

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

IN THE MATTER OF:)

DOVER CHEMICAL CORPORATION)
SITE)

Dover, Ohio)

Tuscarawas County, OH)

Respondent:)

Dover Chemical Corporation)
_____)

Docket No. V-W-01-C-619

ADMINISTRATIVE ORDER BY
CONSENT PURSUANT TO
SECTION 106 OF THE
COMPREHENSIVE
ENVIRONMENTAL RESPONSE,
COMPENSATION, AND
LIABILITY ACT OF 1980,
as amended, 42 U.S.C.
§ 9606(a)

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I. JURISDICTION AND GENERAL PROVISIONS

This Order is entered voluntarily by the United States Environmental Protection Agency ("EPA") and Dover Chemical Corporation ("Respondent"). The Order is issued pursuant to the authority vested in the President of the United States by Sections 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. §§ 9606(a), 9607 and 9622. This authority has been delegated to the Administrator of the EPA by Executive Order No. 12580, January 23, 1987, 52 Federal Register 2923, and further delegated to the Regional Administrators by EPA Delegation Nos. 14-14-A, 14-14-C and 14-14-D, and to the Director, Superfund Division, Region 5, by Regional Delegation Nos. 14-14-A, 14-14-C and 14-14-D.

This Order provides for performance of removal actions and reimbursement of response costs incurred by the United States in connection with property located at 3676 Davis Road N.W., Dover, Tuscarawas County, Ohio, (the "Dover Chemical Corporation Site" or the "Site"). This Order requires the Respondent to conduct removal actions described here to abate an imminent and substantial endangerment to the public health, welfare or the environment that may be presented by the actual or threatened release of hazardous substances at or from the Site.

A copy of this Order will also be provided to the State of Ohio, which has been notified of the issuance of this Order pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

Respondent's participation in this Order shall not constitute an admission of liability or of EPA's findings or determinations contained in this Order except in a proceeding to enforce the terms of this Order. Respondent agrees to comply with and be bound by the terms of this Order. Respondent further agrees that it will not contest the basis or validity of this Order or its terms.

II. PARTIES BOUND

This Order applies to and is binding upon EPA, and upon Respondent and Respondent's successors and assigns. Any change in ownership or corporate status of Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter Respondent's responsibilities under this Order.

Respondent shall ensure that its contractors, subcontractors, and representatives comply with this Order. Respondent shall be responsible for any noncompliance with this Order. With regard to the activities undertaken pursuant to this Order, each contractor and subcontractor shall be deemed to be in a contractual relationship with the Respondent within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

III. DEFINITIONS

Unless otherwise expressly provided in this Order, terms used in this Order which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Order or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

"CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601 *et seq.*

"Day" shall mean a calendar day unless expressly stated to be a working day. "Working day or business day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

"Design" shall mean those activities to be undertaken by the Respondent to develop the final plans and specifications for the Response Actions pursuant to the Design Work Plan.

"Design Work Plan" shall mean the document developed pursuant to Paragraph VI.B.7. of this Order and approved by EPA, and any amendments thereto.

"EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

"Enforcement Action Memorandum" or "EAM" shall mean the EPA decision document relating to the Dover Chemical Corporation Site signed on October 1, 1999, by the Director, Superfund Division, EPA Region 5, including all attachments. The EAM is attached as Appendix A.

"Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the EPA incurs in reviewing or developing plans, reports and other items pursuant to this Order, verifying the Work, or otherwise implementing, overseeing, or enforcing this Order, including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Sections VI.C. (Review of Response Action), VI.E. (Access) (including, but not limited to, the cost of attorney time and any monies paid to secure access and/or to secure institutional controls, including the amount of just compensation), VI.I. (Emergency Response), and Paragraph IX.3. (Work Takeover provision). Future Response Costs shall also include all Interim Response Costs, and all Interest on the Past Costs that has accrued pursuant to 42 U.S.C. § 9607(a) during the period from September 1, 2000 to the date of entry of this Order.

"Interim Response Costs" shall mean all costs, including direct and indirect costs, (a) paid by the United States in connection with the Site between September 1, 2000 and the effective date of this Order, or (b) incurred prior to the effective date of this Order but paid after that date.

"Interest," shall mean interest at the rate specified for interest on investments of the Hazardous Substance Superfund established under Subchapter A of Chapter 98 of Title 26 of the U.S. Code, compounded on October 1 of each year, in accordance with 42 U.S.C. § 9607(a).

"NPDES" means the National Pollutant Discharge Elimination System as provided for in Section 402 of the Clean Water Act, 33 U.S.C. §1342 (also known as the Federal Water Pollution Control Act).

"National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

"OEPA" shall mean the Ohio Environmental Protection Agency and any successor departments or agencies of the State.

"Order" shall mean this Administrative Order by Consent and all appendices attached hereto, as may be amended. In the event of conflict between this Order and any appendix, this Order shall control.

"Paragraph" shall mean a portion of this Order identified by an Arabic numeral or an upper case letter.

"Parties" shall mean EPA and the Respondent.

"Past Response Costs" shall mean all costs, in the amount of \$143,199.63, including, but not limited to direct and indirect costs, that the United States paid at or in connection with the Site through August 31, 2000, plus interest on all such costs which has accrued pursuant to 42 U.S.C. § 9607(a) through such date.

"Performance Standards" shall mean the cleanup standards and other measures of achievement of the goals of the Response Action, set forth in Section VI of the EAM and Section II of the SOW, and any modified standards established by EPA and included herein pursuant to the provisions of this Order.

"Post-Removal Site Control" or "PRSC" shall mean all activities required to ensure the effectiveness and integrity of the Response Actions as required under the Post-Removal Site Control Plan approved or developed by EPA pursuant to this Order and the Statement of Work (SOW), as may be modified pursuant to this Order.

"RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901 et seq. (also known as the Resource Conservation and Recovery Act).

"Response Actions" shall mean those activities, except for Post-Removal Site Control, to be undertaken by the Respondent to implement the EAM, in accordance with the SOW and the final Design Work Plans and other plans approved by EPA.

"Respondent" shall mean Dover Chemical Corporation and its successors and assigns.

"Section" shall mean a portion of this Order identified by a roman numeral.

"Site" shall mean the Dover Chemical Corporation Site, located in Tuscarawas County, Ohio, at 3676 Davis Road N.W., Dover, Ohio. The Site includes the real property that comprises the plant, canal and lagoon areas. The Site also includes the areal extent of groundwater contamination associated with these areas, but does not include the detached groundwater plume described in the Feasibility Study for the Site. The Site is depicted generally on the map attached as Appendix A, Attachment 1.

"State" shall mean the State of Ohio.

"Statement of Work" or "SOW" shall mean the statement of work for implementation of the Design, Response Actions, and Post-Removal Site Control at the Site, as set forth in Appendix B to this Order and any modifications made in accordance with this Order.

"Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant under Section 101(33), 42 U.S.C. § 9601(33); and (3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27).

"Work" shall mean all activities Respondent is required to perform under this Order, except those required by Section XIII (Retention of Records).

IV. FINDINGS OF FACT

Based on available information, including the Administrative Record in this matter, EPA finds that:

1. The real property comprising the Site, which is located at Davis and West Fifteenth Street, Dover, Tuscarawas County, Ohio, is owned by Dover Chemical Corporation. The Site is in a light industrial/residential area. Dover Chemical Corporation operates a chemical manufacturing plant at the Site. The real property comprising the Dover Chemical Corporation plant covers approximately seventeen acres and is adjacent to Interstate 77 ("I-77"). The nearest residences to the plant are located 500 feet east of the plant's main gate. Sugar Creek is approximately 1,000 feet southwest of I-77.
2. The Dover Chemical Corporation plant produces chlorinated hydrocarbon products related to the manufacture of pressure lubricants, plasticizer and flame retardants for vinyl products and for the production of phenyl phosphites. The plant at the Site began operation around 1950 and continues operation today. The Site is located in the Sugar Creek Valley drainage basin. Surface drainage in the vicinity of the Site is collected via Goettege Run, a small tributary to Sugar Creek, and Sugar Creek itself. Sugar Creek flows southeasterly to the Tuscarawas River. A pond is located on Dover Chemical Corporation property between I-77 and Sugar Creek.
3. The Dover Chemical Corporation plant uses groundwater beneath the Site as non-contact cooling water for its production process. Groundwater in this region occurs in the thick sand and gravel glacial deposits of the Sugar Creek Valley. The sand and gravel formation is approximately 240 feet thick near the site and serves as the primary drinking water source for the region. Sedimentary bedrock underlies the sand and

gravel formation and is not a major source of potable groundwater. The City of Dover municipal well field is located approximately 1000 feet north of the plant and draws its water from the sand and gravel formation. This municipal system supplies drinking water to approximately 12,000 people.

4. Hazardous substances were released to the environment through the following activities, including but not limited to: disposal of still bottoms in the southwestern corner of the Site; discharge of contaminated groundwater to the canal and lagoon area; and the storage, spilling and leaking of hazardous substances in the plant area.

5. Pumping of the City of Dover wells threatens to draw contaminated water from beneath the Site up-gradient to the City of Dover drinking water production wells. The influence of the pumping of the Dover Chemical non-contact cooling water production wells has formed an artificial hydraulic barrier to contaminant migration from the Site to the City of Dover wells. Should Dover stop pumping groundwater from its production wells and the City of Dover continue to draw its water supply from its existing wells, the City of Dover municipal water supply could become contaminated by hazardous substances migrating from the Site.

6. Until mid-1987, the Respondent used the canal and lagoon areas located on its property for the discharge of non-contact cooling water. The source of the non-contact cooling water was contaminated groundwater at the Site. The discharge of non-contact cooling water contaminated soil and sediments in the canal area and lagoon area. The water ponded in the lagoon area was discharged to Sugar Creek pursuant to an NPDES permit.

7. On October 23, 1981, EPA issued Agreed Findings and Order, Docket No. V-W-3013-1, to Respondent to study and address soil and groundwater contamination. EPA and Respondent were signatories to the agreement. Respondent removed waste and contaminated soil from the Site in 1981 with the concurrence and under the oversight of EPA. In 1983, with the agreement of the EPA and OEPA, the Respondent initiated an investigation to determine the extent of soil and groundwater contamination. The investigation revealed groundwater and soil contamination at the Site by hazardous substances including: Carbon Tetrachloride, Chloroform, Chlorobenzene, 1,2,4,-trichlorobenzene, 1,2, dichlorobenzene, 1,3, dichlorobenzene, 1,4, dichlorobenzene. As part of the investigation, the Respondent installed groundwater monitoring wells on and around the Site between 1983 and 1986 with the concurrence of EPA. Sampling results from the wells and modeling of groundwater flow indicated that contaminated groundwater migrated southward beyond the real property boundary of the Site.

8. On August 24, 1988, EPA issued an administrative order by consent, Docket No. V-W-88-121, to Respondent to conduct a Remedial Investigation/Feasibility Study ("RI/FS") at the Site. The EPA, OEPA, and Dover Chemical Corporation were

signatories to the agreement. The Feasibility Study identified the presence of the following principal constituents of concern in the soil, sediment and groundwater at the Site: Polychlorinated dibenzodioxins ("PCDD") and dibenzofurans ("PCDFs"), hexachlorobenzene ("HBC"), carbon tetrachloride, chloroform, chlorobenzene, 1,2 dichlorobenzene, 1,3 dichlorobenzene, 1,4 dichlorobenzene, 1,2,4,-trichlorobenzene, tetrachlorethane, and hexachlorocyclohexane ("BHCs"), as well as other constituents of concern. EPA requested the Respondent to take interim actions to reduce the mobility and potential for worker contact with soils containing PCDD/PCDFs.

9. On July 12, 1991, EPA issued an administrative order by consent, Docket No. V-W-91-C-107, to Respondent to conduct interim removal activities. EPA and Respondent were signatories to the agreement. Respondent consolidated dioxin-contaminated soil in area H at the Site. Respondent covered the consolidated soil with a geotextile cover. In addition, Respondent covered contaminated soil in the plant area with some type of material (concrete, asphalt, chip-and-seal or geotextile) or seeded the area to reduce direct contact exposure and wind blown dust. On December 16, 1992, EPA issued an amendment to the administrative order by consent, Docket No. V-W-C-107, to Respondent to conduct additional removal activities on or near residential properties along Fifteenth Street in Dover, Ohio as well as other areas at the Site. The EPA and Respondent were signatories to the amendment. The Respondent removed contaminated soil that had PCDF/PCDD levels of above 1 part per billion ("ppb") from this area and stockpiled the contaminated soil at area H at the Site.

10. On May 10, 1993, EPA proposed that the Dover Chemical Corporation Site be listed on the National Priorities List ("NPL"). EPA has not finalized the proposal to list the Site.

11. In May of 1995, EPA finalized the Baseline Risk Assessment, Dover Chemical Corporation Site. Risk calculations for current and future use pathways showed actual or potential unacceptable excess cancer risks for the adult worker, current visitor/trespasser, future off-site resident, adult routine maintenance worker, off-site visitor/trespasser, and off-site resident. EPA identified excess cancer risk estimates for exposures to direct contact with and incidental ingestion of contaminated surface soils on-site, and direct contact with and inhalation of on-site groundwater while showering. Risk calculations estimated unacceptable excess non-carcinogenic risks for the current visitor/trespasser, the current worker, the maintenance worker, the future visitor/trespasser, and the off-site resident. EPA identified excess non-carcinogenic risks for exposures to direct contact with and incidental ingestion of contaminated soils and sediments and inhalation while showering. EPA also identified ecological risks at the Site.

12. On July 22, 1999, U.S. EPA approved the Feasibility Study prepared by the Respondent under the administrative order by consent, Docket No. V-W-88-121.

13. In August 1999, after reviewing information in the RI/FS, the baseline risk assessment, previous removal activities completed at the Site, and current Site conditions, U.S. EPA determined that a non-time removal action was appropriate to prevent and mitigate releases of hazardous substance to the environment at the Site. EPA will address, in a separate response action to be documented in a record of decision, the cleanup of a detached groundwater plume believed to have spread south of the Dover Chemical Corporation plant. In August of 1999, EPA recommended a cleanup plan for the non time-critical removal action at the Site. On August 3, 1999, a notice was published in The Times Reporter, a major local newspaper of general circulation, of availability and a brief description of the cleanup plan for the non time-critical removal action. On August 10, 1999, EPA sponsored a public meeting to explain the recommended cleanup alternative of the alternatives considered in the RI/FS. The public comment period ran from August 9, 1999, to September 7, 1999, and provided the public an opportunity to comment on the recommended cleanup and the administrative record for the Site.

14. On October 1, 1999, the Director, Superfund Division, EPA Region 5, signed the Enforcement Action Memorandum, which is attached as Appendix A. The EAM documents EPA's selection of the non time-critical removal action for the Site. A responsiveness summary, prepared by EPA and attached to the EAM, addresses comments made during the public comment period. The EAM reflects certain changes made by EPA to the cleanup plan in response to the public's comments.

15. The levels of hazardous substances detected in the surface soil, sediment and groundwater at the Site, if not addressed by implementing the response action selected in the EAM and outlined in the SOW, constitute a threat to public, health, welfare, or the environment.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth above, and the Administrative Record supporting these removal actions, EPA has determined that:

1. The Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).
2. PCDD/PCDFs, HBC, carbon tetrachloride, chloroform, chlorobenzene, 1,2 dichlorobenzene, 1,3 dichlorobenzene, 1,4 dichlorobenzene, 1,2,4,-trichlorobenzene, tetrachlorethane, and BHCs are "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).
3. The Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

4. Respondent, Dover Chemical Corporation, is the present "owner" and "operator" of the Site, as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20). The Respondent therefore may be liable under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

5. The conditions described in the Findings of Fact above constitute an actual or threatened "release" of a hazardous substance from the facility into the "environment" as defined by Sections 101(8) and (22) of CERCLA, 42 U.S.C. §§ 9601(8) and (22).

6. The conditions present at the Site constitute a threat to public health, welfare, or the environment based upon the factors set forth in Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan, as amended ("NCP"), 40 CFR § 300.415(b)(2). These factors include, but are not limited to, the following:

a. high levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate; this factor is present at the Site due to the existence of PCDD/PCDFs, HBC, carbon tetrachloride, chloroform, chlorobenzene, 1,2 dichlorobenzene, 1,3 dichlorobenzene, 1,4 dichlorobenzene, 1,2,4,-trichlorobenzene, tetrachlorethane, BHCs, and other contaminants which migrate with the movement of surface water into groundwater near a public water supply;

b. weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released; this factor is present at the Site due to the existence of contaminated surface soils that may become airborne in dry windy conditions to which on-site workers, on-site visitors, or off-site residents may be exposed;

c. other situations or factors that may pose threats to public health or welfare or the environment; this factor is present at the Site due to (i) the existence of contaminated groundwater near a public water supply system which poses risks to human health and (ii) the existence of soil/sediment contamination which poses ecological risks.

7. The actual or threatened release of hazardous substances from the Site may present an imminent and substantial endangerment to the public health, welfare, or the environment within the meaning of Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

8. The Response Actions and Post-Removal Site Control required by this Order, if properly performed under the terms of this Order, are consistent with the NCP. The Response Actions and Post-Removal Site Control required by this Order are necessary to protect the public health, welfare, or the environment.

VI. ORDER

Based upon the foregoing Findings of Fact, Conclusions of Law and Determinations, it is hereby ordered and agreed that Respondent shall comply with the following provisions, including but not limited to all documents attached to or incorporated into this Order, and perform the following actions:

A. GENERAL PROVISIONS

1. Objectives of the Parties

The objectives of the EPA and the Respondent in entering into this Order are to prevent, minimize, or mitigate damage to the public health or welfare or to the environment by the design and implementation of response actions at the Site by the Respondent, to reimburse response costs of EPA, and to resolve the claims of EPA against Respondent as provided in this Order.

2. Commitments by Respondent

Respondent shall finance and perform the Work in accordance with this Order, the EAM, the SOW, and all work plans and other plans, standards, specifications, and schedules set forth herein or developed by Respondent and approved by EPA pursuant to this Order. Respondent shall also reimburse the EPA for Past and Future Response Costs as provided in this Order.

3. Compliance With Applicable Law

All activities undertaken by Respondent pursuant to this Order shall be performed in accordance with the requirements of all applicable federal and state laws and regulations. In accordance with 40 CFR § 300.415(j), all on-site actions required pursuant to this Order shall, to the extent practicable, as determined by EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements under federal environmental or state environmental or facility siting laws. Respondent must also comply with all applicable or relevant and appropriate requirements of all Federal and state environmental laws as set forth in the EAM and the SOW. The activities conducted pursuant to this Order, if approved by EPA, shall be considered to be consistent with the NCP.

4. Permits

a. As provided in Section 121(e) of CERCLA and Section 300.400(e) of the NCP, no permit shall be required for any portion of the Work.

conducted entirely on-site (i.e., within the areal extent of contamination or in very close proximity to the contamination and necessary for implementation of the Work). Where any portion of the Work that is not on-site requires a federal or state permit or approval, Respondent shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals.

b. The Respondent may seek relief under the provisions of Section XX (Force Majeure) of this Order for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit required for the Work.

c. This Order is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

5. Notice to Successors-in-Title

a. With respect to any property owned or controlled by the Respondent that is located within the Site, within 15 days after the effective date of this Order, the Respondent shall submit to EPA for review and approval a notice to be filed with the Recorder's Office, Tuscarawas County, State of Ohio, which shall provide notice to all successors-in-title that the property is part of the Site, that EPA selected a Response Action for the Site on October 1, 1999, and that the Respondent entered into an Administrative Order by Consent requiring implementation of the Response Action. Such notice(s) shall include a copy of this Order. The Respondent shall record the notice(s) within 10 days of EPA's approval of the notice(s). The Respondent shall provide EPA with a certified copy of the recorded notice(s) within 10 days of recording such notice(s).

b. At least 30 days prior to the conveyance of any interest in Respondent's real property located within the Site including, but not limited to, fee interests, leasehold interests, and mortgage interests, the Respondent shall give the grantee written notice of (i) this Order and (ii) the Declaration of Restrictions recorded pursuant to Paragraph VI.E.20.b. At least 30 days prior to such conveyance, the Respondent shall also give written notice to EPA and the State of Ohio of the proposed conveyance, including the name and address of the grantee, and the date on which notice under this Paragraph was given to the grantee. The Respondent shall make reference to the Declaration of Restrictions recorded pursuant to Paragraph VI.E.20.b., including the volume and page, in every deed, lease, easement or any other document conveying any such interest in Respondent's real property located within the Site.

c. In the event of any such conveyance, the Respondent's obligations under this Order, including, but not limited to, its obligation to provide or secure access and institutional controls, as well as to abide by such institutional controls, pursuant to Section VI.E. (Access and Institutional Controls) of this Order,

shall continue to be met by the Respondent. In no event shall the conveyance release or otherwise affect the liability of the Respondent to comply with all provisions of this Order, absent the prior written consent of EPA. If the EPA approves, the grantee may perform some or all of the Work under this Order.

B. PERFORMANCE OF THE WORK BY RESPONDENT

6. Designation of Contractor, Project Coordinator, and On-Scene Coordinator/Remedial Project Manager

a. Respondent shall perform the Response Actions required by this Order itself or retain a contractor to implement the Response Actions. Respondent shall notify EPA of Respondent's qualifications or the name and qualifications of such contractor(s), whichever is applicable, within 30 business days of the effective date of this Order. Respondent shall also notify EPA of the name and qualifications of any other contractors or subcontractors retained to perform work under this Order at least 14 business days prior to commencement of such work. EPA retains the right to disapprove of the Respondent or any of the contractors and/or subcontractors retained by the Respondent. If EPA disapproves a selected contractor, Respondent shall retain a different contractor and shall notify EPA of that contractor's name and qualifications within 14 business days of EPA's disapproval before work commences.

b. Respondent has designated, and EPA has approved, David Rankin to serve as its Project Coordinator. The Project Coordinator shall be responsible for administration of all the Respondent's actions required by the Order. To the greatest extent possible, the Project Coordinator shall be present on-site or readily available during site work. EPA retains the right to disapprove of any subsequent Project Coordinator named by the Respondent. If EPA disapproves a selected Project Coordinator, Respondent shall retain a different Project Coordinator within 20 business days following EPA's disapproval and shall notify EPA of that person's name and qualifications within 15 business days of EPA's disapproval. Otherwise, EPA will issue notice of authorization to proceed. Receipt by Respondent's Project Coordinator of any notice or communication from EPA relating to this Order shall constitute receipt by Respondent.

c. The EPA has designated Thomas R. Short of the Superfund Division, Region 5, as its On-Scene Coordinator/Remedial Project Manager (OSC/RPM). Respondent shall direct all submissions required by this Order to the RPM at EPA, Mail Code (SR-6J), 77 West Jackson Blvd., Chicago, IL 60604 by certified or express mail. Respondent is encouraged to make their submissions to EPA on recycled paper (which includes significant postconsumer waste paper content where possible) and using two-sided copies.

d. EPA and Respondent shall have the right, subject to the provisions of Paragraph IV.B.6.b., to change their designated OSC/RPM or Project Coordinator. EPA shall notify the Respondent, and Respondent shall notify EPA, as early as possible before such a change is made, but in no case less than 24 hours before such a change. The initial notification may be made orally but it shall be promptly followed by a written notice.

7. Response Design.

a. Within one hundred twenty (120) days after the effective date of this Order, Respondent shall submit to EPA and the State a work plan for the design of the Response Actions at the Site ("Design Work Plan"). The Design Work Plan shall provide for design of the Response Actions set forth in the EAM, in accordance with the SOW and for achievement of the Performance Standards and other requirements set forth in the EAM, this Order and/or the SOW. Upon its approval by EPA, the Design Work Plan shall be incorporated into and become enforceable under this Order. The Respondent's Design Work Plan shall include a Health and Safety Plan for field design activities which conforms to the applicable Occupational Safety and Health Administration and EPA requirements including, but not limited to, 29 C.F.R. §§ 1910.120 and 1926.

b. The Design Work Plan shall include plans and schedules for implementation of all Response Action design and pre-design tasks identified in the SOW. Upon approval of the Design Work Plan by EPA, Respondent shall implement the Design Work Plan. The Respondent shall submit to EPA and the State all plans, submittals and other deliverables required under the approved Design Work Plan in accordance with the approved schedule for review and approval pursuant to Section VI.G. (EPA Approval of Plans and Other Submissions). Unless otherwise directed by EPA, Respondent shall not commence further Design activities at the Site prior to approval of the Design Work Plan.

8. Response Actions.

a. The final design submittal ("Final Design") shall provide for construction and implementation of the Response Actions set forth in the EAM and achievement of the Performance Standards, in accordance with this Order, the EAM, the SOW, and the plans and specifications developed in accordance with the Response Design Work Plan and approved by EPA. Upon its approval by EPA, the Final Design shall be incorporated into and become enforceable under this Order. At the same time as the Respondent submits the Final Design, Respondent shall submit to EPA and the State a Health and Safety Plan for field activities required by the Final Design which conforms to the applicable Occupational Safety and Health Administration and EPA requirements including, but not limited to, 29 C.F.R.

