EPA INFORMATION SHEET

RESULTS OF THE POLYCHLORINATED BIPHENYL (PCB) CONGENER STUDY CHEMICAL WASTE MANAGEMENT KETTLEMAN HILLS FACILITY

JANUARY 2011

The U.S. Environmental Protection Agency Region 9 (EPA) is publishing this information sheet to inform the public of the results of the Polychlorinated Biphenyl (PCB) Congener Study at the Chemical Waste Management (CWM) Kettleman Hills Facility (CWM Facility). This is the first time a scientific study of this magnitude, which included highly sensitive analysis of the most toxic forms of PCBs, has been conducted at a Toxic Substance Control Act (TSCA) PCB storage and disposal facility.

Why did EPA request CWM conduct this Study? In 2007, EPA opened a public comment period on the draft TSCA federal permit renewal requested by CWM to allow it to continue to store and dispose of PCB waste at the CWM Facility. During the extended public comment period and during community meetings throughout 2008, the community raised concerns that wind-blown PCB particles from the CWM Facility operations could either be deposited off-site and taken up into the food chain (through ingestion of crops or consumption of beef or milk from nearby grazing cattle), or could migrate from the CWM Facility as air emissions and impact Kettleman City, which is approximately 3.5 miles northeast. In response to those concerns and to study the possible off-site impacts that the PCB disposal operations at the CWM Facility may present to human health or the environment, EPA put on hold the TSCA permit decision and requested that CWM complete a PCB Congener Study. This is the first time a scientific study of this magnitude and cost has been conducted at a TSCA regulated PCB storage and disposal facility.

EPA requested CWM to collect soil, vegetation, and air samples at the perimeter of the CWM Facility and analyze them for PCB congeners using an independent State-certified laboratory. The data results were then used to assess risk to human health and the environment from PCB operations at the CWM Facility. These studies are collectively referred to as the "PCB Congener Study."

What was EPA's role in this PCB Congener Study? This was the first time EPA had requested such a study at a TSCA regulated PCB storage and disposal facility, and EPA was highly involved in all aspects of the study design and implementation. EPA worked closely with CWM to rigorously: 1) design the study, 2) review and approve all sampling plans to assure that EPA's standards and protocols were met, 3) oversee sample collection, 4) collect soil split samples, 5) review all of CWM's data against EPA quality assurance/quality control standards, and 6) review and approve the risk assessment report. EPA also worked closely with the community including providing multiple opportunities for input into the study design, and convened several meetings with community representatives to discuss the PCB Congener Study data.

EPA concludes that based on the results of the PCB Congener Study:

- ***Concentrations of PCB congeners measured in soil samples collected at the perimeter of the CWM Facility are 2,000 times below EPA's risk-based residential clean-up levels, based on their toxicity.***
- ***Risk of health impacts from PCB congener concentrations measured in soils, vegetation, and air near the perimeter of the CWM Facility are in the same range as risk of health impacts in other rural areas without known PCB activities or sources.***
- ***Concentrations of PCB congeners measured in soils, vegetation, and air at the perimeter as well as those collected at the B-18 landfill drainage swale of the CWM Facility do not adversely affect ecological species.***
- ***There is no evidence suggesting that PCB congeners from operations at the CWM Facility are migrating off-site at concentrations that would adversely affect the health of local community residents or the environment.***

What is the CWM Kettleman Hills Facility? The CWM Facility is a commercial hazardous waste treatment, storage, and disposal facility located in Kings County, California, southwest of the intersection of Interstate 5 and Highway 41 (Figure 1). The CWM Facility handles PCB, non-PCB hazardous waste, and solid waste.

EPA regulates the handling, storage and disposal of PCB waste at the CWM Facility under a TSCA permit. The State of California, authorized under federal law, regulates the handling, storage and disposal of hazardous waste under a Resource and Recovery Act (RCRA) hazardous waste permit. EPA and the State are working together to oversee the CWM Facility and ensure compliance with the respective laws and regulations.

CWM has applied to both EPA under TSCA and the State of California under RCRA to expand its hazardous waste B-18 landfill by 14 acres (an increase of 26%). Neither EPA nor the State of California has issued decisions on the TSCA or RCRA permits, respectively. EPA's position remains that we will not issue a permit to CWM to renew or expand its PCB operations unless we are confident that the CWM Facility does not present a health risk to the community and is operating in compliance with environmental laws and regulations.

