UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

MEMORANDUM

Subject: **Draft Dioxin-Like Polychlorinated Biphenyl (PCB) Congeners Study Workplan Technical Review**

From: **Chemical Waste Management – Kettleman Hills Hazardous Waste Landfill Facility Technical Support Team**
U.S. Environmental Protection Agency – Region IX

To: **Kevin Wong, Senior RCRA Policy Advisor**
Waste Management Division
U.S. Environmental Protection Agency – Region IX

Thank you for the opportunity to review and provide comments on the Chemical Waste Management, Inc., Kettleman Hills Facility (KHF) Hazardous Waste Landfill "Draft Dioxin-like Polychlorinated Biphenyl (PCB) Congener Study Workplan". The Jan. 2009 document was prepared by *Wenck Associates, Inc.*, and is designed to provide the general protocols for sampling and analysis of the co-planar or dioxin-like congeners of PCBs. Data obtained from this sampling and analysis effort will be used to support assessment of potential human health and ecological impacts from releases associated with PCB disposal operations at the facility. The workplan was generated to remain responsive to and incorporate many of the elements from U.S. EPA Region IX's "Kettleman Hills Facility – PCB Disposal Activity Impact Analysis" investigational framework.

The technical support team has provided a number of general and page-specific comments. The gravity of these comments will necessitate a response summary from Chemical Waste Management, and the technical support staff remains available to facilitate comment resolution by direct meetings with facility representatives, a series of conference calls, or by a review of a formal response to comments submittal. Should you have additional questions or concerns, please do not hesitate to contact any member of the technical support staff directly.

Overarching Comment:

EPA's national response and remediation programs frequently employ an overarching assessment strategy when attempting to characterize the impact of contaminant releases on proximate communities. This strategy involves the characterization of locations or receptors subject to maximal chemical impacts, and then arriving at a determination of the magnitude and scale of that impact. To the extent impacts at these Maximally Exposed Individual (MEI) or Maximally Exposed Location (MEL) are deemed "acceptable", then so to would be the impacts to those individuals or locations incurring lower-end exposures.

The investigational framework proposed by EPA for assessment of impacts from the current facility has attempted to incorporate several elements of this strategy. We believe several elements of the draft workplan have not adequately incorporated this overarching strategy. For instance, EPA anticipates that the enormous amount of air monitoring and meterological data used in support of past ambient air and site-specific monitoring activities, can be effectively leveraged to support more precise site-specific location analysis useful for the high-volume air sampling devices proposed for monitoring impacts from direct PCB disposal operations. The ability to consider landfill microclimate and air transport &

dispersion characteristics unique to the PCB disposal surface offers the potential to provide critical information when assessing locations of maximal impact. Our review fully anticipated increased use of this level of data and analysis, and we believe significant efforts should be made to incorporate the facility's on-site meterological data and the known patterns of air movement and transport to further inform the specific siting and location of the PCB congener sampling devices.

General Comments:

1. Overall, this plan does not contain the level of detail which would customarily be found in an EPA lead or funded sampling event. Thus, it is imperative that EPA staff observe and document onsite procedures to ensure that sampling protocols are performed correctly and consistently.

2. The overall approach – media to be sampled, number of samples, general location of samples, chemical analyses to be performed, etc., is conceptually sound.

3. The subject work plan provides considerably less detail than EPA ordinarily requires for many projects of similar scope. That absence of detail leaves room for shortcomings in the data or the utility of the data, e.g., detection limits might not support the necessary decisions, the types of vegetation that are food for key ecological receptors might not be included, or decontamination procedures might not be sufficient given the detection limits achieved in the chemical analyses.

4. The work plan makes a number of statements regarding the purpose, expected outcomes and inferences, and bases for decisions, to which EPA does not directly speak in these comments but with which EPA does not necessarily concur. Similarly, this review does not address editorial issues except as they pertain to technical issues.

5. The work plan discusses a number of determinations and decisions that represent risk management decisions that will be made by EPA, not Wenke Associates, Inc. or Chemical Waste Management. The work plan need not be revised to clarify this.

6. The purpose of this sampling is the support of risk analyses to demonstrate that issuance of the permit will protect human health and the environment. If the target analyte PCBs are not detected, that risk analysis should demonstrate that the analyses would be able to detect contaminant at the levels necessary to make that demonstration.

7. The resolution of some of the specific comments will need to be reflected in multiple locations, including Figure 4, Proposed Soils and Vegetation Sampling Locations, and Figure 5, Conceptual Site Model.

Specific Comments

1. **[Section 3.0, Data Acquisition]** The list of World Health Organization designated dioxin-like PCBs should include congener 77, 3,3',4,4'-Tetrachlorobiphenyl (CAS 32598-13-3) rather than congener 76. Please supplement the discussion in this section of the plan with an accurate listing of the relevant congeners and their U.S. EPA recommended toxicity equivalence values (TEFs).

