



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
ONE CONGRESS STREET, SUITE 1100  
BOSTON, MA 02114-2023

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Steve Morrow  
Olin Corporation  
3855 North Ocoee Street  
Suite 200  
Cleveland, TN 37312

Subject: Preliminary Review of the DRAFT Project Operations Plan, Olin  
Chemical Superfund Site, Wilmington, Massachusetts

Dear Mr. Morrow:

In accordance with Paragraph 40 of the Administrative Settlement Agreement and Order on Consent ("AOC"), Region I of the United States Environmental Protection Agency ("EPA") has reviewed the above-referenced document prepared by MACTEC and dated October 2008.

Pursuant to Section 1.III.D of the Remedial Investigation/Feasibility Study Statement of Work ("RI/FS SOW"), EPA solicited comments from external state and local stakeholders and has consolidated written comments received within the context of this letter. Original comment letters are enclosed.

The Project Operations Plan was prepared under the terms of the AOC, and Section 2.0 and of the RI/FS SOW, to propose the collection of new field data to complete remedial investigations, risk assessments and feasibility studies. The primary objective of the RI/FS Work Plan, and thus this Project Operations Plan, is to collect data necessary to determine the nature and extent of contamination for each of the three operable units.

Given the size and complexity of the Olin Site and this Project Operations Plan, this letter constitutes preliminary broad-base comments only. Detailed review of the Project Operations Plan is ongoing. The goal of this comment letter is to identify broad areas for discussion. Pending the outcome of these discussions, and final review by EPA and the stakeholders, EPA anticipates that Olin will be required to submit a revised Project Operations Plan as an RI/FS Work Plan.

***General Issues***

1. There is no document titled "work plan." It appears that nowhere in the materials provided does this document say Olin plans to write an RI or FS Report, and what

would be included in those reports. The Project Operations Plan discusses remedial objectives and sampling objectives as described in Section 2.0 of the RI/FS SOW, but does not discuss the objectives of the RI itself, as described in Section 3.0 of the RI/FS SOW. The RI is an investigation to identify the horizontal and vertical extent of contamination; therefore, sampling goals and how they will be met should be identified and stated in detail in the Work Plan. Further, the Project Operations Plan does not discuss in any detail the planned risk assessments or expand the information beyond the SOW. As required by the AOC, the RI/FS Work Plan should expand on the SOW. It does state that human health and ecological risk assessments will be done and describes interim deliverables for risk information in the same level of detail provided in the SOW. It does not indicate what guidance would be followed or what receptors, exposure pathways, or exposure areas would be evaluated. At a minimum, a general overview of receptors, potential exposure areas, and data that will be used in the risk assessments should be provided.

2. In addition to comment #1, the Project Operations Plan did not appear to include the following requirements for the RI/FS Work Plan as set forth in the RI/FS SOW:
  - a) Include an evaluation of how completely each objective of the RI has been addressed by any previous investigations. Detail on any further efforts that are necessary to fill remaining data gaps shall also be provided. (Note: since the objectives of the RI are not provided, this must be done and the RI sampling must be conducted to meet the objectives or if the sampling has been conducted and does meet the objectives, this must be clearly shown in the Work Plan).
  - b) Include a method for determining how the field program shall be adjusted according to the initial sampling and chemical testing results. This adjustment must be made once sampling results are known and data gaps (if any) are identified. It is assumed that the initial sampling under an OU may modify subsequent OU sampling.
  - c) Include a Field Sampling Plan (FSP) for the air quality assessment to be implemented during the RI.
  - d) Regarding risk assessment interim deliverables: The exact format of the interim deliverables will be determined in the RI/FS Work Plan.
3. A single figure is needed showing all historic facility features, all historic tanks, disposal locations, drum storage areas, and all historic remedial actions, including MCP actions. This information is somewhat available on a number of figures, but is not comprehensively presented. This information is critical in order to determine where samples need to be collected to identify the nature and extent of Site contamination.

