Kettleman Hills Facility - PCB Disposal Activity Impact Analysis
A site-specific, multi-media investigational framework.

Issue: The Kettleman Hills Hazardous Waste Landfill Facility is seeking a regulatory permit(s). A Hazardous Waste Permit application is under consideration by DTSC and may be combined with a TSCA PCB permit application subject to evaluation by U.S. EPA. A coordinated analysis & approval may be considered by the two regulatory agencies.

Community stakeholders and environmental activists have submitted official comments on the administrative record suggesting that retrospective and current facility operations have adversely impacted the health and welfare of the proximate residential community and ecosystem directly adjacent to the facility.

Objective: Collect sufficient data to assess the magnitude of potential human and ecological impact to off-site receptors from PCB disposal activities at the Kettleman Hills Facility. Several lines of multi-media and complementary scientific evidence should be pursued to better characterize the degree of potential impact.

I. Ambient Air Monitoring Strategy

The Kettleman Hills Facility has been participating with DTSC in an existing ambient air and depositional monitoring program for PCB releases to air. Two stationary air monitoring devices have been collecting air samples over the past two years and subjecting the samples for PCB aroclor analysis. To date, all sample results have been non-detect for PCB aroclors.

A technical review of the methods and results of that analysis have revealed a number of potentially significant data gaps and uncertainties in the air monitoring approach. These data gaps principally involve the ability of the sampling devices to collect and allow detection of the most-relevant suite of PCBs at limits of detection germane to adverse health impacts, and the siting or location of the sampling devices relative to on-site operational disposal activity. Therefore, additional studies should be conducted to collect sufficient air monitoring and depositional data to assess the degree of off-site impact.

a) Obtain sufficient data for assessment of PCB airborne and depositional impacts from landfill disposal activities. To the extent that investigational activities can characterize the degree of potential impact to the buffer-zone immediately adjacent to the facility, a sound rationale can be developed and shared with the community and stakeholders that more distant human and ecological receptors are then subject to a relatively *de minimus* level of impact from PCB disposal activities at the landfill.

   i) <u>Human Health Assessment</u>
   Collect additional air samples from a limited number of high-volume sampling devices specifically located in the facility's buffer zone to assess the degree of PCB depositional impact associated with landfill disposal activities. These samples should be collected over a 1 year window of time, with 12 sampling events occurring throughout that time period. While the sampling devices will

collect air samples over the entire month, contaminant analysis will occur but once a month. Sampling devices should be located in upwind and downwind locations based, in part, upon historical on-site meteorological patterns. In addition, the releases from on-site landfill disposal activities should be subjected to analysis by an air dispersion & transport model to better predict the potential locations of maximum depositional impact. Air monitoring devices siting and location should remain considerate of these results. Finally, any available retrospective or more-recent buffer zone surficial soil sample results should also be reviewed and considered when selecting the location of the air sampling devices to maximize the likelihood of detecting impacts.

ii) Ecological Assessment

The results from the air sampling approach described above will also be used to assess the degree of impact to ecological receptors. Although direct inhalation impacts are not an exposure pathway currently considered in ecological risk assessments, the depositional impacts on soil and vegetation supporting the food web of ecological receptors remains a indirect pathway of contaminant exposure which should be characterized.

iii) Analytical Framework

PCB samples should be subjected to high-resolution analysis to provide specific data regarding the prevalence of the dioxin-like or co-planar PCB congeners (EPA Method 1668a). In addition, the concentration of PCB aroclors should be reported from analysis of these samples.

II. Surficial Soil Sampling Strategy

a) A series of composite soil samples should be collected from the facility buffer zone to characterize the degree of PCBs potentially impacting off-site receptors.

i) Human Health Assessment

A composite soil sampling plan should be developed to assess the degree of PCB impact in the off-site buffer zone. Results from this sampling and analysis effort will be used to assess the magnitude of human health impact from the direct pathways of human exposure. All composite samples should be retained following analysis such that the specific-contribution from any discrete sample can be retrospectively assessed. A composite sampling approach enjoys the advantage of expanding the areal extent of buffer zone characterization while also minimizing resource allocations. Soil sample locations should be informed by results from the air dispersion and modeling results, proximity to disposal activity and TBD based upon a site visit reconnaissance. Samples should be collected from the surficial lens of soil to characterize the pathways of direct exposure. A limited effort should also be made to characterize potential impacts from soil run-off pathways. Results from surficial soil samples

should also be used to assess potential impacts to the food-chain by characterizing the exposure potential and uptake into livestock grazing in the buffer zone. The bioaccumulation and resultant health impacts posed by consumption of impacted livestock can be modeled via algorithms developed to support the indirect pathways of human exposure. Finally, a limited number of background or non-impacted locations should be sampled for purposes of comparison with sampling results from potentially impacted locations.

ii) Ecological Assessment
The results from the surficial soil sampling approach described above will also be used to support characterization of potential impacts to ecological receptors and habitat.

iii) Analytical Framework
PCB samples should be submitted for high-resolution analysis to provide specific data regarding the prevalence of the dioxin-like or co-planar PCB congeners (EPA Method 1668a). In addition, the concentration of PCB aroclors should be reported from analysis of these samples.

III. Biota/Vegetation Sampling Strategy

a) A limited number of vegetative cover samples, and a limited number of biota samples should be collected and analyzed to assess the degree of direct and indirect ecological impact in both the buffer zone and discrete on-site locations. In addition to the direct pathway of ecological exposure via ingestion, results from this sampling effort will be used to model impacts to higher trophic-level organisms via the food chain.

Limited on-site vegetative cover and limited on-site biota samples (lower trophic-level prey animals) will allow more robust characterization of potential impacts to site-specific ecological receptors (threatened or endangered). The number of on-site and off-site or buffer zone vegetative and biota samples, their location, and the type of biota sampled is TBD based upon a site visit reconnaissance.

i) Analytical Framework
PCB samples should be submitted for high-resolution analysis to provide specific data regarding the prevalence of the dioxin-like or co-planar PCB congeners (EPA Method 1668a). In addition, the concentration of PCB aroclors should also be reported from analysis of these samples.