2. **[Section 3.1.1, Sampling Locations (Air)]** This section notes that a newly proposed monitoring station is sited at the meteorological station pad. This location is preferable for monitoring particulate emissions from landfill B-18 that may be migrating towards Kettleman City. However the site is partially obstructed by the adjacent closed landfill. CWM has indicated that it is not feasible to locate this device at a nearby, unobstructed, location. Therefore, it is recommended

that data be collected using the portable sampling platform for one or more sampling periods from an unobstructed location 100-500 feet to the south or southeast to demonstrate comparability of data.

3. **[Section 3.1.3, Sampling and Analytical Methods (Air); Section 3.2.3, Sampling and Analytical Methods (soil); Section 3.3.3, Sampling and Analytical Methods (vegetation)]** These sections are very cursory and standard operating procedures (SOPs) for sampling and analysis have not been included in this work plan. More details of specific sampling procedures, especially for soil and vegetation should be added or attached to this plan. Additionally, information on laboratory sample handling, preparation, and analysis should be included. If procedures from detailed guidance documents are to be followed, then those specific procedures and any related forms should be referenced and included as attachments to the work plan. Field sampling procedures should also address decontamination of equipment. Because a trace level analysis method will be used, the discussion of decontamination should also address how the cleanliness of equipment and solvents used will be ensured and documented prior to sampling.

4. **[Section 3.2.1, Sampling Locations (Soil)]** This section notes that the sample adjacent to the B-18 landfill will be used to evaluate impacts to ecological receptors inside the property boundary. While this is the primary objective of this sample, the data also represent a worst-case potential for air dispersion and erosion impacts to off-site drainages. This should be clarified in the plan.

5. **[Sample 3.2.1, Sampling Locations (Soil)]** The number of discrete samples composited into each analytical sample should be equal. While there is some value in having composite sample components evenly spaced, this is outweighed by potential inconsistencies in sample handling, interpretation of potential "hot spots," and possible differences between impacted and background soils and vegetation. In addition, the number of discrete samples that will make up each composite should be based on the potential for soil concentration variability across the site.

6. **[Section 3.2.2, Sampling Frequency (Soil)]** This section identifies "nine samples" to be used in the risk assessment. This should be changed to seven, as the duplicate and matrix spike samples are only collected for quality control purposes. This would also make this section consistent with Section 3.2.1 which identifies "a total of seven composite samples."

7. **[Section 3.3.1, Sample Locations (Vegetation); Section 3.2.1, Sample Locations (Soil)]** In addition to the use of a global position system (GPS), there should be a means to identify sample locations by measurements from a fixed point of reference. This would increase the accuracy with which a sampling point can be relocated if re-sampling is necessary. Additionally, the plan should identify how the location of vegetation samples collected in the first and second rounds of sampling will related to each other (e.g., offset by ___ feet to the ___).

8. **[Section 3.4, Meteorology]** This section is only a brief description of the meteorological data collection program. Information of the specific sensors to be used, their operating ranges, their siting requirements, and general quality control of this data should be included in this section.

9. **[Section 4.3, Data Validation]** This section should discuss the quality control information that should be provided by the laboratory, specific acceptance criteria, how data will be treated that does not meet these criteria, and who is responsible for data validation. There should also be a contingency to request raw data from the laboratory to help resolve any anomalous results.

10. **[Section 4.4, Data Reporting]** This section should clarify that wind roses will be provided that are temporally matched to each air sampling interval.

11. **[QAPP, Section 2.0, CWMI Organizational Chart of Responsibility]** This section should include a description of the role and responsibility for each of the people identified in the chart.

Additionally, there should be a description of USEPA Region 9's role in this monitoring project.

12. **[QAPP, Section 3.0, Data Quality Objectives]** This section does not outline a data quality objectives (DQO) process as defined in USEPA QA/G-4. Generally USEPA expects that monitoring events should be developed using a systematic planning process such as that discussed in QA/G-4. This process begins by identifying the potential issue which requires environmental measurements and the goals of the study, including specific decisions and decision processes, and continues to develop the sampling approach, methods, and quality control criteria needed to make a proper decision. For this study USEPA Region 9 has recommended the general parameters for data collection. However, information such as the number of composites, sampling strategy, analytical detection limits, and field data quality criteria were left to CWM to develop based on the quality needs of the project. The DQO process should reflect this thought process. Once action limits or criteria are defined, then measurement quality objectives that summarize the precision, accuracy, representativeness, completeness, comparability, and sensitivity criteria that will help ensure data of known quality will be generated to support project decisions can be specified. This summary should include criteria for duplicate samples (precision), matrix spikes and PUF (polyurethane filter) spike compounds (accuracy), completeness, blanks (sensitivity), and detection and reporting limits (sensitivity).

