STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VII
ID #

U.S. DEPARTMENT OF ENERGY
KANSAS CITY PLANT
NORTHEAST AREA (NEA)/OUTFALL 001 SITE
KANSAS CITY, MISSOURI

Facility Unit/Type: **Former land disposal unit**
Contaminants: **VOCs, trichloroethene (TCE), 1,2-dichloroethene (DCE), chloroethene, metals, PCBs, total petroleum hydrocarbons (TPH)**
Media: **Groundwater and soil**
Remedy: **Extract, capture, treat groundwater using a UV/oxidation system, discharge treated groundwater to sanitary sewer, and monitor. Implement institutional controls to limit access to contaminated soils.**

FACILITY DESCRIPTION

DOE and EPA entered into an Administrative Consent Order on June 23, 1989. The order governs environmental restoration activities at the Kansas City Plant. The Kansas City Plant conducted a RCRA facility investigation (RFI) and a corrective measures study (CMS) in 1994. Remedial actions completed at the facility in 1985 included the removal of pipes containing oil that was contaminated with PCBs and chlorinated solvents. Remedial actions completed in 1982 included the closure of the North Lagoon, which involved sludge removal and capping.

The Kansas City Plant is part of the Bannister Federal Complex. The plant, which is operated by Allied Signal, Inc. occupies nearly 130 of the 300 acres at the federal complex and is bordered to the south and east by two streams. The complex is zoned for heavy industry, while the adjoining properties are zoned for residential use with isolated commercial tracts along the west and south sides. The property adjacent to the north and east sides of the plant are designated for public recreational use. A former municipal landfill is located northeast of the plant.

The DOE Northeast area (NEA)/Outfall 001 site is located northeast of the main manufacturing building at the plant and consists of several former disposal locations where soil and groundwater have been contaminated. The NEA includes the former North Lagoon, which has been closed under an approved MDNR RCRA closure and post-closure plan; the former waste-oil pit; and a former oil sludge disposal area. The Outfall 001 contains cooling water and storm water run-off which are point source discharges generally regulated by Missouri's Pollution Discharge Elimination Program. However, because chlorinated solvents were found in the discharge, the Outfall 001 discharge is being addressed as part of the NEA corrective action.

Investigative activities concluded that the contaminated groundwater is limited to the uppermost aquifer, which has low groundwater productivity. The groundwater beneath and immediately surrounding the Kansas City Plant is not currently used for drinking water, but the contaminated groundwater did migrate eastward and seep into the Blue River. In 1990, DOE initiated an interim measure to extract and treat contaminated groundwater and to minimize the additional discharge of contaminants into the Blue River by installing an interceptor trench and a system of pumping wells. The extracted groundwater was treated on-site using a ultraviolet light (UV)/hydrogen peroxide/ozone gas system. In 1993, DOE modified the interim measure by changing the method of treating the extracted groundwater to a UV/oxidation system. A portion of the plume remains downgradiant of the trench and pumping wells and continues to discharge into the Blue River.

Additional site characterization activities were conducted in 1991 and 1992 to address seepage of contaminated groundwater from Outfall 001. Starting in 1992, a subdrain system was installed and operated as a second interim measure to capture contaminated groundwater and to prevent further seepage. The extracted groundwater is treated in a wastewater treatment plant.

EXPOSURE PATHWAYS

The primary chemicals of concern found in the groundwater are trichloroethene (TCE), 1,2-dichloroethene (DCE), and chloroethene. Potential exposure pathways for groundwater are inhalation, dermal contact, and ingestion of contaminants. The primary contaminants found in the soil are metals, PCBs, VOCs, and petroleum hydrocarbons, referred to as total petroleum hydrocarbons (TPH). Potential exposure pathways for soil are the ingestion and inhalation of soil and/or fugitive dusts and the leaching of contaminants into the groundwater. The Blue River is classified as a protected waterway by the State of Missouri. Receptors include fish and wildlife and any person using the river for recreation. Potential routes of exposure to human receptors are inhalation, dermal contact, and ingestion. However, the risks from this exposure is low due to the dilution of the groundwater contaminants in the river.

SELECTED REMEDY

The proposed remedy for groundwater which has been in use and has effectively treated contaminants groundwater since 1993, requires that the facility:

- Extract the contaminated groundwater using a recovery well system and an interceptor trench;
- Capture groundwater seepage with a subdrain system;
- Treat the groundwater on-site using a UV/oxidation treatment system;
- Discharge the effluent from the UV/oxidation treatment system to the Kansas City municipal water treatment plant through the facility's sanitary sewer; and
- Continue groundwater monitoring.

The net cost of the groundwater remedy is estimated to be $8.7 million.