§ 1910.120.

b. The Final Design also shall include a schedule for implementation of all Response Action tasks identified in the Final Design and shall identify the initial formulation of the Respondent's Response Action Project Team (including, but not limited to, the Supervising Contractor).

c. Upon approval of the Final Design by EPA, Respondent shall implement the activities required under the Final Design. The Respondent shall submit to EPA and the State all plans, submittals, or other deliverables required under the approved Final Design in accordance with the approved schedule for review and approval pursuant to Section VI.G. (EPA Approval of Plans and Other Submissions). Unless otherwise directed by EPA, Respondent shall not commence physical Response Action activities at the Site prior to approval of the Final Design.

9. The Respondent shall continue to implement the Response Actions and Post-Removal Site Control until the Performance Standards are achieved and for so long thereafter as is otherwise required under this Order. The Performance Standards may be modified if EPA determines that compliance with such requirements is technically impracticable from an engineering perspective, or in the case of groundwater, if EPA determines, that alternate concentration limits to those otherwise applicable for hazardous constituents in groundwater are appropriate once the three objectives for groundwater management enumerated in Section II.4 of the SOW have been met.

10. Modification of the SOW or Related Work Plans.

a. If EPA determines that modification to the work specified in the SOW and/or in work plans developed pursuant to the SOW is necessary to achieve and maintain the Performance Standards or to carry out and maintain the effectiveness of the Response Actions set forth in the EAM, EPA may require that such modification be incorporated in the SOW and/or such work plans. Provided, however, that a modification may only be required pursuant to this Paragraph to the extent that it is consistent with the scope of the Response Actions selected in the EAM.

b. For the purposes of this Paragraph 10 only, the "scope of the Response Actions selected in the EAM" is the compliance with Performance Standards at the points of compliance for the Site as stated in the EAM and the SOW, including compliance with all applicable or relevant and appropriate requirements as stated in the EAM and SOW.

c. If Respondent objects to any modification determined by EPA to be necessary pursuant to this Paragraph, Respondent may seek dispute

resolution pursuant to Section XIX (Dispute Resolution). The SOW and/or related work plans shall be modified in accordance with the final resolution of the dispute.

d. Respondent shall implement any work required by any modifications incorporated in the SOW and/or in work plans developed pursuant to the SOW in accordance with this Paragraph.

e. Nothing in this Paragraph shall be construed to limit EPA's authority to require performance of further response actions as otherwise provided in this Order.

11. Respondent acknowledges and agrees that nothing in this Order, the SOW, the Design Work Plan, or the Final Design constitutes a warranty or representation of any kind by EPA that compliance with the work requirements set forth in the SOW and the Work Plans will achieve the Performance Standards.

C. REVIEW OF RESPONSE ACTIONS

12. Periodic Review.

After the Respondent submits the Construction Completion Reports under Paragraph VI.K.44, Respondent shall conduct any studies and investigations as requested by EPA if needed, in order to permit EPA to conduct reviews at least every five years regarding whether the Response Actions and Post-Removal Site Controls are in compliance with Performance Standards for the Site.

13. EPA Selection of Further Response Actions.

EPA intends to select further response actions to address a detached groundwater plume associated with the Site. In addition, if EPA determines, at any time, that the Response Actions are not protective of human health and the environment, EPA may select further response actions for the Site in accordance with the requirements of CERCLA and the NCP.

14. Opportunity To Comment.

EPA may provide interested parties with an opportunity to comment on any further response actions proposed by EPA as a result of the five-year review and the opportunity to submit written comments for the record during the comment period.

D. QUALITY ASSURANCE, SAMPLING, and DATA ANALYSIS

15. Respondent shall use quality assurance, quality control, and chain

of custody procedures for all samples in accordance with "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operation," (EPA QA/R5; "Preparing Perfect Project Plans," (EPA /600/9-88/087), and subsequent amendments to such guidelines upon notification by EPA to Respondent of such amendment. Amended guidelines shall apply only to procedures conducted after such notification. Prior to the commencement of any monitoring project under this Order, Respondent shall submit to EPA for approval, after a reasonable opportunity for review and comment by the State, a Quality Assurance Project Plan ("QAPP") that is consistent with the SOW, the NCP and applicable guidance documents. If relevant to the proceeding, the Parties agree that validated sampling data generated in accordance with the QAPP(s) and reviewed and approved by EPA shall be admissible as evidence, without objection, in any proceeding under this Order. Respondent shall ensure that EPA personnel and its authorized representatives are allowed access at reasonable times to all laboratories utilized by Respondent in implementing this Order. In addition, Respondent shall ensure that such laboratories shall analyze all samples submitted by EPA pursuant to the QAPP for quality assurance monitoring. Respondent shall ensure that the laboratories it utilizes for the analysis of samples taken pursuant to this Order perform all analyses according to accepted EPA methods. Accepted EPA methods consist of those methods which are documented in the "Contract Lab Program Statement of Work for Inorganic Analysis" and the "Contract Lab Program Statement of Work for Organic Analysis," dated February 1988, and any amendments made thereto during the course of the implementation of this Order. Respondent shall ensure that all laboratories it uses for analysis of samples taken pursuant to this Order participate in an EPA or EPA-equivalent QA/QC program. Respondent shall ensure that all field methodologies utilized in collecting samples for subsequent analysis pursuant to this Order will be conducted in accordance with the procedures set forth in the QAPP approved by EPA.

16. Upon request, the Respondent shall allow split or duplicate samples to be taken by EPA or its authorized representatives. Respondent shall notify EPA not less than 30 days in advance of any sample collection activity unless shorter notice is agreed to by EPA. In addition, EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall allow the Respondent to take split or duplicate samples of any samples it takes as part of EPA's oversight of the Respondent's implementation of the Work.

17. Respondent shall submit to EPA and the State one copy each of the results of all sampling and/or tests or other data obtained or generated by or on behalf of Respondent with respect to the Site and/or the implementation of this Order unless EPA agrees otherwise.

18. Notwithstanding any provision of this Order, the EPA hereby retains all of its information gathering and inspection authorities and rights, including

enforcement actions related thereto, under CERCLA, RCRA and any other applicable statutes or regulations.

E. ACCESS AND INSTITUTIONAL CONTROLS

19. If the Site, or any other property where access and/or land/water use restrictions are needed to implement this Order, is owned or controlled by the Respondent, the Respondent shall

a. commencing on the effective date of this Order, provide the EPA, including its representatives and contractors, with access at all reasonable times to the Site, or such other property, for the purpose of conducting any activity related to this Order including, but not limited to, the following activities:

- (1) Monitoring the Work;
 - (2) Verifying any data or information submitted to EPA;
 - (3) Conducting investigations relating to contamination at or near the Site;
 - (4) Obtaining samples;
 - (5) Assessing the need for, planning, or implementing additional response actions at or near the Site;
 - (6) Implementing the Work pursuant to the conditions set forth in this Order;
 - (7) Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Respondent or Respondent's agents, consistent with Section XII (Access to Information);
 - (8) Assessing Respondent's compliance with this Order;
- and
- (9) Determining whether the Site or other property is being used in a manner that is prohibited or restricted, or that may need to be prohibited or restricted, by or pursuant to this Order;

b. commencing on the effective date of this Order, refrain from using the Site, or such other property, in any manner that would interfere with or adversely affect the integrity or protectiveness of the Response Actions to be implemented pursuant to this Order. Such use restrictions include, but are not limited to, the restrictions stated in Paragraph VI.E.20.a., below.

20. Agreement to Create Restrictive Covenants. This Paragraph is intended by EPA and the Respondent to create restrictive covenants that attach to the Site and shall restrict the use of the Site enforceable against the Respondent, its successors and assigns, and all future owners of the Site.

a. The Site shall be subject to the following restrictions, which are set forth in Appendix C, "Declaration of Restrictions" which is attached and made part of this Order:

(1) There shall be no use of, or activity at, the Site that may interfere with, damage, or otherwise impair the response actions performed or to be performed under the Enforcement Action Memorandum ("EAM") for the Dover Chemical Corporation Site, dated October 1, 1999, as may be amended, and the corresponding Administrative Order by Consent ("Order"), as may be amended;

(2) There shall be no use of the groundwater underlying the Site for potable, sanitary, horticultural, or agricultural purposes;

(3) There shall be no residential use or development for residential use of the land comprising the Site;

(4) There shall be no installation, construction, or removal of any buildings, structures or roadways that isolate dioxin-contaminated soils beneath these features, except as approved in writing by EPA;

(5) There shall be no excavation, drilling, mining, piercing, digging, or any other disturbance of soils or sediments contaminated with hazardous substances at the Site, except (i) as approved in writing by EPA or (ii) in the case of an emergency, as is consistent with Dover Chemical Corporation's emergency repair protocol; and

(6) There shall be no removal or disturbance of any subsurface non-degradable hazard marker placed over contaminated soils pursuant to the EAM, this Order, and the SOW, except (i) as approved in writing by EPA or (ii) in the case of an emergency, as is consistent with Dover Chemical Corporation's emergency repair protocol;

b. Within thirty (30) days of the effective date of this Order, the Respondent shall record the document entitled "Declaration of Restrictions," attached to this Order as Appendix C, in the Tuscarawas County Recorder's Office. An executed copy of this Order shall be included as an Attachment. The legal description of the Site shall be attached as Attachment 1 to the Declaration of Restrictions. An executed copy of the Order shall be included as Attachment 2 to the Declaration of Restrictions. Within 30 days of the recording of the Declaration of Restrictions, the Respondent shall provide to EPA a certified copy of the original recorded Declaration of Restrictions showing the clerk's recording stamps.

c. Reference to the Declaration of Restrictions, including the volume

and page, shall be made in every deed, lease, easement and any other document conveying all or a portion of the Site, or any interest therein, to any party in substantially the following form:

THE INTEREST CONVEYED HEREBY IS SUBJECT TO A
DECLARATION OF RESTRICTIONS, DATED _____, 20____,
RECORDED IN THE PUBLIC LAND RECORDS ON _____,
20____, IN BOOK _____, PAGE _____.

d. The Restrictions created by this Paragraph shall take effect upon the effective date of this Order. The Restrictions shall remain in effect without modification, except as provided in Paragraph VI.E.20.e.

e. The Restrictions created by this Paragraph may be modified or terminated by obtaining the written consent of EPA if it can be demonstrated to the satisfaction of EPA or its successor agency that there is no release or threat of a release of hazardous substances from the Site. EPA's consent shall not be unreasonably withheld.

f. Any party to this Order or its successor or any future owner of any portion of the Site may enforce this Paragraph either alone, or in conjunction with other parties or owners by appropriate proceedings in a court of competent jurisdiction.

21. If the Site, or any other property where access and/or land/water use restrictions are needed to implement this Order, is owned or controlled by persons other than the Respondent, Respondent shall use best efforts to secure from such persons:

a. an agreement to provide access thereto for Respondent, as well as for the EPA, and the State, as well as their representatives (including contractors), for the purpose of conducting any activity related to this Order including, but not limited to, those activities listed in Paragraph VI.E.19.a. of this Order; and/or

b. an agreement, substantially in the form attached to this Order as Appendix D, that is enforceable under the laws of the State of Ohio by the Respondent and EPA, to abide by the obligations and restrictions established by Paragraph VI.E.20. of this Order, or that are otherwise necessary to implement, ensure non-interference with, or ensure the protectiveness of the Response Actions to be performed pursuant to this Order. The agreement must state the express intention of the parties to the agreement to bind future owners to the obligations and restrictions recited therein. The agreement must also require the owner to record a Declaration of Restrictions, substantially in the form attached to this Order in Appendix C, in the Recorder's Office of Tuscarawas County, State of Ohio. Within 30 days of the recording of Declaration of Restrictions, Respondent shall provide EPA with a certified

copy of the original recorded Declaration of Restrictions showing the clerk's recording stamps.

22. For purposes of Paragraph VI.E.21 of this Order, "best efforts" includes the payment of reasonable sums of money in consideration of access or land/water use restrictions. If any access or land/water use restriction agreements are required by Paragraphs VI.E.21.a. or 21.b. of this Order, Respondent shall promptly notify EPA in writing, and shall include in that notification a summary of the steps that Respondent has taken to attempt to comply with Paragraph VI.E.21 of this Order. The EPA may, as it deems appropriate, assist Respondent in obtaining access or land/water use restrictions. Respondent shall reimburse the EPA in accordance with the procedures in Section VII (Reimbursement of Costs), for all costs incurred, direct or indirect, by the EPA in obtaining such access and/or land/water use restrictions including, but not limited to, the cost of attorney time and the amount of monetary consideration paid or just compensation.

23. If EPA determines that land/water use restrictions in the form of state or local laws, regulations, ordinances or other governmental controls are needed to implement the Response Actions selected in the EAM, ensure the integrity and protectiveness thereof, or ensure non-interference therewith, Respondent shall cooperate with EPA's efforts to secure such governmental controls.

24. Notwithstanding any provision of this Order, the EPA retains all of its access authorities and rights, as well as all of its rights to require land/water use restrictions, including enforcement authorities related thereto, under CERCLA, RCRA and any other applicable statute or regulations.

F. REPORTING REQUIREMENTS

These reporting requirements are in addition to any reporting requirements set forth in the SOW.

25. In addition to any other requirement of this Order, Respondent shall submit to EPA and the State written monthly progress reports that: (a) describe the actions which have been taken toward achieving compliance with this Order during the previous month; (b) include a summary of all results of sampling and tests and all other data received or generated by Respondent or their contractors or agents in the previous month; (c) identify all work plans, plans and other deliverables required by this Order completed and submitted during the previous month; (d) describe all actions, including, but not limited to, data collection and implementation of work plans, which are scheduled for the next six weeks and provide other information relating to the progress of construction, including, but not limited to, critical path diagrams, Gantt charts and Pert charts; (e) include information regarding percentage of completion,

unresolved delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays; and (f) include any modifications to the work plans or other schedules that Respondent has proposed to EPA or that have been approved by EPA. Respondent shall submit these progress reports to EPA and the State by the tenth day of every month following the effective date of this Order until EPA notifies the Respondent pursuant to Paragraph VI.N. (Notice of Completion). If requested by EPA, Respondent shall also provide briefings for EPA to discuss the progress of the Work.

26. The Respondent shall notify EPA of any change in the schedule described in the monthly progress report for the performance of any activity, including, but not limited to, data collection and implementation of work plans, no later than seven days prior to the performance of the activity.

27. Upon the occurrence of any event during performance of the Work that Respondent is required to report pursuant to Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), 42 U.S.C. § 11004, Respondent shall within 24 hours of the onset of such event orally notify the EPA OSC/RPM, or, in the event that the EPA OSC/RPM is unavailable, the Emergency Response Branch, Superfund Division, Region 5, United States Environmental Protection Agency. These reporting requirements are in addition to the reporting required by CERCLA Section 103 or EPCRA Section 304.

28. Within 20 days of the onset of such an event, Respondent shall furnish to EPA a written report, signed by the Respondent's Project Coordinator, setting forth the events which occurred and the measures taken, and to be taken, in response thereto. Within 30 days of the conclusion of such an event, Respondent shall submit a report setting forth all actions taken in response thereto.

29. Respondent shall submit one (1) copy of all plans, reports, and data required by the SOW, the Design Work Plan, the approved final design submittal, or any other approved plans to EPA in accordance with the schedules set forth in such plans. Respondent shall simultaneously submit one (1) copy of all such plans, reports and data to the State.

30. All reports and other documents submitted by Respondent to EPA (other than the monthly progress reports referred to above) which purport to document Respondent's compliance with the terms of this Order shall be signed by an authorized representative of the Respondent.

G. EPA APPROVAL OF PLANS AND OTHER SUBMISSIONS

31. After review of any plan, report or other item which is required to

be submitted for approval pursuant to this Order, EPA, after reasonable opportunity for review and comment by the State, shall: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove, in whole or in part, the submission, directing that the Respondent modify the submission; or (e) any combination of the above. However, EPA shall not modify a submission without first providing Respondent at least one notice of deficiency and an opportunity to cure within the following time: (i) Design Work Plan: 60 days (draft), 30 days (final); (ii) Final Design: 75 days (draft), 60 days (final); (iii) all other submittals: 60 days (draft), 30 days (final); or (iv) such longer time as specified by EPA in such notice, except where opportunity to cure would cause serious disruption to the Work or where previous submission(s) have been disapproved due to material defects and the deficiencies in the submission under consideration indicate a bad faith or lack of effort to submit an acceptable deliverable.

32. In the event of approval, approval upon conditions, or modification by EPA, pursuant to Paragraph VI.G.31 (a), (b), or (c), Respondent shall proceed to take any action required by the plan, report, or other item, as approved or modified by EPA subject only to the Respondent's right to invoke the Dispute Resolution procedures set forth in Section XIX (Dispute Resolution) with respect to the modifications or conditions made by EPA. In the event that EPA modifies the submission to cure the deficiencies pursuant to Paragraph VI.G.31(c) and the submission has a material defect, EPA retains its right to seek stipulated penalties, as provided in Section XXI (Stipulated Penalties).

33. a. Upon receipt of a notice of disapproval pursuant to Paragraph VI.G.31(d), Respondent shall, within the time for opportunity to cure stated in Paragraph VI.G.31, or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the plan, report, or other item for approval. Any stipulated penalties applicable to the submission, as provided in Section XXI (Stipulated Penalties), shall accrue during the specified period but shall not be payable unless the resubmission is disapproved or modified due to a material defect as provided in Paragraphs VI.G.31. and 32.

b. Notwithstanding the receipt of a notice of disapproval pursuant to Paragraph VI.G.31(d), Respondent shall proceed, at the direction of EPA, to take any action required by any non-deficient portion of the submission. Implementation of any non-deficient portion of a submission shall not relieve Respondent of any liability for stipulated penalties under Section XXI (Stipulated Penalties).

34. In the event that a resubmitted plan, report or other item, or portion thereof, is disapproved by EPA, EPA may again require the Respondent to correct the deficiencies, in accordance with the preceding Paragraphs. EPA also retains the right to modify or develop the plan, report or other item. Respondent shall implement any

such plan, report, or item as modified or developed by EPA, subject only to their right to invoke the procedures set forth in Section XIX (Dispute Resolution).

35. If upon resubmission, a plan, report, or item is disapproved or modified by EPA due to a material defect, Respondent shall be deemed to have failed to submit such plan, report, or item timely and adequately unless the Respondent invokes the dispute resolution procedures set forth in Section XIX (Dispute Resolution) and Respondent's position is upheld pursuant to that Section. The provisions of Section XIX (Dispute Resolution) and Section XXI (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. If EPA's disapproval or modification is upheld, stipulated penalties shall accrue for such violation from the date on which the initial submission was originally required, as provided in Section XXI (Stipulated Penalties).

36. All plans, reports, and other items required to be submitted to EPA under this Order shall, upon approval or modification by EPA, be enforceable under this Order. In the event EPA approves or modifies a portion of a plan, report, or other item required to be submitted to EPA under this Order, the approved or modified portion shall be enforceable under this Order.

H. ASSURANCE OF ABILITY TO COMPLETE WORK

37. Within 30 days of entry of this Order, Respondent shall establish and maintain financial security in the amount of \$3,000,000 in one or more of the following forms:

- (a) A surety bond guaranteeing performance of the Response Actions;
- (b) One or more irrevocable letters of credit equaling the total estimated cost of the Response Actions;
- (c) A trust fund;
- (d) A guarantee to perform the Response Actions by one or more parent corporations or subsidiaries, or by one or more unrelated corporations that have a substantial business relationship with the Respondent; or
- (e) A demonstration that the Respondent satisfies the requirements of 40 C.F.R. Part 264.143(f).

38. If the Respondent seeks to demonstrate the ability to complete the Response Actions through a guarantee by a third party pursuant to Paragraph VI.H.37(d) of this Order, Respondent shall demonstrate that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f). If Respondent seeks to demonstrate its ability to complete the Response Actions by means of the financial test or the corporate guarantee pursuant to Paragraph VI.H.37(d) or (e), Respondent shall resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, on the anniversary of the effective date of this Order, or within 90 days of the end of the

preceding fiscal year for Respondent, whichever is later. In the event that EPA, after a reasonable opportunity for review and comment by the State, determines at any time that the financial assurances provided pursuant to this Section are inadequate, Respondent shall, within 30 days of receipt of notice of EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph VI.H.37. of this Order or increase the amount of financial security to include the total cost of remaining Work. Respondent's inability to demonstrate financial ability to complete the Work shall not excuse performance of any activities required under this Order. Once Respondent receives written notice from EPA under Paragraph VI.K.45 of this Order, Respondent shall establish and maintain financial security in the amount of \$4,000,000, the estimated cost of Post-Removal Site Control, in one of the forms described in Paragraph VI.H.37 and in the manner described in Paragraphs VI.H.38, 39, and 40. For purposes of providing financial security for Post-Removal Site Control activities under this paragraph, the references to "Response Actions" in Paragraphs VI.H.37 and 38 are understood to mean "Post-Removal Site Control."

39. If Respondent can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph VI.H.37. after the effective date of this Order, Respondent may, on any anniversary date of the effective date of this Order, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining work to be performed. Respondent shall submit a proposal for such reduction to EPA, in accordance with the requirements of this Section, and may reduce the amount of the security upon approval by EPA. In the event of a dispute, Respondent may reduce the amount of the security in accordance with the final administrative decision resolving the dispute.

40. Respondent may change the form of financial assurance provided under this Section at any time, upon notice to and approval by EPA, provided that the new form of assurance meets the requirements of this Section. In the event of a dispute, Respondent may change the form of the financial assurance only in accordance with the final administrative decision resolving the dispute.

I. EMERGENCY RESPONSE

41. In the event of any action or occurrence during the performance of the Work which causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Respondent shall, subject to Paragraph VI.I.42., immediately take all appropriate action to prevent, abate, or minimize such release or threat of release, and shall immediately notify the EPA's OSC/RPM, or, if the OSC/RPM is unavailable, the Respondent shall notify the EPA Emergency Response Branch, Superfund Division, Region 5. Respondent shall take such actions in consultation with

EPA's OSC/RPM or other available authorized EPA officer and in accordance with all applicable provisions of the Health and Safety Plans, the Contingency Plans, and any other applicable plans or documents developed pursuant to the SOW. In the event that Respondent fails to take appropriate response action as required by this Section, and EPA takes such action instead, Respondent shall reimburse EPA all costs of the Response Actions not inconsistent with the NCP pursuant to Section VII (Reimbursement of Costs).

42. Nothing in the preceding Paragraph or in this Order shall be deemed to limit any authority of the EPA a) to take all appropriate action to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site, or b) to direct or order such action, or seek an order from the Court, to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site, subject to Section IX (Covenants Not to Sue by EPA).

J. POST-REMOVAL SITE CONTROL

43. In accordance with the SOW, or as otherwise directed by the OSC/RPM, Respondent shall submit a proposal for post-removal site control for each action, consistent with Section 300.415(k) of the NCP, 40 CFR § 300.415(k), and OSWER Directive 9360.2-02. Upon EPA approval, Respondent shall implement such controls and shall provide EPA with documentation of all post-removal site control arrangements.

K. CONSTRUCTION COMPLETION REPORTS

44. Within 30 calendar days after Final Inspection for each action or group of actions, as specified in the Design Work Plan, Respondents shall submit a written report by a registered professional engineer stating that the actions have been completed in full satisfaction of the requirements of this Order. The report, titled "CONSTRUCTION COMPLETION REPORT FOR __", shall contain the following statement, signed by a responsible corporate official of the Respondent or the Respondents' Project Coordinator:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

If, after review of the written report, EPA, after reasonable opportunity to review and

comment by the State, determines that any portion of any action has not been completed in accordance with this Order, EPA will notify the Respondent in writing of the activities that must be undertaken by the Respondent pursuant to this Order to complete the action. Respondent shall perform all activities described in the notice in accordance with the specifications and schedules established therein, subject to their right to invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution).

45. If EPA concludes, for each action, based on the initial or any subsequent request for certification of Construction Completion by the Respondent and after a reasonable opportunity for review and comment by the State, that the work has been performed in accordance with this Order, EPA will so notify the Respondent in writing.

L. FINAL REPORT

46. Within 30 calendar days after Respondent concludes that the Response Actions have been fully performed and the groundwater Performance Standards have been attained, the Respondent shall submit for EPA review a final report summarizing the actions taken to comply with this Order and demonstrating that all Performance Standards have been met.

The final report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

"Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true, accurate, and complete."

M. OFF-SITE SHIPMENTS

47. All hazardous substances, pollutants or contaminants removed off-site pursuant to this Order for treatment, storage or disposal shall be treated, stored, or disposed of at a facility in compliance, as determined by EPA, with the EPA Off-Site Rule, 40 CFR § 300.440, 58 Federal Register 49215 (Sept. 22, 1993).

48. Respondent shall, prior to any off-Site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving facility's state and to the EPA OSC/RPM of such shipment of Waste Material. However, this notification requirement shall not apply to any off-Site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

a. The Respondent shall include in the written notification the following information, where available: (1) the name and location of the facility to which the Waste Material is to be shipped; (2) the type and quantity of the Waste Material to be shipped; (3) the expected schedule for the shipment of the Waste Material; and (4) the method of transportation. The Respondent shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

b. The identity of the receiving facility and state will be determined by the Respondent following the award of the contract for Response Action construction. The Respondent shall provide the information required by Paragraph VI.M.48.a. as soon as practicable after the award of the contract and before the Waste Material is actually shipped.

