

**Initiative to Evaluate Chlorinated VOC
Groundwater Plume Behavior
by Using Historical Case Analysis**

Working Task Force and Peer Review Panel Charter

Purpose

This document defines the tasks and responsibilities of two working groups that will guide an initiative to synthesize the years of nationwide accumulated data on chlorinated volatile organic compound (CVOC) contamination, in particular, chlorinated solvents. The purpose of this initiative is to evaluate the behavior of chlorinated solvent groundwater plumes. An important benefit of this initiative will be an understanding of how CVOC plumes behave in like environments and the factors controlling plume growth and stability. The results will provide project managers with a document to aid them in managing CVOC plumes and making cleanup decisions at a given site.

Background

There are currently several national initiatives to reevaluate the CVOC cleanup process. These include efforts by United States Environmental Protection Agency (US EPA) to reconsider the manner in which CVOC toxicity factors are developed; efforts by Department of Energy (DOE), Department of Defense (DOD), and US EPA to evaluate the use of enhanced natural attenuation during CVOC cleanup; efforts by many investigators to evaluate the mechanisms and impacts of natural attenuation at individual sites; and efforts by US EPA, DOE, and DOD to demonstrate new remediation technologies. Missing from these initiatives is a cross-cutting evaluation of the large amount of CVOC case data that is available. A historical case evaluation that uses a large number of cases can identify common CVOC release conditions and allow classification of CVOC sites with common attributes. This information can be used to identify sites that can be managed with minimal effort and cost versus release conditions that warrant the large expenditure of money often applied to all CVOC releases. This charter describes the scope of activities for the two groups that will guide and review the collection, analysis, and preparation of results as part of the initiative to improve management of CVOC releases by using historical case data.

The Western Governors Association working group on Interstate Technology and Regulatory Cooperation (ITRC) will serve as a link to state regulatory bodies that are the appropriate entities to develop any recommendations based on Initiative results. During the CVOC historical case evaluation, participants (DOE, DOD, industry, and ITRC member states) will provide CVOC historical case data to a CVOC plume database. These data will be analyzed for CVOC plume behavior. The anticipated total number of cases to be evaluated is about 400, including DOE, DOD and industrial cases. The participating States and organizations would identify CVOC plumes for analysis from each participating state. The CVOC plume data will then be collected for input into the plume analysis database.

As part of this Initiative, two groups have been formed: a Working Task Force (WTF) and a Peer Review Panel (PeerRP). The WTF will focus on technical issues of historical CVOC case data collection and analysis as well as preparing draft findings and conclusions based on the data analysis. The PeerRP will be called upon to review key deliverables, raise technical issues, and review and comment on draft findings and conclusions, and any recommendations. The data management, statistical analysis, and modeling analysis will be performed by a team of scientists from Lawrence Livermore National Laboratory (LLNL), Lawrence Berkeley National Laboratory (LBNL), and Savannah River Technology Center (SRTC). LLNL shall be overall Initiative Coordinator. ITRC member states are the appropriate entities to consider developing any recommendations which would be warranted based on a scientific evaluation of the historical case data.

Initiative Goal and Objective

An evaluation of plume extent and growth behavior will be the primary goal of this Initiative because of the general importance of plume size to human health and environmental and resource risk. To provide results in the proposed time, the objective of this Initiative will be to reach conclusions in regard to the following key questions related to plume behavior:

Do CVOC plumes behave in predictable ways?

- Are there sufficient data available to adequately characterize about 400 plumes, nationwide and can these data be used to answer key Initiative questions?
- Can CVOC plumes from across the country be grouped into different types based on common features as defined by a set of descriptive attributes that is neither so limited that plumes cannot be distinguished from one another nor so numerous that plumes share few common attributes? What are the limitations to such groupings? Does the existence of particular common attributes between two or more plumes mean that the plumes also have other attributes in common leading to the possibility that data can be shared between plumes?
- Do CVOC plumes within a group have similar shape (length, width, depth) and mass (average plume concentration) that change with time and space? Within a group, what proportion of plumes are increasing, decreasing or stable in size and mass?

What factors influence the observed behavior of plumes within a group?

- What are the dominant process occurring in each group? Is there a natural attenuation process that is dominant within a hydrogeologic setting group or cluster and to what degree does it influence the observed behavior of CVOC plumes?
- How does probability of a DNAPL source influence observed plume behavior? Should source areas and distal dissolved areas of a CVOC plume be considered as separate features that behave differently in different hydrogeologic settings?

- How does the mass and distribution of CVOC plume daughter products or other geochemical indicators relate to plume changes in length and mass?
- Are plume length/shape influenced by production wells, man-made conduits, or surface water bodies?

