

Arkema Inc. Administrative Order on Consent for Removal Action
U.S. EPA Region 10, Docket No. CERCLA 10-2005-0191
Disputed Directed Changes to Arkema Draft EE/CA Work Plan

January 5, 2006



ARKEMA

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DELIVERED BY OVERNIGHT MAIL

Lori Cora, Esq.
U.S. Environmental Protection Agency Region 9
75 Hawthorne Street, ORC-3
San Francisco, CA 94105

Mr. Sean Sheldrake
U.S. Environmental Protection Agency Region 10
1200 Sixth Avenue
Seattle, WA 98101-3123

Re: Arkema Inc. Administrative Order on Consent for Removal Action
U.S. EPA Region 10, Docket No. CERCLA 10-2005-0191
Disputed Directed Changes to Arkema Draft EE/CA Work Plan

Dear Lori and Sean:

Pursuant to Section XVI., Paragraph 48 of the above-captioned Administrative Order on Consent (AOC), Arkema Inc. (Arkema) hereby invokes the dispute resolution process. Specifically, Arkema disputes the following directed changes required by the U.S. Environmental Protection Agency, Region 10 (EPA) in its November 1, 2005 letter to Mr. Larry Patterson:

Directed Change No. 2: Inadequate Summary of Previous Investigations.

Directed Change No. 4: Failure to Adequately Delineate Areal or Vertical Extent of Contamination in Previous Investigations.

Directed Change No. 5: Investigation of Additional Constituents of Interest (COI).

Directed Change No. 6: Insufficient Information to Evaluate Potential Releases and Sediment Quality Pertaining to Lots 1 and 2.

Arkema Inc.
900 First Avenue, PO Box 61536
King of Prussia, PA 19406-0936
www.arkemagroup.com
(610) 878-6500

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Directed Change No. 8: Failure to Present an Acceptable Methodology to Establish Removal Action Area (RAA) Boundary.

Directed Change No. 10: Requirement to Perform Characterization Activities for Entire Arkema Site.

Summary of Major Issues and Concerns

Arkema received some 467 comments on its draft EE/CA work plan in early November 2005. The number and nature of the comments signaled a serious disconnect between the work Arkema understood it had agreed to perform under its early action AOC and the work expectations of EPA and its partners. It also signaled a protracted schedule and an unexpected, unnecessary, and expensive amount of additional technical data presentation work. Nonetheless, Arkema has worked diligently with EPA, its contractor and its partners since early November to identify what it considers to be the major misunderstanding between itself and EPA concerning the essential components of a non-time-critical removal action.

Arkema understands that non-time-critical removal actions address priority risks, thereby providing an important method of moving sites more quickly through the Superfund process. "Thus, conducting non-time-critical removal actions advances the goals of the Superfund Accelerated Cleanup Model (SACM) to include substantial, prioritized risk reduction in shorter time frames and to communicate program accomplishments to the public more effectively." U.S. Environmental Protection Agency, *Conducting Non-Time-Critical Removal Actions under CERCLA*, OSWER 9360.0-32FS, Quick Reference Fact Sheet at 1 (December 1993).

EPA has made it clear from the outset of its discussions with Arkema that the primary reason Arkema was selected for a non-time-critical removal action (or "early action") is the DDT and monochlorobenzene detected in sediments in and around the vicinity of its docks in the Willamette River. Arkema has always understood that its early action would be designed to focus primarily on those constituents; i.e., the priority risks at its site. In fact, Arkema and EPA spent a great deal of time negotiating the definition of the "Removal Action Area" (RAA) in an attempt to focus the early action effort on the principal threat. A map illustrating the preliminary boundaries of the RAA was developed by Arkema and EPA during the course of the AOC negotiations, and that map is part of the definition of the RAA. (Tab 1). The final version of the map was dictated by EPA, and although Arkema believes it is overbroad, Arkema agreed to EPA's version to accommodate EPA's concern that the sampling and evaluation of site conditions would be broader than the actual RAA. The map is based on current information, which includes more than ten consecutive years of investigation, evaluation and interim remedial actions at the Arkema property. The RAA definition and the map notwithstanding, EPA in its 467 comments, is in effect demanding a full blown CERCLA RI/FS, encompassing hundreds of COPCs over the "entire site." See Directed Change No. 10. The RI/FS, which is being required by EPA, would compare data to extremely conservative screening values without the benefit of a risk assessment.