13. **[QAPP, Section 4.0, Site Selection/Sampling Procedures]** As noted in Concern 3, additional information on sampling and specific citations to the attached sampling references should be included here and in the work plan. Additionally, Section 4.0 of the QAPP provides no information on soil, vegetation, or meteorological sampling.

14. **[QAPP, Section 6.0, Calibrations and Frequency]** This section includes the necessary calibrations of the high volume air samples, but does not include the criteria for acceptance or the corrective action for a failed calibration. Calibration information for the laboratory analyses and for the meteorological measurements should be included in this section or provided in an attached laboratory QA Plan or appropriate SOPs.

15. **[QAPP, Section 7.0, Analytical Procedures]** This section only references the laboratory that will be used for analysis. A summary of the analytical procedure that will be used by the laboratory should be included in this section. Additionally, in lieu of providing detailed information on the laboratory methods and criteria, CWM may provide Region 9 with a copy of laboratory SOPs used for sample handling, homogenization, preparation and analysis. These can be provided as Confidential Business Information (CBI), if necessary.

16. **[QAPP, Section 9.0, Internal Quality Control (QC)]** This section should include or reference the criteria for acceptance of the quality control checks listed and discuss associated corrective action for failed QC checks. Additionally, this section should clarify if duplicates of the air samples will be collected every sampling period or at a less frequent rate that meets the 10% criterion, such as every three months.

17. **[QAPP, General, Training and Qualifications]** The QAPP should include a section that discusses the training and qualifications required for the personnel involved in this sampling effort.

18. **[Section 3.2.1, paragraph 2]** The samples from the area immediately adjacent to the B-18 landfill are intended to address the potential for differential (elevated) concentration of PCBs in sediment in the runoff swale in that area. The increments for that sample should be collected from the low-lying areas in that swale and, to the extent feasible, comprise sediment that appears to have been deposited during stormwater runoff events. EPA would be amenable to combining the incremental samples described in the work plan with a similar number of increments from the

swale into a single composite. This section and Figure 4 should be revised to reflect this approach.

19. **[Section 3.2.1, paragraph 4]** The citation of "Hathaway 2008" is inadequate to document the basis for the number of increments selected. Justification for the use of that method will require more substantial documentation of the underlying data, assumptions, their use in specific equations presented in the article, and the rationale for their selection. In the absence of such documentation, the citation should be deleted.

20. **[Section 3.2.1, paragraph 4]** I recommend using the same number increments for all of the composite samples to promote comparability among samples. Ten and twelve have been discussed internally as possible numbers of increments to be used for each composite sample.

21. **[Figure 4]** The color scheme for symbols for the discrete increment locations make it difficult to differentiate between those comprising the southern half of the eastern property boundary and those comprising the southern property boundary.

22. **[Section 3.2.3]** If EPA QA/G-4HW is to be cited in this context, a more precise citation, e.g., a section or subsection number, should be made. Additionally, EISOPQAM, presumed to be EPA Region 4's 2001 "Environmental Investigation Standard Operating Procedures and Quality Assurance Manual", is not readily available for our review.

23. **[Section 3.2.3]** The record of increment sampling locations should be more precise than GPS, e.g. using temporary markers such as metal wires with plastic flagging at each sampling location. This comment also applies to vegetation sampling.

24. **[Section 3.3.1]** Please provide additional information about how the vegetation sampling will be performed to obtain representative sample increments, avoid bias and provide consistency and comparability among samples. This would include, for example, grid dimensions, what vegetation types will be collected, what plant parts will be included and excluded, any cutting or chopping to be done in the field, any combining or mixing to be done in the field, and other field procedures.

25. **[Section 3.3.3]** Please specify how vegetation type will be selected, e.g., the protocol for determining "type" and how that will be used.

26. **[Section 3.3.3]** Care should be exercised to assure that soil deposited on foliar surfaces is collected as part of the sample for analysis and not lost in the sample collection, handling, management, or preparation.

27. **[Section 3.3.3]** When EPA guidance is specified, on sample handling that will be followed for vegetation samples, the specific EPA document and, as appropriate, chapter, section, etc., should be identified.

28. **[Section 5.1 paragraph 2]** The impacts analysis should address potential ecological impacts on-site as well as off-site.

29. **[Section 5.1, paragraph 3]** The terms "chemicals of concern" and "chemicals of potential concern" need to be defined.

30. **[Section 5.1, paragraph 4]** The future land use scenario should address reasonable maximum exposure using reasonably foreseeable potential future land uses.

