

NPL Site Narrative for Annapolis Lead Mine

ANNAPOLIS LEAD MINE Annapolis, Missouri

Conditions at Proposal (March 8, 2004): The Annapolis Lead Mine (ALM) is an inactive lead mine located approximately 1 mile east and 3/8 mile north of Annapolis, Iron County, Missouri. The total area of the former mine facility is approximately 50 acres. Lead-bearing ore was mined from ALM sporadically from approximately 1920 through 1940. According to production figures for a portion of the mine's operational history, over 1 million tons of mining wastes were generated. The mining wastes, composed of overburden and milling residue, contain heavy metals. The primary metals of concern are lead, cadmium, zinc, and arsenic. The site is being proposed to the NPL because elevated levels of heavy metals, particularly lead, have been found throughout the site. In addition, elevated concentrations of site-related hazardous substances have been detected in surface water bodies located downstream from the site and pose a threat to recreational fisheries and wetlands in the area.

The former mining facility is composed of derelict buildings used during the mining operation, most of which only have foundations remaining. One structure, however, was used as a single family residence. The dominant feature on the site is a chat/tailings pile that occupies approximately 10 acres in the southern portion of the former mining facility. The material in the pile is highly erodible, which has resulted in steep-sided features with an outwash area that fans westward to Sutton Branch Creek. The property is divided among several landowners.

Previous sampling activities at the ALM site have included efforts by the Missouri Department of Natural Resources, an EPA-lead Site Investigation (SI) and Expanded Site Investigation (ESI), and an emergency response (resulting from the occurrence of high blood lead levels in children who have since been relocated from the site). The analytical results associated with these sampling activities indicated the presence of heavy metals in the on-site ground water, surface water, sediment, and surface soil. Dust and wipe samples were also collected within the on-site residence and were found to have lead concentrations up to 0.625 micrograms per square centimeter ($\mu\text{g}/\text{cm}^2$) and 1,170 mg/kg, respectively.

Four lead-contaminated source areas were delineated for removal assessment purposes: the heavily eroded chat/tailings waste pile, the outwash area of the chat/tailings waste pile, the former mining operations area, and the mill slime pond. EPA analytical results have identified heavy metals at all four delineated source areas. Elevated levels of metals, particularly lead, were found throughout the site, with the highest concentration at 20,000 mg/kg in surface soils adjacent to the onsite residence. Samples collected at the chat/tailings pile during the EPA SI in April 1996 revealed lead and cadmium concentrations as high as 2,570 mg/kg and 4.67 mg/kg, respectively. Elevated levels of arsenic, cadmium, lead, and zinc were also found during the ESI sampling activity in the surface waters of Sutton Branch Creek and Big Creek. Lead was found as high as 2,600 mg/kg in sediment samples at the chat/tailings pile outfall and as high as 1,700 mg/kg at the confluence of Sutton Branch Creek and Big Creek (designated wetland area), located about 0.75 miles downstream of the site.

Big Creek is a known fishery, and wetlands have been identified at the confluence of Sutton Branch and Big Creek. Soil contamination poses a threat to human health because of the lack of vegetation on exposed contamination, the presence of residents on the site, a lack of access restriction, and use of the site for recreation. Currently, a minimal threat exists for site ground water. None of the domestic wells sampled within a 1-mile radius had concentrations exceeding the designated Maximum Contaminant Levels (MCLs).

Status (July 2004): A removal action was initiated at the Annapolis Lead Mine site. The removal action will stabilize and cover the abandoned tailings pile which is migrating into Big Creek via Sutton Branch. At the current time, two temporary settling basins have been constructed between the tailings pile and Sutton Branch to establish a barrier between the tailings and Sutton Branch.

For more information about the hazardous substances identified in this narrative summary, including general information regarding the effects of exposure to these substances on human health, please see the Agency for Toxic Substances and Disease Registry (ATSDR) ToxFAQs. ATSDR ToxFAQs can be found on the Internet at [ATSDR - ToxFAQs](http://www.atsdr.cdc.gov/toxfaqs/index.asp) (<http://www.atsdr.cdc.gov/toxfaqs/index.asp>) or by telephone at 1-888-42-ATSDR or 1-888-422-8737.