1. Task Descriptions

1.1 The Working Task Force (WTF) will prepare a draft primary deliverable based on scientific evaluation of collected data and current state of knowledge. The Peer Review Panel (PeerRP) will review key intermediate documents during the preparation of the primary deliverable. Each intermediate document will build upon the previously reviewed document and incorporate appropriate PeerRP recommendations. These intermediate documents are:

1.1.1 Summary of Data Collection Procedures. These documents should include descriptions of study goals and objectives, key questions to be addressed, data quality objectives, data collection formats and protocols, including site selection criteria.

1.1.2 CVOC Initiative Data Collection and Analysis Summary: This document will constitute the introduction, background and methods section of the CVOC Initiative primary deliverable. In addition to the data collection procedures, this document should include a CVOC transport and fate conceptual model summary that identifies key technical issues, including the identification of critical CVOC transport and fate parameters, and the measurements and techniques to be used to indicate and estimate these parameters, an information model that will be used during the data analysis phase of the project, and a summary of anticipated analytical approaches to be used during data analysis.

1.1.3 CVOC Draft Final Primary Deliverable: This document will include the results of the data analysis and the WTF findings and conclusions based on these results.

1.2 Sensitivity analyses will be performed to identify key data necessary to understand plume behavior characteristics.

1.3 The PeerRP will review draft final versions of the above three intermediate documents for completeness based on current state of scientific knowledge, appropriateness of methodology used, and the validity of results.

1.4 The PeerRP will provide comments to the WTF to improve the quality of the draft deliverables and to raise issues for WTF consideration.

1.5 If appropriate recommendations for improved CVOC plume management strategies are warranted, these recommendations will be developed by ITRC member states.

2. Membership and process

2.1 The membership of the WTF and PeerRP will be formed by invitation from DOE and ITRC, who are the initiating organizations.

2.2 The Working Task Force

2.2.1 The Working Task Force will be made up of workers active in CVOC risk management and cleanup who represent each of the CVOC Initiative participating organizations.

2.2.2 The WTF will hold planning and analysis meetings at least every other month. Meetings will be scheduled according to the availability of a majority of the WTF members. Proceedings of these meetings shall be circulated to all WTF members. Conference calls will be held as needed.

2.2.3 Working Task Force Chairman shall be the overall CVOC Initiative Coordinator.

2.2.4 Working Task Force members will act in their personal and professional capacity only.

2.2.5 Members will assure quick markup and turnaround of draft materials.

2.2.6 The WTF will act as a consensus body to the extent possible. Where consensus is not reached, decisions will be based on the opinions of a majority of the WTF members.

2.2.7 The option of writing minority opinions is permitted. This is intended to permit regulatory bodies to understand how solid an opinion may be on a given issue. Written rebuttal by the majority opinion holders is not permitted.

2.2.8 The WTF will be supported by a Peer Review Panel of external reviewers of high professional caliber.

2.2.9 The WTF shall be required to consider and address PeerRP comments or provide justifiable reasons why their comments should not be incorporated into the deliverables.

2.2.10 All PeerRP comments must be addressed and formally accepted in writing by the PeerRP before draft deliverables are finalized.

2.3 Peer Review Panel

2.3.1 The PeerRP will be made up of recognized experts in CVOC, transport, fate, and cleanup.

2.3.2 The PeerRP will hold at least five meetings. The focus of each meeting will be one of the three documents identified above as well as any recommendations that may be developed as part of this process. Conference calls will be held as needed.

2.3.3 The PeerRP will act as a consensus body to the extent possible. Where consensus is not reached, PeerRP comments will be based on the opinions of a majority of the PeerRP members.

2.3.4 The option of writing minority opinions is permitted. This is intended to permit regulatory bodies to understand how solid an opinion may be on a given issue. Written rebuttal by the majority opinion holders is not permitted.

2.3.5 The PeerRP Chairman shall be nominated by the ITRC working group, which is a component of the WGA DOIT Process, and ratified by at least 75% of the members of the PeerRP.

2.3.6 Peer Review Panel members will act in their personal and professional capacity only and not as representatives of any agencies or employers.

2.3.7 Members will provide comments on each draft deliverable within 30 days from the date of delivery of the draft deliverable to the PeerRP Members.

2.3.8 After the PeerRP has written and submitted its comments to the WTF and the WTF has acted on them, then the PeerRP should see the results of the changes made and provide, if they wish, a final open statement on the deliverable.

2.4 Release of Findings and Conclusions: No findings, conclusions, or recommendations from this study shall be released until the PeerRP has been given the opportunity to submit comments to the WTF and the WTF has had the opportunity to act upon them.

3. Time Line

Unless circumstances arise beyond the WTF and PeerRP members control after these groups have been formed, it is the groups' goal to have completed the Primary initiative deliverable by the end of September, 1998.

4. Members

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