A CERCLA RI/FS is not appropriate or necessary for this site. EPA Guidance advises:

At one end [of a continuum] are sites where the non-time-critical removal action is the first and only action expected at a site and where no other data are available. In this case, the EE/CA should provide definitive information on the source, nature and extent of contamination, and risks presented by the site. At the other end of the continuum are sites where the non-time critical removal action is one of a series of response actions, where a completed RI is or will be available, and where the nature and extent of contamination and the risk presented by the site have been or will be determined. In this case, the EE/CA would be similar to a focused FS, concentrating on the analysis of perhaps two or three appropriate alternatives and providing reference to existing information on the nature and extent of contamination and risks.

U.S. Environmental Protection Agency, *Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA*, EPA/540-R-93-057, Publication 9360.0-32, Office of Emergency and Remedial Response, Section 2 at 19 (August 1993) [hereinafter U.S. EPA, *NTCRA Guidance* 1993].

Arkema has been working with the Oregon Department of Environmental Quality (DEQ) at the Arkema property for more than a decade. The Revised Draft RI Report for the extensive uplands remedial investigation and interim removal actions conducted pursuant to the DEQ Voluntary Agreement ECVV-WMCVC-NWR-97-14 (the "Upland Source Control Action") was issued on December 1, 2005. Included in that report are the results of nearly one half million dollars worth of in-water work that is being used to design and implement source control activities at the property. In addition, the Lower Willamette Group (LWG) has conducted major sampling of sediments, pore water, surface water, transition zone water (TZW), fish tissue and benthic invertebrates in the vicinity of the Arkema property since 2001 under its Administrative Order on Consent for Remedial Investigation/Feasibility Study, U.S. EPA Docket Number CERCLA-10-2001-0240 (also incorporating significant bathymetric and sediment transport studies completed in 2000) (hereinafter LWG AOC). An RI/FS Report is scheduled to be completed for the Portland Harbor Superfund Site within the next two years. Arkema has agreed to collect additional data, as requested by EPA, that will be used in the broader decision-making framework for the RI/FS of the lower Willamette River. Clearly, the Arkema property is not a site where the non-time-critical removal action is the first and only action expected and where no other data are available. Rather, the Arkema property "is one of those sites where a non-time-critical removal action is one of a series of response actions, where a completed RI is or will be available, and where the nature and extent of contamination and the risk presented by the site have been or will be determined." *Id.* Neither a full blown nor an extensive RI is required.

How did we get here from what we thought was a common understanding of the nature and extent of this project, carefully negotiated over a year's time? Why has our best effort over the past two months to frame the issues and respond to each comment and avoid the dispute resolution process met with nearly complete resistance? Why have no other early action sites in Portland Harbor been required to undertake the scope of work and level of effort now being required of Arkema under its early action AOC?

What seems to have gone wrong at this juncture in our non-time-critical removal action process is that (1) there is an apparent conclusion by EPA's team that Arkema's years long and millions of dollars worth of effort have missed significant issues at the property, and (2) the project has been hijacked by a non-risk assessment approach that requires answers to all of the typical risk assessment questions but without the benefit of a risk assessment, leaving the project to default continually downward toward the lowest available numbers. The result of these problems is that Arkema is being directed to undertake a standard CERCLA RI/FS under the guise of an EE/CA, meet a schedule that cannot be accomplished, and undertake work that not only is not streamlined, but for which there is no definable end point.

We believe the project can be put back on track. Arkema offered a screening approach to EPA on November 30, 2005, designed to provide an understanding of the basic facts at the property and to streamline a risk evaluation to determine and define the principal threat at the property. EPA rejected the approach without offering an alternative. Arkema respectfully requests that EPA reconsider the Arkema approach, particularly in view of the information provided in the recently issued RI Report for the Upland Source Control Action. Without cooperation from EPA to clearly define the scope of this project and the level of effort necessary to achieve the SACM goal of significantly reducing priority risks, it simply cannot be characterized as a non-time-critical removal action. The schedule will be set back by months if not years and the process will devolve into a full blown CERCLA RI/FS in violation of the terms of the early action AOC.

