this ROD is located on the internet at: www.epa.gov/superfund/sites/ rodsites/0601269.htm).

The OU2 ROD addressed the residential areas. Construction continues on the residential yard cleanups. The full text for this ROD is located on the internet at: www.epa.gov/earth1r6/6sf/6sf-decisiondocs.htm

Community Involvement

- Community meetings were held in Picher, Commerce, and Quapaw on August 14, 15, and 16, 2000.
- An Open House was held in Picher on August 16, 2001.
- The EPA, ODEQ, and the Quapaw Tribe participate in quarterly stakeholders meetings.
- An Open House was conducted June 18, 2002.
- The EPA and the ODEQ met with the Mayors of Picher, Cardin, Commerce, North Miami, the County Commissioner, and Quapaw representatives on July 8 -11, 2002, to provide a letter and fact sheet on the acceptable and unacceptable uses of chat. Mailings of this document were sent to all the mining communities.
- The Site Repository is located at: Miami Public Library, 200 North Main Street, Miami, OK 74354. The telephone number for the repository is 918-541-2292. This repository contains information about the Site and is available to the public.

Technical Assistance Grant

- Notices were published on 7/24/00, 10/12/00, and 12/18/00 to inform the public about the availability of the TAG.
- Letters of Intent were received from John Ballard (Inter-Tribal Environmental Council; 515G Southeast; Miami, OK) on 9/12/2000, Rebecca Jim (Local Environmental Action Demanded (LEAD); 19257 S. 4403 Dr.; Vinita, OK, 74301) on 12/01/00, and Ed Keheley (Tar Creek Basin Committee; 2020 South 640 Road; Quapaw, OK, 74363) on 12/08/00.
- LEAD was awarded a TAG of $50,000 on 5/01/01. Rebecca Jim, the Executive Director for LEAD, can be reached at 918-256-5269 for information concerning the implementation of the TAG. Gary Lawley selected as Technical Advisor

Site Contacts

EPA Remedial Project Managers:	Mike McAteer, OU2	214-665-7157
EPA Community Coordinator:	Donn Walters	214-665-6483
EPA Site Attorney:	Jim Costello	214-665-8045
EPA State Coordinator:	Roberta Hirt	214-665-8079
EPA Ombudsman:	Arnold Ondarza	1-800-533-3508
EPA Toll-Free Telephone Number:		1-800-533-3508
ODEQ Program Manager:	Kelly Dixon	405-702-5156
ODEQ Project Managers:	Dennis Datin, P.E.	405-702-5125
	David Cates, P.E.	405-702-5133

Quapaw Environmental Program Director: Tabitha Worley 918-542-1853
Quapaw Superfund Program Manager: Tim Kent 918-542-1853

Enforcement

- The EPA entered into a Consent Decree (CD) for OU1 with 6 mining companies (ASARCO Inc., Blue Tee Corp., Childress Royalty Comp. Inc., The Doe Run Resources Corp., Gold Fields Mining Corp., NL Industries, Inc.) settling their liability for costs paid by the United States in responding to the release or threat of release of hazardous substances. The CD was filed on June 10, 1991, in the U.S. District Court (Northern District of Oklahoma).
- On August 25, 1995, the EPA issued a notice to the Potentially Responsible Parties (PRPs) 6 mining companies and to the U.S. Department of the Interior (DOI) offering them the opportunity to conduct and finance the removal activities described in the EPA's August 15, 1995, Action Memorandum for OU2. The PRPs did not undertake the emergency removal.
- The EPA issued Special Notice to the PRPs on November 17, 1995, to conduct the Remedial Investigation and Feasibility Study (RI/FS) and Remedial Design (RD) for OU2, residential areas. The PRPs declined to perform the RI/FS/RD. As an alternative, the PRPs offered to perform a Community Health Action and Monitoring Program (CHAMP). The CHAMP consisted of the health monitoring of the children in the contaminated residential areas, cleaning of homes in the contaminated area, and education program for the residents. EPA agreed, and the PRPs implemented CHAMPs; however, since housecleaning and education did not provide a permanent remedy, EPA went forward with RI/FS/RD for OU2.
- In 1996, the EPA settled its claims with a bankrupt mining company which had the largest operation at the Site.
- EPA issued an Action Memo on March 21, 1996, calling for an emergency removal to address residential contamination. The PRPs declined to participate in the removal.
- The EPA issued Special Notice to the PRPs on December 19, 2000, requesting that they perform and finance the RI/FS for OU4, the non-residential portion of the Site.

Benefits

- The cleanup of lead-contaminated soils from 1,647 residential properties located within the five-city mining area has significantly reduced the exposure of the population, especially young children.
- Recent independent studies comparing blood lead data collected in 1997 to data from 2000 show an approximately 50% decrease in the number of children living in Picher and Cardin between the ages of one and six years old with blood lead levels equal to or greater than the 10 µg/dL standard set by the CDC. This reduction in the number of children with elevated blood lead levels is attributed to the residential yard cleanups and extensive educational efforts by federal, state, county, and tribal entities.
- Remedial actions by the EPA and the ODEQ have reduced the potential for contaminants in the shallow Boone Aquifer to migrate to the drinking water aquifer.