Draft Environmental Justice Analysis

for the Kettleman Hills Facility Proposed TSCA Permit

Kings County, California
U.S. EPA ID: CAT 000 646 117

Land, Chemicals, and Redevelopment Division
U.S. Environmental Protection Agency Region 9
San Francisco, California

August 2019

Frances Wicher, Kettleman Hills Project Manager (LND-4-2)
U.S. Environmental Protection Agency Region 9
75 Hawthorne Street
San Francisco, CA 94105
wicher.frances@epa.gov

Disclaimer: The Spanish version is a translation of the original in English for informational purposes only. In case of a discrepancy, the English original will prevail.

August 2019

Executive Summary

Draft Environmental Justice Analysis for the Kettleman Hills Facility's Proposed TSCA Permit

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws and policies. Achieving environmental justice is a United States Environmental Protection Agency (U.S. EPA) priority and is an integral part of the U.S. EPA's mission to protect human health and the environment.

U.S. EPA is proposing to issue a permit to Chemical Waste Management, Inc.'s (CWM) Kettleman Hills Facility (KHF or Facility) to renew and modify the permit that allows it to store, treat and dispose of polychlorinated biphenyls (PCBs). U.S. EPA has prepared this Draft Environmental Justice (EJ) Analysis to ensure that environmental justice concerns are considered in drafting the proposed permit and in seeking the affected community's involvement in reaching a final permit decision.

U.S. EPA focused the Draft EJ Analysis on Kettleman City, which is located approximately 3.5 miles northeast of the Facility and is the nearest residential area to KHF. The Kettleman City community has a long history of advocating for environmental justice in local, state, and federal decisions related to the Facility. This advocacy has positively assisted the community in the ways discussed in this Draft EJ Analysis and has also helped U.S. EPA to prepare this Draft EJ Analysis and the proposed permit.

Certain pre-existing social, economic, environmental, and health conditions may make a community more vulnerable and susceptible to harm from additional pollution. The Draft EJ Analysis includes information gathered from a variety of sources, including input from the local community, on the current social, economic, environmental, and health conditions in Kettleman City. This information shows that the majority of Kettleman City residents are minority and low-income. It also shows that Kettleman City has an above average number of residents whose primary language is Spanish and above average number of adults that did not graduate high school.

The Draft EJ Analysis documents that the Kettleman City community also bears multiple environmental burdens, including poor regional air quality, drinking water that exceeds the state drinking water quality standards for arsenic, and proximity to traffic from nearby major truck routes. The health data collected for this analysis show that children and older adults in Kings County have rates of asthma and mortality that are higher than the state averages and the community has limited access to health care. In 2007-2010, the community also suffered an increased occurrence of birth defects.

The Draft EJ Analysis describes the proposed PCB operations at the Facility and includes information on KHF's permitting, compliance, and monitoring history. It also describes how PCBs could potentially be released from KHF and the engineering, operating, and monitoring requirements included by U.S. EPA in the proposed permit to monitor and reduce or prevent such releases. For example, the proposed permit includes dust control requirements to reduce dust emissions from the landfill and requirements to monitor the air for PCBs.

The permit decision-making process provides an opportunity for U.S. EPA to hear from the community about all types of issues that affect them – not just those directly related to the Facility requesting a permit. Over the past decade, U.S. EPA has held or participated in many community events in Kettleman City to provide information on its activities to the community but, more importantly, to hear and learn about community issues and concerns. The Draft EJ Analysis includes a chronicle of these events.

This Draft EJ Analysis also includes a discussion of the many concerns that that the community has shared and discusses the work that U.S. EPA and California's state environmental and health agencies have done to evaluate and to take actions to address these concerns. For example, U.S. EPA requested that CWM complete a PCB congeners study in response to community concerns that PCBs from KHF could either be deposited off-site and taken up into the food chain or could migrate as air emissions and impact Kettleman City. The resulting "PCB Congeners Study" found no evidence that PCBs from KHF migrate off-site at concentrations that would adversely impact the environment or health of nearby residents.