4. Extensive historical sampling has occurred at the Site over many years. Some of the data collected remains representative of current conditions; some represents soils or sediments that have been removed or contained beneath caps during remedial activities; some is unusable because detection limits were too high or because of the age of the data; some represents groundwater sampled from residential wells at unknown screening intervals or under unknown conditions. The Work Plan needs to present the datasets of all usable data representative of current conditions, which is expected to be included in the quantitative RI evaluations, in a format that clearly presents what data are in each dataset. It is not clear by the existing tables and figures, what existing data is proposed for quantitative use in the risk assessment and RI evaluations. Please provide revised tables and figures which clearly identify the data proposed for use in the remedial investigation process.
  
5. Further, a single figure needs to be included that shows the useable historic data and the proposed new sampling data so that the entire sampling program is visible. Historic samples that are from excavated materials do not represent current conditions and will not be used in the RI. Decisions on the density of samples that will be used in the RI are difficult/impossible to determine as the material is currently presented. Presentation of useable historic and new sampling locations should be shown in a grid pattern so the adequacy of the samples can be evaluated.
  
6. Background samples: Background samples are included in an RI/FS to aid in an understanding of what conditions at the Site would be like in the absence of the disposal site. It is understood that background may include both naturally occurring and anthropogenic data. In the EPA RI/FS process, background is considered in the uncertainty discussions during the RI (in the risk assessment sections) and to establish clean-up levels in the FS. If a contaminant drives risk, it is identified as a contaminant of concern to be addressed in the FS. During the FS, potential clean-up levels are set to protect human health and the environment, but not below background concentrations. Therefore, up front knowledge of background concentrations and appropriate selection of background sampling locations are very important. EPA needs to approve background sample locations. The FSP in Section 3 describes available background samples; however, the following information has not been included:
  - a) Summaries of the background data by media and figures showing background sampling locations should be provided in the Work Plan.
  
  - b) Among the background samples included in the FSP are background samples used for the Industri-Plex site. The locations of these samples are not provided. Where are these background samples collected from? Are they from locations that are down gradient from the Site? This information should be provided in the Work Plan or the collection of new background samples applicable to the Site should be provided in the Work Plan.

- c) The FSP refers to the 1997 Smith report, Appendix S, Attachment 3 for characterization of background conditions and a figure in the Draft FRI. When this information is examined, the figure of the soil background locations provided in the Draft FRI only shows the 5 samples collected in 1996 to support MCP activities. Smith included 7 samples (these 5 plus 2 earlier ones). Nowhere is the full dataset of proposed background samples (described in section 3 of the FSP) presented in table form or on a figure. This information needs to be provided or a plan to collect new background samples should be included in the Work Plan.
  - d) While historical background sampling locations for surface water/sediment samples may be suitable, new background surface water/sediment data need to be collected. This is particularly important if biota sampling is planned or if toxicity testing will be performed.
7. The RI analyte list is provided (FSP, Table 3.1-1). EPA acknowledges and appreciates the addition of perchlorate and EPH/VPH analyses to the RI analyte list. Table 3.1-1 lists several VOC contaminants twice, either including them under both VOCs and SVOCs or listing them as two synonyms. It is unclear why. The FSP Appendix A, Table 2 provides a list of products made at the Site, the raw materials used to produce them, and the waste materials generated. EPA notes that numerous chemicals listed on this table are not included in the RI analyte list. Generally these chemicals were excluded because they are not sufficiently defined (i.e. processing oils, urea), they are not persistent in the environment (i.e. butyl alcohol), they lack toxicity data (i.e. benzonitrile), or lack approved analytical methods (i.e. chlorosulfonic acid). These unaddressed potential contaminants remain a concern. Olin should be familiar with these chemicals as they were used in Olin's manufacturing process; therefore, it is reasonable to request that Olin seek out an analytical method and/or toxicity information for these chemicals or include them in the uncertainty section in the risk assessment.
8. Proposed analytes: The RI analyte list is provided (FSP, Table 3.1-1). It is EPA's position that all contaminants on the RI analyte list should be analyzed for in a representative number of samples from soils and sediments (OU1), sediments (OU2), and groundwater (OU3), unless spatially and temporally appropriate and usable data already exists to fully characterize the nature and extent soils, sediments, and both overburden and bedrock groundwater contamination. This data may exist for or a number of areas and contaminants; however, it was not presented in a manner EPA found to be clear or usable in both the FRI and this Project Operations Plan. See comments #4 and #5 above.
9. In Section 10.1 (Ecological Assessment) Olin states that the following elements required by the Administrative Order of Consent have been provided in previous work efforts (see list below); leaving the reader to assume that these elements are

appropriate for inclusion in future ecological risk assessments. In order to verify and evaluate the usability of this information for future risk assessments, the following supporting documentation is required: a reference(s) for each element; applicable location information, and data collection dates. Only information that Olin feels is useable for risk assessments should be listed. Any elements required by the Administrative Order of Consent that are not available for use in a risk assessment should be listed as "data gaps" and an approach to satisfy any "data gaps" should be presented.