N. NOTICE OF COMPLETION:

49. When EPA determines, after EPA's review of the Final Report, that all Work has been fully performed in accordance with this Order, except for certain continuing obligations required by this Order (e.g., record retention, payment of costs), EPA will provide written notice to the Respondent. If EPA determines that any Response Actions have not been completed in accordance with this Order, EPA will notify the Respondent, provide a list of the deficiencies, and require the Respondents to correct such deficiencies. The Respondent shall correct the deficiencies and shall submit a modified Final Report in accordance with the EPA notice. Failure to correct the deficiencies shall be a violation of this Order.

VII. REIMBURSEMENT OF COSTS

1. Respondent shall pay all Past and Future Response Costs of the United States related to the Site that are not inconsistent with the NCP. Within 30 days of the effective date of this Order, the Respondent shall pay Past Costs in the amount of \$143,199.63, in the manner described in Paragraph VII.3, below.

2. EPA will send Respondent a bill for "Future Response Costs" on an annual calendar year basis. The bill will include an Itemized Cost Summary of the costs incurred and paid during the billing period.

3. Respondent shall, within 60 calendar days of the effective date of this Order or receipt of a bill, remit a cashier's or certified check for the amount specified therein made payable to the "Hazardous Substance Superfund," to the following address:

U.S. Environmental Protection Agency
Superfund Accounting
P.O. Box 70753
Chicago, Illinois 60673

Respondent shall simultaneously transmit a copy of the check to the Director of the Superfund Division, EPA Region 5, 77 West Jackson Blvd., Chicago, Illinois, 60604-3590. Payments shall be designated as "Response Costs - Dover Chemical Corporation Site" and shall reference the payor's name and address, the EPA site identification number F4, and the docket number of this Order.

4. In the event that any payment is not made within the deadlines described above, Respondent shall pay Interest on the unpaid balance. The Interest shall begin to accrue on the date of the Respondent's receipt of the bill. Interest shall accrue at the rate specified through the date of the payment. Payments of Interest made under this paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondent's failure to make timely payments under this Section.

5. Respondent may dispute all or part of a bill for Future Response Costs submitted under this Order, if Respondent alleges that EPA has made an accounting error, or if Respondent alleges that a cost item is inconsistent with the NCP. If any dispute over costs is resolved before payment is due, the amount due will be adjusted as necessary. If the dispute is not resolved before payment is due, Respondent shall pay the full amount of the uncontested costs into the Hazardous Substance Fund as specified above on or before the due date. Within the same time period, Respondent shall pay the full amount of the contested costs into an interest-bearing escrow account. Respondent shall simultaneously transmit a copy of both checks to the OSC/RPM. Respondent shall ensure that the prevailing party in the dispute shall receive the amount upon which they prevailed from the escrow funds plus interest within 20 calendar days after the dispute is resolved.

VIII. INDEMNIFICATION AND INSURANCE

1. a. The EPA does not assume any liability by entering into this agreement or by virtue of any designation of Respondent as EPA's authorized representative under Section 104(e) of CERCLA. Respondent shall indemnify, save and hold harmless the EPA and its officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Order, including, but not limited to, any claims arising from any designation of

Respondent as EPA's authorized representative under Section 104(e) of CERCLA. Further, the Respondent agrees to pay the EPA all costs it incurs including, but not limited to, attorneys fees and other expenses of litigation and settlement arising from, or on account of, claims made against the EPA based on negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Order. EPA shall not be held out as a party to any contract entered into by or on behalf of Respondent in carrying out activities pursuant to this Order. Neither the Respondent nor any such contractor shall be considered an agent of the EPA.

b. EPA shall give Respondent notice of any claim for which the EPA plans to seek indemnification pursuant to Paragraph VIII.1.a., and shall consult with Respondent prior to settling such claim.

2. Respondent waives all claims against the EPA for damages or reimbursement or for set-off of any payments made or to be made to the EPA, arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Respondent shall indemnify and hold harmless the EPA with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

3. No later than 15 days before commencing any on-site Work, Respondent shall secure, and shall maintain until the first anniversary of EPA's Notice of Completion of the Response Action pursuant to Section XXIII (Notice of Completion) comprehensive general liability insurance with limits of 2 million dollars, combined single limit, and automobile liability insurance with limits of 2 million dollars, combined single limit, naming the EPA as an additional insured. In addition, for the duration of this Order, Respondent shall satisfy, or shall ensure that its contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Respondent in furtherance of this Order. Prior to commencement of the Work under this Order, Respondent shall provide to EPA certificates of such insurance and a copy of each insurance policy. Respondent shall resubmit to EPA such certificates and copies of policies each year on the anniversary of the effective date of this Order. If Respondent demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, Respondent need provide only that portion of the insurance described above which is not maintained by the contractor or subcontractor.

IX. COVENANTS NOT TO SUE BY EPA

1. In consideration of the actions that will be performed and the payments that will be made by the Respondent under the terms of the Order, and except as specifically provided in Paragraph IX.2, the EPA covenants not to sue or to take administrative action against Respondent pursuant to Sections 106 and 107(a) of CERCLA for performance of the Work and for recovery of Past Costs and Future Response Costs. These covenants not to sue shall take effect upon the receipt by EPA of the payments required by Section VII (Reimbursement of Costs). These covenants not to sue are conditioned upon the satisfactory performance by Respondent of its obligations under this Order. These covenants not to sue extend only to the Respondent and do not extend to any other person.

2. General reservations of rights. Except as specifically provided in this Order, nothing herein shall limit the power and authority of U.S. EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent U.S. EPA from seeking legal or equitable relief to enforce the terms of this Order. U.S. EPA also reserves the right to take any other legal or equitable action as it deems appropriate and necessary, or to require the Respondent in the future to perform additional activities pursuant to CERCLA or any other applicable law.

3. Work Takeover In the event EPA determines that Respondent has ceased implementation of any portion of the Work, is seriously or repeatedly deficient or late in its performance of the Work, or is implementing the Work in a manner which may cause an endangerment to human health or the environment, EPA may assume the performance of all or any portions of the Work as EPA determines necessary. Respondent may invoke the procedures set forth in Section XIX (Dispute Resolution) to dispute EPA's determination that takeover of the Work is warranted under this Paragraph. Costs incurred by the EPA in performing the Work pursuant to this Paragraph shall be considered Future Response Costs that Respondent shall pay pursuant to Section VII (Reimbursement of Costs).

4. Notwithstanding any other provision of this Order, the EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

X. COVENANTS BY RESPONDENT

1. Covenant Not to Sue. Subject to the reservations in Paragraph X.2., Respondent hereby covenants not to sue and agrees not to assert any claims or causes of action against the EPA or the United States with respect to: the Work, past

response actions, and Past and Future Response Costs as defined herein or this Order, including, but not limited to:

a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund (established pursuant to the Internal Revenue Code, 26 U.S.C. § 9507) through CERCLA Sections 106(b)(2), 107, 111, 112, 113 or any other provision of law;

b. any claims against the United States, including any department, agency or instrumentality of the United States under CERCLA Sections 107 or 113 related to the Site, or

c. any claims arising out of response activities at the Site, including claims based on EPA's selection of response actions, oversight of response activities or approval of plans for such activities.

2. The Respondent reserves, and this Order is without prejudice to, claims against the EPA, subject to the provisions of Chapter 171 of Title 28 of the EPA Code, for money damages for injury or loss of property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the EPA while acting within the scope of his office or employment under circumstances where the EPA, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred. However, any such claim shall not include a claim for any damages caused, in whole or in part, by the act or omission of any person, including any contractor, who is not a federal employee as that term is defined in 28 U.S.C. § 2671; nor shall any such claim include a claim based on EPA's selection of response actions, or the oversight or approval of the Respondent's plans or activities. The foregoing applies only to claims which are brought pursuant to any statute other than CERCLA and for which the waiver of sovereign immunity is found in a statute other than CERCLA.

3. Nothing in this Order shall be deemed to constitute preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

XI. EFFECT OF SETTLEMENT: CONTRIBUTION PROTECTION

1. Nothing in this Order shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this Order. The preceding sentence shall not be construed to waive or nullify any rights that any person not a signatory to this Order may have under applicable law. Each of the Parties expressly reserves any and all rights (including, but not limited to, any right to contribution), defenses, claims, demands, and causes of action which each Party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against

any person not a Party hereto.

2. The EPA and Respondent agree that the Respondent is entitled, as of the effective date of this Order, to protection from contribution actions or claims as provided by CERCLA Section 113(f)(2), 42 U.S.C. § 9613(f)(2) for matters addressed in this Order.

3. The Respondent agrees that with respect to any suit or claim for contribution brought by it for matters related to this Order it will notify the EPA and the State in writing no later than 60 days prior to the initiation of such suit or claim.

4. The Respondent also agrees that with respect to any suit or claim for contribution brought against it for matters related to this Order it will notify in writing the EPA within 10 days of service of the complaint on it. In addition, Respondent shall notify the EPA within 10 days of service or receipt of any Motion for Summary Judgment and within 10 days of receipt of any order from a court setting a case for trial.

5. In any subsequent administrative or judicial proceeding initiated by the EPA for injunctive relief, recovery of response costs, or other appropriate relief relating to the Site, Respondent shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the EPA in the subsequent proceeding were or should have been brought in the instant case; provided, however, that nothing in this Paragraph affects the enforceability of the covenants not to sue set forth in Section IX (Covenants Not to Sue by EPA).

XII. ACCESS TO INFORMATION

1. Respondent shall provide to EPA, upon request, copies of all documents and information within its possession or control or that of its contractors or agents relating to activities at the Site or to the implementation of this Order, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Respondent shall also make available to EPA, for purposes of investigation, information gathering, or testimony, its employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

a. Respondent may assert business confidentiality claims covering part or all of the documents or information submitted to EPA and the State under this Order to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information

determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when they are submitted to EPA, or if EPA has notified Respondent that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA, the public may be given access to such documents or information without further notice to Respondent.

b. The Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Respondent asserts such a privilege in lieu of providing documents, it shall provide the EPA and the State with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the contents of the document, record, or information; and (6) the privilege asserted by Respondent. However, no documents, reports or other information created or generated pursuant to the requirements of the Order shall be withheld on the grounds that they are privileged.

2. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Site.

XIII. RETENTION OF RECORDS

1. Until 10 years after the Respondent's receipt of EPA's notification pursuant to Paragraph VI.N. (Notice of Completion), the Respondent shall preserve and retain all records and documents now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work or liability of any person for response actions conducted and to be conducted at the Site, regardless of any corporate retention policy to the contrary. Until 10 years after the Respondent's receipt of EPA's notification pursuant to Paragraph VI.N. (Notice of Completion), Respondent shall also instruct its contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to the performance of the Work.

2. At the conclusion of this document retention period, Respondent shall notify the EPA at least 90 days prior to the destruction of any such records or documents, and, upon request by the EPA or the State, Respondent shall deliver any such records or documents to EPA. The Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law and in accordance with Paragraph XII.1.b.

3. Respondent hereby certifies that, to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information relating to its potential liability regarding the Site since notification of potential liability by the EPA or the State or the filing of suit against it regarding the Site and that it has fully complied with any and all EPA requests for information pursuant to Section 104(e) and 122(e) of CERCLA, 42 U.S.C. 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. 6927.

XIV. NOTICES AND SUBMISSIONS

Whenever, under the terms of this Order, written notice is required to be given or a report or other document is required to be sent by one party to this Order to another, it shall be directed to the individuals at the addresses specified below, unless those individuals or their successors give notice of a change to the other party to this Order in writing. All notices and submissions shall be considered effective upon receipt, unless otherwise provided. Written notice as specified herein shall constitute complete satisfaction of any written notice requirement of the Order with respect to the EPA, the State, and the Respondent, respectively.

(1) As to EPA:

Thomas R. Short, Jr.
Remedial Project Manager
U.S. EPA - Region 5
77 West Jackson Blvd.- Mail Code SR-6J
Chicago, IL 60604

(2) As to OEPA

Christine Osborne
Ohio EPA - Southeast District Office
2195 Front St.
Logan, OH 43138

(3) As to the Respondent:

David Rankin
Respondent's Project Coordinator
Dover Chemical Corporation
3676 Davis Road, N.W.
Dover, Ohio 44622

and

the consultant designated by the Respondent's Project Coordinator to receive Respondent's communications as stated in the Designation of Contractor letter submitted to EPA pursuant to Paragraph VI.B.6.

XV. APPENDICES

The following appendices are attached to and incorporated into this Order:

- "Appendix A" is the EAM.
- "Appendix B" is the SOW.
- "Appendix C" is the declaration of restrictions for the Site.
- "Appendix D" is the agreement to create restrictive covenants for the Site.

XVI. COMMUNITY RELATIONS

EPA will determine the appropriate role for the Respondent under the Community Relations Plan to be developed by EPA. Respondent shall also cooperate with EPA in providing information regarding the Work to the public. As requested by EPA, Respondent shall participate in the preparation of such information for dissemination to the public and in public meetings which may be held or sponsored by EPA to explain activities at or relating to the Site.

XVII. MODIFICATION

1. Schedules specified in this Order for completion of the Work may be modified by agreement of EPA and the Respondent. All such modifications shall be made in writing.
2. Except as provided in Paragraph VI.B.10. ("Modification of the SOW or related Work Plans"), no material modifications shall be made to the SOW without written notification to and written approval of the EPA and Respondent. Prior to providing its approval to any modification, the EPA will provide the State with a reasonable opportunity to review and comment on the proposed modification. Modifications to the SOW that do not materially alter that document may be made by written agreement between EPA and the Respondent, after providing the State with a reasonable opportunity to review and comment on the proposed modification.

XVIII. AUTHORITY OF THE EPA ON-SCENE COORDINATOR/REMEDIAL PROJECT MANAGER

The OSC/RPM shall be responsible for overseeing the implementation of this Order. The OSC/RPM shall have the authority vested in an OSC/RPM by the NCP, including the authority to halt, conduct, or direct any work required by this Order, or to direct any

other Response Actions undertaken by EPA or Respondent at the Site. Absence of the OSC/RPM from the Site shall not be cause for stoppage of work unless specifically directed by the OSC/RPM.

XIX. DISPUTE RESOLUTION

1. The parties to this Order shall attempt to resolve, expeditiously and informally, any disagreements concerning this Order. If the Respondent objects to any EPA action taken pursuant to this Order, including billings for response costs, the Respondent shall notify EPA in writing of its objection within 10 calendar days of such action, unless the objection has been informally resolved. This written notice shall include a statement of the issues in dispute, the relevant facts upon which the dispute is based, all factual data, analysis or opinion supporting Respondent's position, and all supporting documentation on which such party relies. EPA shall submit its Statement of Position, including supporting documentation, no later than 10 calendar days after receipt of the written notice of dispute. In the event that these 10-day time periods for exchange of written documents may cause a delay in the work, they shall be shortened upon, and in accordance with, notice by EPA. The time periods for exchange of written documents relating to disputes over billings for response costs may be extended at the sole discretion of EPA.

2. An administrative record of any dispute under this Section shall be maintained by EPA. The record shall include the written notification of such dispute, and the Statement of Position served pursuant to the preceding paragraph. Upon review of the administrative record, the Director of the Superfund Division, EPA Region 5, shall resolve the dispute consistent with the NCP and the terms of this Order.

3. Respondent's obligations under this Order shall not be tolled by submission of any objection for dispute resolution under this Section. Following resolution of the dispute, as provided by this Section, Respondent shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with EPA's decision, whichever occurs.

XX. FORCE MAJEURE

1. Respondent agrees to perform all requirements under this Order within the time limits established under this Order, unless the performance is delayed by a force majeure. For purposes of this Order, a force majeure is defined as any event arising from causes beyond the control of Respondent or of any entity controlled by Respondent, including but not limited to its contractors and subcontractors, that delays or prevents performance of any obligation under this Order despite Respondent's best efforts to fulfill the obligation. Force majeure does not include financial inability to complete the work or increased cost of performance.

2. Respondent shall notify EPA orally within 24 hours after Respondent becomes aware of any event that Respondent contends constitutes a force majeure, and in writing within 7 calendar days after the event. Such notice shall: identify the event causing the delay or anticipated delay; estimate the anticipated length of delay, including necessary demobilization and re-mobilization; state the measures taken or to be taken to minimize the delay; and estimate the timetable for implementation of the measures. Respondent shall take all reasonable measures to avoid and minimize the delay. Failure to comply with the notice provision of this Section shall be grounds for EPA to deny Respondent an extension of time for performance. Respondent shall have the burden of demonstrating by a preponderance of the evidence that the event is a force majeure, that the delay is warranted under the circumstances, and that best efforts were exercised to avoid and mitigate the effects of the delay.

3. If EPA determines a delay in performance of a requirement under this Order is or was attributable to a force majeure, the time period for performance of that requirement shall be extended as deemed necessary by EPA. Such an extension shall not alter Respondent's obligation to perform or complete other tasks required by the Order which are not directly affected by the force majeure.

XXI. STIPULATED AND STATUTORY PENALTIES

1. For each day, or portion thereof, that Respondent fails to fully perform any requirement of this Order in accordance with the schedule established pursuant to this Order, Respondent shall be liable as follows:

<u>Milestone</u>	<u>Penalty Per Violation Per Day</u>		
	<u>Up to 30 Days</u>	<u>31 to 60 Days</u>	<u>Over 60 Days</u>
Record Declaration of Restrictions in accordance with ¶ VI.E.20.	\$250	\$500	\$1,000
Failure to take action pursuant to Section VI.I.	\$1,000	\$2,000	\$4,000
Monthly Progress Reports. ¶ VI.F	\$250	\$500	\$1,000

<u>Milestone</u>	<u>Penalty Per Violation Per Day</u>		
	<u>Up to 30 Days</u>	<u>31 to 60 Days</u>	<u>Over 60 Days</u>
Approvable Design Work Plan(s) ¶ VI.B.7.	\$1,000	\$2,000	\$4,000
Implement Modification to Work Plan Pursuant to ¶ VI.B.10	\$1,000	\$2,000	\$4,000
Approvable Quality Assurance Project Plan; ¶ VI.D.	\$250	\$500	\$1,000
Other Plans required by AOC/SOW	\$100	\$200	\$300
Pre-Construction Inspections and Meetings	\$500	\$1,000	\$2,000
Prefinal Inspections	\$500	\$1,000	\$2,000
Prefinal Inspection Reports	\$1,000	\$2,000	\$4,000
Final Inspections	\$1,000	\$2,000	\$4,000
Final-Post Removal Site Control Plan	\$500	\$1,000	\$2,000
Construction Completion Reports, ¶ VI.K.	\$500	\$1,000	\$2,000

<u>Milestone</u>	<u>Penalty Per Violation Per Day</u>		
	<u>Up to 30 Days</u>	<u>31 to 60 Days</u>	<u>Over 60 Days</u>
Final Report ¶ VI. L.	\$1,000	\$2,000	\$4,000
Implement Studies and Investigations Pursuant to ¶ VI.C.12.	\$1,000	\$2,000	\$4,000
Failure to comply with notice or other requirements of the Order ¶¶ VI.F., I., B., J.	\$400	\$800	\$1,600

Upon receipt of written demand by EPA, Respondent shall make payment to EPA within 20 days and interest shall accrue on late payments in accordance with Section VII of this Order (Reimbursement of Costs).

2. Even if violations are simultaneous, separate penalties shall accrue for separate violations of this Order. Penalties accrue and are assessed per violation per day. Penalties shall accrue regardless of whether EPA has notified Respondent of a violation or act of noncompliance. The payment of penalties shall not alter in any way Respondent's obligation to complete the performance of the work required under this Order. Stipulated penalties shall accrue, but need not be paid, during any dispute resolution period concerning the particular penalties at issue. If Respondent prevails upon resolution, Respondent shall pay only such penalties as the resolution requires. In its unreviewable discretion, EPA may waive its rights to demand all or a portion of the stipulated penalties due under this Section. Such a waiver must be made in writing.

3. Violation of any provision of this Order may subject Respondent to civil penalties of up to twenty-five thousand dollars (\$25,000) per violation per day, as provided in Section 106(b)(1) of CERCLA, 42 U.S.C. § 9606(b)(1). Respondent may also be subject to punitive damages in an amount up to three times the amount of any cost incurred by the United States as a result of such violation, as provided in Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Should Respondent violate this Order or any portion hereof, EPA may carry out the required actions unilaterally, pursuant to Section 104 of CERCLA, 42 U.S.C. § 9604, and/or may seek judicial enforcement of

this Order pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606.

XXII. OTHER CLAIMS

1. By issuance of this Order, the EPA assumes no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent. The EPA shall not be a party or be held out as a party to any contract entered into by the Respondent or its directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out activities pursuant to this Order.

2. Except as expressly provided in Section IX (Covenant Not To Sue by EPA), nothing in this Order constitutes a satisfaction of or release from any claim or cause of action against the Respondent or any person not a party to this Order, for any liability such person may have under CERCLA, other statutes, or the common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106(a) or 107(a) of CERCLA, 42 U.S.C. §§ 9606(a), 9607(a).

3. This Order does not constitute a preauthorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611(a)(2). The Respondent waives any claim to payment under Sections 106(b), 111, and 112 of CERCLA, 42 U.S.C. §§ 9606(b), 9611, and 9612, against the United States or the Hazardous Substance Superfund arising out of any action performed under this Order.

4. No action or decision by EPA pursuant to this Order shall give rise to any right to judicial review except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XXIV. SEVERABILITY

If a court issues an order that invalidates any provision of this Order or finds that Respondent has sufficient cause not to comply with one or more provisions of this Order, Respondent shall remain bound to comply with all provisions of this Order not invalidated by the court's order.

XXV. EFFECTIVE DATE

This Order shall be effective upon receipt by Respondent of a copy of this Order signed by the Director of the Superfund Division, EPA Region 5.

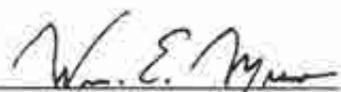
SIGNATORIES

Each undersigned representative of a signatory to this Administrative Order on Consent certifies that he or she is fully authorized to enter into the terms and conditions of this Order and to bind such signatory, its directors, officers, employees, agents, successors and assigns, to this document.

Agreed this 15th day of October, 2000.

BY: 
Dover Chemical Corporation

IT IS SO ORDERED AND AGREED

BY:  DATE: 10/20/00
William E. Muno, Director
Superfund Division
United States
Environmental Protection Agency
Region 5

In The Matter Of: Dover Chemical Corporation Site
Tuscarawas County, Dover, Ohio
Administrative Order by Consent
Non-Time Critical Removal Action

In The Matter Of: Dover Chemical Corporation Site
Tuscarawas County, Dover, Ohio
Administrative Order by Consent
Non-Time Critical Removal Action

APPENDIX A

**ENFORCEMENT ACTION
MEMORANDUM**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF SR-6J

MEMORANDUM

Date:

Subject: ENFORCEMENT ACTION MEMORANDUM - Request for Approval of a Non-Time Critical Removal Action at the Dover Chemical Corporation Site, Dover, Ohio

FROM: Thomas Short, Remedial Project Manager
Remedial Response Branch#2, Section #4

Thomas Short

TO: William E. Muno, Director
Superfund Division

PURPOSE

The purpose of this memorandum is to request and document approval of the proposed non-time critical removal action described here for the Dover Chemical Corporation Site (Site) in Dover, Ohio. This non-time critical removal action will be protective of human health and the environment by removing contaminants from the Site, preventing exposure to on-site residual contamination and by reducing the migration of contaminants from the Site.

The proposed removal action for the Site includes the excavation of facility, lagoon and abandoned canal area soils along with off-site disposal to a permitted facility, the enhancement and continued operation of the groundwater pump and treat system, the installation of a barrier around the lagoon area and the implementation of institutional controls. The institutional controls will provide for access restriction and limit the use of the Site for industrial activities only. This removal action will address contamination at the Site that poses a risk to human health and the environment. Some residual waste will be left on-site following the completion of the removal action. Therefore, a Post Removal Site Control Plan will be established and a review of the Site situation shall occur every 5 years by U.S. EPA.

Detached plume groundwater issues are noted in this Enforcement Action Memorandum for informational purposes only and will be addressed under a separate agency action.

The proposed removal action is based on the Remedial Investigation/Feasibility Study (RI/FS) and administrative record for this Site. This action has an estimated present worth value of approximately \$23,000,000. Other clean-up alternatives considered for this Site are discussed in the Feasibility Study. This action does not obligate funds from the Superfund. Therefore an exemption from the \$2 million and 12-month statutory limits is not required.

This proposed removal action is considered non-time critical because a planning period of at least six months exists prior to the initiation of the removal activities.

II. SITE CONDITION AND BACKGROUND

CERCLIS ID#: OHD 004210563

A. Physical Location

The Dover Chemical Site is located in Tuscarawas County, in east central Ohio. Dover Chemical Corporation, just off of Interstate 77, owns four parcels of land near the City of Dover city limits that total approximately 60 acres. Figure 1 is the Site location map. Figure 2, on the following page, is a map of the plant, lagoon, canal, and wooded low lying areas. Areas to be excavated are shaded.