Specific Objections

Please find Arkema's specific objections to EPA's Directed Changes below. For your convenience, we have restated each disputed EPA Directed Change, Arkema's initial response to the Directed Change, EPA's comments on each Arkema response, followed by Arkema's rebuttal. Because the Directed Changes are so general, there is a good deal of conceptual overlap among them. Therefore, please note that both Arkema's Response and its Rebuttal on Directed Change No. 2 are relevant for most of the other Directed Changes as well. We have indicated references to Arkema's Response and Rebuttal of Directed Change No. 2 where appropriate.

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DIRECTED CHANGE NO. 2. *EPA considers the Summary of Previous Investigations inadequate. Arkema shall revise the summary of data needs in order to adequately assess: (1) the nature and extent of contamination; (2) the COIs that are known to exist at the site, including all contaminants from boundary to boundary; and (3) the mechanisms that move contaminants through the environment. Additional data for both upland and in-water conditions are needed to develop the CSM at a level that will allow for informed analysis and decision-making for this response action.*

Arkema Response (11/30/05, 12/9/05 and 12/13/05). Arkema has proposed a revised data presentation and screening approach to address this and the following EPA comments on the Draft EE/CA Work Plan: Directed Change Nos. 2, 4, and 5; and Comment Nos. 3, 14, 30, 45, 56, 126, 130, 148, 268, 269, 276, 279, 287, 296, 297, 298, 299, 300, 301, 310, 367, 368, 369, 383, 395, 412, 439, 441, 450, 451, 455, 458, 459, 460, 461, 462, 467, 470, 475, 477, 483, 485, 494, and 502. (See Arkema memorandum dated November 30, 2005 at Tab 2.) EPA rejected Arkema's approach in its December 6, 2005 response.

EPA Response (12/6/05). *We are pleased to see that Arkema will include an expanded list of chemicals for inclusion in the EE/CA process. However, the expanded chemical list will need to be compared to chronic and acute criteria, including but not limited to TEC, PEC, Region 9 industrial PRGs and bioaccumulation SLVs for sediment. It is not appropriate at this time to assume that COIs will be only those chemicals that exceed the limited acute criteria listed in Section 4. EPA expects that Section 3 should present the screening criteria, both acute and chronic for each chemical by media. This includes wildlife SLVs for both bio-accumulative and non-bioaccumulative scenarios. The "Screening Level Criteria" section under Section 4 should be deleted (as this will have already been done in Section 3) and the "Data Screening Section" should include a discussion of both chronic and acute levels as a part of the preliminary CSM.*

Arkema Rebuttal. The major issue raised in this EPA comment is its statement that "it is not appropriate at this time to assume that COI will be only those chemicals that exceed the limited acute criteria listed in Section 4" of the Draft EE/CA Work Plan. With this comment, EPA is rejecting the screening of COI to determine the priority in-water risks at the Arkema property. In its rejection of Arkema's approach for selection of COI, EPA also is requiring data presentation well beyond the scope of an EE/CA. See data presentation requirements in Port of Portland Terminal 4 Early Action EE/CA Work Plan (BB&L 2004)(Tab 3). The heart of Arkema's November 30th proposal is a data presentation and screening approach to (1) display not only sediment data, but all historic and current data from the sampling of Willamette River sediments, river bank soils, groundwater, surface water, TZW, and fish tissue gathered over more than a decade, (2) screen all of this data against a broader range of screening level values than required by the Arkema AOC/SOW (i.e., the Portland Harbor Joint Source Control Strategy (JSCS))(Tab 4), and (3) provide a process to show how each chemical that is above even one of the screening criteria by media will be further evaluated under a proposed EE/CA screening process. The proposed EE/CA screening process is based on EPA guidance and is intended to help define the

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principal threat at the Arkema property. It is still not clear to Arkema why its approach was rejected or how it might get to the delineation of priority risks at this site without a similar screening methodology.

