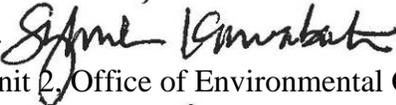




UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
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Reply To
Attn Of: ECL-112

TO: Daniel D. Opalski, Director
Office of Environmental Cleanup

THRU Sylvia Kawabata, Unit Manager 
Site Assessment and Cleanup Unit 2, Office of Environmental Cleanup

FROM: Sean Sheldrake, Project Manager 

SUBJECT: EE/CA Approval Memorandum for Proposed Non-Time Critical Removal Action at Arkema, Inc. Facility, Portland, Oregon

The purpose of this memorandum is to request approval to proceed with an Engineering Evaluation/Cost Analysis (EE/CA) for a non-time critical removal of contaminated sediments at the Arkema, Inc. (Arkema) site, located at 6400 NW Front Avenue, Portland, Multnomah County, Oregon. The Arkema site is located along river mile 7.5 of the Willamette River, and is within the known boundaries of the Portland Harbor Superfund Site. At this time, the Environmental Protection Agency (EPA) expects the Arkema to prepare the EE/CA and implement the removal activities with EPA oversight. Arkema has entered into an Administrative Order on Consent for Non-time Critical Removal Action.

I. Site Background

A. Site Ownership History

The facility started operations in 1941 to meet wartime needs for chlorate production in the western United States. It was built by Pennsylvania Salt Manufacturing, which later became known as Pennwalt Corporation (Pennwalt). In 1990, Pennwalt's operations were combined with those of two other subsidiaries of Elf Aquitaine, and the new combined company was named, Elf Atochem North America, Inc. In 2000, Elf Aquitaine merged with TOTALFINA and formed TOTALFINA ELF and Elf Atochem became ATOFINA Chemicals, Inc. In 2004, ATOFINA Chemicals, Inc. changed its name to Arkema Inc.

B. Site Investigation and Cleanup Activities

Various chemicals have been historically produced at the facility since 1941, including sodium chlorate, potassium chlorate, chlorine, sodium hydroxide, DDT, sodium orthosilicate, magnesium chloride hexahydrate, ammonia, hydrogen, ammonium perchlorate, and hydrochloric acid.

Six chemical spills were reported to have occurred at the site in 1987, the first year reporting was required. Excavation activities in 1992 encountered residues determined to be associated with the manufacture of DDT by Pennwalt in the late 1940s and early 1950s. DDT residue was removed by Atochem in a trench disposal area from the northwestern portion of the plant site in 1994. Investigation of the former DDT-manufacturing area (current acid plant area) by Atochem in 1994 showed high concentrations of DDT in soil and monochlorobenzene in groundwater. Four Willamette River outfalls (regulated under a common NPDES permit) are also present.

Elf Atochem later entered the Oregon Department of Environmental Quality (DEQ) Voluntary Cleanup Program and requested DEQ oversight for the investigation & cleanup of the former DDT manufacturing area (current Acid Plant area). Field work in the fall & winter of 1996 focused on delineating the former DDT manufacturing residue disposal pond and overflow trench and beginning the characterization of groundwater quality between the former disposal pond and the Willamette River. Data from work is summarized in a June 1997 report. Elf Atochem and DEQ entered Voluntary RI/FS Agreement to investigate former DDT manufacturing releases. During the fall of 2000, Arkema removed approximately 3,000 cubic yards of soil with some of the highest levels of DDT at the site. The removal took advantage of a planned facility maintenance shutdown, which allowed access to specific areas of the plant. Arkema also paved or placed temporary covers over areas of the plant to control surface soils containing DDT from being transported by stormwater to the Willamette River. In December 2000, Arkema constructed and started operation of a small vapor-extraction system to remove chlorobenzene from vadose zone soils in the location of the former chlorobenzene recovery unit. This system has been periodically expanded during 2001 to cover a longer area of the Acid Plant. Arkema conducted a pilot test on the effectiveness of injecting sodium persulfate into the aquifer to oxidize chlorobenzene and DDT. Initial results showed a decrease in chlorobenzene levels in groundwater. However, levels rebounded as a result of the large mass of chlorobenzene (NAPL) present. Arkema is evaluating options for a modified pilot test to determine if sodium persulfate is a viable technology given the large amount of chlorobenzene NAPL present. Investigation in the chlorate production plant detected hexavalent chromium in groundwater. Hexavalent chromium was used in the chlorate manufacturing process. Remedial investigation of the hexavalent chromium release is ongoing. Initial investigation results indicate the groundwater plume has reached the river. Arkema initiated another soil removal in the north portion of the Acid Plant to remove surface soils containing high levels of DDT (> 1,200 mg/kg) and to rework the storm drainage system in this area. As of January 2003, manufacturing operations at the Arkema plant ceased, and the plant has been shut down. Current investigation efforts are focusing on near-shore sediments to understand the migration of contaminated groundwater to the Willamette River. Interim removal measures (IRMs) are underway for both the chrome and chlorobenzene plumes. Both measures utilize in-situ techniques. No IRMs are underway for other plumes on site.