31. **[Section 5.1, paragraph 5]** Receptors are hypothetical individuals that are used in the numerical analysis as reasonable surrogates for addressing the full range of potential impacts to the environment. Accordingly, receptor selection should not be restricted to species that demonstrably occur in the area. Sometimes reasonable surrogates are needed to adequately

address important ecological risk issues.

32. **[Section 5.1, bullet describing "Section 4.0 of the RA report"]** This bullet should include an uncertainty analysis and cite the Ecological Risk Assessment Guidance for Superfund (EPA 540-R-97-006) to be followed for the ERA as a whole.

33. **[Section 5.2.1, paragraph 1]** Generally, EPA recommends that analytical detection limits should be selected using the data quality objectives process and, to the extent feasible, reflect concentrations that, if used in the risk assessment, do not present unacceptable impacts to human health or the environment.

34. **[Section 5.2.2, step 2]** The data set should be evaluated as a whole before eliminating analytes from what is referred to as an "exposure group". The overall data set may infer that some other data treatment is more appropriate. For example, if congener A very toxic and is consistently detected at ¼ the concentration of the less-toxic congener B, but at location X, congener B is detected at low concentration and congener A is not detected, it would not reasonable to exclude congener B from the risk analysis for location X.

35. **[Section 5.2.2, step 4]** I recommend using field duplicate data to confirm that the primary analysis is usable, and using only the primary analysis in the quantitative (risk) analysis

36. **[Section 5.3.2.2]** The indirect exposure pathway involving the ingestion of homegrown produce in support of the subsistence rancher exposure scenario is considered a potentially complete exposure pathway – nevertheless it has been proposed for exclusion in the current assessment of risk. Please provide additional detail to support the proposed exclusion, and further detail how this putative uncertainty will impact the resultant risk estimate.

37. **[Section 5.4.2.2]** A more detailed discussion of trophic levels in the context of the food chain should be presented, including the potential for bioaccumulation and bioconcentration of PCBs as they pass through lower trophic levels to the high-trophic level consumers.

38. **[Section 5.4.2.2]** The conceptual site model and exposure pathway assessment discussion should also include: (1) deposition of dust to foliar surface leading to food chain exposures, (2) releases of PCB vapors from waste, (3) uptake of vapors into plants, leading to food chain exposures, (4) more detail in the discussion of different trophic levels, including ecological receptors representing different trophic levels to be included in the evaluation, and (5) soil invertebrates as potential receptors and food chain components. Inclusion of soil invertebrates as potential receptors also requires selecting a TRV (or TRVs as appropriate) and HQ calculation methods. Exclusion of any of these pathways or receptors should be justified.

39. **[Section 5.4.2.3.3]** Concentrations in air (vapor and particle-bound), soil and plant material are the measurement endpoints, the modeled contaminant levels and TRVs are not.

40. **[Section 5.4.3]** The number of samples available for statistical analysis does not appear to be adequate to support UCL calculations. Please justify the use of UCLs or present a different method to provide the basis for a conservative estimate of potential exposure.

41. **[Section 5.4.4, paragraph 3]** A step in the proposed process appears to have been omitted. TECs and TRVs are not directly comparable because TECs are estimates of concentrations and TRVs are expressed as dose rates.

42. **[Section 5.4.4, paragraph 7]** Please define "ESV".

43. **[Section 5.4.4, paragraph 6]** For the development of the avian embryo TRVs, please consider the values in Table 2-2 of the cited document, in addition to Table 3-1. Final documentation of TRV selection will need to include rationale / justification for the selection of those values.

44. **[Section 5.4.5, paragraph 1]** The text conflicts with the bullets; the bullets are correct. HQs are based on intake rate estimates and TRVs; TECs are concentrations and not directly comparable with the TRVs. The text needs to address the relationship between TEC, intake rate estimation, and TRVs, as appropriate.

45. **[Section 5.4.5, text and bullets]** HQs for avian eggs will be calculated differently; that method should be presented in this section.

46. **[Section 5.4.5, paragraph 2]** The term "final COPEC" needs to be defined. Additionally, the overall discussion needs to reflect that identification of final COPECs, as used in this paragraph, is a risk management decision that will be made by EPA. Similarly, the decisions made at the SDMP 2 will be made by EPA.

47. **[Section 5.4.5, paragraph 3 and Section 5.4.6**] The analysis described in Section 5.4.5, paragraph 3 provides a good conceptual model for evaluating impacts. EPA will consider that analysis and other factors in a weight-of-evidence approach when making our decision at SMDP 2.

48. **[Appendix E, Section 3, Data Quality Objectives]** This Appendix should be renamed. The section does not reflect the 8-step DQO process described in EPA QA/G4. The PARCC parameters discussed are criteria used to evaluate the usability of chemical analysis data for use in risk assessment and only tangentially applicable to DQOs.