Arkema's November 30, 2005 Proposal

The AOC defines the RAA. Included in that definition are areas where sampling and characterization activities will take place. "Areas where sampling and characterization activities, and studies or analysis are necessary are preliminary within the RAA. . . . A map illustrating the preliminary boundaries of the RAA based on current information is attached to this Order." AOC, Section III., Paragraph 11(o) at 9. The SOW requires a comparison of sediment quality data and figures to display the sediment data. The SOW also contains a requirement for "[o]ther information (including maps and figures) necessary to gain a general understanding of the Arkema RAA." SOW, Section II., Paragraph 1 at 4. Arkema's November 30 proposal exceeds both of these AOC and the SOW requirements. It includes the presentation of data from shoreline to thalweg and the south property boundary to the north property boundary (outside of even the definition of the preliminary RAA) for sediments, riverbank soils, surface water, TZW, deep groundwater below the TZW, upland groundwater adjacent to the riverbank, and tissue (not just sediment quality data). The proposal includes a comparison of all data (not just sediment quality data) to the JSCS criteria as requested in EPA's comments, but not required by the SOW. Arkema's proposal provides that any data exceeding these comparison criteria would be carried forward into the EE/CA screening step to develop a list of COI representing priority risks. The COI development screening would rely on adverse effects criteria such as freshwater acute criteria, sediment PECs or equivalent criteria, and human health screening values for direct exposure. Constituents that exceed proposed screening criteria would be considered COI for the EE/CA and be included on appropriate figures for presentation. In summary, the Arkema proposal provides a thorough and complete process for defining the priority risks and the principal threat area at the Arkema property in compliance with the SOW which states: "The primary purposes of this Statement of Work (SOW) are: . . . (3) expedite the characterization, feasibility study, cleanup alternatives analysis, and performance of cleanup on the *principal threat* in the intertidal area and submerged lands on and adjacent to the Arkema Site." (Emphasis added) SOW, Section I. at 1.

EPA disagrees not only with Arkema's proposed approach, but with the identification of a principal threat at this property. Contrary to the purpose stated in the SOW, specific EPA comments suggest removal of the language that pertains to principal threats from the screening section of the work plan. See Comment Nos. 458 and 475. Moreover, the chronic or no adverse effect screening levels required by EPA in its 12/6/05 response are inappropriate, unnecessary, and not based on precedent in the Portland Harbor, law or guidance. EPA defines principal threat wastes as source materials that are highly toxic or highly mobile and which cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. U.S. EPA, *Guide to Principal Threat and Low-level Threat Wastes*, Superfund

Publication 9380.3-06FS, Office of Solid Waste and Emergency Response (1991). EPA does not establish threshold levels of toxicity that equate to a principal threat. However, EPA indicates that *principal threat levels are identified at or above the high end of the risk range* that would result in a risk management action. *Id.* (emphasis added). Adverse effects criteria (e.g., freshwater acute criteria) were selected by Arkema as principal threat screening values in the Draft EE/CA Work Plan based on EPA guidance. This general guidance is consistent with development of the RAA and the implementation of non-time-critical-removal actions, which seek to identify principal threat chemicals for migration pathways that should be removed, or intervention measures needed to prevent existing or imminent threats to the environment. U.S. Department of Energy (DOE), *Non-Time-Critical Removal Risk Evaluation*, CERCLA Information Brief, DOE/EH-413/9710 (1997a); DOE, *Development of Remediation Goals under CERCLA*, DOE CERCLA Information Brief, DOE/EH413/9711 (1997b). Arkema cannot perform an EE/CA without focusing on the primary risks at the property.

Expanding the Conceptual Site Model

Not only has EPA rejected Arkema's November 30 proposal to focus on the primary risks at its property, EPA wants to expand the scope of the conceptual site model (CSM) to include all chemicals detected in each media of the site and to evaluate all sources, release mechanisms, and exposure routes. In Directed Change No. 2, EPA states: "Additional data for both upland and in-water conditions are needed to develop the CSM at a level that will allow for informed analysis and decision-making for this response action." (EPA also requested that the CSM be moved to a section preceding the screening process in the revised EE/CA Work Plan, typical of a standard CERCLA RI/FS.) Finally, EPA's comments in Directed Change No. 2 (including EPA responses on 12/6/05) as well as in Comment Nos. 410 and 482 imply that unless screening is performed against very conservative values (i.e., no-adverse effects criteria), sediment concentrations outside the RAA boundary after remediation may exceed "acceptable" levels.

Arkema submits that the CSM should address only those chemicals considered COI after the EE/CA screening process has been applied as set forth in Arkema's November 30 proposal. The CSM under an EE/CA approach should be streamlined to focus on the COI that are the principal targets of the removal action. Additional evaluation will be accomplished as part of the harbor-wide RI.

