Site Summary Update **December 1999**

RED TOP MERCURY RETORT SITE

Alaska Department of Environmental Conservation ● Division of Spill Prevention and Response

Site Description

The Red Top retort site is in a flood plain of the Wood River approximately 2 miles south of the village of Aleknagik. The nearest large community is Dillingham, 12 miles upriver from Aleknagik and approximately 350 miles southwest of Anchorage. The project area was reportedly used by private parties between 1952 and 1955 to extract mercury by retorting mercury sulfide (cinnabar) ore mined at the nearby Red Top Mine. Retorting is a processing technique, which entails heating the ore to vaporize the mercury. The vaporized mercury rises and is recaptured when it condenses into elemental mercury and runs down the sides of a sealed vertical condensation pipe.

ADEC became aware of mercury contamination in October 1992, following complaints that elemental mercury was visible in site soils in the retort shack area. Staff visited the site, observed free mercury in soils, and sampled soils and near-shore sediments of the Wood River. Drums of bunker C oil were also present at the site. A Notice of Violation (NOV) was issued to the landowner, the Bureau of Land Management (BLM), requesting site characterization and cleanup.

Threats and Contaminants

Contaminants of concern are bunker C and mercury. BLM's contractor removed most of the contaminated soils and other media from the site in 1998. ADEC soil cleanup levels for mercury for this area of the state are 18 parts per million (ppm) for inhalation and 1.4 ppm to prevent migration of contaminants to groundwater. Soils, which have greater than 0.02 ppm mercury concentrations using the EPA's Toxicity Characteristic Leaching Procedure (TCLP), are classified as hazardous waste and require special handling. Mercury levels in site soils were documented at levels as high as 38,000 ppm near the rusted-out condensation pipe on the retort. Soils within 25 feet of the retort shack had mercury levels ranging to several thousand ppm. Some of the eleven Bunker C drums at the site had leaked due to gunshot holes and soils were visibly stained.

Public Health and Environmental Concerns

The Department's immediate concern in 1992 was the easy accessibility of the site to passersby, since the retort shack was only 30 feet from the Wood River, a popular fishing destination known for its large red salmon runs. The free mercury presented a threat to human health by dermal contact or vapor inhalation. The Department recommends that BLM immediately post the area to notify visitors to the site that mercury was present. The mercury also presented a threat to the environment, primarily due to the potential to migrate into river sediments where it could enter the food chain.

Although mercury in its elemental form does not enter the food chain, it can be converted into a toxic form that can be absorbed by plant and animal tissues through a bacterial process known as methylation. Little is known about this process, although research is underway to determine under what circumstances and at what rate elemental mercury can be transformed to the more toxic methylmercury form. From the standpoint of public perception, the presence of mercury in the Wood River also threatens the reputation of a fishery, which is critical to the area's economy. The bunker C was a threat to the environment due to its presence in the floodplain, and because the drums were an attractive nuisance, likely to be used again as targets.

Response Actions

Following receipt of the Department's NOV in 1992, BLM submitted a workplan for Department approval. The Department approved the workplan in April 1993. However, work was not done in accordance with the approved plan. Work commenced at the site during the summer and early fall of 1994 without any further communications or submittals to the Department. Work entailed sampling, analyzing and disposing of the bunker C drums, excavation and stockpiling most of the bunker C contaminated soils, dismantling the retort and shack and transporting the debris to the Aleknagik landfill. Some mercury-contaminated debris was placed in capped drums tied in plastic-covered bundles and stored in a fenced area. Also stored within the fenced area were 180 1-cubic-yard plastic fish totes containing mercury contaminated soils.

ADEC and BLM staff visited the site in September 1997 in response to complaints from area residents. Staff observed improper storage of soils contaminated with mercury and petroleum hydrocarbons. The fish totes filled with mercury contaminated soils were stacked up to three high and stored in a chain-link fenced area less than 20 feet from the Wood River. Several of the totes were cracked, tipping, and otherwise damaged. The petroleum contaminated stockpile was observed to be uncovered and inadequately lined. Following the site visit ADEC issued a NOV requesting that the contaminated soils be removed from the floodplain immediately to preclude the possible release of contamination if the site flooded. The Department also requested that BLM arrange to hold a public meeting in Aleknagik no later than December 15, 1997 to inform area residents of the cleanup and planned actions for the site. BLM objected to the Department's request for hasty action, and pointed out that no flooding had been observed at the site since site investigation began in 1991.

Between late May and early July 1998 the stored soils and containment area was continuously inundated by floodwaters up to four feet deep. At the Department's request, BLM stabilized the area with sandbags and reinforced plastic to minimize flow-through. Analytical samples of accessible (top layer) totes showed that three totes were Resource Conservation and Recovery Act (RCRA) regulated hazardous waste based on TCLP results. A public informational meeting was held in Aleknagik on June 9, 1998. BLM barged the mercury contaminated media to Dillingham where the remaining totes were sampled, then shipped to solid waste sites or a hazardous waste treatment site in Wisconsin.

Current Status

ADEC received a remedial action report in January 1999 for BLM's summer 1998 work, which included site soil sampling after the floodwaters receded. The highest level of mercury identified during the sampling was 92 ppm. The Department requested additional site characterization. BLM expects to complete a risk assessment for the site, since remaining mercury levels exceed Department cleanup standards.

BLM submitted a workplan for the additional site characterization on August 30, 1999. The Department approved the plan in a letter dated September 15, 1999. As of mid-December 1999, BLM is reviewing the consultant's report and expects to submit a copy to the Department before the end of the year.