This Draft EJ Analysis is one step in U.S. EPA's efforts to integrate environmental justice concerns into its permit actions for the Facility. U.S. EPA's primary duty in acting on an application to renew or modify a TSCA permit is to determine that the facility's operations will not pose an unreasonable risk of injury to health or the environment. TSCA regulations provide U.S. EPA with the authority to add permit conditions to prevent unreasonable risk. The involvement of the local community in the permit decision-making process helps identify potential risks that may be unique to that community. This Draft EJ Analysis documents how past involvement by the Kettleman City community has resulted in permit conditions to address community concerns.

U.S. EPA is proposing to issue a permit to KHF that contains the conditions necessary to prevent an unreasonable risk to health and the environment from storage, treatment and disposal of PCBs. U.S. EPA is now asking the Kettleman City community and any others with interest in this permit decision to review and comment on the proposed permit and U.S. EPA's analysis of it, called the Statement of Basis, that includes this Draft EJ Analysis. Comments will be accepted until November 1, 2019.

U.S. EPA will be holding a public meeting with a question and answer session on the proposed permit in Kettleman City on October 10, 2019. This meeting will be followed by a public hearing at which spoken comments may be formally submitted. Simultaneous Spanish translation will be provided at the meeting and hearing. Written comments may be submitted until November 1, 2019 at any one of these addresses:

- **www.regulations.gov** [docket number EPA-R09-RCRA-2019-0088];
- **R9LandSubmit@epa.gov** or wicher.frances@epa.gov; or
- Frances Wicher, Kettleman Hills Project Manager
  U.S. Environmental Protection Agency Region 9
  75 Hawthorne Street
  San Francisco, CA 94105

Comments, including any personal information provided, will be placed in the publicly available docket for this action. Copies of the proposed permit, the statement of basis, the Draft EJ Analysis, and other supporting information can be found at the Kettleman City Library, **www.regulations.gov** [docket number EPA-R09-RCRA-2019-0088], and U.S. EPA's Kettleman Hills website: **www.epa.gov/ca/kettleman_hills**.

Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
AAMP	Ambient Air Monitoring Program
ACS	American Community Survey
CAA	Cleanup and Abatement Account
CalEnviroScreen	California Communities Environmental Health Screening Tool
CalEPA	California Environmental Protection Agency
CalRecycle	California Department of Resources, Recycling, and Recovery
CAM	Corrective Action Monitoring
CARB	California Air Resources Board
CalTrans	California Department of Transportation
CCR	California Cancer Registry
CBDMP	California Birth Defects Monitoring Program
CBI	Confidential Business Information
CDPH	California Department of Public Health
CDPR	California Department of Pesticide Regulation
CEHTP	California Environmental Health Tracking Program
C.F.R.	Code of Federal Regulations
CWM	Chemical Waste Management, Inc.
DHHS	United States Department of Health and Human Services
DTSC	California Department of Toxic Substances Control
DWP	Drinking Water Program
EJ Analysis	Environmental Justice Analysis
E.O.	Executive Order
Facility	Kettleman Hills Facility
Greenaction	Greenaction for Health and Environmental Justice
HPSA	Health Professional Shortage Area
HRSA	Health Resources and Services Administration
I-5	Interstate 5
KCCSD	Kettleman City Community Services District
KHF	Kettleman Hills Facility
LCRS	Leachate Collection and Removal Systems
µg/m3	Micrograms per Cubic Meter
NAAQS	National Ambient Air Quality Standards
NEIC	National Enforcement Investigations Center
NON	Notice of Noncompliance
OEHHA	Office of Environmental Health Hazard Assessment

PCB(s)	Polychlorinated Biphenyls
PCB Congeners Study	Dioxin-Like PCB Congeners Study Report
PCB F/SU	PCB Flushing/Storage Unit
$PM_{2.5}$	Particulate Matter Less than 2.5 Micrometers in Diameter
PM_{10}	Particulate Matter Less than 10 Micrometers in Diameter
ppm	Parts Per Million
PWS	Public Water System
RCRA	Resource Conservation and Recovery Act
RWQCB	Central Valley Regional Water Quality Control Board
SJVAPCD	San Joaquin Valley Air Pollution Control District
SR-41	State Route 41
TASC	Technical Assistance Services for Communities
Water Board	State Water Resources Control Board
TSCA	Toxic Substances Control Act
U.S. EPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

Table of Contents

Text Tables

Figures

1. Introduction

Environmental justice is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws and policies. Achieving environmental justice is a United States Environmental Protection Agency (U.S. EPA) priority and is an integral part of the U.S. EPA's mission to protect human health and the environment.