Arkema's Draft EE/CA Work Plan provides an approach and scope of work to fill data gaps associated with the evaluation of several alternatives that would be equivalent to or similar to a focused FS. See Sections 5 and 6 in the Draft EE/CA Work Plan. EPA guidance states: "Data to characterize the nature and extent of contamination should be limited to those needed to support the specific objectives of the non-time-critical removal action, supplementing existing data (e.g., the existing RI/FS) to the extent appropriate." U.S. EPA, *NTCRA Guidance* 1993, Section 2.1 at 20. The SOW provides for this possibility and recognizes there is an ongoing

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RI/FS that will address remaining unacceptable risk at the Arkema property and other sites in the Portland Harbor. The SOW states: "Beyond the RAA, the removal action will not address all contamination and releases to human health and the environment. The river-wide Portland Harbor Superfund Site cleanup will address releases of hazardous substances from the Arkema Site beyond the RAA". SOW, Section I., Paragraph 2 at 1. The AOC also acknowledges Arkema's continuing work outside of the RAA in the uplands. "Upland Source Control Action' shall mean the remedial investigation and feasibility study, pilot treatability studies, and remedial source control action(s), whether interim or final, on the Arkema Site, that Arkema Inc. is performing and may perform in the future under a Voluntary Cleanup Agreement with DEQ." AOC Section III., Paragraph 11(t) at 10. "Upon entering into this Order, EPA will use best efforts to coordinate with DEQ to minimize the duplication of work or inconsistencies between the removal action and the Upland Source Control Action." AOC, Section I., Paragraph 8 at 5. Arkema believes the approach outlined in its draft EE/CA Work Plan places the CSM in its proper context and that its data gaps approach meets the requirements of the SOW and complies with EPA Guidance.

Other EPA comments request that Arkema develop wildlife screening and indirect human health exposure values appropriate for the removal action. *See* Comment Nos. 45, 46, 139, 271, 302, 365, 381, 395, 410, 417, 460, 475, 482, 483, 491, and 502. Arkema understands that the development of additional screening values that are not relevant to the analysis of principal threats at the property are more appropriately left to the ongoing harbor-wide RI/FS process that will identify harbor-wide approaches to address these potential exposure routes. This understanding is based on EPA's approach used at other non-time-critical removal actions within the boundaries of the Portland Harbor Superfund Site Assessment Areas. *See* Port of Portland Terminal 4 Early Action EE/CA Work Plan at Tab 3.

At the Arkema property, the specific source (or sources) of contamination identified and referenced in the AOC and SOW include DDT and chlorobenzene, hexavalent chromium, and perchlorate. Arkema's Draft EE/CA Work Plan necessarily focused on the sources of these chemicals, and in accordance with EPA guidance, evaluated the risk by comparing various screening criteria specifically for these chemicals. In the course of this process, consistent with Arkema's November 30 proposal for additional evaluation, other chemicals were considered at the site, but were screened out using a typical risk assessment "weight-of-evidence" approach. One of the primary tenets of an EE/CA is to focus on COI at a site and not to consider all chemicals that are present. EPA guidance states: "Where standards for one or more contaminants in a given medium are clearly exceeded, a removal action is generally warranted, and further quantitative assessment that considers all chemicals, their potential additive effects, or additivity of multiple exposure pathways, are generally not necessary." U.S. EPA, *NTCRA Guidance* 1993, Section 2.4 at 30.

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DIRECTED CHANGE NO. 4. *The document does not adequately delineate the areal or vertical extent of contamination identified in the previous investigations. The EE/CA work plan should include a map for each COI showing extent and estimated thickness of each COI in sediment over the entire river area between thalweg and shoreline and the Arkema south and north property lines.*

Arkema's Response (11/30/05 and 12/13/05). Please refer to Arkema's Response to Directed Change No. 2.

EPA's Response (12/6/05). *The proposed figures should include isopleths that depict the extent of chemicals relative to acute and chronic values. Isopleths showing measured concentrations are not as valuable to EPA as isopleths that represent the threshold value. For the reader's efficiency, both acute and chronic criteria should be presented on the same figure, rather than on separate ones. To ensure that Arkema's proposed graphic presentations will meet EPA needs for evaluating the EE/CA, we request that once data tables are compiled, Arkema present examples of figures for two or three chemicals of concern. Please provide a date when these figures will be ready for EPA review.*

Arkema Rebuttal. Please refer to Arkema's Response and Rebuttal in response to Directed Change No. 2.