The proposed remedy for soil is institutional controls. This remedy entails leaving the contaminated soil in place and establishing controls that would require any future construction or maintenance activities involving excavation of contaminated soil to include treatment or disposal of the soil in accordance with federal, state, and local regulations. Access to the contaminated soil by the general public is prohibited by stringent security measures. In the event that the United States sells the Kansas City Plant, the deed entered into for the transfer of the property shall contain a covenant warranting that all remedial activities necessary to protect human health and the environment with respect to the contaminated soil in the area have been taken pursuant to Section 120(h) of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) 41 U.S.C. §9621(h).

The net cost of the soil remedy is considered to be negligible.

PUBLIC PARTICIPATION

A 45-day public comment period began on June 12, 1995 and ended on July 26, 1995.

INNOVATIVE TECHNOLOGIES

Innovative technologies considered but not selected include in-situ and ex-situ bioremediation and thermal desorption. In-situ bioremediation treatment would involve the use of bioventing wells to maximize oxygen delivery to TPH-contaminated soils and to promote biological degradation of contamination in the soils above the water table. Ex-site bioremediation treatment would involve the excavation of contaminated soils, followed by land treatment using indigenous or applied microorganisms to degrade organic contaminants. Thermal desorption would involve excavating the contaminated soil followed by on-site treatment using heat to remove organic compounds. These alternatives were not chosen as the proposed remedy because treatment methods may not reduce the TPH soil concentrations to below action levels. A treatability study would have to be performed for each of these remedial alternatives to determine the effectiveness of the technologies.

NEXT STEPS

Review and respond to public comments and prepare, submit, and approve of CMI workplan.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (mg/kg)	Action Level	Cleanup Goal	Point of Compliance
Soil	Not given	Acetone	.047	8	Not given	Not given
		Benzene	0.22	0.02		
		2-Butanone Carbon	0.051	46		
		disulfide	0.026	14		
		Chlorobenzene	0.3	0.6		
		Chloroethane	0.1	1.7		
		Chloroethene	0.7	0.01		
		Chloroform	0.25	0.3		
		1,2-dichlorobenzene	0.019	6		
		1,4-dichlorobenzene	0.112	1		
		1,1-dichloroethane	0.017	11		
		1,1-dichloroethene	0.65	0.03		
		1,2-dichloroethene	15	0.2		
		Ethylbenzene	3.2	5		
		2-Hexanone	0.01	N/A		
		Methylene chloride	3.0	.01		
		4-methyl-2-pentanone	3.5	3.6		
		PCBs	36.5	10		
		1,1,2,2tetrachloro-ethane	0.069	0.001		
		1,1,2,2tetrachloro-ethene	0.029	0.04 5		
		Toluene	1.1	100		
		TPH	6,961	0.9		
		1,1,1-trichloroethane	0.9	0.01		
		1,1,2-trichloroethene	0.13	0.02		
		Trichloroethene	81	74		
		Xylenes	9.0	20		
		Arsenic	334	7		
		Beryllium	14.2	40		
		Cadmium	10,700	400		
		Chromium	295	34		
		Copper	33,090	46		
		Lead	30,300	1,210		
		Manganese	4,300	20		
		Mercury	408	2,000		
		Nickel	<46	20,000		
		Zinc	183			

Media	Estimated Volume	Contaminant	Maximum Concentration (mg/kg)	Action Level	Cleanup Goal	Point of Compliance
Groundwater	Not given	Acetone	2,600	4,000	Not given	Not given
		Benzene	500	5		
		2-Butanone Carbon	16,000	700		
		disulfide	18	400		
		Chlorobenzene	500	100		
		Chloroethene	1,985	2		
		Chloroform	630	100		
		1,2-dichlorobenzene	150	600		
		1,1-dichloroethane	200	400		
		1,2-dichloroethane	669	5		
		1,1-dichloroethene	20,400	7		
		1,2-dichloroethene	75,000	70		
		4-methyl-2-pentanone	20	2,000		
		Tetrachloroethene	100	5		
		Toluene	1,100	1,000		
		1,1,1-trichloroethane	382	200		
		1,1,2-trichloroethane	450	5		
		Trichloroethene	21,600	5		

KEYWORDS:

soil; dermal contact, ingestion, inhalation; VOCs, chloroethene, cis-1,2-dichloroethene, 1,1,2,2,-tetrachloroethane, total petroleum hydrocarbons (TPH); institutional controls, innovative technology considered: bioremediation, thermal desorption

CONTACT:

Dale Armstrong
U.S. EPA, Region VII
726 Minnesota Avenue
Kansas City, KS 66101
(913) 551-70033