As described in the RI/FS SOW, the following need to be provided:

- a) Include an FSP for surface water and sediment sampling during the scoping of the RI/FS. The FSP shall contain provisions for sampling events and more general assessments of wetlands, streams, and ponds, if this additional work is needed.
- b) Include an FSP for ecological assessment, containing an evaluation of the applicability of the following elements, and a plan to implement those elements determined to be applicable:
  - i. An accurate delineation of the wetland boundary and classification of the wetland types and determination of the functions and values of the wetlands and an accurate description and delineation of the ten year and hundred year floodplains;
  - ii. A description of habitat types including a map of major habitats present at the Site and a list of plant and animal species, both resident and transient;
  - iii. A determination of the status of those species identified in terms of sport or commercial usage, protected status, endangered, threatened, or of special concern;
  - iv. Sampling of environmental receptors for analysis of community composition, abundance, or body burden of contaminants;
  - v. Sampling of chemical and physical parameters for surface water and sediments (e.g., grain size, total organic carbon, dissolved oxygen, etc.);
  - vi. Toxicity testing of indicator species, if required, to determine effects of contaminated Site media on the environment;
  - vii. An evaluation of how the contamination from the Site has affected receptors;

- viii. An evaluation of whether the contamination has affected the health of the wetland and other major habitats present at the Site; and
  - ix. A discussion of how each remedial alternative under consideration would affect the wetland, biota, and their functions and values.
10. Also, in Section 10.1, Ecological Assessment, It is unclear what activities are being proposed. The inclusion of an ecological conceptual site model would provide clarity and should be provided. Currently there is no biota sampling or toxicity testing planned. If toxicity testing and sediment sampling (OU1 and OU2) for chemical analysis should occur simultaneously.
  11. The current database that has been made available to the government reviewers and their consultants through an FTP link is no longer sufficient. It is extremely time consuming to evaluate the existing Site data location by location, and contaminant by contaminant. The data in the database needs to be accessible and reportable such that reviewers can search the database and quickly ascertain where a specific contaminant was evaluated, the results, detection limits, etc. The creation of plume maps, evaluation of multiple locations of a single contaminant, and other data queries can not be made with the current available database. While there are many needs for a database, the initial need to administer the data is critical to determining whether there is adequate sample coverage for a contaminant.
  12. There does not appear to be any sort of DQO or goals statement that provides a premise for this FSP. The assumption with respect to any additional characterization is merely the collection of samples for some analytes as described in a table; otherwise there is an implicit assumption that the previous work was good enough. The document needs a coherent statement of data gaps and objectives and how the proposed sampling will address these gaps for each OU.
  13. The FSP needs to present the datasets of all usable data representative of current conditions, as well as the proposed new sampling locations, which is expected to be included in the quantitative RI evaluations. Data must be in a format that clearly presents what data are in each dataset. See comment #5 above.
  14. Please include only usable historic validated data representative of current conditions. In considering what is usable, please keep detection limits and quality control issues in mind, as well as age of data.
  15. From a human health risk assessment perspective, the FSP does not explain what scenarios are planned for groundwater exposures. The potential pathways that need to be considered are exposures through drinking water consumption, household water use (i.e., showering), gardening, industrial use and vapor intrusion.