The request for showing the "extent of chemicals" is not consistent with the EPA guidance for conducting non-time-critical removal actions, where there is an ongoing RI/FS. EPA expects Arkema to address each specific comment. Many of the specific comments relate to the Directed Changes. This Directed Change No. 4 and specific related comments request isoconcentration contour maps of all available chemical data for all media (including sediments, TZW, groundwater, riverbank soils, etc.). This amounts to a staggering number of map presentations for chemical data that are not appropriate for defining the principal threat or the RAA boundary for the site and will greatly increase the level-of-effort and time schedule for completing the EE/CA characterization and all subsequent tasks. Arkema has agreed to provide appropriate figures for a discrete list of COI after completing the proposed EE/CA screening and developing the list of COI. See Arkema's November 30 proposal. Arkema has also agreed to provide drafts of figures for selected chemicals for EPA's review prior to resubmittal of the Draft EE/CA Work Plan.

The Draft EE/CA Work Plan delineated and presented the data for the key COI (primarily DDT and its metabolites) as required by the AOC and SOW. See Figures 3-5, 3-6, 3-7, 3-8, 3-9, and 3-10. This approach is directly addressed in EPA's EE/CA guidance which states: "Where standards for one or more contaminants in a given medium are clearly exceeded, a removal action is generally warranted and further quantitative assessment that considers all chemicals, their potential additive effects, or additivity of multiple exposure pathways, are generally not necessary." U.S. EPA, *NTCRA Guidance* 1993, Section 2.4 at 30. Both the EPA Directed

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Changes and specific comments require Arkema to include all chemicals as COI at the property including all VOC, SVOC, metals, PAH, PCB, and dioxins/furans. Arkema's November 30 proposal addresses all of the chemicals that EPA has identified for evaluation. Those chemicals would be included in a preliminary screening process for all chemicals in media for which data are available at the Arkema property. Even though Arkema committed to screening all of those chemicals and presenting the results of the comparison in data tables and presenting a shorter list of COI in figures, Arkema did not commit to presenting all of the detected chemicals as COI for all media at its property. To do so would create an extremely burdensome reporting and presentation project with questionable value. Arkema's contractor, Integral Consulting, Inc., estimates that the figure presentation would exceed 2,000 figures, assuming that 300 chemicals require presentation for up to seven different media. (Based on the results of the Round 1 and 2 field reports in support of the Portland Harbor RI/FS (Integral 2004, 2005)¹, more than 300 chemicals have been detected in many of the harbor-wide samples taken in the Portland Harbor Superfund Site Assessment Area.)

The extremely high level of effort required by EPA in Directed Change No. 4 and related general and specific comments is not in accordance with EPA's EE/CA guidance (*Id.*), and would not add qualitatively or substantively to the identification of principal threats at the Arkema property. It could, however, add at least a year to the schedule. In addition, the presentation of chemical data for chemicals that are not COI for the Arkema property will be completed as part of the ongoing RI/FS reporting process for the harbor-wide Portland Harbor Superfund Site Assessment Area. As a result, EPA's requirement would be duplicative and possibly inconsistent with the ongoing harbor-wide RI/FS.

For the figures that Arkema has committed to produce in the Draft EE/CA Work Plan, Arkema is concerned about how the acute and chronic isopleths will be used to delineate the RAA boundary. Arkema is not opposed to showing both acute and chronic isopleths on the figures for selected COI; however, Arkema can find no purpose in preparing those figures if EPA cannot agree in advance to the criteria that will be used to define the RAA boundary. In its November 30, 2005 proposal, Arkema presented a screening approach that would be used to develop the RAA boundary. EPA has rejected the approach, but has not committed to nor identified what part of Arkema's process is deficient with specific reference to how the approach will be used to define the RAA boundary.

DIRECTED CHANGE NO. 5. *Based on information from the Portland Harbor Phase 2A sampling, the data presented in Appendix D of the draft Work Plan and the findings of the upland investigations being performed at the site by ERM and others, additional COIs need to be further investigated. At a minimum, Arkema shall add PCBs, chlorinated dioxins/furans, PAHs,*

¹ Integral Consulting, Inc., Mercer Island, WA, *Portland Harbor RI/FS Round I Site Characterization Summary Report*, prepared for the Lower Willamette Group, Portland, OR (2004); *Portland Harbor RI/FS Round 2A Sediment Site Characterization Report*, Draft, IC05-0025, prepared for the Lower Willamette Group, Portland, OR (2004)

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hexachlorocyclohexane, and VOC to the list of COI. Other COI should be added as determined by Arkema through their continued review of background documents and existing data sets.

