

August 28, 1985

U.S. Environmental Protection Agency  
Region V  
Mail Code 5C-16  
230 South Dearborn Street  
Chicago, IL 60604

EPA Region 5 Records Ctr.



253033

Attention: Mr. Michael H. Elam  
Office of Regional Counsel

Re: United States v. Chem-Dyne Corp., et al.

Dear Mr. Elam:

Liaison counsel and technical consultants for the Settling Defendants have reviewed public comments on the proposed Consent Decree for the Chem-Dyne site. This letter constitutes the Settling Defendants' response to the public comments. Since several of the letters raised the same or similar issues, this response will focus on specific issues raised in the comments rather than addressing each letter.

1. Termination of Groundwater Extraction System

Several comments expressed concerns about termination of pumping when a 0.1 ppm concentration of priority pollutant volatile organic chemicals in the groundwater is reached. However, this concern does not reflect an accurate understanding of the Consent Decree. The performance goals set forth in the Consent Decree for terminating the groundwater extraction system are not based solely on reaching a total VOC concentration of 0.1 ppm. In addition, the total VOC concentrations must become effectively constant. If the concentration is not effectively constant, the extraction system will continue to operate for a period of time after the level of 0.1 ppm of VOC concentrations has been reached. Thus, the concentration of VOCs at termination could be considerably lower than the 0.1 ppm level. Moreover, the critical issue is not the level of VOCs or other priority pollutant compounds that remain at or in the vicinity of the site at termination, but rather the potential impact of the remaining contaminants on the drinking water supplies of the area.

August 28, 1985  
Page Two

There are no wells for potable supplies in the vicinity of the site or west of the site in the direction of groundwater flow. Thus, residual contaminants in the groundwater, if any, are not expected to move in the direction of public water supply wells. Moreover, the residual contamination should be completely diluted by groundwater flowing through the site.

The City of Hamilton south wellfield is located about five miles south of the site; however, groundwater from the site does not flow to the south. The Consent Decree requires monitoring to the south of the site to assure that groundwater flow from the site continues in a westerly direction. In addition, the Consent Decree provides funds to assure full protection of wells to the south of the site in the unlikely event that (1) groundwater flow patterns change and (2) there is sufficient residual contamination to pose a threat to the south wellfield. Thus, drinking water supplies will be adequately protected by the provisions of the Consent Decree.

## 2. Location of Extraction Wells

Several letters questioned the location of the extraction wells and the accuracy of the data used for locating these wells. Although outer extraction wells are to be placed on the 0.1 ppm VOC isopleth, the wells will be capturing water from hundreds of feet beyond this isopleth. Thus, the concentration of VOCs outside the area hydraulically controlled by these extraction wells will be below 0.1 ppm. Water outside this area is moving to the west and, as discussed above, does not present a health risk. Moreover, the Consent Decree requires monitoring outside the 0.1 ppm VOC isopleth and corrective action under specific conditions.

Regarding the accuracy of the data used to define the 0.1 ppm isopleth, the position of the 0.1 ppm VOC isopleth will be defined by three consecutive monthly samplings in all existing monitoring wells and in six additional wells to be installed. These samplings will occur prior to the final selection of the outer extraction well locations. Thus, the extraction system will be designed on the basis of updated

data that will account for any migration of contaminants since the last sampling at the site.

3. Non-VOC Contaminants

Concerns were expressed about the lack of pumping termination standards for non-volatile organic chemicals and metals. The data indicate that essentially all contaminants in the groundwater under the site are VOCs. Contamination by other non-VOC priority pollutant compounds is not extensive, and these compounds are not as mobile in the groundwater environment as the VOCs. For these reasons, the performance goals for the extraction system were based on VOCs. However, the Consent Decree establishes criteria for other non-volatile priority pollutant compounds at compliance points and thus provides for the protection of public health if these compounds are found to migrate at concentrations that present a threat to public health.

4. Groundwater Treatment System

Some commenters are concerned that treatment of the extracted groundwater is limited to air stripping of volatile organic compounds without treatment for metals and non-VOC organics.

Essentially all contamination in the groundwater beneath the site is limited to VOC compounds which are appropriately treated by air stripping. The air stripping step will be operated on a small demonstration scale using actual groundwater samples in order to provide design data. A metal removal step may be required to prevent precipitation of metallic compounds where the system could be plugged and rendered inoperable. The removal of non-toxic materials may also remove toxic materials even at the very low concentrations present in the groundwater. In any event, the Consent Decree and Remedial Action Plan provide for intensive monitoring of groundwater to identify the presence of contaminants other than VOCs and to allow the implementation of appropriate treatment methodologies should different types of contamination occur in the future.

5. Ford Canal

A number of commenters expressed concern about contaminated sediments on the floor of the Ford Canal, and the lack of a plan for remediation. All parties, including EPA and Ohio EPA, evaluated data from the Ford Canal. This data showed that the Ford Canal was not adversely affected by the Chem-Dyne site. Accordingly, no remedial action was necessary.

6. Effect of Discharge on Ford Canal

Comments were directed at the possible effect of the treated water discharge on aquatic life in the Ford Canal and Great Miami River. The permit limitations set forth in the National Pollutant Discharge Elimination System permit were based upon water quality criteria including levels necessary to prevent harm to aquatic life. The permit also requires sampling and analysis of appropriate aquatic species to determine if the permitted discharge has a deleterious effect on indigenous species.