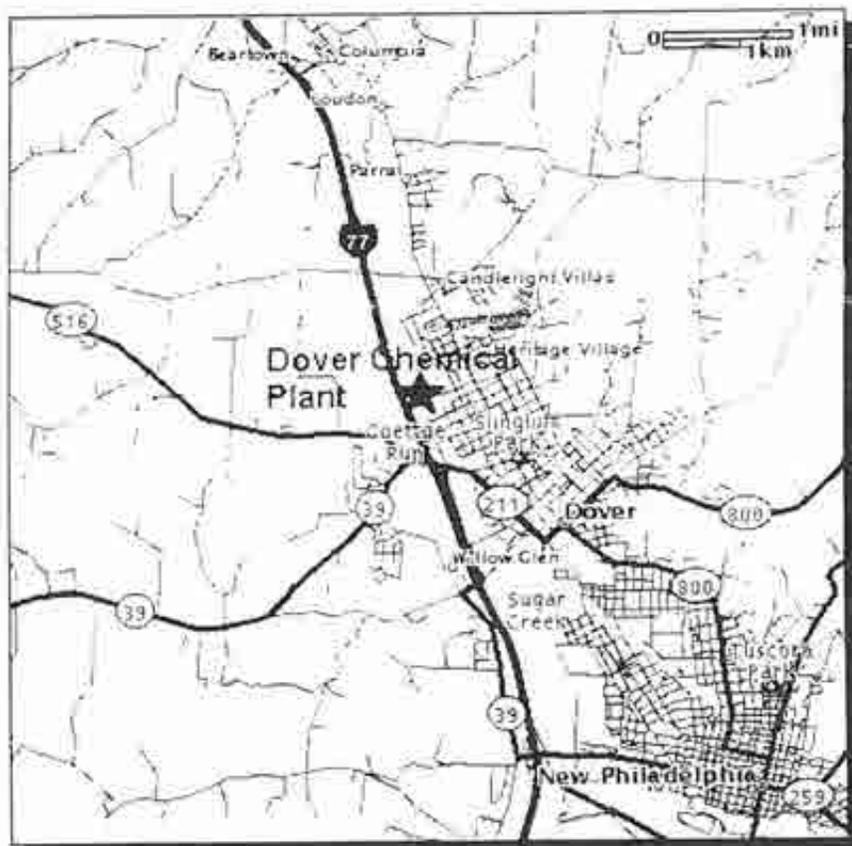


Figure 1- Location Map

The City of Dover, Ohio has a population of approximately 13,600 in 1999. Land use around the Site is varied and includes industrial, commercial and residential areas in addition to some undeveloped areas. Industrial facilities are located both to the north and south. There are several blocks of residences east of the Site that extend to the north and the south. The City of Dover well field is located northeast of the Site but groundwater flow is away from the well field. There are no known sensitive human or ecological populations near the Site.

B. Site Description and Background

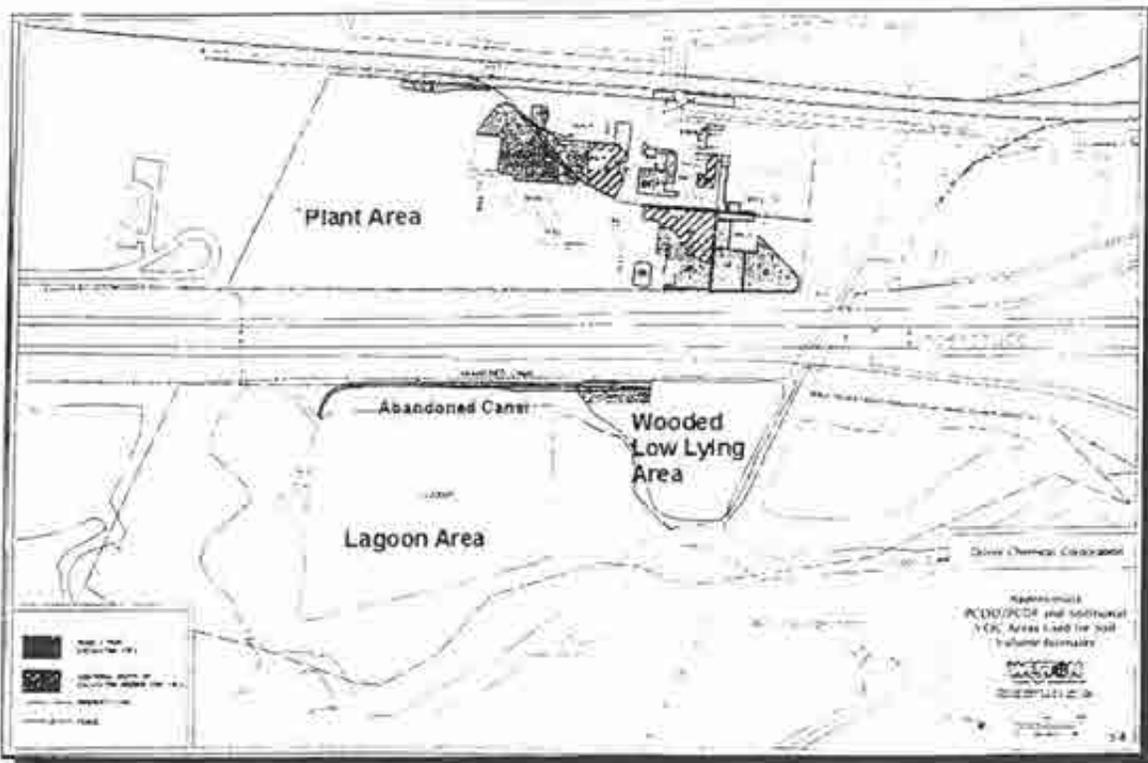


Figure 2 - Plant, Lagoon, Canal, and Wooded Low Lying Areas.

Since 1950, Dover Chemical has operated a manufacturing facility in Dover, Ohio. The facility produces phenyl phosphites and chlorinated paraffin products that are used in the manufacture of pressure lubricants, plasticizers, and flame retardants for vinyl products. Site activities from the 1950s to the early 1970s introduced site-related constituents into the environment in the vicinity of the Dover Chemical plant. Site-related constituents entered the environment through the deposition of dichlorobenzene in a low lying area in the southwestern corner of the facility, the temporary storage of hexachlorocyclohexane (BHC) on the ground next to Building 21 and unintentional process spills and leaks.

Since 1981, several environmental investigations have been conducted at Dover Chemical to assess the impact of constituents of potential concern (COPC) (site constituents) that were inadvertently released to the environment.

Based on the RI/FS investigation results in 1991, the U.S. EPA requested that Dover Chemical take interim actions to reduce the mobility and potential for contact with soils containing Polychlorinated dibenzodioxins (PCDDs) and dibenzofurans (PCDFs). Dover and U.S. EPA entered into an Administrative Order on Consent (AOC) to conduct this work. This action was taken to mitigate a direct contact risk to workers in the on-site

soils at the Site and did not address potential risks associated with other organic constituents at the Site.

The interim soil clean-up taken to mitigate direct human exposure included the following:

- excavation and removal of off-site soils above the U.S. EPA residential area soil cleanup standard and securing on-site soils,
- capping active plant areas
- securing inactive areas with levels above the soil clean up standard to prevent access by installing snow fencing,
- fencing the entire plant area to maintain security and prevent unauthorized access,
- reducing the average PCDD/PCDF soil concentration on the Armory property to below the soil clean up standard by removal of soil in area M and BN and adding 6-inches of clean fill and paving to area AC, and
- removal of soil above the soil clean up standard of PCDD/PCDF to the east of building 31 (area P and part of area K) and installation of a parking lot and top soil.

The Armory property, and Areas M, BN, AC, P, and K are depicted in Figure 5-1, on page 5-8 of the Feasibility Study, which is attached to this memorandum as Attachment 1.

Previous actions were taken in 1987 and 1988 under the Ohio EPA Pollution Discharge Elimination System (PDES) program to improve groundwater treatment, close the lagoon, and increase the rate of remediation. These activities included upgrading the groundwater treatment system by installing an air stripper, installing a filter dam across the downstream end of the canal to minimize migration of sediments, routing the effluent directly to Sugar Creek (bypassing the canal and lagoon), and pumping lagoon water back to the new treatment system until the VOC and semi-volatile organic compound concentrations in the lagoon dropped below the drinking water maximum concentration limits (MCLs).

As a result of the rerouting and upgraded treatment system, volatile and semivolatiles site constituents previously found in the lagoon and the adjacent shallow groundwater at low concentrations are no longer present.

Information gathered from all the investigations conducted at this Site have identified four areas of concern. These areas are identified as follows:

- Plant area soils
- Lagoon and canal area soils
- Plant area groundwater
- Detached groundwater plume

The plant area soils include all soils located in the production area as well as the soils in unused portions of the immediate plant area. See Figure 2. The groundwater plume refers to the groundwater contamination currently found underneath the plant area. This contamination is currently being contained by the pump and treat system. The lagoon area soils are the areas of the Site west of I-77, where a plant lagoon is located. The detached groundwater contamination is a plume of contamination that separated from the main plume. This groundwater contamination will be addressed under a separate action as it also includes some contamination from a facility other than Dover Chemical.

C. National Priorities List (NPL) Status

Under Section 105(a)(8) of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. 9605(a)(8), U.S. EPA promulgated a list of national priorities among the known or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. That list, appendix B of 40 CFR Part 300, is the National Priorities List ("NPL"). A site may undergo CERCLA-financed remedial action only after it is placed on the NPL, as provided in the NCP at 40 CFR 300.425(b)(1). On May 10, 1993, U.S. EPA proposed the Dover Chemical Corporation Site for inclusion on the NPL. See 58 FR 27507, 27513 (May 10, 1993).

U.S. EPA has not yet moved to finalize listing the Dover Chemical Corporation Site on the NPL. The NCP states that "[r]eleases may be categorized on the NPL when deemed appropriate by EPA." 40 CFR § 300.425(d)(6) (Procedures for placing sites on the NPL). Based on current information on the Site, U.S. EPA believes that if the final non-time critical removal action selected for the Site and a separate response action to address the detached groundwater plume are completed to U.S. EPA's satisfaction, listing the Site on the NPL and a CERCLA-financed remedial action will be unnecessary.

D. Rationale for Implementing a Non-Time-Critical Removal Action

U.S. EPA proposes to address the threats to human health and the environment posed by the Dover Chemical Site through a non-time critical removal action. U.S. EPA has categorized removal actions in three ways: emergency, time-critical, and non-time critical, based on the type of situation, the urgency and threat of the release or potential release, and the subsequent time frame in which the action must be initiated. See, "Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA," Publication No. 9360.0-32, August 1993, at pg. 3. Emergency and time-critical removal actions respond to releases requiring action within 6 months. *Id.* The NCP allows non-time-critical removal actions to be taken when there is a planning period of at least six

months before on-site activities must be initiated and U.S. EPA has determined that a removal action is appropriate [40 CFR § 300.415(b)(4)]. The Dover Chemical Site meets both of these criteria.

The design of the proposed removal action will take approximately twelve months and thus meets the first criterion for a non-time critical removal action. See, 40 CFR § 300.415(b)(4).

With respect to the second criterion (i.e., whether a removal action is appropriate), a removal action is appropriate for the Dover Chemical Corporation Site based on the factors stated at 40 CFR § 300.415(b)(2), including, but not limited to, actual or potential exposure to nearby human populations, animals or the food chain from hazardous substances, pollutants or contaminants. This conclusion is based on the baseline risk assessment for the Site.

Actual or threatened releases of hazardous substances from this Site, if not addressed by the proposed non-time critical removal action, may present an imminent and substantial endangerment to public health, welfare, or the environment. Completion of the non-time-critical removal action will not compromise the integrity or protectiveness of a final action. It does, however, provide the U.S. EPA an opportunity to expedite the planning and construction phases of the action which will reduce current risks at the Site more quickly.

Moreover, the proposed non-time critical removal action for the Site is consistent with the types of removal actions contemplated by the NCP, as well as U.S. EPA guidance, i.e., site control precautions, excavation and removal of contaminated soils, and the minimization of migration of contaminated groundwater. See, 40 CFR § 300.415(e)(1) and (6), and "Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA," Publication No. 9360.0-32, August 1993, at pg. 31.

E. Current Site Conditions

Polychlorinated dibenzodioxins (PCDDs) and dibenzofurans (PCDFs) Background Sampling

PCDD/PCDF background samples were collected in December 1989, September 1990, and April 1991 at various locations in the vicinity of the City of Dover and the Dover Chemical Site. In December 1989, off-site background surface soil samples were collected from three residences east of the Site at depths of 0 to 1/4 inch. Concentrations in these areas ranged from 0.005 parts per billion (ppb) to 0.30 ppb. In September 1990, background samples taken along Interstate I-77 and southwest of the Site along Route 39 ranged from not detectable to 0.03 ppb.

Plant Area Soils

Results from all of the investigations conducted on the Site indicate that site-related chlorinated organic compounds, primarily chlorobenzenes and carbon tetrachloride, along with hexachlorobenzene, polychlorinated dibenzodioxins (PCDDs) and dibenzofurans (PCDFs), and hexachlorocyclohexane (BHC) are present in soils on-site. The levels of these compounds detected in various areas on-site included chlorobenzenes (370,000 ug/Kg), carbon tetrachloride (54,920 ug/Kg), BHC (520,000 ug/kg). A soil boring sample from the most contaminated dioxin area on-site (Area H) was reported to contain 19,256 ng/kg toxicity equivalent factor (TEF) PCDD/PCDFs.

As an interim procedure until more definitive Agency guidance is established, U.S. EPA Region 5 has adopted a Toxicity Equivalency Factor (TEF) methodology for evaluating the toxicity of chlorinated dioxins and furans. This methodology relates the relative potency of each dioxin/furan compound to the potency of 2,3,7,8-tetrachlorodibenzodioxin (TCDD), the most toxic dioxin compound. For example, the compound 1,2,3,7,8-pentachlorodibenzodioxin (PCDD) is considered only 50% as toxic as 2,3,7,8-TCDD, so its concentration is multiplied by 0.5 to estimate its concentration relative to TCDD. After this is done for each of the 11 dioxin and furan compounds of concern to U.S. EPA, the concentrations are added to provide a single concentration value known as TCDD equivalents (TEQs). All of the dioxin values discussed in this memorandum are presented in TEQs.

Lagoon and Canal Area Soils

Samples collected from this area of the Site include a soil sample from the wooded area (24.2 ppb TEF PCDD/PCDF), a soil sample from the abandoned canal area which was once used by Dover Chemical to discharge wastewater under an NPDES permit, (185.9 ppb TEF PCDD/PCDF); a sediment sample from the lagoon itself (0.6 ppb TEF PCDD/PCDF); and one fish sample.

Analysis of the fish fillet showed levels of TEF PCDD/PCDFs at 5.4 ppt which is below the level used by the Ohio Department of Health to issue fish advisories. The canal area soils contained significant concentrations of site-related contaminants. Chlorobenzene was found at concentrations ranging from 310 mg/kg to 5660 mg/kg. 1,3 dichlorobenzene and 1,2,4 trichlorobenzene were found at concentrations up to 310 ug/kg. 1,2,4-trichlorobenzene was estimated at 9,600 mg/kg and HCB was present at concentrations between 1000 and 3900 mg/kg.

Groundwater

Sampling of groundwater from 41 monitoring wells, both on-site and off-site, were analyzed for PCDD/PCDF, BHC and chlorinated organic compounds. The detached groundwater plume is believed to have spread south of the facility before site hydraulic control was completely established. The detached groundwater plume was found to extend from approximately 1/4 to 1 mile down gradient of the Site. The detached groundwater plume will be addressed under a separate action. For groundwater,

federal and state MCLs are identified as the clean up goals. Table 1, contains the maximum constituent concentrations found in the groundwater.

Table 1: Groundwater - Maximum Constituent Concentrations					
	Maximum Concentration On-site Wells (ug/L)	Well #	Maximum Concentration Off-site Wells (ug/L)	Well #	MCL (ug/L)
1,4 dichlorobenzene	16,000	11A	1,600	31B	75
1,2, dichlorobenzene	15,000	11A	1,400	31B	600
1,3, dichlorobenzene	5,300	11A	440	31B	5.5**
Carbon Tetrachloride	3,800	2A	2 J	25B	5
1,2,4-Trichlorobenzene	1,400	11A	9 J	30A	70
Mono chlorobenzene	1,300	11A	470	FBF	100
Chloroform	620	2A	5	RW-8	100*
Tetrachloroethene	45 J	11A	53	25B	5
Trichloroethane	ND	--	49	RW-8	5
1,1,1-Trichloroethane	7	2A	150	RW-8	200
1,1-Dichloroethene	ND	--	8	RW-8	7
PCDD/PCDF (TEF)	15.69	11A	0.0028	16B	3×10^{-11}
2,3,7,8-TCDD	0.33	11A	ND	--	0.03
Alpha-BHC	8	5A	ND	--	--
Hexachlorobenzene	26 (estimated value)	11A	ND	--	1×10^{-6}

ND = Not detected
 -- = Not applicable

* = proposed MCL
 J - estimated value

** Region 3 Risk Based Concentration Table (4/12/99)

III. THREAT TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

The levels of hazardous substances detected in the surface soils, subsurface soils, and groundwater at the Dover Chemical Site and the conditions present at the Site constitutes a threat to public health, welfare, or the environment based upon the factors set forth in Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan, as amended (NCP), 40 CFR Part 300. These factors are based on the results of the baseline risk assessment performed for the Site as part of the investigations and include but are not limited to actual or potential exposure to

nearby human populations, animals or the food chain from hazardous substances, pollutants or contaminants.

Summary of Risk Analysis

For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a life-time as a result of exposure to the carcinogen. Excess life-time cancer risk is calculated from the following equation:

$$\text{Risk} = \text{CDI} \times \text{SF}$$

where:

risk = a unit less probability (e.g., 2×10^{-5}) of an individual developing cancer
CDI = chronic daily intake averaged over 70 years (mg/kg-day)
SF = slope factor, expressed as (mg/kg-day)⁻¹

These risks are probabilities that usually are expressed in scientific notation (e.g., 1×10^{-6}). An excess lifetime cancer risk of 1×10^{-6} indicates that an individual experiencing the reasonable maximum exposure estimate has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure. This is a reference to an "excess lifetime cancer risk" because it would be in addition to the risks of cancer individuals face from other cancer causes such as smoking or exposure to too much sun. The chance of an individual developing cancer from all other causes has been estimated to be as high as one in three. U.S. EPA's generally acceptable risk range for site-related exposures is 10^{-4} to 10^{-6} .

The potential for non-carcinogenic effects is evaluated by comparing an exposure level over a specified time period (e.g., life-time) with a reference dose (RfD) derived for a similar exposure period. An RfD represents a level that an individual may be exposed to that is not expected to cause any deleterious effects. The ratio of exposure to toxicity is called a hazard quotient (HQ). An HQ < 1 indicates that a receptor's dose of a single contaminant is less than the RfD, and that toxic noncarcinogenic effects from that chemical are unlikely. The Hazard Index (HI) is generated by adding the HQs for all chemical(s) of concern that affect the same target organ (e.g., liver) within a medium or across all media to which a given population may reasonably be exposed. An HQ > 1 indicates that, based on the sum of all HQs from different contaminants and exposure routes, toxic noncarcinogenic effects from all contaminants are likely. An HI > 1 indicates that site-related exposures may present a risk to human health.

The HQ is calculated as follows:

$$\text{Non-cancer HQ} = \text{CDI} / \text{RfD}$$

where:

CDI = Chronic daily intake

RfD - reference dose

CDI and RfD are expressed in the same units and represent the same exposure period.

Human Health Risks

The Dover Chemical risk assessment was based on conditions at the Site prior to interim action conditions and included hypothetical exposures to exposed soils in the highest concentration areas that have not been used for production in many years. Interim actions included covering contaminated soils to minimize exposure or migration.

For the current-use scenario, potentially exposed populations are:

1. Adult worker
2. Resident
3. Visitor/trespasser

For the future use scenario, the risk assessment assumed that the Site would be developed for industrial use. The potential exposed populations from the future use scenario include:

1. Adult routine maintenance worker
2. Visitor/trespasser
3. Off-site resident

Risk calculations for current use pathways and future use pathways showed actual or potential unacceptable excess cancer risks for the adult worker, current visitor/trespasser, future off-site resident, adult routine maintenance worker, off-site visitor trespasser, and off-site resident. Excess cancer risk estimates were identified for exposures to direct contact with and incidental ingestion of contaminated surface soils on-site, and direct contact with, and inhalation of, on-site groundwater while showering (contaminated groundwater from the Site is not currently being used as a residential supply).

Non-carcinogenic unacceptable excess risks were estimated for the current visitor/trespasser, the current worker, the maintenance worker, the future visitor/trespasser, and the off-site resident. Excess non-carcinogenic risks were identified for exposures to direct contact with and incidental ingestion of contaminated soils and sediments, and inhalation while showering.

Table 2: Source Areas, Constituents, and Exposure Routes		
Source area/media exceeding U.S. EPA's Risk Range (10 ⁻⁴ to 10 ⁻⁶)	Constituents Driving the Risk or Hazard	Exposure Routes of Concern
Plant Area Soils	Dioxin (2,3,7,8 - TCDD) Hexachlorobenzene	Dermal contact and incidental ingestion
Lagoon Area Soils	Dioxin (2,3,7,8-TCDD)	Dermal Contact and soil ingestion
Groundwater	Dioxin (2,3,7,8 - TCDD) Carbon Tetrachloride 1,4- Dichlorobenzene	Dermal Contact and incidental ingestion while showering

For a detailed list of constituents and exposure routes see Attachment 4 - Human Health Risk Tables.

U.S. EPA's "Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites", OSWER Directive 9200.4-26, April 13, 1998, was taken into consideration in developing starting levels for final cleanup goals for dioxin. As documented in the Administrative record for this Site, a starting level of 5 ppb (TEQs) dioxin was selected for soil in the Plant Area reasonably expected to be used as industrial property.

A final soil cleanup level of 5 ppb (TEQ) was selected for the Plant Area based on an evaluation, as documented in the Administrative Record, of a range of cleanup alternatives using EPA's selection criteria. The final soil cleanup level of 5 ppb (TEQ) for industrial soil at the Plant Area is considered protective (as documented in the Administrative Record) for human health and the environment, based on current and future use of the Site for industrial purposes, and reflects an excess cancer risk of 1.4×10^{-4} .

The U.S. EPA and Ohio EPA set a cumulative risk goal of 1×10^{-5} for all other soil constituents. Because on-site groundwater is and will continue to be collected and treated, the establishment of the soil cleanup levels is focused on ingestion, inhalation, and dermal contact exposures to soil rather than exposure to groundwater contaminated as a result of migration of soil contaminants to ground water.

Ecological Risks

Ecological impacts from site-related contamination were also evaluated. The Ohio Department of Natural Resources (ODNR) reviewed Natural Heritage maps and files and found no indication that either threatened or endangered species, or unique ecological habitats exist within or adjacent to the Dover Chemical Site. Although numerous species of wildlife could potentially utilize terrestrial and aquatic habitats surrounding the Site, the highly industrial character of the area tends to limit the overall species abundance and diversity. In terms of habitat quality, the lagoon area provides

the best available habitat proximate to the Site. The areas evaluated in the ecological risk assessment include Sugar Creek, a lagoon, a canal and a wooded area near the lagoon. Aquatic life inhabiting Sugar Creek and the lagoon may be exposed to COPCs in the surface water and sediments. Terrestrial wildlife exposure to COPCs occurs when animals feed in areas affected by site contaminants.

An ecological screening risk assessment was completed in May 1995 which evaluated ecological risks at the small wooded area adjacent to the Site, across Interstate 77. The screening ecological risk assessment evaluated 3 terrestrial receptors; the short-tailed shrew, the woodland vole and the belted kingfisher. Ecologically-protective soil screening levels for the short-tailed shrew and woodland vole were back-calculated from the dose models and toxicity reference values (TRVs) presented in the Baseline Risk Assessment, Dover Chemical Corporation Site, 1995. Ecologically-protective sediment screening levels for the Belted Kingfisher were back-calculated from the dose models and toxicity reference values (TRVs) presented in the same 1995 risk assessment.

The soil and sediment screening levels (which are not intended to serve as final cleanup levels) are estimates based on screening (generic) food chain models, not site-specific measurements of bioaccumulation of soil and sediment dioxins in resident biota. The generic models indicated that screening levels correspond to background levels. Additional site-specific investigations of dioxin bioaccumulation to reduce the uncertainties associated with the generic food chain models and, accordingly, to develop final ecological cleanup levels, were not performed at this Site because the relatively small size of the contaminated area did not justify further expensive investigations to develop site specific final cleanup levels, and because all parties concurred with source removal.

The Columbus Waste-to-Energy Municipal Incinerator Dioxin Soil Sampling Project Report, developed by US EPA in April 1996 described background levels of dioxin contamination range from 1 to 33 ppt in urban areas and 1 to 5 ppt in rural areas in the Columbus Area. As mentioned earlier, samples taken between 1989 and 1991 showed dioxin background levels ranging from non-detectable to 2 ppb. Surface sediment samples taken in the canal/lagoon area showed dioxin TEFs of approximately 186 ppb where wastewater was historically discharged to the canal. Dioxin levels decrease to approximately 17 ppb at the end of the canal where it enters the lagoon with further decreases in levels to approximately 0.6 ppb in the lagoon area itself. Investigations, in the spring of 1997, focused on a 4,400 ft² area represented by a low lying area where the 186 ppb sample was previously taken. A grid surrounding the 4,400 ft² area was sampled. The results of this sampling event showed contaminant levels ranging from 8.5 to 40.5 ppt immediately outside the low lying area indicating that the high levels of dioxin contamination are concentrated in the low lying area and quickly taper to near background levels.