U.S. EPA is proposing to issue an approval (permit[1]) to Chemical Waste Management, Inc.'s (CWM) Kettleman Hills Facility (KHF or Facility) to renew and modify the permit that allows it to store, treat and dispose of polychlorinated biphenyls (PCBs). U.S. EPA has prepared this Draft Environmental Justice (EJ) Analysis to ensure that environmental justice concerns are considered in the drafting of the proposed permit and in seeking community involvement in reaching a final permit decision.

The Draft EJ Analysis was prepared pursuant to Executive Order (E.O.) 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The E.O. directs federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations. The E.O. is intended to prevent discrimination in federal programs that affect human health and the environment, as well as to provide the opportunity for public participation and access to public information. The E.O. further mandates that federal agencies are required to implement this order consistent with, and to the extent permitted by, existing law.

This Draft EJ Analysis documents that U.S. EPA has incorporated environmental justice considerations into its permit application review that are within U.S. EPA's legal authority to address in the permit decision-making process. U.S. EPA considered publicly available data, tools, and previous studies to focus on potential health and environmental impacts. U.S. EPA focuses this analysis on Kettleman City due to its location and proximity with respect to the Facility and history of community concerns about impacts related to the Facility. U.S. EPA recognizes that Kettleman City has multiple environmental burdens, as well as social and health issues that may make the community more vulnerable to the impacts of pollution. Most of these environmental burdens and their potential impacts fall outside of U.S. EPA's legal authority to address during the permit decision-making process, but U.S. EPA supports referring these issues to other programs or organizations within or outside of U.S. EPA that may have authority and/or resources to mitigate potential burdens and impacts.

In this document, U.S. EPA summarizes information about the proposed action and its regulatory framework (Section 2), identifies existing environmental conditions and examines demographic and health data for Kettleman City and Kings County (Section 3), describes the Facility and its history (Section 4), lists the public participation and outreach activities for this proposed permit action and prior outreach activities (Section 5), describes community concerns raised during these outreach activities and actions taken to better understand the Facility's potential impacts on the health of Kettleman City residents and the environment (Section 6), and includes a list of U.S. EPA's proposed permit conditions to protect human health and the environment (Section 7). More information on U.S. EPA's proposed permit can be found in the Statement of Basis.

---

[1] While U.S. EPA's proposed action is called an "approval" by the TSCA PCB regulations, it is most easily understood as a "permit" because that is the common term used in other regulatory programs; therefore, this document generally refers to any proposed or final TSCA approval as a proposed or final TSCA permit. However, in some instances the more precise regulatory term "approval" must be used.

2. Proposed Permit Action and Regulatory Framework

2.1 Proposed Permit Action

U.S. EPA's proposed permit for KHF, if made final, would replace U.S. EPA's existing permits[2] for the Facility with a modern permit. The proposed permit would allow CWM to continue to:

1) Dispose of PCB waste in Landfill B-18 Phase I and Phase II (Figure 1).
2) Store PCB waste in the PCB Flushing/Storage Unit (PCB F/SU) enclosed building (Figure 1).
3) Drain and flush PCB-containing electrical equipment at the PCB F/SU.
4) Bulk (combine small containers of waste into a larger container) and repackage PCB waste in the enclosed building at the PCB F/SU.

The proposed permit, if made final, would also allow CWM to:

1) Dispose of PCB waste in Landfill B-18 Phase III.
2) Store PCB waste that is within 30 days of its removal from service date in the outside containment area at the PCB F/SU.
3) Bulk and repackage PCB waste within the outside containment area at the PCB F/SU.
4) Perform bin-top and container-top solidification of incidental liquids at the PCB F/SU.