7. Design of Reinjection System

Several comments focused on the design objective of the treated water reinjection system and expressed concern about the underground movement of the injection fluid. The intent of the reinjection system is to accelerate the process of aquifer remediation by increasing the rate of groundwater displacement through the contaminated zone of the aquifer. An increased rate of displacement will result in an increased rate of release of contaminants absorbed by the solid matrix (salts, sands and gravels) of the aquifer. The extraction/injection system will be designed such that all injected water will be captured by extraction wells surrounding each injection well. Thus, the injected water will remain within the defined plume boundary and undergo successive cycles of treatment. The Consent Decree requires that inward hydraulic gradients, horizontally and vertically, be maintained along the plume boundary. Maintenance of this inward hydraulic gradient will ensure that injected water remains within the plume boundary.

8. Soil Removal

Many commenters expressed concern about the extent of removal of contaminated soil. In order to reduce the potential for exposure of workers at the site to contaminants, and to minimize nuisance odors generated during remedial construction, the Consent Decree and Remedial Action Plan provide for the excavation and off-site disposal of heavily contaminated soils from the site. The RAP also provides a contingency for the removal of additional grossly contaminated soils over those currently identified if such are encountered during remedial construction.

A limited number of individuals suggested that all contaminated soil above the water table be removed. To be effective in removing essentially all contaminants that have a significant potential for migration from the unsaturated zone to the groundwater (VOCs), assuming no cap is installed, any excavation program would necessarily include the removal of essentially all soil in the unsaturated zone beneath the site. Such a program is technically infeasible and environmentally unacceptable for the following reasons:

- (i) The volume of soil which would have to be removed to eliminate VOC contamination in the unsaturated zone at the site is approximately 850,000 cubic yards. There is not sufficient USEPA approved hazardous waste landfill capacity presently existing in the United States to accommodate even a significant portion of this volume. Other treatment/disposal technologies are insufficiently developed at present to effectively accommodate even a small volume of excavated soils from the Chem-Dyne site.
- (ii) Excavation and disposal of soils from the unsaturated zone at the Chem-Dyne site would require at least 75,000 tractor-trailer round trip shipments of excavated soil and 75,000 similar truck trips to backfill the excavated areas. Due to limited working space at the site, the necessity to manifest each load of soil removed and the relatively small number

of licensed hazardous waste haulage units available in reasonable proximity to the site, it is anticipated that no more than 50 truckloads per day on the average could be removed from the site. It is clear, therefore, that the removal of contaminated soil from the site would take a minimum of 1600 working days to complete. Factoring in holidays, inclement weather and delays due to mechanical breakdown, it is estimated that approximately five years would be required to complete the soil excavation and removal phase of the project.

The environmental impact of 150,000 truck trips (75,000 for soil removed, 75,000 for backfill) on the residential areas adjacent to the site and on the City of Hamilton in general would be devastating. Even with state of the art controls in place, excavation of large amounts of soil would probably result in the creation of dust which could migrate off site. Almost certainly, a small percentage of the waste haulage units would be involved in accidents while in transit, resulting in the spillage of contaminated soils at off-site locations and possible personal injury or loss of life. Because of the large number of truck trips and the extended duration of the project, inconvenience and disruption to the citizens of Hamilton caused by noise, vehicular congestion and deteriorated roadways would be unavoidable.

- (iii) The estimated cost for the removal and off-site disposal of 850,000 cubic yards of soil from the Chem-Dyne site is over \$300,000,000.00.

The Consent Decree provides for installation of a composite cap which has been designed to accomplish the same objectives as soil removal without the attendant risks.

#### 9. Adequacy of Cap

The purpose, adequacy and useful life of the cap over the site have been questioned. Soil contaminants are transported through the unsaturated soil zone to the groundwater

by water which infiltrates the surface of the site following rain or snow melt. The quantity and rate at which contaminants enter the groundwater is approximately directly proportional to the volume of infiltration. Infiltration is easily controlled by proper contouring of the site to promote surface water runoff and installation of a durable low-permeability cap to impede infiltration. The Consent Decree and Remedial Action Plan provide for both recontouring of the site and installation of a low-permeability cap. These measures will reduce infiltration of surface waters into the site and hence discharge of contaminants into the groundwater to less than 1 percent of that which presently occurs. The Consent Decree and Remedial Action Plan provide for intensive monitoring and stringent maintenance of the cap to ensure long term structural integrity and compliance with performance standards. Specified monitoring and maintenance will continue until such time as it is demonstrated that contaminants in the unsaturated zone do not pose an adverse threat to public health or the environment.

#### 10. Purpose of Site Trench

The purpose of the trench to be dug around the site was generally misunderstood as a barrier to later movement of groundwater. The purpose of the trench is to locate, intercept and remove utilities which cross the site boundaries and, if not located and removed, may provide a preferential route of contaminant migration from the site.

Lateral movement of water through the unsaturated zone does not occur under most circumstances. The basic purpose of the perimeter trench is not to preclude the unlikely occurrence of lateral flow in the unsaturated zone both into or from the site.

#### Conclusion

Liaison counsel and technical consultants for the Settling Defendants do not believe that the public comments raise legitimate questions about the adequacy of the Consent Decree and Remedial Action Plan. The proposed remedial plan utilizes the best of presently demonstrated technologies applied in a cost-effective manner. Accordingly, we recommend

August 28, 1985  
Page Eight

that the United States and Ohio promptly respond to the public comments and urge the Court to sign the Consent Decree so that the process of site cleanup can begin.

Sincerely,

*James R Adams by CHT*  
James R. Adams

*Theodore L Garrett by CHT*  
Theodore L. Garrett

*Thomas T Terp by CHT*  
Thomas T. Terp

*Charles H Tisdale, Jr.*  
Charles H. Tisdale, Jr.

Liaison Counsel for Original  
Defendants and Settling Third  
Party Defendants

cc: Mr. Barry Sandals