C. Integration of In-Water Removal Action with Upland Source Control Actions

Activities at this site will be coordinated closely between USEPA and DEQ to ensure that upland and inwater efforts proceed seamlessly. To allow timely implementation of this action without undue risk of recontamination, the EE/CA may need to include alternatives to eliminate upland sources should these not be put in place by the time the EE/CA is completed.

II. Threat to Public Health, Welfare, or the Environment

Contaminants known to be present at the Arkema facility that pose a substantial risk to human health or the environment include: chlorobenzene, dichlorodiphenyltrichloroethane (DDT), its breakdown products (e.g. DDE), hexavalent chromium, and perchlorate. Historic operational practices have resulted in releases of hazardous substances in soils, stormwater, groundwater, and Willamette River sediments on and adjacent to portions of the Arkema Site. DDT concentrations exceed 1 part per million (ppm) in groundwater (unfiltered geoprobe sample), 20 ppm in surface sediments, and 1,000 ppm in subsurface sediment which exceed the following screening criteria: the published ecological probable effects level (PEL) of 4,450 parts per billion (ppb) (NOAA, 1999) in sediment and the acute aquatic water quality criteria (AWQC) of 0.55 ppb. DDT and its breakdown products have been found in resident fish species in the Willamette River. Chlorobenzene has been detected in upland monitoring wells at concentrations up to 292 ppm in groundwater and 64 ppm in shallow groundwater under the sediment off the facility, several orders of magnitude above the AWQC for chlorobenzene of 250 ppb. The presence of chlorobenzene (a solvent) in groundwater enables transport of the DDT to sediment and the water column in the Willamette River. Perchlorate in upland monitoring wells at the site has been found in groundwater at concentrations up to 290 ppm and in the shallow groundwater under the sediment at concentrations up to 370 ppm. Recent studies from Texas Tech University indicate adverse ecological effects occur at concentrations of 147 ppb perchlorate. Hexavalent chromium concentrations exceeded 26 ppm in shallow groundwater (in an unfiltered Geoprobe sample), several orders of magnitude above the AWQC for hexavalent chromium of 16 ppb. The highest groundwater result for hexavalent chromium from an upland monitoring well was 9.79 ppm.

Therefore, sufficient evidence exists to justify proceeding with the preparation of an EE/CA to address principal threat sources from the Arkema facility to the Willamette River and human and ecological receptors. The goals of the EE/CA are listed in the Statement of Work for the Administrative Order on Consent. The primary concerns are potential impacts to aquatic organisms and specific human exposure pathways.

If this removal action is not taken, then necessary alternatives analysis and cleanup work will be delayed until after completion of a harbor-wide Remedial Investigation/Feasibility Study and Record of Decision (ROD), during which time unacceptable exposures may continue to occur. It is expected that the ROD will be completed in 2008 at the earliest. By conducting an early removal action, significant progress will be made more quickly in addressing the human health and environmental risks presented by the contaminated sediment in the Willamette River.

III. Statutory Basis for Action

Section 300.415(b)(2) of the National Contingency Plan (NCP) provides factors for determining the appropriateness of a removal action. The factors applicable to current conditions at the Arkema site are: (1) the actual or potential contamination of sensitive ecosystems; (2) actual or potential exposure to nearby human populations, animals, or the food chain from hazardous

substances or pollutants; and (3) high levels of hazardous substances in river sediment that may migrate throughout the river system. In accordance with 300.415(b)(4) of the NCP, EPA has determined that a planning period of at least six months exists before on-site activities could be initiated; therefore, an EE/CA must be conducted for a non-time critical removal action.

IV. Factors for Determining Appropriateness of a Removal Action

Section 300.415(b)(2) of the National Contingency Plan (NCP) provides factors for determining the appropriateness of a removal action. The factor most applicable to current conditions at the Arkema site are the actual or potential contamination of sensitive ecosystems. Other factors that may be applicable include: actual or potential exposure to nearby human populations or the food chain from hazardous substances or pollutants. In accordance with 300.415(b)(4) of the NCP, EPA has determined that a planning period of at least six months exists before on-site activities could be initiated; therefore, an EE/CA must be conducted for a non-time critical removal action.

D. Enforcement/Proposed Actions/Cost Estimates

EPA has entered into an Administrative Order on Consent with Arkema to conduct this work. Arkema will prepare the EE/CA, EPA will issue an Action Memorandum, and Arkema has agreed to implement the removal actions on the site. EPA anticipates that some of the potential removal response options may include dredging and capping. EPA estimates that the very approximate cost of these various removal responses could range from five to fifteen million dollars.

E. Public Involvement

EPA expects to issue an EE/CA for public comment early in 2007.

F. Approval/Disapproval

The conditions at the Arkema site meet the NCP criteria for a removal action. Therefore, I am requesting approval to proceed with an EE/CA. Your approval or disapproval should be indicated below.

Approve: _____
Disapprove: _____

Date: 6/27/2005
Date: _____

References

NOAA Screening Quick Reference Table, 1999.