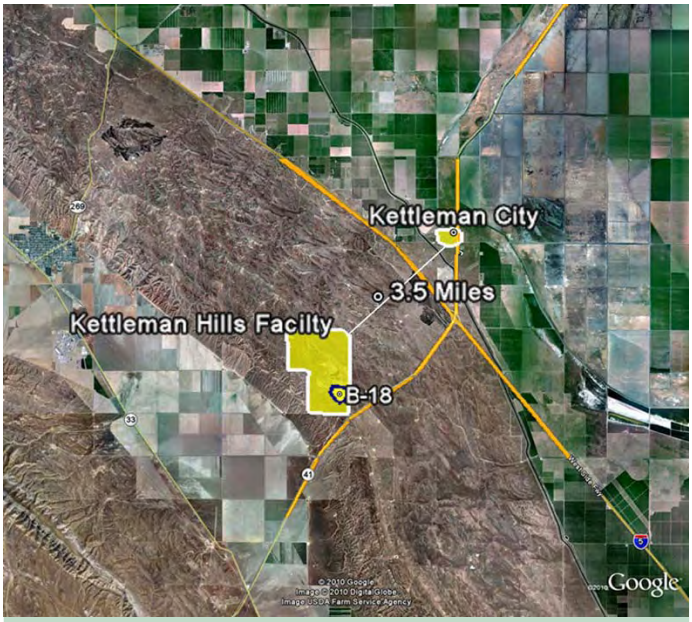

Figure 1: Location of CWM Kettleman Hills Facility, California.

What are PCBs? PCBs are a group of man-made chemicals that contain 209 individual compounds (known as congeners) with varying potentially harmful effects. Different mixtures of these 209 congeners were used worldwide on a large scale beginning in 1929. PCBs in liquid form were used in electrical transformers, capacitors, circuit breakers, voltage regulators/switches, plasticizers, and additives in lubricating and cutting oils.

PCBs are now banned because of suspected links to cancer. However, decades of PCB use in a wide variety of applications have resulted in the distribution of low level concentration of PCBs in the ambient environment.

Why analyze for PCB Congeners? In recent years researchers have determined that 12 of the 209 congeners (identified by the World Health Organization) are the most toxic to human health and the environment.

Typically, PCBs are analyzed for Aroclors, which are a mixture of PCB congeners. However, for the PCB Congener Study EPA required the use of the most sensitive analytical methods for PCB congeners, or individual PCBs, to look for the 12 most toxic forms of PCBs that are the most significant risk drivers.

How was the PCB Congener Study designed? EPA formulated the technical design of the study and requested that CWM implement the work plan. The design incorporated on-site meteorological data (wind direction and speed), landfill design characteristics, the most sensitive laboratory analytical method/procedures, direct EPA sampling oversight and extensive Quality Assurance/Quality Control protocols to ensure data of known quality. Additionally, EPA required that CWM develop an air dispersion and deposition model. This model identified locations that were expected to have the maximum impact from site PCB operations.

How were soil, vegetation, and air samples collected? EPA required that CWM use a multi-incremental sampling (MIS) methodology for the collection of soil and vegetation samples (Figure 2). This approach is specifically designed to characterize contaminants over large areas such as those potentially impacted by broad-based air emissions. EPA has applied this sampling methodology at other sites where the purpose of the study is similar to that intended at the CWM Facility.

Surface soil sampling was designed to measure concentrations of PCB congeners that may have been deposited and accumulated in the surface soil around the perimeter of the CWM Facility from handling PCB contaminated waste.

Vegetation sampling was designed to measure concentrations of PCB congeners that may have accumulated in the surface soil, were taken up by the vegetation, deposited on the leaf tissue, or taken up in gaseous form through leafy tissue. For the purpose of this study, the vegetation sampling was assumed to reflect both historic and current potential impacts off-site from handling PCB contaminated waste at the CWM Facility.

A total of 720 soil samples and 720 vegetation samples representative of the entire CWM Facility perimeter were collected (Figure 2).

Air sampling was designed to measure PCB congener emissions continuously over a 12-month period to characterize present-day conditions at the perimeter of the CWM Facility. Monitoring included upwind and downwind stations.