Arkema Response (11/30/05 and 12/13/05). Please refer to Arkema's Response to Directed Change No. 2.

EPA Response (12/6/05). EPA expects that figures will include information to connect upland to in-water conditions. This was discussed during the November 22 comment review meeting, however it is not clear in your proposal. As stated above, EPA requests Arkema present examples of figures to ensure our needs are being met prior to producing all required graphics.

Arkema Rebuttal. Please refer to Arkema's Response and Rebuttal of Directed Change No. 2.

Because EPA has rejected Arkema's November 30 proposal which would result in the development of a COI list for the property, Arkema must dispute the reasonableness of this Directed Change No. 5. Table 3-10 in the Draft EE/CA Work Plan shows a list of all sediment analytes that exceeded a PEC. (Tab 5). Following Arkema's November 30 proposal, several of the constituents included in EPA's Directed Change No. 5 would be included as COI. Dioxins do not have a PEC, but as Arkema suggested, there may be other criteria to use that may result in dioxins being included on the COI list. As we have discussed with you, VOC do not exceed the acute water quality criteria, but Arkema may want to include monochlorobenzene (MCB) because of its presence in the uplands.

DIRECTED CHANGE NO. 6. *The Work Plan does not include sufficient information for EPA to evaluate potential releases from Lots 1 and 2, or what the sediment quality is adjacent to Lots 1 and 2. Existing data shall be assessed and new data collected as necessary to ensure there is no significant contamination beyond the DDT area. Arkema shall include data from Lots 1 and 2 and show the distribution of data from upland and in water environs. Arkema shall also propose methods to complete data gaps identified for Lots 1 and 2.*

Arkema Response (11/30/05 and 12/13/05). With the proposed screening approach outlined in Arkema's November 30 proposal, existing data will be further evaluated in the revised Draft EE/CA Work Plan. Also as indicated, several sediment cores will be collected off of Lots 1 and 2. The information on the location and depth of this sampling will be provided in the revised Draft EE/CA Work Plan after consultation with EPA

EPA Response (12/6/05). No formal response to Arkema's proposal has been received from EPA. Therefore, Arkema disputes Directed Change No. 6.

Arkema Rebuttal. Arkema cannot respond to or accept the request in EPA's Directed Change No. 6 that requires "new data collected as necessary" because it is ambiguous and open-ended.

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Arkema has agreed to provide six (6) additional borings off Lots 1 and 2, and has agreed to provide any information available for Lots 1 and 2. Based on Arkema's November 30 proposal, the cores would be analyzed for the list of COI developed from application of the approach outlined in the proposal. Comment No. 384 requested three (3) transects off Lots 1 and 2 with four (4) cores in each transect at four (4) depths per core. In its written responses to EPA comments, Arkema has proposed six (6) additional cores off Lots 1 and 2 with the COIs to be determined pursuant to the November 30 proposal. Since Arkema has not received a response from EPA indicating whether this approach is adequate, Arkema disputes all of Directed Change No. 6.

DIRECTED CHANGE NO. 8. *Within the Work Plan, Arkema shall present a methodology that will be used or a set of criteria for how the RAA boundary will be delineated. Several criteria that may be used are, but are not be [sic] limited to: dredging restrictions generated from material stability, water depth, limiting factors on containment options; dredge methods; recontamination impacts; hydraulic containment alternatives; cost and schedule limitations; institutional controls; and technology limitations.*

Arkema Response (11/30/05). Arkema's November 30 proposal provides a revised data comparison, data evaluation, and data presentation approach that would be used to evaluate COI for the site and define the RAA boundary. The criteria listed in this Directed Change No. 8 also will be reviewed in determining the RAA boundary and evaluated in selection of appropriate remedial alternatives and technologies within the RAA boundary. Please refer to Arkema's Response to Directed Change No. 2.

EPA Response (12/06/05). *EPA has rejected Arkema's November 30 proposal, which included a process for delineating the RAA boundary.*

Arkema Rebuttal. Please refer to Arkema's Response and Rebuttal to Directed Change No. 2.