Therefore, excavation of the 4,400 ft² low lying area and abandoned canal will remove contaminated soils/sediments which pose an excess risk to the most sensitive

ecological receptors: the short-tailed shrew and woodland vole, resulting in near background levels of dioxin in this area. Furthermore, the lagoon area will be evaluated periodically as part of the post removal site control activities for the Site. This evaluation shall take place at least every 5 years.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response selected in this Enforcement Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATES

A. Proposed Actions

1. Proposed Action Description

The non-time critical removal action selected to mitigate threats associated with the Dover Chemical Site will consist of the following tasks:

Plant Area Soil

- Maintain existing buildings, structures and roadways so that, with institutional controls, soils remain isolated beneath these features.
- Excavate the areas exceeding the action level (5 ppb (TEQs) dioxin) for dioxin-contaminated soils in the Plant Area, with the maximum depth of excavation controlled by a typical industrial building foundation depth of up to 4 feet.
- Excavate VOC-contaminated soils to a depth of 4 feet in Areas G, H, and AN.
- Remove stockpiled soil and asphalt structure from Area H.
- Dispose of all excavated and stockpiled soil and materials off-site in an approved landfill that will be acceptable under the NCP's off-site rule. Excavated and stockpiled soil and materials will be treated as necessary to meet off-site disposal requirements, including land disposal restrictions.
- In the areas where removal of dioxin-contaminated soil stops at a depth of 4 feet, the soil will be sampled and analyzed in order to document the levels of dioxin contamination which will be left in place. No additional soil removal will be performed regardless of the findings from soil analysis.

- If the concentration of dioxin in the soils below 4 feet remains above the action level of 5 ppb, a marker, such as an orange polyethylene netting, will be laid on top of the soil at this depth in order to make it clear to anyone excavating in these areas that these soils are not to be disturbed. The area will then be backfilled with clean soil to present grade, designed with consideration for future site use and the prevention of soil erosion. A restriction will be placed on the property deed to restrict excavation below a depth of 4 feet. Institutional controls will also be instituted to ensure that the integrity of the covers is maintained.
- Import clean soil and backfill excavated areas. Grade backfilled areas for drainage, and pave or seed, depending on the intended use.
- Before implementation of the plant area clean-up, the property adjacent to road ways to be trafficked between the plant and I-77 will be sampled to document site-related constituent levels. During plant area soil excavation and off-site disposal, these areas will be sampled annually to check for releases. Upon completion of plant area soil excavation these areas will be sampled to document site-related constituent levels. If at any time during implementation releases occur resulting in exceedances above the U.S. EPA residential area dioxin soil cleanup standard, 1.0 ppb (TEQs), these areas will be excavated and backfilled with clean material and returned to the condition prior to implementation of the plant soil clean up. The selection of 1.0 ppb is based on using standard default assumptions for reasonable maximum exposure scenarios for residential properties taking into consideration the April 1998 dioxin guidance.

Plant area soils will be excavated until risk goals are achieved or reach a maximum depth of four feet. Excavated areas will be backfilled with four feet of clean soil. The maximum depth of four feet addresses a typical industrial foundation depth in case of future industrial development on the property. Excavations deeper than four feet provide little additional protection as future industrial development is expected not to exceed this foundation depth. Post excavation sampling and analysis of soils just beneath the foundation depth, will be performed for documentation of the site conditions before backfilling. Where contamination remains above the risk goals, a marker, such as an orange polyethylene netting, will be laid on top of the remaining soils so as to not be disturbed in the future. A deed restriction will help ensure that there will be no digging below a four foot depth without notice to the U.S. EPA. Institutional controls will be implemented to maintain the integrity of the covers.

The approximate areas of excavation are depicted in Attachment 1, Approximate PCDD/PCDF and Additional VOC Areas Used for Soil Volume Estimates (Fig. 5-1 in the Feasibility Study). Areas, depth and volume of soils to be excavated are stated in Attachment 2, Detailed Soil Volume Estimates.

Lagoon area and Canal Soils/Sediments

- Excavate the areas exceeding the ecological screening level for dioxin contaminated soils/sediments up to a maximum removal depth of 3 feet for the first 50 feet of the old canal (beginning from the historical point where wastewater entered the canal) and 1 foot along the rest of the canal
- Remove 1 foot of soil over the 4,400 square foot area. The soil to be removed from this area was based on sampling results collected after the FS was developed. Any areas that are excavated shall be backfilled and returned to pre-excitation grade.
- In the areas where removal of dioxin contaminated soil stops at a maximum depth, the soil/sediment will be sampled and analyzed in order to document the levels of dioxin contamination which will be left in place. No additional soil/sediment removal will be performed regardless of the findings from soil analysis.
- If the concentration of dioxin in the soils below the maximum depth remains above the ecological screening level, a marker, such as an orange polyethylene netting, will be laid on top of the soil/sediment at this depth in order to make it clear to anyone excavating in these areas that these soils are not to be disturbed. The area will then be backfilled to present grade to prevent erosion and institutional controls will be implemented to maintain the cover.
- Off-site disposal of all of the excavated materials in an approved landfill that will be acceptable under the off-site rule. Treatment as needed of the excavated soil/sediment to meet off-site disposal requirements, including land disposal restrictions.
- Seed and re-vegetate backfilled areas.
- Install a vegetative or other type of barrier around the lagoon area.
- Place "No Fishing" and "No Trespassing" signs around lagoon area.
- Regularly monitor and maintain barrier and signs. Repair areas of soil erosion as it occurs.

Groundwater

- Continue to operate the existing groundwater treatment / management system. Recovered groundwater will be treated by the existing air stripper.

- Install new pumping wells. This new well network is expected to reduce the amount of time necessary to clean up the contaminated on-site plume in comparison to the existing groundwater treatment/management system.
- Enhance the groundwater system by adding filtration, carbon adsorption, or a combination of both mechanisms to remove PCDD/PCDFs and lindane.

The goal of groundwater clean-up will be to reach Maximum Contaminant Levels (MCLs) throughout the on-site plume.

A long-term monitoring program will be instituted for the groundwater. Monitoring will consist of collecting water level measurements along with sampling and analysis of groundwater from the monitoring wells. As a base, the long-term groundwater monitoring program will establish a graduated performance monitoring approach to demonstrate compliance with the clean-up criteria. This graduated performance monitoring approach will establish clean wells outside of the plume and then monitor the effectiveness of the groundwater treatment system back toward the source of the contamination.

Institutional Controls

- Implement institutional controls which will include access restrictions, deed restrictions, and land and groundwater use restrictions. Institutional controls may include site-specific zoning restrictions.

Maintenance

- Implement Institutional Controls and conduct site maintenance to ensure the integrity of the backfilled areas, the site fencing, the groundwater system, the roadways, the monitoring wells and any other operating systems. A regularly scheduled maintenance program shall be implemented to inspect the physical property and ensure all systems are maintained in good repair. The maintenance program will be developed in a site post removal site control plan as part of the design/action.

2. Contribution to Remedial Performance

Implementation of the proposed non-time critical removal action will be effective in reducing the potential exposure of on-site workers and nearby human populations and ecological populations to hazardous substances and in eliminating the threat of continued releases to the environment posed by the contamination found at the Site. This action is recommended because it will result in the removal of dioxin and VOC contaminated soils and will reduce the migration of contaminants to on-site.

groundwater.

3. Description of Clean-up Alternatives

U.S. EPA recommends a clean-up alternative that consists of a combination of various components of several of the clean-up alternatives considered in the Feasibility Study. For plant area soils (S) the Feasibility Study considered the following range of clean-up alternatives: Alternative S-1 - No Action; Alternative S-2 - Long-Term Maintenance of Existing Containment; Alternative S-3 - Enhanced In-Place Containment; Alternative S-4 - Excavation and On-Site Containment; Alternative S-5 - Excavation and Off-Site Disposal; Alternative S-6 - Excavation and Thermal Treatment by either Off-Site Incineration, On-Site Incineration, Off-Site Thermal Desorption, or On-Site Thermal Desorption; and Alternative S-7 - Treatment of Hot Spot Soils with Isolation of Remaining Soils.

For groundwater (GW) the Feasibility Study considered the following clean-up alternatives: Alternative GW-1 - No Action; Alternative GW-2 - Groundwater Extraction from Wells PW-2, PW-4, and PW-5, and Treatment by Air Stripping and Filtration; Alternative GW-3 - Groundwater Extraction from PW-5 and Three New Wells To Enhance Cleanup Time, and Treatment by Air Stripping and Filtration; and Alternative GW-4 - Groundwater Extraction from the Four Wells in Alternative GW-3 with a 50% Increased Flow Rate, and Treatment by Air Stripping and Filtration.

For the lagoon area (LA) the Feasibility Study considered the following clean-up alternatives: Alternative LA-1 - No Action; Alternative LA-2 - Institutional Controls, including Fencing, Posting of Signs, and Routine Maintenance; Alternative LA-3 - In-Place Capping of Lagoon Area Soils; Alternative LA-4 - Excavation and On-Site Containment of Lagoon Area Soils and Canal Sediments with Other On-Site Soils; Alternative LA-5 - Excavation and Off-Site Disposal of Lagoon Area Soils and Canal Sediments; Alternative LA-6 - Excavation, Treatment, and Backfill/Disposal of Lagoon Area Soils and Canal Sediments; and Alternative LA-7 - Treatment of Hot Spots Canal Sediments with Isolation of Remaining Soils.

The Feasibility Study then made combinations of the clean-up alternatives to form the following comprehensive site-wide alternative "packages":

Alternative ON-1: Plant Area Soils - Alternative S-1
Groundwater - Alternative GW-1
Lagoon Area Soils - Alternative LA-1
Capital Cost: \$0
O&M Cost: \$0
Present Net Worth: \$0

- Alternative ON-2: Plant Area Soils - Alternative S-2
 Groundwater - Alternative GW-2
 Lagoon Area Soils - Alternative LA-2
 Capital Cost: \$1,753,600
 O&M Cost: \$804,200
 Present Net Worth: \$14,116,100
- Alternative ON-3: Plant Area Soils - Alternative S-3
 Groundwater - Alternative GW-2
 Lagoon Area Soils - Alternative LA-3
 Capital Cost: \$2,694,100
 O&M Cost: \$822,900
 Present Net Worth: \$15,344,100
- Alternative ON-4: Plant Area Soils - Alternative S-4
 Groundwater - Alternative GW-3
 Lagoon Area Soils - Alternative LA-4
 Capital Cost: \$6,317,900
 O&M Cost: \$759,300
 Present Net Worth: \$17,991,200
- Alternative ON-6: Plant Area Soils - Alternative S-7
 Groundwater - Alternative GW-2
 Lagoon Area Soils - Alternative LA-7
 Capital Cost: \$22,405,600
 O&M Cost: \$803,800
 Present Net Worth: \$34,762,000
- Alternative ON-5: Plant Area Soil - Alternative S-6
 Groundwater - Alternative GW-3
 Lagoon Area Soils - Alternative LA-6
 Capital Cost: \$46,419,200
 O&M Cost: \$745,400
 Present Net Worth: \$57,877,800

The FS provided a range of clean-up alternatives for the Site with varying degrees of effectiveness, implementability, and cost. Upon review of all of the alternatives for the three areas of concern, the U.S. EPA recommended a new clean-up alternative called Alternative ON-7.

- Alternative ON-7: Plant Area Soils - Alternative S-5
 Groundwater - Alternative GW-3
 Lagoon Area Soils - Alternative LA-5
 Capital Cost: \$10,624,300
 O&M Cost: \$803,800
 Present Net Worth: \$22,980,700

This clean-up alternative is described in detail in Section V.A.1. Proposed Action Description, above.

4. Remedial Investigation and Feasibility Study (RI/FS) [EE/CA equivalent]

For non-time critical removal actions, such as this one, the National Contingency Plan requires that U.S. EPA conduct an engineering/cost analysis (EE/CA) or its equivalent. See, 40 CFR § 300.415(a)(4)(i). The EE/CA or EE/CA equivalent is an analysis of clean-up alternatives for a site. The RI/FS and the administrative record form the EE/CA equivalent for the Dover Chemical Corporation Site.

U.S. EPA guidance requires that the EE/CA or its equivalent evaluate a range of clean-up alternatives against the short-term and long-term aspects of three broad criteria: effectiveness, implementability, and cost. See, "Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA," Publication No. 9360.0-32, August 1993, at 35. Effectiveness includes protectiveness of public health and the environment, compliance with federal and state regulations, and long-term permanence of the action. Implementability includes the feasibility and availability of the technology being used. Cost includes both initial capital costs and post removal site control costs. The Feasibility Study analyzed the range of clean-up alternatives for the Site against this criteria.

U.S. EPA considers Alternative ON-7 the most favorable of all the alternatives because it provides the best balance between effectiveness, implementability, and cost in comparison to the other clean-up alternatives considered in the RI/FS.

Effectiveness

The recommended clean-up alternative, ON-7, will protect human health and the environment by the excavation, removal, and off-site disposal of contaminated soil and sediment. Contaminated groundwater will be treated and migration of contaminants in groundwater will be contained. U.S. EPA risk goals for dioxin and other contaminants will be met. The removal of soils and sediments will offer a permanent solution at the Site in three to four years and will require reduced long-term care. Alternative ON-7 would also limit risks posed by past site activities, and would provide long-term permanence by eliminating potential future exposure and migration of site-related contaminants. In addition, the recommended clean-up alternative will reduce migration to groundwater. The clean-up will also comply with federal and state environmental laws and regulations. See, Section 5, below for a detailed discussion of federal and state environmental laws and regulations which are applicable or relevant to the recommended clean-up alternative.

In comparison to the no-action and containment alternatives (ON-1 through ON-4) discussed in the FS and described above, clean-up alternative ON-7 provides greater

and more permanent protection from risks posed by the Site with less long term care necessary. Unlike no-action or containment clean-up alternatives, Alternative ON-7 will permanently remove contaminated soil and sediment and therefore reduce or eliminate long-term care for soil. Reduced migration of contaminants to groundwater by the elimination of the source of contamination will also result in reduced time for groundwater clean-up. And, the new well network and enhancement of control technology for the groundwater treatment system is expected to provide reduced time frames for the treatment of contaminated groundwater in comparison to the no-action and containment alternatives.

In addition, U.S. EPA considers ON-7 to be one of the three most effective clean-up alternatives, which include Alternatives ON-5, ON-6, and ON-7. These clean-up alternatives provide either on-site treatment of contaminated soil or the removal of contaminated soil for off-site treatment and disposal. Alternative ON-5 employs the same groundwater clean-up component as ON-7 (GW-3). The recommended alternative, ON-7, provides for enhanced clean-up times for groundwater in comparison to Alternative ON-6, which uses groundwater Alternative GW-2.

Implementability

This alternative is readily implementable and does not require any methods or equipment that are not proven or readily available. The FS stated a concern that the clean-up components for the plant and lagoon areas (S-5 and LA-5) were not implementable because of land disposal restrictions which require treatment before off-site disposal. In addition, the FS stated the concern that there might be excavation difficulties associated with clean-up alternative S-5 because of site structures and piping. However, U.S. EPA resolved these concerns. After the identification of these concerns in the FS, U.S. EPA determined that excavated materials will most likely not require treatment prior to disposal. U.S. EPA and Ohio EPA determined in 1996 that contaminated soils that were staged after completion of the earlier removal action in 1991 and 1992, were not considered hazardous waste. This determination was based on an analysis of soil staged on the "H" pad. The "H" pad soil was analyzed for dioxin based on a composite sample obtained from a ten point grid system. The soil was also analyzed for the toxicity characteristic set for in OAC 3745-51-24, and the results declared it not to be hazardous waste based on this criteria. U.S. EPA anticipates that the soil proposed to be excavated as part of the non-time critical removal action will have similar characteristics as the "H" pad soil. In addition, if any excavated materials are determined to be hazardous waste subject to land disposal restrictions, the materials will be treated prior to disposal in compliance with federal and state requirements. Excavation difficulties raised as a concern in the FS are not insurmountable and can be addressed in the removal planning documents.

Cost

The costs for the clean-up alternatives considered by U.S. EPA range from \$0 to \$57.8

million dollars. Although the recommended alternative (ON-7) is not the lowest in cost in comparison to the other clean-up alternatives considered, of the three alternatives that are considered most effective (ON-5: \$57.8 M; ON-6: \$34.7 M; ON-7: \$22.9 M), ON-7 has the lowest cost.

A notice was published in the Times Reporter newspaper, a major local newspaper, prior to the public meeting held on August 10, 1999. A fact sheet outlining the proposed removal action was issued prior to the public meeting which kicked off public comment. The public comment period ran from August 9, 1999, to September 7, 1999, and provided the public an opportunity to comment on this recommended clean-up alternative and the administrative record. After the public comment period, U.S. EPA addressed significant comments in a Responsiveness Summary attached to this Enforcement Action Memorandum. In addition, any significant changes to the proposed removal action due to the comments are discussed in the Responsiveness Summary.

5. Applicable or Relevant and Appropriate Requirements (ARARs)

Section 300.415 (j) of the NCP states that removal actions under CERCLA Sections 104 and 106 shall, to the extent practicable considering the exigencies of the situation, attain applicable or relevant and appropriate requirements (ARARs) under federal or state environmental or facility-siting laws. Other advisories, criteria, or guidance may be considered for a particular site situation. Specific ARAR discussions are provided in the FS in the Administrative record.

U.S. EPA identified the following major ARARs:

Chemical Specific		
Standard, Requirement, Criteria, or Limitation	Regulatory Citation	Description
Soils		
Resource Conservation and Recovery Act (RCRA)	40 CFR 261 Subparts C & D	RCRA classification of hazardous wastes
Ohio Haz. Waste Mgt. Regulations (OHWMR)	OAC 3745-50 to 69	State equivalent of RCRA haz. waste regulations
Land Disposal Restrictions (RCRA)	40 CFR 268	Concentrations above which land disposal is prohibited
Groundwater		
Safe Drinking Water Act	42 USC 300 f et seq	MCLs to protect public health
Ohio Drinking Water Regs.	OAC 3745-81	State-level equivalent of SDWA

Standard, Requirement, Criteria, or Limitation	Regulatory Citation*	Description
Ohio Haz. Waste Mgt. Regulations	OAC 3745-54-94	Regulates "Maximum Concentration of Constituents for Groundwater Protection" for selected compounds
Sediments		
RCRA	40 CFR 261 Subparts C & D	RCRA classification of hazardous waste
OHWMR	OAC 3745-50 to 69	State equivalent of RCRA haz waste regulations
Surface Water		
CWA	33 USC 1251 et seq	Establish Ambient Water Quality Criteria
Ohio Water Quality Stds	OAC 3745-1	Establishes water quality criteria based on classification of the water body
Air		
Clean Air Act (CAA)	42 USC 7401 et seq	Establishes National Ambient Air Quality Stds (NAAQS) and National Emissions Standards for Haz. Air Pollutants (NESHAP)
Ohio Air Pollution Control Regulations	OAC 3745-21	Establishes ambient quality standards and guidelines
Ohio Ambient Air Quality Standards	OAC 3745-17, 18, 23 & 71	Establishes allowable emissions limits

Location Specific		
Standard, Requirement, Criteria, or Limitation	Regulatory Citation	Description
Fish and Wildlife Coordination Act	16 USC Sect. 661-666	Development, protection, rearing and stocking of species, resources, and habitat, and controlling losses
Executive Order on Floodplain Management	No. 11988, 40 CFR Part 6 Subpart A.	Protects 100-year floodplains from long- or short-term impact

Action Specific		
Standard, Requirement, Criteria, or Limitation	Regulatory Citation	Description
Soils		
RCRA	40 CFR 262-268	Requirements for managing RCRA hazardous wastes
Ohio Hazardous Waste Management Regulations	OAC 3745-50 to 69	State equivalent of RCRA
Hazardous Materials Transportation Act	40 USC 1801-1813	Establishes regulations regarding transportation of hazardous materials
Groundwater (N/A)		
Sediments		
RCRA	40 CFR 261	Requirements for managing RCRA hazardous wastes
Ohio Hazardous Waste Management Regulations	OAC 3745-50 to 69	State equivalent of RCRA hazardous waste regulations
Hazardous Materials Transportation Act	49 USC 1801-1813	Establishes regulations regarding transportation of hazardous materials
Surface Water		
CWA	CWA Sections 402 & 403, 40 CFR 122, 40 CFR 125	Effluent standards for point source discharges
Ohio NPDES Regulations	OAC 3745-33	Establishes effluent standards to discharge of water to a surface water body
CAA	40 CFR 60 40 CFR 50, 40 CFR 61	Establishes New Source Performance Standards NAAQS and NESHAP requirements

Ohio Regulations:	OAC 3745-15. 21 and 31	Requires permitting if the maximum potential uncontrolled 24-hour emissions are over 10 lb/day VOC or 1 ton/yr HAP. Emissions controls not likely if near the permit exemption de minimus level. Also requires best available technology for all new sources.
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The recommended clean-up will comply with these ARARs:

6. Project Schedules

U.S. EPA estimated that this non-time critical removal action can be complete in three to four years from the effective date of this Enforcement Action Memorandum. This estimated project schedule includes the design and construction of the main clean-up components described above, but does not include off-site groundwater concerns which will be handled under a separate enforcement action.

7. Post Removal Site Control

The Federal Remedial Project Manager has begun planning for provisions of post-removal site control, consistent with provision of Section 300.415 (k) of the NCP.

B. Estimated Costs

The estimated costs of the recommended action are presented here. Costs have been broken down into two categories, direct capital costs and operation and maintenance costs.

Total Capital Costs:	\$10,624,300
Total O & M Costs:	\$ 803,800
Present Net Worth:	\$22,980,700

A detailed breakdown of soil volume estimate costs can be seen in Attachment 2 while a detailed cost estimate can be seen in Attachment 3.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delay or non-action may result in continued or increased likelihood of releases of contaminants into the environment.

VII. OUTSTANDING POLICY ISSUES

No significant policy issues are associated with the removal activities proposed for the Dover Chemical Site in this action memorandum.

VIII. ENFORCEMENT

U.S. EPA anticipates that the removal action for the Dover Chemical Site will be conducted by the potentially responsible parties pursuant to an administrative order on consent.

IX. RECOMMENDATION

This decision document represents the selected non-time critical removal action for the Dover Chemical Site in Dover, Ohio, developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on the administrative record for the Site. Conditions at the Site meet the NCP Section 300.415 (b) criteria for a removal action, and I recommend your approval of the proposed removal action.

Approval:  10/10/79
William E. Muno, Director Date
Superfund Division

Disapproval: _____
William E. Muno, Director Date
Superfund Division

Attachments:

- Attachment 1 Approximate PCDD/PCDF and Additional VOC Areas Used for Soil Volume Estimates
- Attachment 2 Detailed Soil Volume Estimates [2 pages]
- Attachment 3 Detailed Cost Estimate [2 pages]
- Attachment 4 Risk Tables [Tables 1 through 8]
- Attachment 5 Responsiveness Summary
- Attachment 6 Administrative Record Index
- Attachment 7 Enforcement Addendum ** Enforcement Confidential **

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Attachment 1

**Approximate PCDD/PCDF and Additional VOC
Areas Used for Soil Volume Estimates**



Attachment 2

Detailed Soil Volume Estimates

Plant Area Soil Volume To Be Excavated

AREA SEGMENT	SURFACE CONC. (ppb)	SURFACE AREA (acre) ⁽¹⁾	Depth (in) to 5 ppb	VOLUME to 4ft Deep (yd ³)	BASIS
A (north of the road) ⁽²⁾	3.7	0.1056	0	0	grassy area
AM	4.2	0.3145	0	0	soil sample data
AN	66.6	0.0633	18	153	non-roadway area
BV	140.7	0.1479	18	358	non-roadway area
BW	2.1	0.0579	0	0	soil sample data
E (excluding AK)	49.7	0.5818	18	1408	non-roadway area
G	44.6	0.3944	18	954	non-roadway area
east 1/2 of H	1741	0.3179	72	2052	soil boring data
west 1/2 of H	1741	0.3179	120	2052	soil boring data
J	15.2	0.3041	6	245	grassy area
K (north of bldg 32)	20.3	0.0597	18	144	non-roadway area
west 1/2 of Q	3.4	0.3719	0	0	grassy area
Y (east of the gate)	20.9	0.1010	48	652	roadway area

Total Volume
for 5 ppb
Action Level: 8,018

NOTES:

- (1) Surface soil areas were estimated for each area segment excluding: concrete areas, roadways, buildings, and areas that were addressed during the interim period.
- (2) Six-inches of soil excavated from Area A south of the road during interim action. The roadway, non-roadway and grassy area depths were estimated using existing data from representative areas of each classification. See the FS Appendix B, Table B-1 for basis.