To maintain compliance with all applicable TSCA regulations for storage, treatment for disposal, and disposal of PCB waste, the proposed permit, if made final, would require CWM to:

1) Maintain records on Facility operations.
2) Regularly inspect and maintain the Facility.
3) Maintain and implement a contingency plan to respond to spills or other emergencies.
4) Promptly report any PCB spill or emergency that requires implementation of the contingency plan.
5) Test groundwater annually from wells monitoring active Landfill B-18 and every five years from wells monitoring closed Landfills B-14, B-16, and B-19 for PCBs and report the results.
6) Test leachate annually from Landfills B-14, B-16, B-18, and B-19 for PCBs and report the results.
7) Implement an air quality monitoring program that includes four monitoring sites and provide quarterly air monitoring reports.
8) Test surfaces quarterly at the PCB F/SU for PCB contamination and promptly clean up any PCB contamination found at or above 10 micrograms per 100 square centimeters.
9) Promptly report any detection of PCBs in groundwater, leachate, ambient air, or on surfaces at the PCB F/SU.
10) Maintain and implement post-closure plans, cost estimates, and financial assurance for post-closure care for closed Landfills B-14, B-16 and B-19.
11) Maintain plans, cost estimates, and financial assurance for closure and post-closure care of Landfill B-18.
12) Maintain a closure plan, cost estimates, and financial assurance for closure of the PCB F/SU.
13) Follow public process requirements for many types of modifications to the permit.

[2] KHF currently operates under permits issued in 1988 (amended in 1990) and 1992. See Section 4.2 for more information.

Overall, the proposed permit would result in the following changes to the Facility:

1) Increase the PCB waste-disposal capacity of Landfill B-18 from 10.7 million cubic yards to 15.6 million cubic yards by approving the disposal of PCB waste in Phase III (Figure 1).
2) Set a maximum PCB waste storage capacity at the PCB Flushing/Storage Unit of 44,015 gallons.

