Department of Environmental Conservation

Division of Environmental Remediation

ALCOA - 60 ACRE LAGOON
TOWN OF MASSENA, ST. LAWRENCE COUNTY, NEW YORK
Site No. 6-45-005, Operable Unit No. 2
December 1999

EXPLANATION OF SIGNIFICANT DIFFERENCE

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* JOHN P. CAHILL, *Commissioner*

INTRODUCTION

The 60 Acre Lagoon (Site No. 6-45-005, OU No. 2) is one of eighteen hazardous waste disposal areas that has been identified at the Aluminum Company of America (ALCOA) facility in the Town of Massena, St. Lawrence County.

On January 22, 1992, the New York State Department of Environmental Conservation (NYSDEC) issued a Record of Decision (ROD) concerning remediation of the lagoon. The ROD requires, in part, that sludge contaminated with polychlorinated biphenyls (PCBs) be permanently treated and/or permanently immobilized. ALCOA was given a specified number of years in which to evaluate various treatment technologies and make a recommendation to the NYSDEC. The ROD also indicates that the remedy must comply with the United States Environmental Protection Agency's (USEPA's) Toxic Substance and Control Act (TSCA) requirements in effect at the time of implementation.

On June 29, 1998, the USEPA amended TSCA to allow, among other things, non-liquid PCB remediation waste to be placed directly into an approved chemical waste landfill. Further, the lagoon sludge satisfies the definition of PCB remediation waste, as provided in the rule change. The effective date of the rule change was August 28, 1998.

On December 18, 1998, ALCOA submitted the *Revised Technologies Evaluation Report for the 60 Acre Lagoon*. Based upon the detailed analysis of remedial alternatives provided in the report, and in recognition of the TSCA amendments, ALCOA's recommendation is to solidify the sludge and place it in the Secure Landfill (SLF). The SLF is an on-site, TSCA-approved facility that was constructed to accommodate waste generated during the cleanup of ALCOA's hazardous waste sites. Historical PCB levels in the sludge ranged as high as 2,690 ppm, and at the time the ROD was written, landfilling of PCB-contaminated sludge exhibiting any PCB levels above 500 ppm was not acceptable under TSCA.

The NYSDEC has reviewed ALCOA's recommendation and determined that it is acceptable. However, the ROD must be amended to allow the recommendation to be implemented. There are three types of ROD amendments: an administrative change, an Explanation of Significant Difference (ESD), and a fundamental change. An administrative change is minor in nature, such as a typographical alteration, while a fundamental change is a complete modification in approach, such as removal versus capping. An ESD addresses everything in between. Since, under ALCOA's recommendation, the sludge will still be permanently removed from the environment, the NYSDEC has determined that an ESD is appropriate.

This ESD only addresses management options for the sludge. The management options for sediment remain the same as in the ROD. The ESD is part of the Administrative Record for the 60 Acre Lagoon, and is available for public inspection at the following locations:

NYSDEC - Region 6 Headquarters
Dulles State Office Building, 14th Floor
317 Washington Street
Watertown, NY 13601
Phone (315) 785 - 2513

NYSDEC - ALCOA Field Office
ALCOA Massena Operations
Building 65
Massena, NY 13662
Phone (315) 764 - 4581

SUMMARY OF SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

The 60 Acre Lagoon is closer to 86 acres in size, and occupies a low-lying area of the plant that was formerly wooded and subject to flooding. The lagoon was formed in 1972 by means of a berm constructed across the natural drainage outlet for the area. A dike was also built along a portion of the centerline of the lagoon, the purpose of which was to lengthen the flow path of water moving through the lagoon. Once the water had been impounded, most of the trees present were cut off at the water's surface and disposed in place. Stumps and logs still remain throughout the majority of the site. The NYSDEC has also designated the area as a regulated wetland.

From 1972 until its decommissioning in 1998, the lagoon was used as a settling basin for process and storm waters from each of the plant's three manufacturing areas. Effluent was directed to the Grasse River via a permitted outfall.

Approximately 155,000 cubic yards of sludge and sediment are present in the bottom of the lagoon, at varying thicknesses up to 5 feet. Based upon physical and chemical testing, the sludge is defined as material with PCB concentrations of 50 ppm and greater, while the sediment is defined as material with PCB concentrations below 50 ppm. Underlying the sludge and sediment is a sequence of soft clay. In addition to PCBs, polynuclear aromatic hydrocarbons (PAHs), cyanide, and fluoride have been detected in the sludge, sediment, surface water, and/or groundwater at concentrations exceeding NYSDEC Standards, Criteria, and Guidelines (SCGs).

As summarized below, the ROD is tailored to ALCOA's demonstrated ability to segregate the sludge and sediment in the field according to PCB levels.

Sludge (PCBs $\geq$ 50 ppm; 50,000 cubic yards)

The sludge is to be permanently treated and/or permanently immobilized pursuant to NYSDEC and USEPA criteria governing the treatment of industrial sludge. Ex situ treatment residuals are to be placed in the SLF, while in situ treatment residuals are to be managed as described in the following sections, depending upon the levels of PCBs remaining in the residuals.