Additional VOC Contaminated Plant Area Soil To Be Excavated

AREA SEGMENT ⁽¹⁾	HIGHEST CONC CCl ₄ (mg/kg) 0-6ft/ 6-10 ft	HIGHEST CONC 1,4 DCB (mg/kg) 0-6 ft/ 6-10 ft	SURFACE AREA (acre)	Depth (in) to 5 ppb PCDD/F	Depth to Water Table ⁽³⁾ (in)	VOLUME to 4ft Deep ⁽⁴⁾ (yd ³)
G	2,305 / 54.92 ⁽²⁾	540 / 3.7 ⁽²⁾	0.2296	18	96	926
east 1/2 of H	0.88 / 2.1	4,200 / 2,200	0.3179	72	120	0
AN	2.9 U / 2.9 U	27 / 470	0.0633	18	120	255
TOTAL AREA:						1181

NOTE:

- 1) The measured area for Area G is only for the VOC contaminated surface area, and does not represent the total area for Area G. For Area H, VOCs extend the affected depth in the eastern half from 6 to 10 feet, raising the average affected depth from 8 feet to 10 feet.
- 2) The highest concentration is still below the individual compound risk based Action Levels of 57,897 mg/kg for CCl₄ and 547.6 mg/kg for 1,4-DCB. Combined, however, cumulative risk may exceed 1E-05 in some portion of this area.
- 3) VOC contamination assumed to extend down to the water table (worst case scenario).
- 4) Volume of soil between the depth to be excavated to reach 5 ppb PCDD/PCDF and the 4 foot excavation depth.

LAGOON AREA SOIL/SEDIMENT TO BE EXCAVATED

AREA SEGMENT	SURFACE CONC (ppb)	SURFACE AREA (acre)	Depth (in) to Target	Volume (yd ³)	COMMENTS
BL hot spot ⁽¹⁾	24.2	0.1010	12	163	lagoon area
canal - 1st 50 ft ⁽²⁾	185.9/ 16.5	0.0223	36	108	3 ft. near mouth of canal
canal - balance ⁽²⁾	185.9/ 16.5	0.4009	12	647	2 ft. for balance of canal area
Total Volume to Target:				917	
Subtotal for Canal:				755	

NOTES:

- (1) No depth data for BL hot spot. Depth assumed to be 12 inches for all target concentrations.
 (2) Canal depth to 3 ft. for the 1st 50 ft. length and 1 ft. for remainder of estimated 950 ft. length.

VOLUME ESTIMATES FOR SOIL STOCKPILED ON AREA H PAD DOVER CHEMICAL CORPORATION (ALREADY PLACED/DISPOSED)

AREA SEGMENT	CONCENTRATION (ppb)	VOLUME (yd ³)
H-pad	29.94	555.6
Residential Pile 1	6.79	37.3 ⁽¹⁾
Residential Pile 2	0.48	148.1 ⁽¹⁾
Residential Pile 3	0.78	111.1 ⁽¹⁾
Total Additional Volume:		556

NOTE:

- (1) The three Residential Piles were mixed and placed inside a new building foundation. The estimated composite concentration at 1.39 ppb, is below the lowest Action Level of 5 ppb and is not, therefore, included in the soil volume total.

Attachment 3
Detailed Cost Estimate

**Estimated Capital Costs for U.S. EPA 5 ppb Alternative:
Offsite Landfill/Thermal Treatment for Soils with Enhanced Groundwater Extraction
Dover Chemical Corporation**

Tasks	Quantity	Unit Cost (\$)	Total Cost (\$)
1 Site preparation			
a. Mobilization	Lump Sum		\$ 10,000
b. Construct staging/support areas	Lump Sum		\$ 25,000
c. Temporary haul roads/pathways	444 sy	27.03 /sy	\$ 12,001
2 Soil Removal			
a. Site Preparation	Lump Sum		\$ 27,212
b. Excavation, Loading and Transportation	10,117 cy	17.59 /cy	\$177,958
c. Confirmation Sampling and Analysis	Lump Sum		\$ 63,000
d. Interim Cover	1,010 cy	10.64 /cy	\$ 10,746
3 Soil Disposal			
a. Non-Hazardous (incl transportation all but ½ of H, G and Canal (6,748 cy))	11,472 ton	100 /ton	\$1,147,160
b. Hazardous (incl trans, incin, and disp ½ of H, G and Canal (3,369 cy))	5,727 ton	800 /ton	\$4,581,840
4 Site Restoration/Demobilization (2.8122 acres)			
a. Backfill (10,764 cy)	10,764 cy	10.65 /cy	\$114,637
b. Topsoil (6 in.)	2,254 cy	17.45 /cy	\$ 39,331
c. Seeding and Mulching-Revegetating Excavations	13,524 sy	0.90 /sy	\$ 12,171
d. Erosion and sedimentation controls	Lump Sum		\$ 50,000
5 Monitoring During Excavation/Staging	Lump Sum		\$100,000
6 Plant Roadway Area Asphalt Cap (same as FS Alternative ON-3)	Lump Sum		\$231,755
7 Non-Roadway Area Asphalt (same as FS Alternative ON-3)	Lump Sum		\$ 92,117
8 Groundwater Treatment System			
a. Installation of Three New Extraction Wells	3	30,000 each	\$ 90,000
b. Filtration System Installation/Piping (see ON-2 breakdown)	Lump Sum		\$949,174
9 Institutional Controls			
a. Installation of Fencing Around Lagoon	3,875 ft	20.70 /ft	\$ 80,213
b. Installation of Signs	40 sign	86.25 each	\$ 3,450
c. Deed Restrictions	Lump Sum		\$ 5,000
d. Develop Excavation Control Program	Lump Sum		\$ 5,000
SUBTOTAL (Rounded)			\$7,827,800
10 Construction Management		0.10	\$ 782,780
11 Engineering and Technical Services*		0.25	\$ 524,700
12 Contractor Overhead and Profit*		0.15	\$ 314,820
13 Contingency		0.15	\$1,174,170
TOTAL CAPITAL (Rounded)			\$10,624,300

* Subtotal for basis of computing 10 & 11 above was adjusted by deducting the desorption and chemical treatment line item from the first cost subtotaled.

**Estimated O & M Costs for U.S. EPA 5 ppb Alternative:
Offsite Landfill/Thermal Treatment for Soils with Enhanced Groundwater Extraction
Dover Chemical Corporation**

Tasks	Quantity	Unit Cost (\$)	Total Cost (\$)
Annual O&M Activities			
1 Site Monitoring and Maintenance			
a Periodic cover/fence inspection (1/mo.)	96 hrs	25 /hr	\$ 2,400
b Repair and resurface road cover (1/4 / yr)	5,215 sy	9.96 /sy	\$ 51,941
c Repair and resurface non-road cover (1/10 each year)	1,258 sy	5.63 /sy	\$ 7,083
d Fences - repair or replace 1/10 each yr	792 ft	20.70 /ft	\$ 16,394
Signs - replace 1/10 each year	4 signs	86.25 ea.	\$ 345
e E & S controls on excavation two events per year and training	4 events	5,000 ea.	\$ 20,000
2 Groundwater/Effluent Monitoring (Total of 20 wells sampled quarterly)			
a Labor (includes VOA/SVOA Analysis)	Lump Sum		\$ 42,000
b Equipment	Lump Sum		\$ 10,000
c Analytical Costs (PCDD/PCDF and Pesticide)	40	1,500	\$ 60,000
3 Groundwater Treatment System			
a Labor	2,920 hr	25 /hr	\$ 73,000
b Diatomaceous Earth	48.8 tons	260 /ton	\$ 12,688
c Residual disposal	151.6 tons	800 /ton	\$ 121,280
d Electricity	Lump Sum		\$ 91,154
e Maintenance (% of capital plus the air stripper)	Lump Sum		\$ 58,039
4 Data Evaluation and Reporting	Lump Sum	50,000	\$ 50,000
5 Community Relations	Lump Sum		\$ 2,000
SUBTOTAL			\$618,300
6 Administrative Services		0.15	\$92,745
7 Contingency		0.15	\$92,745
TOTAL O&M			\$803,800
TOTAL PRESENT WORTH (Rounded) @ 5% interest for 30 years			\$22,980,700

Attachment 4

Human Health Risk Tables

Table 1: Worker - Plant Soil (Area H) Risk Characterization Summary

Media	Exposure Scenarios That Trigger the Need for Cleanup	Chemical	Non-Carcinogenic Hazard Quotient				Carcinogenic Risk			
			Incidental Ingestion	Dermal Contact	Inhalation	Exposure Routes Total	Incidental Ingestion	Dermal Contact	Inhalation	Exposure Routes Total
Soil	Adult Worker (Area H)	4-Methyl-2-Pentanone	1.2 x 10 ⁻⁴	4.2 x 10 ⁻³		4.3 x 10 ⁻³				
		Acetone	3.3 x 10 ⁻⁵	7.3 x 10 ⁻⁵		1.1 x 10 ⁻⁴				
Volatiles		Carbon Tetrachloride	7.4 x 10 ⁻³	1.5 x 10 ⁻³		8.9 x 10 ⁻³			1.5 x 10 ⁻⁷	
		Chlorobenzene	1.1 x 10 ⁻²	6.1 x 10 ⁻³		1.7 x 10 ⁻²				
		Chloroform	9.5 x 10 ⁻⁵	1.7 x 10 ⁻⁴		2.6 x 10 ⁻⁴				1.2 x 10 ⁻⁸
		Tetrachloroethene	2.2 x 10 ⁻²	3.8 x 10 ⁻²		6.0 x 10 ⁻²				2.2 x 10 ⁻⁵
		Toluene	4.7 x 10 ⁻⁵	1.6 x 10 ⁻³		1.6 x 10 ⁻³				
		Trichloroethene	4.6 x 10 ⁻⁴	6.2 x 10 ⁻⁴		1.3 x 10 ⁻³				
		Xylene	1.3 x 10 ⁻⁵	2.5 x 10 ⁻⁵		3.8 x 10 ⁻⁵				
		1,2-Dichlorobenzene	1.6 x 10 ⁻²	2.3 x 10 ⁻¹		2.4 x 10 ⁻¹				
		1,2,4-Trichlorobenzene	1.2 x 10 ⁺⁰	1.6 x 10 ⁺¹		1.7 x 10 ⁺¹				
		1,3-Dichlorobenzene	1.3 x 10 ⁻²	1.8 x 10 ⁻¹		1.9 x 10 ⁻¹				
Semi-volatiles		1,4-Dichlorobenzene								
		2,3,7,8-Tetra-CDD (floxin)	N/A	N/A		N/A			6.0 x 10 ⁻⁵	
Pesticides		Hexachlorobenzene	8.1 x 10 ⁻²	7.1 x 10 ⁻²		1.5 x 10 ⁻¹				
		Lindane	3.4 x 10 ⁻⁵	2.5 x 10 ⁻²		2.5 x 10 ⁻²			8.8 x 10 ⁻⁵	
		Antimony	1.2 x 10 ⁻²	8.2 x 10 ⁻²		9.4 x 10 ⁻²				1.4 x 10 ⁻⁵
		Copper	2.9 x 10 ⁻³	2.2 x 10 ⁻⁴		3.1 x 10 ⁻³				
		Nickel	1.4 x 10 ⁻³	1.4 x 10 ⁻²		1.5 x 10 ⁻²				
Inorganics		Zinc	4.3 x 10 ⁻⁴	9.9 x 10 ⁻²		9.9 x 10 ⁻²				
		Total Pathway Risk (Hazard Index)	1.2	16	N/A	17.2	5.5 x 10 ⁻²	5.5 x 10 ⁻²	1.2 x 10 ⁻⁵	1.1 x 10 ⁻¹

Table 2: Worker - Plant Soil (Non-Area H) Risk Characterization Summary

Media	Exposure Scenario That Trigger the Need for Cleanup	Chemical	Non-Carcinogenic Hazard Quotient					Carcinogenic Risk				
			Incidental Ingestion	Dermal Contact	Inhalation	Exposure Routes Total	Incidental Ingestion	Dermal Contact	Inhalation	Exposure Routes Total		
Soil	Adult Worker (Non-Area H)	Acetone	9.5 x 10 ⁻⁵	2.0 x 10 ⁻³		2.1 x 10 ⁻³						
		Tetrachloroethene										
Volatiles		Toluene	1.1 x 10 ⁻⁷	3.7 x 10 ⁻⁴		3.7 x 10 ⁻⁴						
		Trichloroethene										
Semi-vols		Xylene	2.3 x 10 ⁻⁷	4.5 x 10 ⁻⁶		4.7 x 10 ⁻⁶						
		1,2-Dichlorobenzene	6.4 x 10 ⁻³	9.0 x 10 ⁻²		9.6 x 10 ⁻²						
		1,2,4-Trichlorobenzene	1.8 x 10 ⁻¹	2.5 x 10 ⁺⁰		2.7 x 10 ⁺⁰						
		1,3-Dichlorobenzene	5.5 x 10 ⁻³	7.7 x 10 ⁻²		8.3 x 10 ⁻²						
		1,4-Dichlorobenzene										
Pesticides		2,3,7,8 Tetra-COD (dioxin)	N/A	N/A		N/A				2.7 x 10 ⁻⁶	1.9 x 10 ⁻⁶	4.6 x 10 ⁻⁶
		2,4-Dichlorophenol	1.6 x 10 ⁻²	2.2 x 10 ⁻¹		2.2 x 10 ⁻¹						
		Hexachlorobenzene	3.8 x 10 ⁻¹	3.3 x 10 ⁻¹		7.1 x 10 ⁻³			1.8 x 10 ⁻⁴	1.5 x 10 ⁻⁴		3.3 x 10 ⁻⁴
		Beta-BHC										
		Lindane	5.7 x 10 ⁻³	4.3 x 10 ⁻³		1.0 x 10 ⁻²			2.0 x 10 ⁻⁵	1.5 x 10 ⁻⁵		3.5 x 10 ⁻⁵
Inorganics		Antimony	1.2 x 10 ⁻²	6.2 x 10 ⁻²		1.0 x 10 ⁻¹			8.0 x 10 ⁻⁷	6.0 x 10 ⁻⁷		1.4 x 10 ⁻⁶
		Arsenic	2.4 x 10 ⁻²	1.7 x 10 ⁻³		2.6 x 10 ⁻²						
		Copper	5.6 x 10 ⁻⁴	6.5 x 10 ⁻⁵		6.2 x 10 ⁻⁴						
		Nickel	7.0 x 10 ⁻⁴	6.9 x 10 ⁻³		7.6 x 10 ⁻³						
		Zinc	1.5 x 10 ⁻⁴	3.5 x 10 ⁻⁵		1.9 x 10 ⁻⁴						
Total Pathway Risk (Hazard Index)			0.6	3.8	N/A	4.4		5.5 x 10 ⁻²	5.5 x 10 ⁻²	1.2 x 10 ⁻⁵		1.1 x 10 ⁻¹

Table 8: Resident - Plant Groundwater Risk Characterization Summary

Media	Exposure Scenario That Trigger the Need for Cleanup	Chemical	Non-Carcinogenic Hazard Quotient				Carcinogenic Risk				
			Incidental Ingestion	Dermal Contact	Inhalation	Exposure Routes Total	Incidental Ingestion	Dermal Contact	Inhalation	Exposure Routes Total	
Ground-water Volatiles	Future Resident	1,1-Dichloroethane	1.8 x 10 ⁻²		1.3 x 10 ⁻²	2.1 x 10 ⁻²					
		Acetone	4.1 x 10 ⁺⁰			4.1 x 10 ⁺⁰					
Semi-vols		Carbon Tetrachloride	1.5 x 10 ⁺²		2.0 x 10 ⁺²	3.5 x 10 ⁻²		2.8 x 10 ⁻³		8.4 x 10 ⁻³	
		Chlorobenzene	1.8 x 10 ⁺⁰		8.8 x 10 ⁺⁰	8.6 x 10 ⁺⁰					
		Chloroform	1.7 x 10 ⁺⁰			1.7 x 10 ⁺⁰					
		Methylene Chloride	5.5 x 10 ⁻²		4.2 x 10 ⁻³	5.9 x 10 ⁻²		2.5 x 10 ⁻⁶		1.4 x 10 ⁻⁵	
		Tetrachloroethene	1.2 x 10 ⁻¹			1.2 x 10 ⁻¹		1.2 x 10 ⁻⁶		2.9 x 10 ⁻⁵	
		Toluene	5.5 x 10 ⁻²		1.1 x 10 ⁻²	6.6 x 10 ⁻²					
		1,2-Dichlorobenzene	4.8 x 10 ⁺⁰	1.3 x 10 ⁺¹		1.8 x 10 ⁺¹					
		1,2,4-Trichlorobenzene	3.8 x 10 ⁺⁰	1.8 x 10 ⁺¹		2.2 x 10 ⁺¹					
		1,3-Dichlorobenzene	4.8 x 10 ⁺⁰	1.9 x 10 ⁺¹		2.4 x 10 ⁺¹					
		1,4-Dichlorobenzene									
Pesticides		2,3,7,8 Tetra-CDD (dioxin)	N/A	N/A		N/A		6.4 x 10 ⁻⁴		5.1 x 10 ⁻³	
		Hexachlorobenzene	8.9 x 10 ⁻¹	1.1 x 10 ⁻¹		1.0 x 10 ⁺⁰		3.0 x 10 ⁻⁴		7.9 x 10 ⁻⁴	
		Alpha-BHC									
Inorganics		Beta-BHC									
		Lindane	3.1 x 10 ⁻²	1.1 x 10 ⁻³		3.2 x 10 ⁻²		1.8 x 10 ⁻⁷		5.4 x 10 ⁻⁶	
		Manganese	3.1 x 10 ⁺⁰			3.1 x 10 ⁺⁰					
Total Pathway Risk (Hazard Index)			173.9	16.7	206.8	397.4		1.1 x 10 ⁻²	1.6 x 10 ⁻¹	3.2 x 10 ⁻³	1.7 x 10 ⁻¹

Attachment 5
Responsiveness Summary

Dover Chemical Corporation Site Responsiveness Summary

This summary provides the responses to public comments on the Dover Chemical Corporation Site Removal Action Plan. The comments were grouped by theme including: Clean-up Action, Risk, or General. Multiple sources of comments were noted where appropriate. Each comment (sometimes paraphrased in order to group) is provided with the response below.

The text of these full comments can be found in the U.S. EPA Dover Chemical Site Administrative Record. Comments were provided by either citizens present at the August 10, 1999 public meeting in Dover, Ohio or by the State of Ohio or Potentially Responsible Parties during the public comment period which extended from August 9, 1999 to September 7, 1999.

Clean-up Action

Comment No. 1

Ohio EPA believes that the groundwater removed from the aquifer by the pump and treat system should be analyzed for volatiles and dioxin on a regular basis for, at a minimum, the next five years in order to evaluate the removal efficiencies of the system. If the contaminants are being removed either in greater quantities or at a more rapid rate than previous analysis would indicate should be happening, then the ground water treatment system should be reevaluated. The reevaluation of the system should include reexamining whether there are additional contaminated soils which should be removed in order to eliminate leaching to groundwater as well as re-calibrating the groundwater model in order to develop a more realistic removal time-frame.

Response:

Groundwater Alternative GW-3, which includes groundwater extraction from one existing well and three new wells, projects plume capture ranges of 10 to 113 years for dichlorobenzene, 55 to 192 years for trichlorobenzene and 20,000 to 50,000 years for dioxin. U.S. EPA agrees that plant groundwater should be sampled and analyzed on a regular basis to document and the effectiveness of the new well system.

The response action will include regular monitoring of plant area groundwater to document contaminant levels and an evaluation of all components of the non-time critical removal action will be subject to a review process, i.e., post removal site control.

Risk

Comment No. 2

EPA should adjust the PCDD/PCDF (dioxin) onsite action level to 10 ppb which was the value

recently selected for a remediation of a similar industrial site in southeastern Ohio. This is within the range of 5 to 20 ppb starting point for commercial/industrial exposures provided for in EPA OSWER Directive 9200.4-26. This directive states that "These levels are recommended unless extenuating site-specific circumstances warrant a different level." There is no reason to believe that exposures at this site would be higher than assumed by EPA to develop Directive 9200.4-26. The institutional controls and capping of areas where soils are to remain in place will further reduce exposure potential relative to an uncontrolled industrial/commercial site considered in the OSWER Directive.

Response:

The National Contingency Plan (NCP) states that, "[for] known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual between 10^{-4} and 10^{-6} using information on the relationship between dose and response." 40 CFR § 300.430(e)(2)(i)(A)(2). As U.S. EPA's "Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites" states, [U.S.] EPA should generally use a level within the range of 5 ppb to 20 ppb (TEQs) as a starting point for commercial/industrial soil clean-up levels at CERCLA response actions, including non-time critical removal sites. See, "Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites", OSWER Directive. No. 9200.4-26, 4 (April 13, 1994). Based on the use of standard default assumptions for reasonable maximum exposure scenarios, the upper-bound lifetime excess cancer risk from commercial/industrial exposure to a concentration of 5 ppb (TEQs) is approximately 1×10^{-4} . Site-specific conditions may result in starting point concentrations greater than 5 ppb, but no greater than 20 ppb (TEQs), for commercial/industrial soil, provided that the final cleanup goal is within the risk range of 10^{-6} and 10^{-4} .

Based on conditions at the Dover Chemical Site, the starting point level of 5 ppb (TEQs) reflects approximately a 1×10^{-4} excess lifetime cancer risk. The 5 ppb (TEQs) starting point level for the Dover Chemical Site is within U.S. EPA's "range" for excess lifetime cancer risk and is consistent with OSWER Directive 9200.4-26 and the NCP.

General

Comment No. 3

I think it's great that Dover Chemical realizes there's a problem and they're going to do something about it and you guys (US EPA and Ohio EPA) are on the ball.

Response

Comment Noted.

Attachment 6

Administrative Record Index

ATTACHMENT 6

U.S. EPA ADMINISTRATIVE RECORD
REMOVAL ACTIONDOVER CHEMICAL SITE
DOVER, TUSCARAWAS COUNTY, OHIOUPDATE #2
AUGUST 16, 1999

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	05/00/96	Black & Veatch Special Projects Corporation	U.S. EPA	Revised Community Involvement Plan for the Dover Chemical Site	64
2	12/00/96	Roy F. Weston, Inc.	U.S. EPA	Final Feasibility Study for the Dover Chemical Site	521
3	04/29/97	Rankin, D., Dover Chemical Corporation	Martin, L., U.S. EPA	Letter re: Lagoon "Hot Spot" Analytical Results for the Dover Chemical Site	11
4	06/16/97	Romp, J., Ohio EPA & L. Martin, U.S. EPA	Rankin, D., Dover Chemical Corporation	Letter re: Lagoon Area Dioxin Soil Sampling for the Dover Chemical Site	4
5	04/13/98	Fields, T., U.S. EPA/OSWER	U.S. EPA	Memorandum re: Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites (OSWER Directive: 9200.4-26)	7
6	11/12/98	Karecki, E., U.S. Fish & Wildlife Service	Short, T., U.S. EPA	Memorandum re: Dioxin Remediation Levels and Ecological Risk for the Dover Chemical Site	3
7	02/03/99	Pugliese, P., Duke Engineering & Services	Short, T., U.S. EPA	Letter re: Revised Soil Soil Volume Estimates and Cost Estimates for the Dover Chemical Site	16
8	06/03/99	Chapman, J., U.S. EPA	Short, T., U.S. EPA	Memorandum re: Ecologically-protective Dioxin Soil Preliminary Remedial Goal for the Dover Chemical Site	2
9	06/08/99	Chapman, J., U.S. EPA	Short, T., U.S. EPA	Memorandum re: Ecologically-protective Dioxin Sediment Preliminary Goal for the Dover Chemical Site	4

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
10	07/22/99	Short, T., U.S. EPA	Rankin, B., Dover Chemical Corporation	Letter re: U.S. EPA's Approval of the December 1996 Feasibility Study for the Dover Chemical Site	
11	07/22/99	Short, T., U.S. EPA	Administrative Record	Memorandum re: Dioxin Action Level Clarification for the Dover Chemical Site	3
12	08/00/99	U.S. EPA	Public	Fact Sheet: U.S. EPA Proposes Cleanup Plan for the Dover Chemical Corporation Site	10
13	08/06/99	Short, T., U.S. EPA	Administrative Record	Memorandum: Clarification Regarding NPL Status and Recommendation for a Non- Time Critical Removal Action at the Dover Chemical Site	5

UPDATE #3
NON-TIME CRITICAL REMOVAL ACTION
SEPTEMBER 28, 1999

1	09/08/99	Short, T., U.S. EPA	Myers, X., U.S. EPA	Enforcement Action Memorandum: Request for Approval of a Non-Time Critical Removal Action at the Dover Chemical Corporation Site (PENDING)	
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In The Matter Of: Dover Chemical Corporation Site
Tuscarawas County, Dover, Ohio
Administrative Order by Consent
Non-Time Critical Removal Action

APPENDIX B

STATEMENT OF WORK

**STATEMENT OF WORK
FOR THE DESIGN AND CONSTRUCTION OF THE RESPONSE ACTION
AT THE
DOVER CHEMICAL CORPORATION SITE
TUSCAWARAS COUNTY, DOVER, OHIO**

I. PURPOSE

The purpose of this Statement of Work (SOW) is to set forth requirements for implementation of the Response Actions set forth in the Enforcement Action Memorandum (EAM), which was signed by the Superfund Division Director of U.S. EPA Region 5 on October 1, 1999, for the Dover Chemical Corporation Site (Site). The Respondent shall follow the EAM, the SOW, the approved Design Work Plans, the approved Designs, U.S. EPA Superfund Guidance and any additional, applicable U.S. EPA guidance identified by U.S. EPA in submitting deliverables for designing and implementing the Response Action activities at the Site.