16. Vapor intrusion issues are applicable to volatile contaminants in shallow groundwater (water table 30 feet or less from basement or slab floors) beneath current or potential buildings both on-site and in areas off-site that lie over the groundwater plume(s). Shallow groundwater (sampled at the water table) should be evaluated for potential vapor intrusion issues following the EPA's Vapor Intrusion Guidance of 2002. Analyses of these samples must be performed such that detection limits are at or are less than the groundwater concentrations designed to be protective of vapor intrusion presented on Table 2c of the EPA's Vapor Intrusion Guidance of 2002. In addition, for a few VOCs, the Table 2c values are based on MCLs. For these VOCs, detection limits based on the vapor pathway need to be developed and met. Also, detection limits based on Table 2c values based on toxicity values that have been updated since 2002, should be developed based on the updated toxicity values and met.
17. Throughout the FRI and FSP, what could be termed "indicator compounds" or "indicator parameters" are discussed at length. These include but are not limited to: NDMA, sulfate, chloride and specific conductance. It is implied that analyzing various media for these compounds/parameters provide a convenient way to assess impact by Site related compounds without collecting and analyzing samples for detailed and expansive analyte lists. In these documents, there is a lack of discussion as to what levels of these compounds/parameters indicate Site impact. Additionally, there is a lack of discussion of additional sampling and investigative activities for other Site related contaminants once impact is apparent at a particular location or area. Simply confirming previously detected compounds as referenced in Table 6.2-4 is not sufficient.
18. General comments on groundwater figures:
  - a) In several figures, residential well data is presented on the same figure with data from groundwater monitoring wells. While it may be appropriate to display chemical results from private wells along side monitoring well data in a few exceptional scenarios, generally it is inappropriate to use data collected from private wells in a quantitative manner for purposes of delineating groundwater plumes or performing detailed evaluations. A number of uncertainties would need to be evaluated (from well depth and construction, to the location of sample collection (pre/post treatment) and collection method) in order to utilize these data in the manner they are being presented.
  - b) One element missing from almost all of the figures is any kind of reference to the temporal distribution of the data. There is no way to evaluate whether the information presented represents data points collected over a period of 1, 2, 5, or 20 years. The usability of the data to represent current conditions diminishes with time as well as the amount of magnitude of time span between individual sampling points. For example, two monitoring wells could be shown on a figure but the data represented could have been collected 10 years apart. Additionally,

the cessation of pumping from the Maple Meadow Brook Aquifer by the town of Wilmington may have significantly changed the groundwater flow regime and the usability of data should take this into account, i.e. potential for significant changes to vertical gradients.

- c) Historical data is helpful in a qualitative way and was presented in great detail in the FRI report, however, if historical data is not being presented to help support the sampling plan rationale and only serves to demonstrate the level of historical effort it should be removed from figures and tables.

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### OU1 SPECIFIC COMMENTS

1. Proposed analytes: The RI analyte list is provided (FSP, Table 3.1-1). It is EPA's position that all contaminants on the RI analyte list should be analyzed for in a representative number of samples throughout the property (OU1), taking into account historic activities, and unless adequate usable data already exists to fully characterize the nature and extent of contamination at each potential exposure point.
2. OU1 Exposure Areas: It is not clear from the documents provided, whether or not Olin intends to evaluate the entire 50-acre property (OU1) as one large exposure unit for human health and ecological risk evaluation. EPA recommends that the portion of the Site south of the south ditch with an environmental and open space restriction should be looked at separately from the remainder of the Site; also the temporary cap area should be looked at separately. Attachment A to these comments depicts suggested exposure areas for OU1. These suggested exposure areas are negotiable. Olin may propose alternative exposure areas, but should consider both potential exposure scenarios and potential variations in contamination make-up in different areas of the Site. It is not acceptable for relatively clean areas of the Site to essentially dilute out concentrations from more contaminated areas or areas contaminated with different contaminants. Figures incorporating these exposure areas (or alternative exposure areas), historic samples representative of current conditions, and proposed sample locations are needed for both surface and subsurface soils and should be included in the Work Plan. The existing data need to be summarized for each potential exposure area in order to determine whether there will be adequate data for each exposure area.
3. Summary of usable surface soil data: FSP Table 4.1-1 provides a summary for the entire 50-acre Site of existing surface soil data considered to be representative of current conditions. FSP Figure 4.1-1 shows these samples. There are over 160 samples shown on this figure. Except for chromium, there are at most 89 samples analyzed for any given contaminant and for some contaminants as few as 4-10 samples. It is not clear in looking at the figure versus the table, which samples have been analyzed for what and whether the analyses for any particular contaminant or group of contaminants are concentrated in or missing from certain areas of the Site or whether all the data is usable. The RI/FS Work Plan needs to demonstrate what data are available for use in the RI. Table 4.1-1 needs to be divided up into exposure