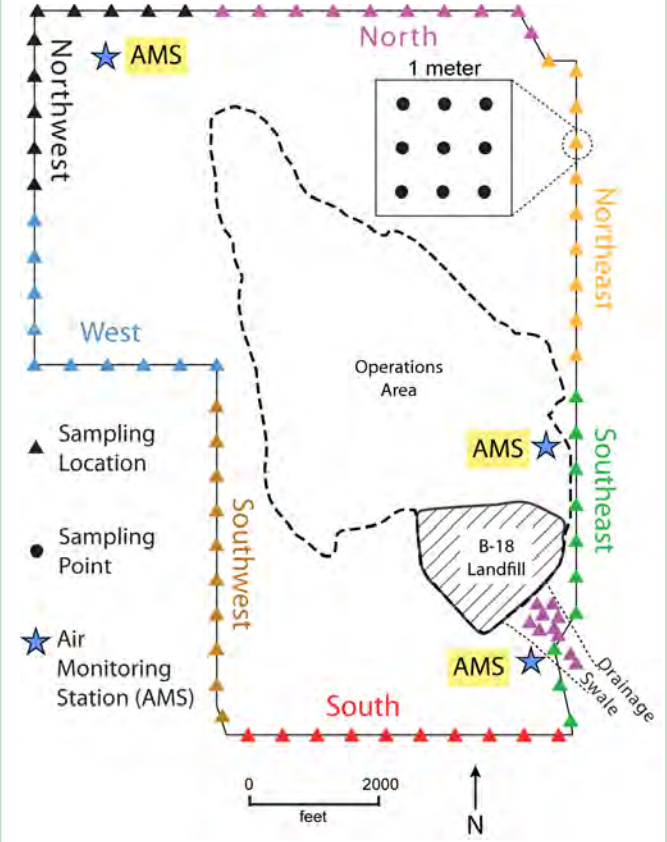

Figure 2: Soil, vegetation, and air sampling locations at the CWM Kettleman Hills Facility.

How were samples analyzed? Samples collected by CWM were analyzed by Test America Laboratories, located in West Sacramento, CA, an independent State-certified laboratory. The analytical methods used are EPA-approved methods for the analysis of PCB congener concentrations at the parts per trillion (ppt) levels. One ppt is roughly equivalent to one grain of sand in 730,000 pounds of sand (enough to cover a football field with 1.5 inches of sand).

What were the results and what do they mean?

- ***Concentrations of PCB congeners measured in soils collected at the perimeter of the CWM Facility are consistent with concentrations reported in an EPA national study (April 2007) for rural areas not near hazardous waste facilities across the United States (Figure 3).***
- ***Concentrations of PCB congeners measured in soils collected at the perimeter of the CWM Facility are 2,000 times below the Agency's risk-based residential clean-up levels, based on their toxicity (Figure 3).***

- ***Concentrations of PCB congeners measured in vegetation collected at the perimeter of the CWM Facility were consistent with those found in soils also collected at the perimeter.***
- ***Concentrations of PCB congeners measured in air collected at the CWM Facility are within EPA's human health screening levels.***

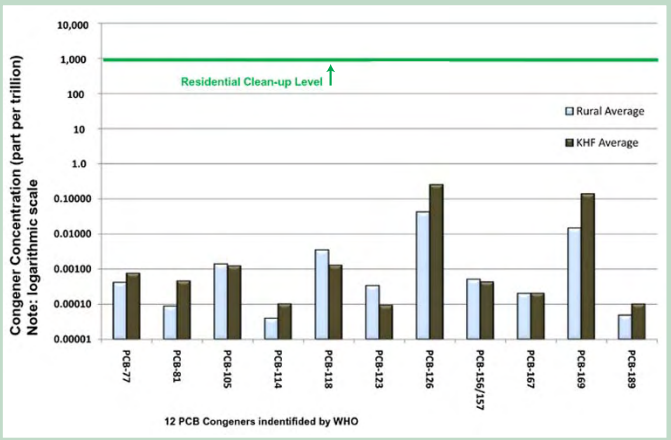

Figure 3: Average PCB soil concentration found at the perimeter of the CWM Kettleman Hills Facility vs. average PCB soil concentrations found in rural areas across the U.S., expressed as toxicity.