II. DESCRIPTION OF THE RESPONSE ACTION ACTIVITIES/PERFORMANCE STANDARDS

Respondent shall design and implement the Response Actions to meet the performance standards and specifications set forth in the EAM and this SOW. Performance standards shall include clean-up standards, standards of control, quality criteria and other substantive requirements, criteria or limitations including all identified Applicable or Relevant and Appropriate Requirements (ARARs) set forth in the EAM, SOW and/or Administrative Order on Consent (AOC).

The response action selected to mitigate threats associated with the Dover Chemical Site that shall be designed and implemented by the Respondent are:

1. PLANT AREA CLEAN-UP

1.A Isolation of contaminated soils beneath on-site buildings, structures and roadways: In accordance with the EPA approved post-removal site-control plan, the Respondent shall maintain existing buildings, structures and roadways so that, with institutional controls, contaminated soils remain isolated beneath these features.

1.B Clean-up Levels: In the EAM, U.S. EPA selected a clean-up level for polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs), referred to generally in this SOW as "dioxin", based on a Toxicity Equivalency Factor (TEF) methodology. This methodology relates the relative potency of each dioxin compound to the potency of 2,3,7,8-tetrachlorodibenzodioxin (TCDD), the most toxic dioxin compound. For example, the compound 1,2,3,7,8-pentachlorodibenzodioxin is

considered only 50% as toxic as 2,3,7,8-TCDD, so its concentration is multiplied by 0.5 to estimate its concentration relative to TCDD. After this is done for each of the 11 dioxin compounds of concern to U.S. EPA, the concentrations are added to provide a single concentration value known as TCDD equivalents (TEQ). In the plant area, the Respondent shall attain a clean-up level 5 parts per billion (ppb) TEQ for dioxin down to an excavation depth of four (4) feet.

For all other soil constituents of concern, including, but not limited to, carbon tetrachloride, tetrachloroethane, chloroform, monochlorobenzene, dichlorobenzenes, trichlorobenzenes, hexachlorobenzene, and BHC, Respondent shall attain a cumulative risk of 1×10^{-5} excess lifetime cancer risk, as defined under U.S. EPA's Risk Assessment Guidance (or subsequently issued U.S. EPA Superfund Risk Assessment Guidance) down to a maximum excavation depth of 4 feet in Segments AN, G, and H, in the plant area.

1.C Excavation of dioxin-contaminated soils in the Plant Area: Respondent shall excavate all dioxin-contaminated soil exceeding 5 ppb TEQs for dioxin in the plant area down to a maximum excavation depth of 4 feet, which is the typical industrial building foundation depth. In the chip and seal areas, Respondent shall also remove chip and seal unless it is clearly delineated by the geotextile cover installed during prior interim removal activity. Respondent shall not excavate soil under existing on-site buildings, structures and roadways.

1.D Excavation of VOC-contaminated soils in the Plant Area: Respondent shall excavate volatile organic compound (VOC) contaminated soils to a maximum depth of 4 feet in Areas G, H, and AN to attain the cumulative risk goal of 1×10^{-5} excess lifetime cancer risk as determined by U.S. EPA's Risk Assessment Guidance (or subsequently issued U.S. EPA Superfund Risk Assessment Guidance). In the chip and seal areas, Respondent shall also remove chip and seal unless it is clearly delineated by the geotextile cover installed during prior interim removal activity. Respondent shall not excavate soil on-site under existing buildings, structures and roadways.

1.E Off-site treatment and disposal of contaminated soils: Respondent shall remove and dispose of all excavated and stockpiled soil and materials at an off-site facility consistent with 40 CFR § 300.440 (Procedures for planning and implementing off-site response actions).

Before excavated or stockpiled waste materials are removed from the Dover Chemical Corporation Site, the Respondents shall determine, under 40 CFR § 261.24, whether or not such waste materials exhibit the characteristics of toxicity for Chlorobenzene, Carbon tetrachloride, Lindane, Chloroform, 1,4 Dichlorobenzene, and Hexachlorobenzene and are therefore required to be managed as hazardous waste under the Resource Conservation and Recovery Act (RCRA). Respondent may

complete on-site soil vacuum extraction in accordance with the selected response action and applicable standards to achieve soil Toxicity Characteristic Leaching Procedure (TCLP) results that are below characteristic hazardous waste thresholds. Results of Toxicity Characteristic Leaching Procedure testing and copies of any manifests shall be submitted to U.S. EPA. Pursuant to 40 CFR § 268.40(e), for characteristic wastes that are subject to treatment standards, all underlying hazardous constituents, as defined in 40 CFR § 268.2(i), including, but not limited to, all Pentachlorodibenzo-p-dioxins and all Pentachlorodibenzofurans, must meet Universal Treatment Standards prior to land disposal, as defined in 40 CFR § 268.2(c). Respondent may conduct the required TCLP tests after excavation on the stockpiled soil. Respondent shall conduct the sampling in accordance with the Field Sampling and Analysis Plan (FSP), the Quality Assurance Project Plan (QAPP), and Performance Standards Verification Plan (PSVP). Respondent shall not stockpile highly contaminated soil known to be much less contaminated soil in order to achieve TCLP results that are below characteristic hazardous waste thresholds. However, Respondent may stockpile together similarly contaminated soil as set forth in the approved Final Design.

1.F Roadway sampling and management: Before implementation of the Plant Area Clean-up under Sections II.1.C and D of this SOW, Respondent shall sample the property adjacent to the roads between the plant and I-77 that will be used during the removal of contaminated soil and waste material to document whether site-related contamination is present in these areas. Respondent shall conduct the sampling in accordance with the Field Sampling and Analysis Plan (FSP), the Quality Assurance Project Plan (QAPP), and Performance Standards Verification Plan (PSVP). When the removal and off-site disposal activities are completed, Respondent shall sample these areas again. If dioxin is detected in these areas at levels above the U.S. EPA residential area dioxin soil cleanup standard of 1.0 ppb (TEQs), Respondent shall excavate and backfill these areas with clean fill in a manner consistent with Section II.1.H of this SOW.

1.G Post-Excavation Confirmatory Soil Sampling: The Respondent shall conduct post-excavation confirmatory soil sampling to confirm that all soils above the clean-up levels for dioxin and other constituents of concern above the four foot maximum excavation depth in the plant area have been excavated and removed from the Dover Chemical Corporation Site. Respondent shall perform this sampling before backfilling excavated areas. The Respondent shall specify the sampling and analytical requirements for determining whether the clean-up levels have been met in the FSP, the QAPP, and the PSVP. The Respondent shall submit the results of this sampling in the Post-Excavation Confirmatory Sampling Report to the U.S. EPA, according to the schedule set forth in Section IV of this SOW. U.S. EPA will not require Respondent to remove additional soil below the four foot maximum excavation depth, regardless of the findings in the Post-Excavation Confirmatory Sampling Report. Where contamination remains

above the 5 ppb TEQ clean-up level for dioxin or 1×10^{-5} cumulative risk level for VOC-contaminated soils below the four foot maximum excavation depth, the Respondent must lay a non-degradable hazard marker, such as orange polyethylene netting, on top of the remaining soil at the depth of excavation. Consistent with Section II.1.J. of this SOW, the Respondent shall backfill the excavated plant areas with clean soil to present grade, designed with consideration for future site use, and prevention of erosion of soils.

The Respondent shall not disturb contaminated soil beneath the non-degradable hazard marker.

1.H Clean Fill and Revegetate or Pave: Respondent shall import clean soil and backfill excavated areas. Respondent shall grade backfilled areas for drainage, and pave or seed, depending on the intended use. The Respondent shall backfill all excavation areas and all areas disturbed by construction, with clean, suitable fill. The Respondent shall grade the Site to promote positive drainage and to prevent ponding of water. The Respondent shall provide, as necessary, drainage ditches, drainage swales, and erosion control methods to prevent surface runoff from eroding the final grade. In backfilled areas that are not paved, the Respondent shall provide six (6) inches of topsoil suitable for vegetative growth.

The Respondent shall demonstrate to U.S. EPA that soil used to backfill excavated areas is clean, suitable fill under the methodology specified in the FSP approved by U.S. EPA.

The Respondent shall maintain the backfilled areas and control erosion in a manner consistent with the post-removal site control plan approved by U.S. EPA. Respondent shall implement institutional controls to ensure that the integrity of the covers is maintained.

2. CANAL AND LAGOON AREA CLEAN-UP

2.A Excavation of Contaminated Soils/Sediment: The Respondent shall clear trees and brush in areas to be excavated.

The Respondent shall excavate soils/sediments to an excavation depth of 3 feet for the first 50 feet of the canal (beginning from the historical point where wastewater entered the canal) and 1 foot along the rest of the canal.

The Respondent shall excavate the 4,400 square foot area within the lagoon area, as described in the Administrative Record, to an excavation depth of 1 foot.

2.B Off-site treatment and disposal of contaminated soils/sediment: Respondent shall

remove and dispose of all excavated soil off-site consistent with 40 CFR § 300.440 (Procedures for planning and implementing off-site response actions).

Before excavated soils are removed from the Site, the Respondent shall determine, under 40 CFR § 261.24, whether or not such waste materials exhibit the characteristics of toxicity for Chlorobenzene, Carbon tetrachloride, Lindane, Chloroform, 1,4 Dichlorobenzene, and Hexachlorobenzene and are therefore required to be managed as hazardous waste under Subtitle C of the Resource Conservation and Recovery Act (RCRA). Respondent may complete on-site soil vacuum extraction in accordance with the selected response action and applicable standards to achieve soil Toxicity Characteristic Leaching Procedure (TCLP) results that are below characteristic hazardous waste thresholds. Results of Toxicity Characteristic Leaching Procedure testing and copies of any manifests shall be submitted to U.S. EPA. Pursuant to 40 CFR § 268.40(e), for characteristic wastes that are subject to treatment standards, all underlying hazardous constituents, as defined in 40 CFR § 268.2(i), including, but not limited to, all Pentachlorodibenzo-p-dioxins and all Pentachlorodibenzofurans, must meet Universal Treatment Standards prior to land disposal, as defined in 40 CFR § 268.2(c). Respondent may conduct the required TCLP tests after excavation on the stockpiled soil. Respondent shall conduct the sampling in accordance with the Field Sampling and Analysis Plan (FSP), the Quality Assurance Project Plan (QAPP), and Performance Standards Verification Plan (PSVP). Respondent shall not stockpile highly contaminated soil with soil known to be much less contaminated in order to achieve TCLP results that are below characteristic hazardous waste thresholds. However, Respondent may stockpile together similarly contaminated soil pursuant as set forth in the approved Final Design.

In addition, excavated listed hazardous waste must be managed in compliance with applicable RCRA requirements.

2.C Post-Excavation Confirmatory Soil/Sediment Sampling: The Respondent shall conduct post-excavation confirmatory soil sampling in the canal and lagoon areas. Respondent shall perform this sampling before backfilling excavated areas. The Respondent shall specify the sampling and analytical requirements for determining whether the clean-up levels have been met in the FSP, the QAPP, and the PSVP. The Respondent shall submit the results of this sampling in the Post-Excavation Confirmatory Sampling Report to the U.S. EPA, according to the schedule set forth in Section IV of this SOW. U.S. EPA will not require Respondent to remove additional soil below the required excavation depths, regardless of the findings in the Post-Excavation Confirmatory Sampling Report. Where contamination below the required excavation depths remains above the ecological screening levels for dioxin, the Respondent must lay a non-degradable hazard marker, such as orange polyethylene netting, on top of the remaining soil at the depth of excavation. Consistent with Section II.2.D of this SOW, the Respondent shall backfill the excavated plant areas with clean soil to

present grade, designed with consideration for future site use, and prevention of erosion of soils.

The Respondent shall not disturb contaminated soil beneath the non-degradable hazard marker.

2.D Clean Fill and Re-vegetate: Respondent shall import clean soil and backfill excavated areas. Respondent shall grade backfilled areas for drainage and seed. The Respondent shall backfill all excavation areas and all areas disturbed by construction, with clean, suitable fill. The Respondent shall grade the Site to promote positive drainage and to prevent ponding of water. The Respondent shall provide, as necessary, drainage ditches, drainage swales, and erosion control methods to prevent surface runoff from eroding the final grade. The Respondent shall provide six (6) inches of topsoil suitable for vegetative growth in backfilled areas.

The Respondent shall demonstrate to U.S. EPA that soil used to backfill excavated areas is clean, suitable fill under the methodology specified in the FSP approved by U.S. EPA.

The Respondent shall maintain the backfilled areas and control erosion in a manner consistent with the EPA approved post-removal site control plan. Respondent shall implement institutional controls to ensure that the integrity of the covers is maintained.

3. INSTALLATION OF BARRIER AND ACCESS CONTROLS IN THE CANAL AND LAGOON AREA

The Respondent shall install a fence meeting Ohio DOT specifications or a vegetative barrier that restricts access to the canal lagoon area. If a vegetative barrier is implemented it shall include such plants as Swamp Rose (Rose palustris), Washington Hawthorne (Craetegus phaenopyrum), and blackberry bushes (Rubus Spp.). The vegetative barrier shall consist of plants that are thorn-bearing shrubs planted in a native-style hedge to deter pedestrian access to the lagoon area. The Respondent shall develop an appropriate vegetative plan with a certified person familiar with the soil, weather and growth conditions in the area. In addition, "No Fishing" and "No Trespassing" signs shall be placed all around the barrier.

After completion of the Response Action, Respondent shall conduct periodic Site inspections. Respondent shall develop and implement a procedure, under the post-removal site control plan approved by U.S. EPA, prohibiting access to the canal and lagoon area except for authorized personnel.

4. PLANT AREA GROUNDWATER CLEAN-UP

4.A GROUNDWATER PERFORMANCE STANDARDS AND OBJECTIVES

Respondent shall attain Maximum Contaminant Levels (MCLs) throughout the groundwater plume. Applicable MCLs are listed in Table 1 of this SOW. If additional compounds are found to be above MCLs during any monitoring event, those

GROUNDWATER CLEANUP STANDARDS	
PARAMETER	MCL (ug/L)
Carbon Tetrachloride	5
Chlorobenzene	100
Chloroform	100
Dioxin (2,3,7,8-TCDD)	.00003
Methylene Chloride	5
Tetrachloroethene	5
1,2-Dichlorobenzene	600
1,2,4-Trichlorobenzene	70
1,3-Dichlorobenzene	600
1,4-dichlorobenzene	75
Hexachlorobenzene	1
Lindane	0.2

Table 1

design, construct, operate and maintain an improved groundwater treatment system that will attain groundwater performance standards and the three objectives for groundwater management. Respondent shall install new pumping wells to the existing well network to improve recovery and treatment of VOCs while evaluating the distribution and migration of PCDD/PCDFs. If after three years of quarterly monitoring migration of PCDD/PCDFs is occurring or lindane is present above MCLs, then the Respondent shall add filtration and/or carbon adsorption to the existing groundwater treatment system for the removal of PCDD/PCDFs and/or lindane from groundwater. The Respondent shall pump the extracted groundwater to the groundwater treatment system for removal of contaminants to their discharge/performance standards prior to

compounds shall be added to Table 1 as groundwater performance standards. There are 3 objectives for groundwater management: 1) prevention of further migration of contaminants from the plant area; 2) reduction of the areal extent and concentrations of contaminants within the groundwater plume; and, 3) protection of the public water supply system operating within 1000 feet of the facility.

4.B Improvements to Existing Groundwater Treatment System: The Respondent shall continue to operate and maintain the existing groundwater treatment system consistent with the three objectives for groundwater management. Respondent shall continue to treat recovered groundwater through use of the existing air stripper. The Respondent shall

discharge to Sugar Creek. Respondent shall comply with any applicable National Pollutant Discharge Elimination System (NPDES) permit and any other applicable requirements of the Clean Water Act. The groundwater treatment process shall include the following steps: (1) air stripper; (ii) filtration and/or carbon adsorption, as necessary; and (iii) discharge.

The Respondent shall monitor the system's performance on a regular basis, and U.S. EPA may require adjustment to the system as warranted by the performance data collected during operation. Examples of adjustments which U.S. EPA may require are additional groundwater wells and/or increased pumping rates.

ARARs for the groundwater management system shall be identified in the approved Design Work Plan. A number of ARARs that may be triggered are listed in the EAM.

The Respondent may petition U.S. EPA to terminate the groundwater extraction and treatment system after demonstration that the groundwater performance standards have been met throughout the entire contaminated plume. The demonstration shall consist of three years of consecutive quarterly monitoring during which none of the contaminants exceeds any performance standard in any of the wells in the monitoring network. Upon U.S. EPA's written approval of the petition, Respondent may terminate the groundwater extraction treatment system. In addition, the Respondent may petition U.S. EPA to modify the system based on performance data from the system that indicates that performance standards can be met under other operating conditions. Review of the petition shall be in accordance with the AOC.

4.C. Points of Compliance

In order to monitor and evaluate the Response Actions, certain locations at which there are groundwater monitoring wells shall be selected as points of compliance in the approved PSVP. If any of the wells are destroyed or in any way becomes unusable, the Respondent shall repair or replace each well. The location of any additional wells installed pursuant to the AOC or this SOW shall be approved by the U.S. EPA. Detection monitoring and compliance monitoring shall be conducted in accordance with the approved PSVP. The frequency of sampling and the parameters sampled for during detection and compliance monitoring must be described in the approved PSVP.

5. Installation and Operation of Monitoring Program

Respondent shall implement monitoring program(s) to evaluate and ensure that the construction and implementation of the Response Actions comply with approved plans and design documents and performance standards. Respondent shall submit monitoring programs as part of the Design Work Plan, which shall address the specific components of the Response Action listed below. Each sample shall be analyzed for a

list of parameters approved by U.S. EPA during design.

5.A. Groundwater Monitoring

The Respondent shall implement a groundwater monitoring program as identified in the Design Work Plan or as required by EPA. The Respondent shall design a groundwater monitoring program to detect changes in the chemical concentration of the groundwater at and adjacent to the Site.

Upon EPA approval of the Design Work Plan, the Respondent shall sample the monitoring wells identified in the approved Design Work Plan on a quarterly basis, and analyze the samples for the parameters listed in the approved in the approved Design Work Plan.

During construction of the groundwater treatment system improvements described in Section II.4.B of this SOW, the Respondent shall sample and analyze groundwater on a quarterly basis, at the locations identified in the approved Design Work Plan and analyzed for the sampling parameters listed in the approved Design Work Plan.

After construction of the groundwater treatment system improvements described in Section II.4.B of this SOW, Respondent shall continue sampling and analysis of groundwater at and adjacent to the Site for a minimum of thirty (30) years at the locations identified in the Design Work Plan and analyzed for the sampling parameters listed in the Design Work Plan, to ensure performance standards in Table 1 continue to be attained.

Respondent shall institute a long-term monitoring program for the areal extent of contaminated groundwater plume emanating from the Site. Monitoring will consist of collecting water level measurements along with sampling and analysis of groundwater from the monitoring wells. Groundwater monitoring must meet the requirements of OAC § 3745-54-97 (cross citation 40 CFR 264.97) [General groundwater monitoring requirements]. As a base, the long-term groundwater monitoring program will establish a graduated performance monitoring approach to demonstrate compliance with the clean-up criteria. This graduated performance monitoring approach will establish clean wells outside of the plume and then monitor the effectiveness of the groundwater treatment system back toward the source of the contamination. The frequency of sampling and the parameters sampled for during compliance monitoring shall be listed in the Design and Post-Removal Site Control plans.

If additional information indicates that the groundwater monitoring program is inadequate, U.S. EPA may require additional groundwater monitoring wells and

laboratory analysis of additional parameters. Monitoring wells designated for sampling must be specified in the approved Final Design.

5.B. Air

At all times during Response Action soil excavation and handling activities, the level of particulates will be monitored and dust control measures will be taken, consistent with the methods and thresholds used in the Interim Soil Remediation Work Plan (Weston, September 1991) Section 3.2.3 on Dust Control for the Site. If dust levels exceed these thresholds, the Response Action Work Plan will apply the same responses of applying dust control and for stopping excavation work established in the Interim Soil Remediation Work Plan.

5.D. Extraction/Treatment System Monitoring

The Respondent shall monitor the groundwater treatment system in accordance with the applicable NPDES Permit.

6. INSTITUTIONAL CONTROLS

Institutional controls are considered an important part of this response action and may include access restriction, deed restrictions, site specific zoning limitations and land use restrictions or easements. Access restrictions will help to ensure future site usage is conducted in an approved manner. Deed restrictions and/or groundwater use restrictions will help restrict the use of groundwater for unknown purposes or for use as drinking water and restrict the use of areas where contamination will be left in place.

7. POST REMOVAL SITE CONTROL

Respondent shall conduct post removal site control (PRSC) at the Dover Chemical Site to ensure the integrity of the in-place buildings, structures and roadways to assure isolation of contaminated soils in these areas. The Respondent shall also conduct PRSC to ensure the integrity of the new backfilled areas associated with the plant area, the lagoon area, the operation of the groundwater system, the continued observation of groundwater through monitoring wells, the fencing, the vegetative barrier and other related environmental controls that are implemented under this SOW. Respondent shall implement a regularly scheduled maintenance program to inspect the physical property and ensure all systems are maintained in good repair. The PRSC plan for the Site will include a provision for evaluation of the Response Actions and PRSC Activities at least every five years after construction completion of the response action. The periodic evaluations will consider whether the Response Actions and PRSC are in compliance with Performance Standards and ARARs.

8. DECLARATION OF RESTRICTIONS

Pursuant to the terms of the AOC, Respondent shall execute and record with the Tuscaloosa County Recorder of Deeds the declaration of restrictions in Appendix C of the AOC.

III. SCOPE OF DESIGN AND RESPONSE ACTION

The Design/Response Action shall consist of five tasks. Each plan requiring approval is marked accordingly. U.S. EPA will review plans requiring U.S. EPA approval in accordance with Section VI.G. of the AOC (U.S. EPA Approval of Plans and Other Submissions).

Task 1: Design Work Plan and Pre-design Phase

A. Design Work Plan(s)

Within one hundred twenty (120) days after the effective date of the AOC, the Respondent shall submit a Design Work Plan for the action to be taken at the Site. The content of the Design Work Plan shall include the overall management strategy, suggested pre-design activities, a plan for execution of the work, an estimate of the resources required, and a schedule for the planned work. The Design Work Plan shall also include a schedule with deadlines, in terms of days, for delivery or execution of the milestones stated in the AOC and SOW. The plan shall document the responsibility and authority of all organizations and key personnel involved with the implementation and shall include a description of qualifications of key personnel directing the Design, including contractor personnel. These plans and schedules must be approved by U.S. EPA.

B. Pre-design Study Plans

Some of the Response Actions for the Site may require pre-design studies to provide information necessary to fully implement the Design and Response Action. If pre-design studies are necessary the Respondent shall identify additional data needs for each action as part of the Design Work Plans. The pre-design studies may also include pilot and demonstration scale components of a proposed technology. The components of these pilot and demonstration scale facilities may be incorporated into the final removal action. The Pre-design Study Plans shall include, at a minimum, a pre-design QAPP, Health and Safety Plan, Field Sampling Plan and schedule. Where appropriate, Respondent may use or update previous plans. Pre-design Study Plans must be approved by U.S. EPA.

C. Field Sampling Plans

Prior to initiating field work, the Respondent shall develop Field Sampling Plans. The Field Sampling Plans should supplement the QAPP and address all sample collection activities. Field Sampling Plans must be approved by U.S. EPA.

D. Quality Assurance Project Plans

The Respondent shall develop a Site-specific Quality Assurance Project Plan (QAPP) based upon U.S. EPA's Region 5 model QAPP. The QAPP shall cover chemical analysis and data handling for samples collected during pre-design work, response action construction and PRSC. The QAPP and the laboratory chosen to perform analysis shall be consistent with the requirements of the U.S. EPA Contract Lab Program (CLP). The QAPP shall be submitted and approved by U.S. EPA before the sampling occurs and at a minimum include:

Project Description

- Facility Location and History
- Project Scope
- Sample Network Design
- Parameters to be Tested and Frequency
- Project Schedule

Project Organization and Responsibility

Quality Assurance Objective for Measurement Data

- Level of Quality Control Effort
- Accuracy, Precision and Sensitivity of

Analysis

- Completeness, Representativeness and Comparability

Sampling Procedures

Sample Custody

- Field Specific Custody Procedures
- Laboratory Chain of Custody Procedures

Calibration Procedures and Frequency

- Field Instruments/Equipment
- Laboratory Instruments

Analytical Procedures

- Non Contract Lab Program Analytical Methods
- Field Screening and Analytical Protocol

- Laboratory Procedures

Internal Quality Control Checks

- Field Measurements
- Laboratory Analysis

Data Reduction, Validation, and Reporting

- Data Reduction
- Data Validation
- Data Reporting

Performance and System Audits

- Internal Audits of Field Activity
- Internal Laboratory Audit
- External Field Audit
- External Laboratory Audit

Preventive Maintenance

- Routine Preventative Maintenance Procedures and Schedules
- Field Instruments/Equipment
- Laboratory Instruments

Specific Routine Procedures to Assess Data Precision, Accuracy, and Completeness

- Field Measurement Data
- Laboratory Data

Corrective Action

- Sample Collection/Field Measurement
- Laboratory Analysis

Quality Assurance Reports to Management

The QAPP must be approved by U.S. EPA.