Sediment (PCBs = 10 to 49 ppm; 43,000 cubic yards)

This sediment is to be solidified, as needed, to increase its bearing strength and improve its handling properties, and then it is to be encapsulated within the lagoon on a clay shelf to elevate it above the water table.

Sediment (PCBs $<$ 10 ppm; 62,000 cubic yards)

This sediment is to be encapsulated in place, in the event the lagoon is converted to an upland area. (The ROD also requires ALCOA to develop and implement a wetlands restoration/mitigation program for any wetlands functions adversely impacted as a result of contamination and remediation.) Otherwise, it must be managed in the same fashion as the sediment with PCB levels from 10 to 49 ppm.

The elements of ALCOA's proposal are essentially the same as those in the ROD, with the exception of management of the sludge. As described above, The ROD requires the material to be permanently treated and/or permanently immobilized, whereas ALCOA recommends that the material be solidified and disposed in the SLF.

DESCRIPTION OF THE SIGNIFICANT DIFFERENCES AND THE BASIS FOR THE DIFFERENCES

TSCA was promulgated by the USEPA in 1978 to regulate the generation, use, and disposal of PCBs. In 1987, the USEPA amended TSCA to include the PCB Spill Cleanup Policy, again aimed at current PCB handling practices. However, after an extended period of time during which TSCA was also being applied to the remediation of PCB-contaminated hazardous waste sites, the USEPA recognized the need for regulations specific to such activities. The result was the 1998 rule change, which allows PCB remediation waste to be managed utilizing a risk-based approach.

Although the ROD provides ALCOA with a great deal of flexibility in selecting a remedy for the sludge, it does so within the context of permanent treatment and/or permanent immobilization, as defined by the NYSDEC and the USEPA. ALCOA's proposal, on the other hand, calls for the material to be solidified (not considered permanent treatment) and placed in the SLF. (An amendment to the TSCA approval to allow the material to be placed in the SLF has been approved by the USEPA.)

From a performance standpoint, the solidification and placement of the sludge in the SLF in lieu of permanent treatment or immobilization is considered equally protective of human health and the environment. The SLF is a state-of-the-art waste management facility that was subjected to rigorous NYSDEC and USEPA review during siting, design, and construction. The extensive leak detection and groundwater monitoring data that has been gathered since the facility went on-line in 1994 indicates that the landfill is achieving performance standards on a consistent basis. A maintenance and monitoring program will be continued throughout the operational and post-closure life of the facility.

According to the results of the detailed analysis of alternatives contained in the *Technologies Evaluation Report*, the present worth of the ROD remedy ranges from $9.5M to $16.8M, depending upon the type of permanent treatment selected, and the manner in which the residuals are managed. In comparison, the present worth of ALCOA's proposal is approximately $8.5M.

The NYSDEC endorses ALCOA's recommendation for management of the sludge, based upon the fact that it is considered equivalent to the ROD-prescribed remedy in terms of protection of human health and the environment, while at the same time offers a more cost-effective solution.

SCHEDULING AND SOURCES FOR MORE INFORMATION

Presently, a conceptual design incorporating ALCOA's proposal is under review by the NYSDEC. The results of a wetlands restoration study are also nearing completion, the results of which will be included in the design. ALCOA has scheduled construction activities to begin in April 2000, and is in the process of establishing access roads, dewatering facilities, and equipment laydown areas. Work will be carried out around the clock until completion, anticipated to be late November 2000.

For additional information concerning this or any other aspect of ALCOA's on-site remediation program, please contact:

Mr. Gregg A. Townsend, P.E.
NYSDEC - Region 6 Headquarters
Dulles State Office Building, 14th Floor
317 Washington Street
Watertown, NY 13601
Phone (315) 785 - 2513

RESPONSIVENESS SUMMARY

Two commenters responded that they would prefer to see the sludges in the lagoon permanently treated.

The Department gives preferences to treatment technologies that will result in a permanent and significant decrease in the toxicity, mobility, or volume of hazardous substances. By solidifying the sludges and placing this material in the Secure On-site Landfill, it is the Department's finding that the mobility of the contaminants have been significantly and permanently reduced. The USEPA, by virtue of changing the TSCA land disposal options to allow this method of disposal, has agreed with this remedy change, and has amended the Secure Landfill authorization to allow the disposal of 60 Acre Lagoon sludges into the Secure Landfill.

One of the commenters also inquired about the fate of groundwater contamination beneath the site.

Hydrogeological investigations of the Central Valley, in which the 60 Acre Lagoon is located, indicate that the lagoon acts as a discharge area for groundwater flow from the north (Central Ridge) and the south (Southern Ridge). Monitoring wells screened beneath the lagoon have not shown the presence of elevated levels of the contaminants of concern.

1/26/98
Date

Michael J. O'Toole, Jr., Director
Division of Environmental Remediation