The two sections of the AOC and SOW that address the process for defining the RAA are (1) the definition and map of the RAA in the AOC, and (2) the principal threat language in the first paragraph of the SOW. By definition, areas where sampling and characterization activities, and studies or analysis are necessary are preliminarily within the RAA. The final boundaries of the RAA for implementation of the removal action will be established in the EE/CA. A map illustrating the preliminary boundaries of the RAA based on current information is attached to the Order. AOC, Section III., Paragraph 11(o) at 9; SOW, Section I. at 1.

EPA has rejected Arkema's November 30 proposal. EPA has directed that all data be presented and screened against very conservative screening criteria, but EPA has not made a commitment regarding how this information will be used to define RAA boundaries. EPA has repeatedly stated in meetings and during the AOC negotiations that a risk assessment is not

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appropriate for this project because that task will fall to the harbor-wide risk assessment to be prepared under the LWG AOC. However, comment after comment by EPA on Arkema's Draft EE/CA is clearly driven by the risk assessors' typical inquiries. Without conducting a risk assessment, but being required to mine ever lower screening numbers (in some cases orders of magnitude below detection limits), Arkema is watching its project default to the lowest possible numbers without the benefit of a risk assessment to define the principal threat and an appropriate RAA. It appears to Arkema that EPA intends to select very conservative criteria to define the RAA, which in turn, will result in an EE/CA extending along the entire property line, from the shoreline to the thalweg. Even then, it is not clear where the RAA would begin and end. An RAA dictated by this process will likely result in an arbitrary, geographical carve-out of the Portland Harbor RI/FS that is not subject to the eventual LWG risk-based cleanup standards, and is not consistent with the concept of a principal threat, or with EPA guidance for conducting non-time-critical removal actions within an ongoing RI/FS. Therefore, without a rational basis consistent with EPA guidance, Arkema rejects and disputes Directed Change No. 8.

DIRECTED CHANGE NO. 10. *Arkema shall perform characterization activities that assess contaminant conditions at the entire site in order to determine the RAA boundaries for the EECA [sic].*

Arkema Response (12/13/05). Please refer to Arkema's Responses to Directed Change Nos. 2, 6, and 8.

EPA Response (12/6/05). *No formal response to Arkema's proposal has been received from EPA.*

Arkema Rebuttal. Please refer to Arkema's Response and Rebuttal of Directed Change No. 2.

Directed Change No. 10 is stunning in its breadth and totally outside of an EE/CA process. It is a call for a full-blown CERCLA RI/FS. This Directed Change does not require Arkema to characterize the site to define the principal threat as necessary to conduct an EE/CA removal action in light of the ongoing harbor-wide RI/FS that will address residual risk after completion of the EE/CA. This Directed Change encompasses and lies at the heart of each of the other changes Arkema is disputing. Primarily, the dispute hinges on what EPA means by "characterization activities that assess contaminant conditions" and "entire site."

Arkema agrees that the RAA boundary must be delineated, but based on other Directed Changes and specific comments, Arkema understands that "characterization activities" are defined by EPA as a complete nature and extent site characterization effort equivalent to a standard CERCLA RI/FS. Arkema disputes this definition and believes it is contrary to all of EPA's guidance. As for the "entire site," Arkema agrees and has agreed to conduct further investigation in areas that ultimately may or may not be within the RAA boundary (e.g. data

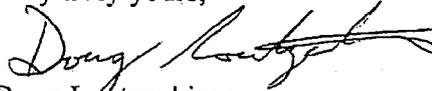
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collection off of Lots 1 and 2); however, EPA is requiring extensive investigation on the entire site encompassing the area between upstream and downstream property boundaries and from shoreline to thalweg. This definition of "entire site" is well beyond the scope of an EE/CA as previously defined in EPA Guidance referenced in this letter, especially given that there is already extensive data available for the property that can be used to focus in on the principal threat areas and to identify the RAA boundary.

This Directed Change No. 10 suggests that Arkema is trying to avoid addressing the real problems at its property. After more than a decade of effort under regulatory supervision and public scrutiny, and millions of dollars spent, this simply is not the case. What Arkema is urging EPA to do under the auspices of the early action AOC is to follow a rational, consistent process designed to evaluate and obtain as necessary credible, usable data without undue delay, expense and hardship. Thank you for your consideration of our comments and our requests.

Very truly yours,



Doug Loutzenhiser
Director, Environment and Sustainable
Development

Tabbed Enclosures