E. Health and Safety Plan (HASP)

The Respondent shall develop a health and safety plan which is designed to protect on-site personnel and area residents from physical, chemical and all other hazards posed by this Response Action. The safety plan shall meet the applicable requirements set forth at 29 CFR 1910.120 and 1926.

F. Contingency Plans [Stand alone or in HASP]

Respondent shall submit a Contingency Plan describing procedures to be used in the event of an accident or emergency at the site resulting from on-site activities. The Contingency Plan shall be submitted with the HASP and then revised, upon submittal of the Final Design. The Contingency Plan shall include, at a minimum, the following:

1. Name of the person or entity responsible for responding in the event of an emergency incident.
2. Requirements for meeting(s) with the local community, including local, State and Federal agencies involved in the cleanup, as well as local emergency squads and hospitals.
3. First aid medical information.
4. Air Monitoring Plan (if applicable).
5. Spill Prevention, Control, and Countermeasures (SPCC) Plan (if applicable), as specified in 40 CFR Part 109 describing measures to prevent and contingency plans for potential spills and discharges from materials handling and transportation.

Task 2: Design Phases

Respondent shall prepare construction plans and specifications to implement the Response Actions at the Site as described in the EAM and this SOW. Plans and specifications shall be submitted in accordance with the schedule set forth in the Design Work Plans. Respondent may submit design submittals on separate timetables reflecting different components of the Response Action. All plans and specifications shall be developed in accordance with professional engineering practices and shall demonstrate compliance with Performance Standards and ARARs. Respondent shall meet as needed with U.S. EPA to discuss design issues.

A. Draft Design

Respondent shall submit to U.S. EPA the Draft Design(s) for review and approval when the design effort is approximately 50% complete. The Draft Design submittal(s) shall include or discuss, at a minimum, the following:

- A description of the response actions;
- Drawings, and sketches, including design calculations;
- Results of treatability studies and additional field sampling, unless

previously submitted;

- Design assumptions and parameters, including design restrictions, process performance criteria, appropriate unit processes for the treatment train, and expected removal or treatment efficiencies for both the process and waste (concentration and volume);
- Draft Construction Quality Assurance and Quality Control Plan (CQAP) and Draft Performance Standard Verification Plan;

Respondent shall submit a Construction Quality Assurance Plan (CQAP) which describes the Site specific components of the quality assurance program which shall ensure that the completed project meets or exceeds all design criteria, plans, and specifications. The CQAP shall contain, at a minimum, the following elements:

1. Responsibilities and authorities of all organizations and key personnel involved in the design and construction of the Response Action.
 2. Qualifications of the Quality Assurance Official to demonstrate she or he possess the training and experience necessary to fulfill the identified responsibilities.
 3. Protocols for sampling and testing used to monitor construction.
 4. Identification of proposed quality assurance sampling activities including the sample size, locations, frequency of testing, acceptance and rejection of data sheets, problem identification and corrective measures reports, evaluation reports, acceptance reports, and final documentation. A description of the provisions for final storage of all records consistent with the requirements of the AOC shall be included.
 5. Reporting requirements for CQA activities shall be described in detail in the CQA plan. This shall include such items as daily summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports, and final documentation. Provisions for the final storage of all records shall be presented in the CQA plan.
- Compliance with Applicable or Relevant and Appropriate Requirements (ARARs);

- Outline of required specifications;
- Proposed siting/locations of processes/construction activity;
- Expected long-term monitoring and operation requirements;
- Real estate, easement, and permit requirements;
- Preliminary construction schedule, including contracting strategy.

The Respondent and U.S. EPA will meet or have a conference call to discuss the draft design. The draft design must be approved by U.S. EPA.

B. Final Design

The Respondent shall submit the Final Design(s) for approval when the design effort is 100% complete. U.S. EPA will review the Final Design(s) in accordance with Section VI.G. of the AOC (U.S. EPA Approval of Plans and Other Submissions). The approved Final Design(s) will be used for construction.

The Final Design(s) submittals shall include the following:

- Drawings and Specifications;
- Performance Standard Verification Plan
- Construction Quality Assurance and Quality Control Plan
- Final HASP/Final Contingency Plan; (if revised from previous submittal);
- Draft Post-Removal Site Control Plan, including Capital and Post-Removal Site Control Cost Estimates (Respondent may claim such cost estimates as confidential business information and submit them under separate cover);
- Final Project Schedule for the construction and implementation of the Response Actions which identifies timing for initiation and completion of all critical path tasks. The final project schedule submitted as part of the Final Design shall include specific dates for completion of the project and major milestones.

C. Update Meetings

At appropriate times during the design phase, meetings may be held to discuss progress with design development. At these meetings the Respondent will verbally present a general outline of the progress of the various aspects of the design.

Task 3: Response Action/Construction

The Respondent shall implement the Response Action(s) as detailed in the approved Final Designs. The following activities shall be performed as part of constructing the Response Actions.

A. Preconstruction inspection(s) and meeting(s):

The Respondent shall participate with the U.S. EPA in a preconstruction inspection(s) and meeting(s) to:

1. Review methods for documenting and reporting inspection data;
2. Review methods for distributing and storing documents and reports;
3. Review work area security and safety protocol;
4. Discuss any appropriate modifications of the construction quality assurance plan to ensure that site-specific considerations are addressed; and,
5. Conduct a Site walk-around to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.

The preconstruction inspection(s) and meeting(s) shall be documented by the Respondent and minutes shall be transmitted to all parties.

B. Construction

The Respondent shall undertake the construction described in the U.S. EPA-approved 100% design(s)(Final Design(s)).

C. Prefinal Inspection and Report:

After Respondent makes a preliminary determination that construction is complete for each action, the Respondent shall notify the U.S. EPA for the purposes of conducting a prefinal inspection. The prefinal inspection shall consist of a walk-through inspection with U.S. EPA of the entire Facility affected by the Response Actions. The purpose of the inspection is to determine if the project is complete and consistent with the contract

documents and the Response Actions. Any outstanding construction items discovered during the inspection shall be identified and noted in a prefinal inspection report. Additionally, treatment equipment shall be operationally tested by the Respondent. Retesting shall be completed where deficiencies are revealed. The prefinal inspection report shall outline the outstanding construction items, actions required to resolve items, completion date for these items, and a proposed date for final inspection. The Prefinal Inspection Report can be in the form of a punch list or letter. There may be a prefinal inspection for each Final Design.

D. Final inspection:

After completion of all work identified in the prefinal inspection report, the Respondent shall notify the U.S. EPA for the purposes of conducting a final inspection. The final inspection shall consist of a walk-through inspection with U.S. EPA and the Respondent of the entire Facility affected by the Response Action. The prefinal inspection report shall be used as a checklist with the final inspection focusing on the outstanding construction items identified in the prefinal inspection. Confirmation shall be made that outstanding items have been resolved. The Respondent shall certify that the equipment performance meets the project design objectives, to the extent feasible in this stage of operation.

E. Reports

1. Construction Completion Reports

After a successful final inspection of each action, the Respondent shall submit a written report by a registered professional engineer stating that the action has been completed in full satisfaction of the requirements of the AOC. In the report, a registered professional engineer and the Respondent's Project Coordinator shall state that the Response Action has been constructed in accordance with the design, specifications and performance standards. The written report shall include as-built drawings signed and stamped by a professional engineer. The report, titled "CONSTRUCTION COMPLETION REPORT FOR ____" shall contain the following statement, signed by a responsible corporate official of the Respondent or the Respondent's Project Coordinator:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

This report shall include a good faith estimate of total costs incurred in

complying with the Order, a listing of quantities and types of materials removed off-site or handled on-site, a listing of the ultimate destinations of those materials, a presentation of the analytical results of all sampling and analyses performed, and accompanying appendices containing all relevant documentation generated during the removal action (e.g., manifests and permits).

If U.S. EPA concludes that the Work has been performed in accordance with the AOC, U.S. EPA will so notify the Respondent in writing.

2. Final Report

Within 30 calendar days after Respondent concludes that the Response Actions have been fully performed and the groundwater Performance Standards have been attained, the Respondent shall submit for U.S. EPA review a final report summarizing the actions taken to comply with this Order and demonstrating that all Performance Standards have been met.

The final report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

“Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true, accurate, and complete.”

Task 4: Post-Removal Site Control

The Respondent shall prepare an Post-Removal Site Control (PRSC) Plan for the Response Actions. A draft PRSC Plan shall be submitted with the Final Design(s). The final PRSC Plan shall be submitted to U.S. EPA prior to the pre-final construction inspection, in accordance with the approved construction schedule. The PRSC Plan will require U.S. EPA approval. The plan shall be composed of the following elements:

1. Description of normal post-removal site control;
 - a. Description of tasks for operation;
 - b. Description of tasks for maintenance;
 - c. Description of prescribed treatment or operation conditions; and
 - d. Schedule showing frequency of each PRSC task.

2. Description of potential operating problems;
 - a. Description and analysis of potential operation problems;
 - b. Sources of information regarding problems; and

- c. Common and/or anticipated remedies.
3. Description of routine monitoring and laboratory testing;
 - a. Description of monitoring tasks;
 - b. Description of required data collection, laboratory tests and their interpretation;
 - c. Required quality assurance, and quality control;
 - d. Schedule of monitoring frequency and procedures for a petition to U.S. EPA to reduce the frequency of or discontinue monitoring; and
 - e. Description of verification sampling procedures if Cleanup or Performance Standards are exceeded in routine monitoring.
4. Description of alternate PRSC;
 - a. Should systems fail, alternate procedures to prevent release or threatened releases of hazardous substances, pollutants or contaminants which may endanger public health and the environment or exceed performance standards; and
 - b. Analysis of vulnerability and additional resource requirement should a failure occur.
5. Corrective Action;
 - a. Description of corrective action to be implemented in the event that cleanup or performance standards are exceeded; and
 - b. Schedule for implementing these corrective actions.
6. Safety plan;
 - a. Description of precautions, of necessary equipment, etc., for Site personnel; and
 - b. Safety tasks required in event of systems failure.
7. Description of equipment;
 - a. Equipment identification;
 - b. Maintenance of Site equipment; and
8. Records and reporting mechanisms required.
 - a. Daily operating logs;
 - b. Laboratory records;
 - c. Mechanism for reporting emergencies;

- d. Maintenance records; and
- e. Monthly/annual reports to State agencies.
- f. 5 year periodic evaluations

Task 5: Performance Monitoring

Performance monitoring shall be conducted to ensure that all Performance Standards are met.

A. Performance Standard Verification Plan

The purpose of Performance Standard Verification is to ensure that both short-term and long-term Performance Standards for the Response Actions are met. The Draft Performance Standards Verification Plan shall be submitted with the Pre-Final Design. Once approved, the Performance Standards Verification Plan shall be implemented on the approved schedule. The Performance Standards Verification Plan shall include:

- 1. Quality Assurance Project Plan
- 2. Health and Safety Plan
- 3. Field Sampling Plan

If the above plans already exist due to requirements stated previously in this SOW, and can be used for the Performance Standard Verification Plan, then referencing these documents is acceptable.

IV. SUMMARY OF MAJOR DELIVERABLES/SCHEDULE

One hundred twenty (120) days after the effective date of the AOC; the Respondent shall submit the Design Work Plan(s). The schedule for the submittal of the submissions or milestones listed below shall be detailed in the Design Work Plan(s) and requires U.S. EPA approval.

Submission or Milestone

Task 1: Design Work Plan and Predesign Phase

- 1A: Design Work Plan (a.k.a. Master Plan)(U.S. EPA Approves)
- 1B: Pre-Design Study Plans (U.S. EPA Approves)
- 1C: Field Sampling Plans (U.S. EPA Approves)
- 1D: Quality Assurance Project Plans (QAPP) (U.S. EPA Approves)
- 1E: Health and Safety Plan
- 1F: Contingency Plan

Task 2: Design Phases

- 2A: Draft Design (U.S. EPA Approves)
- 2B: Final Designs (U.S. EPA Approves)
- 2C: Update Meetings

Task 3: Response Action/Construction Award Response Action Construction Contract

- 3A: Preconstruction Meeting
- 3B: Construction
- 3C: Prefinal Inspection
- 3D: Final Inspection
- 3E: Reports
- 3E1: Construction Completion Reports (U.S. EPA Approves)
- 3E2: Final Report (U.S. EPA Approves Final Report)

Task 4: Post Removal Site Control Plan (U.S. EPA Approves)

Respondent will complete the Work through Task 3D within the time-frame approved in the Design Work Plan. The project schedule will include an allowance of 60 days for U.S. EPA review and approval of those documents submitted for approval. The actual time necessary for approval of documents will be dependent upon the number of revisions necessary between the draft and final versions of the documents. The completion date for Task 3D will be extended by the amount of agency review and approval time actually incurred.

In The Matter Of: Dover Chemical Corporation Site
Tuscarawas County, Dover, Ohio
Administrative Order by Consent
Non-Time Critical Removal Action

APPENDIX C

DECLARATION OF RESTRICTIONS

STATE OF OHIO

COUNTY OF TUSCAWARAS

DECLARATION OF
RESTRICTIONS

THIS DECLARATION OF RESTRICTIONS ("Declarations") is made and is effective this _____ day of _____, 2000, by Dover Chemical Corporation ("Declarant"), a corporation having its principal place of business at 3676 Davis Rd., N.W. Dover, OH 44622 .

WHEREAS, Declarant owns certain property in the City of Dover, Tuscarawas County, Ohio; and

WHEREAS, Declarant has reason to believe that the soil, sediment and groundwater underlying certain parcels of Declarant's property are contaminated with hazardous substances [such parcels are more particularly described on Attachment "1" attached hereto and made a part hereof (the "Affected Property")]

WHEREAS, ON October 1, 1999, the Director, Superfund Division, EPA, Region 5, signed, a decision document, entitled, "Enforcement Action Memorandum," selecting a response action to address the actual or threatened releases of hazardous substances at the Dover Chemical Site in Dover, Ohio;

WHEREAS, in light of the above, Declarant entered into an Administrative Order by Consent ("Consent Order") with EPA attached hereto as Attachment 2 to implement the response action selected in the Enforcement Action Memorandum, including but not limited to, the restriction of certain uses of the Affected Property in an effort to ensure protection of human health, welfare and the environment;

WHEREAS, the intention of the Parties to that Consent Order is to create restrictive covenants that attach to the Affected Property and to restrict the use of the Affected Property enforceable against on the Parties, their successors and assigns, and all future owners of the Affected Property;

NOW, THEREFORE, Declarant, pursuant to the Consent Order attached hereto, hereby imposes the following restrictions on the Affected Property, which shall be enforceable by Declarant, EPA, any other governmental agencies with jurisdiction over the environmental conditions on the Affected Property. and any party having an interest in the Affected Property or any part thereof (the "Benefitted Parties"), and which are binding upon Declarant, any purchaser of all or any portion of the Affected Property and their respective heirs, personal representatives, successors, purchasers or assigns.

1. Unless modified or revoked in accordance with the terms of the Agreement attached hereto, the Affected Property shall be subject to the following restrictions:

(a) There shall be no use of, or activity at, the Affected Property that may interfere with,

damage, or otherwise impair the response actions performed or to be performed under the Enforcement Action Memorandum for the Dover Chemical Corporation Site, dated October 1, 1999, as may be amended, and the Consent Order for the Dover Chemical Corporation Site, as may be amended;

(b) There shall be no use of the groundwater underlying the Affected Property for potable, sanitary, horticultural or agricultural purposes;

(c) There shall be no residential use or development for residential use of the Affected Property;

(d) There shall be no installation, construction, or removal of any buildings, structures or roadways that isolate dioxin-contaminated soils beneath these features, except as approved in writing by EPA;

(e) There shall be no excavation, drilling, mining, piercing, digging, or any other disturbance of contaminated soils or sediments within the Affected Property, except (i) as approved in writing by EPA or (ii) in the case of an emergency, as is consistent with Dover Chemical Corporation's emergency repair protocol; and

(f) There shall be no removal or disturbance of the subsurface non-degradable hazard marker placed over contaminated soils at the Affected Property pursuant to the Enforcement Action Memorandum, dated October 1, 1999, and the Consent Order for the Dover Chemical Superfund Site, except (i) as approved in writing by EPA or (ii) in the case of an emergency, as is consistent with Dover Chemical Corporation's emergency repair protocol.

2. The Restrictions imposed on the Affected Property pursuant to this Declaration shall become effective with respect to EPA and DCC as of the effective date of the Consent Order attached hereto and effective as to all others as of the date of recording of this Declaration. The Restrictions shall remain in effect in accordance with Paragraph VI.E.20 of the Consent Order.

3. If any provision of this Declaration of Restrictions is held to be invalid by any court of competent jurisdiction, the invalidity of any such provision shall not affect the validity of any other provisions in this Declaration. All such other provisions shall remain in full force and effect unless and until amended or revoked in accordance with Paragraph VI.E.20 of the attached Consent Order.

4. Enforcement of the Restrictions shall be done in accordance with Paragraph VI.E.20 of the attached Consent Agreement.

In The Matter Of: Dover Chemical Corporation Site
Tuscarawas County, Dover, Ohio
Administrative Order by Consent
Non-Time Critical Removal Action

APPENDIX D

AGREEMENT TO CREATE RESTRICTIVE COVENANTS

AGREEMENT FOR CREATION OF RESTRICTIVE COVENANTS

THIS AGREEMENT is made by and between the United States Environmental Protection Agency ("EPA") and the Dover Chemical Corporation ("DCC"), a corporation organized under the laws of Ohio, with a principal place of business at 3676 Davis Rd., N.W. Dover, OH 44622, and [name of property owner].

WHEREAS, on October 1, 1999, the Director, Superfund Division, EPA, Region 5, signed, a decision document, entitled "Enforcement Action Memorandum," selecting a response action to address the actual or threatened releases of hazardous substances at the Dover Chemical Site, in Dover, Ohio; and

WHEREAS, the Director, Superfund Division, EPA, Region 5, pursuant to the authority vested in the President of the United States by Sections 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. §§ 9606(a), 9607 and 9622, and delegated to the Director, Office of Superfund, Region 5, entered into an Administrative Order by Consent with DCC on _____, 2000 to implement the response action selected by EPA, including the implementation of certain use restrictions, to address the release or the threat of a release of hazardous substances from the Dover Chemical Corporation Site located at 3676 Davis Road N.W., Dover, Ohio; and

WHEREAS, investigations to date indicate that contamination from DCC's operations migrated onto and from the Affected Property as defined herein; and

WHEREAS, in an effort to ensure protection of public health, welfare and the environment, a component of the selected response action, as set forth in the Enforcement Action Memorandum, dated October 1, 1999, includes provisions for the implementation of institutional controls, including access restrictions, and land and groundwater restrictions restricting certain uses and activities on the Affected Property; and

WHEREAS, without these provisions for these restrictions, actual or threatened releases of hazardous substances from Affected Property may present an imminent and substantial endangerment to the public health, welfare or the environment; and

WHEREAS, the integrity of the response action set forth in the Enforcement Action Memorandum for the Dover Chemical Corporation Site, dated October 1, 1999, depends on present and future owners of the Affected Property being bound by these restrictions so long as the threat posed by the contamination continues;

NOW THEREFORE, EPA and DCC, and {name of property owner} intending to be legally bound and in consideration of the mutual covenants and stipulations herein do hereby

agree as follows:

ARTICLE I

1. Whenever the terms listed below are used in this Agreement the following definitions shall apply:

a. "Parties" mean EPA and DCC, and [name of property owner] and their successors and assigns.

b. "Affected Property" means that portion of property, owned by DCC, and the underlying groundwater, located at 3676 Davis Road N.W., Tuscarawas County, Ohio onto which contamination from DCC's operations have migrated. A legal description of the Affected Property is attached as Attachment 1.

ARTICLE II - RESTRICTIONS/RECORDING

2. This Agreement is intended by the Parties to create restrictive covenants that attach to the Affected Property and shall restrict the use of the Affected Property enforceable against the Parties, their successors and assigns, and all future owners of the Affected Property. The Affected Property shall be subject to the following restrictions, which are set forth in verbatim in Attachment 2, "Declaration of Restrictions" which is attached and made part of this Agreement:

(a) There shall be no use of, or activity at, the Affected Property that may interfere with, damage, or otherwise impair the response actions performed or to be performed under the Enforcement Action Memorandum for the Dover Chemical Corporation Site, dated October 1, 1999, as may be amended, and the Consent Order for the Dover Chemical Corporation Site, as may be amended;

(b) There shall be no use of the groundwater underlying the Affected Property for potable, sanitary, horticultural or agricultural purposes;

(c) There shall be no residential use or development for residential use of the Affected Property;

(d) There shall be no installation, construction, or removal of any buildings, structures or roadways that isolate dioxin-contaminated soils beneath these features, except as approved in writing by EPA;

(e) There shall be no excavation, drilling, mining, piercing, digging, or any other disturbance of contaminated soils or sediments within the Affected Property, except (i) as approved in writing by EPA or (ii) in the case of an emergency, as is consistent with Dover Chemical Corporation's emergency repair protocol; and

(f) There shall be no removal or disturbance of the subsurface non-degradable hazard

Agreement. All such other provisions shall remain in full force and effect unless and until modified or terminated as permitted in Paragraph 6.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by officials thereunto duly authorized as of the date and year signified below:

William E. Muno, Director
Superfund Division, EPA Region 5

Date: _____

[Name]
Dover Chemical Corporation

Date: _____

[Name of owner of Affected Property]

Date: _____

STATE OF OHIO

COUNTY OF TUSCAWARAS

DECLARATION OF
RESTRICTIONS

THIS DECLARATION OF RESTRICTIONS ("Declarations") is made and is effective this _____ day of _____, 2000, by Dover Chemical Corporation ("Declarant"), a corporation having its principal place of business at 3676 Davis Rd., N.W. Dover, OH 44622.

WHEREAS, Declarant owns certain property in the City of Dover, Tuscarawas County, Ohio; and

WHEREAS, Declarant has reason to believe that the soil, sediment and groundwater underlying certain parcels of Declarant's property are contaminated with hazardous substances [such parcels are more particularly described on Attachment "1" attached hereto and made a part hereof (the "Affected Property")]

WHEREAS, ON October 1, 1999, the Director, Superfund Division, EPA, Region 5, signed a decision document, entitled, "Enforcement Action Memorandum," selecting a response action to address the actual or threatened releases of hazardous substances at the Dover Chemical Site in Dover, Ohio;

WHEREAS, in light of the above, Declarant entered into an Agreement to Create Restrictive Covenants with EPA attached hereto as Attachment 2 to restrict certain uses of the Affected Property in an effort to ensure protection of human health, welfare and the environment

WHEREAS, the intention of the Parties to that Agreement is to create restrictive covenants that attach to the Affected Property and to restrict the use of the Affected Property enforceable against the Parties, their successors and assigns, and all future owners of the Affected Property;

NOW, THEREFORE, Declarant, pursuant to the Agreement attached hereto, hereby imposes the following restrictions on the Affected Property, which shall be enforceable by Declarant, EPA, any other governmental agencies with jurisdiction over the environmental conditions on the Affected Property, and any party having an interest in the Affected Property or any part thereof (the "Benefitted Parties"), and which are binding upon Declarant, any purchaser of all or any portion of the Affected Property and their respective heirs, personal representatives, successors, purchasers or assigns

1. Unless modified or revoked in accordance with the terms of the Agreement attached hereto, the Affected Property shall be subject to the following restrictions:

- (a) There shall be no use of, or activity at, the Affected Property that may interfere with,*

damage, or otherwise impair the response actions performed or to be performed under the Enforcement Action Memorandum for the Dover Chemical Corporation Site, dated October 1, 1999, as may be amended, and the Consent Order for the Dover Chemical Corporation Site, as may be amended;

(b) There shall be no use of the groundwater underlying the Affected Property for potable, sanitary, horticultural or agricultural purposes;

(c) There shall be no residential use or development for residential use of the Affected Property;

(d) There shall be no installation, construction, or removal of any buildings, structures or roadways that isolate dioxin-contaminated soils beneath these features, except as approved in writing by EPA;

(e) There shall be no excavation, drilling, mining, piercing, digging, or any other disturbance of contaminated soils or sediments within the Affected Property, except as approved in writing by EPA; and

(f) There shall be no removal or disturbance of the subsurface non-degradable hazard marker placed over contaminated soils at the Affected Property pursuant to the Enforcement Action Memorandum, dated October 1, 1999, and the Consent Order for the Dover Chemical Superfund Site, except as approved in writing by EPA.

2. The Restrictions imposed on the Affected Property pursuant to this Declaration shall become effective with respect to EPA, the Declarant and DCC as of the effective date of the Agreement attached hereto and effective as to all others as of the date of recording of this Declaration. The Restrictions shall remain in effect in accordance with Article III of the Agreement

3. If any provision of this Declaration of Restrictions is held to be invalid by any court of competent jurisdiction, the invalidity of any such provision shall not affect the validity of any other provisions in this Declaration. All such other provisions shall remain in full force and effect unless and until amended or revoked in accordance with Article III of the Attached Agreement.

4. Enforcement of the Restrictions shall be done in accordance with Article IV of the attached Agreement.