How were PCB sampling results used to evaluate potential risk to Human Health and the Environment? EPA directed CWM to use the soil, vegetation, and air PCB congener data in an EPA-approved multi-pathway risk model to assess potential risk to human health and the environment.

Human Health Risk Assessment: A risk assessment is a scientific tool used by EPA to estimate the likelihood of developing health impacts (cancer and non-cancer effects) from exposure to chemical substances through multiple exposure routes (inhalation, ingestion, and skin contact).

Potential health impacts from calculations through risk assessment are compared to EPA's "Acceptable Risk Range" guidelines. The guidelines for acceptability range from one additional case of cancer (above the background rate) in a population of one million similarly exposed individuals (often expressed as 1×10^{-6}) to 100 additional cases of cancer in a population of one million similarly exposed individuals (often expressed as 1×10^{-4}) (Figure 4).

The human health risk evaluation was modeled to respond to community concerns regarding risk to residents from wind-blown PCB particles from the CWM Facility operations being

deposited off-site and taken up into the food chain (through ingestion of crops or consumption of beef or milk from nearby grazing cattle) or from airborne emissions. To address these concerns, EPA directed CWM to evaluate several different exposure scenarios including a hypothetical resident living at the fence line (perimeter) of the CWM Facility and a hypothetical subsistence resident rancher living at the fence line (perimeter) of the CWM Facility. A subsistence resident rancher would consume home-grown beef, food crops, and dairy products over 30 continuous years.

EPA concludes that the likelihood of developing cancer under any of these scenarios is within EPA's range of acceptability (Figure 4).

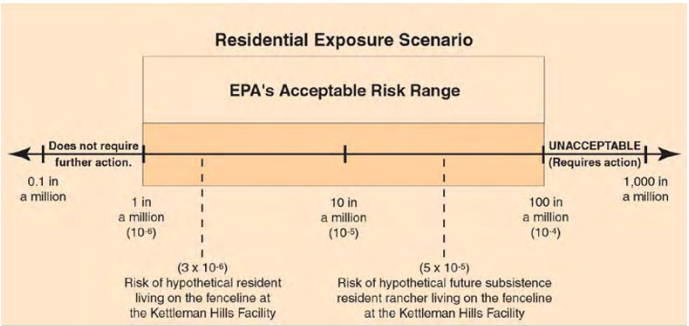

Figure 4: Risk of a Hypothetical Resident Living at the Fence Line (Perimeter) of the CWM Kettleman Hills Facility Compared to EPA's Acceptable Risk Range.

Ecological Risk Assessment: EPA also required CWM to prepare an ecological risk assessment that considered a broad range of animal types and exposure mechanisms and selected those that EPA thought would be the most highly exposed and the most susceptible to PCB toxicity (such as the San Joaquin Kit Fox).

Based on the results of the PCB Congener Study, EPA concludes that the PCB congener concentrations measured at the perimeter of the CWM Facility would have no ecological effects.

In summary, how do the results of the PCB Congener Study respond to community concerns? EPA concludes that risk of health impacts to Kettleman City residents from PCB congener concentrations measured in soils, vegetation, and air collected at the perimeter of the CWM Facility are in the same range as risk of health impacts in other rural areas without known PCB activities or sources.

There is no evidence suggesting that PCB congeners from operations at the CWM Facility are migrating off-site at concentrations that would adversely affect the health of local community residents or the environment.

How is the PCB Congener Study related to the permit application pending before EPA? EPA has not yet made a decision on whether to grant or to deny CWM's request for a renewal/expansion of its TSCA PCB permit for the B-18 landfill.

EPA will carefully consider not only the results of the PCB Congener Study but also the results of other studies conducted by various State agencies, as well as a complete review of CWM Facility's TSCA PCB permit application and their on-site PCB activities, before making a proposed decision.

When EPA makes a proposed decision on whether to grant or to deny CWM's TSCA PCB permit application, EPA will hold a public meeting to announce our proposal and open a 45-day period for the public to comment on our proposed decision.

To receive notification of EPA public meetings for this site, please contact one of the individuals listed below.

Who can I contact with questions regarding the PCB Congener Study?

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How can I review a copy of the PCB Congener Study, or other EPA documents related to this Facility? A copy of the PCB Congener Study and other key project documents are available at the Kettleman Hills Library, the Hanford Library, and the Avenal Library, and are also available on-line at:

http://www.epa.gov/region9/kettleman