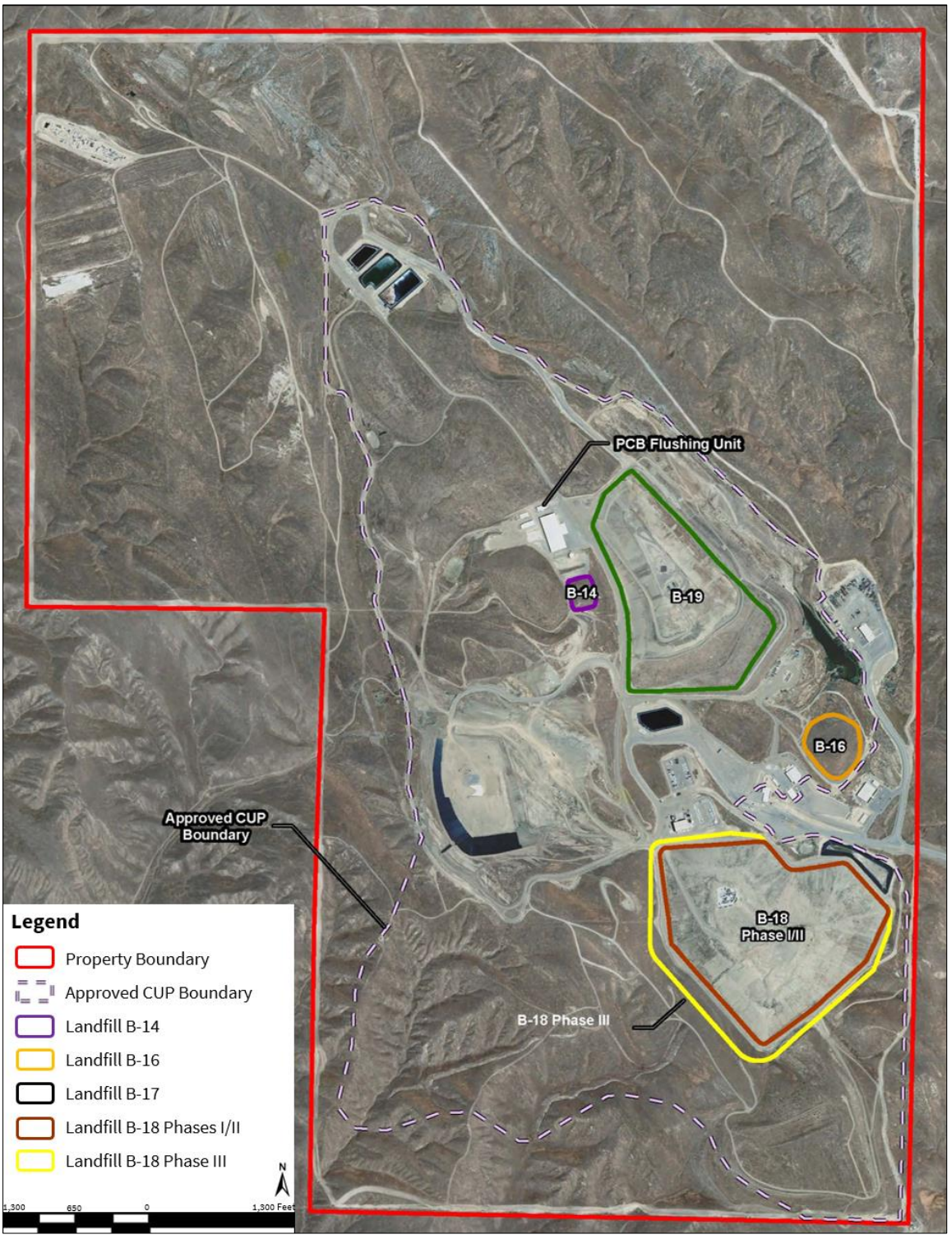


FIGURE 1 Permitted Area for Management of RCRA and State-Only Hazardous Waste and Municipal Solid and Designated Waste at KHF [Wenck 2011a (modified)].

2.2 Regulatory Framework

2.2.1 Toxic Substances Control Act

U.S. EPA is responsible for implementing the TSCA PCB regulatory program as described in 40 Code of Federal Regulations (C.F.R.) Part 761.[3] Any person storing or disposing of regulated PCBs must comply with the TSCA PCB regulatory program including the storage and disposal regulations in 40 C.F.R. Part 761 Subpart D. Any person storing or disposing of PCBs is also responsible for determining and complying with all other applicable federal, state, and local laws (40 C.F.R. § 761.50(a)(6)).

For storage and disposal of PCB waste at the Facility, CWM must comply with 40 C.F.R. Part 761 and obtain all necessary permits from U.S. EPA. Sections 761.65 and 761.75 of Part 761 list the requirements that apply to the design and operations of TSCA PCB waste storage facilities and TSCA chemical waste landfills, respectively.[4] These sections also describe the findings that U.S. EPA must make prior to issuing a permit, including finding that PCBs from operations at the landfill or storage facility will not pose an unreasonable risk of injury to health or the environment.

KHF is currently operating under TSCA permits issued in 1988 (amended 1990) and 1992. CWM submitted applications to renew these permits in 1997 and 1998, respectively, and has since submitted several updated and revised applications, the latest of which is dated October 2, 2018. U.S. EPA has reviewed the 2018 renewal application and is proposing to issue a TSCA permit. More information about the KHF's history can be found in Section 4 of this document.

Certain nonliquid PCB waste may be disposed of in an approved TSCA chemical landfill.[5] The TSCA PCB regulatory program describes the PCB wastes that may be disposed in a TSCA chemical waste landfill and the procedures to be taken before such disposal, such as removal of free-flowing liquid PCBs from transformers.

TSCA PCB regulations also allow certain nonliquid PCB wastes to be disposed of in a Resource Conservation and Recovery Act (RCRA) hazardous waste landfill if that disposal is also allowed by the landfill's other permits.[6] CWM is currently allowed to dispose of certain PCB wastes, mainly PCB remediation waste from sites with U.S. EPA-approved PCB cleanup plans, in Landfill B-18 Phase III under the PCB regulations and its state RCRA permit.

This general overview is not a substitute for the full regulations, but it illustrates that the TSCA PCB regulatory program has specific requirements for the storage, treatment for disposal, and disposal of different types of PCB waste.

---

[3] TSCA PCB regulations are in Title 40 and Part 761 is in volume 34 of the C.F.R., which can be accessed at **www.ecfr.gov/**.

[4] The Statement of Basis Sections III.C. and III.D. provide additional information about the TSCA regulatory program as it applies to storage facilities and landfills.

[5] For example, PCB "articles" (e.g., transformers) and "containers" (e.g., drums) that contain PCB oils greater than or equal to 50 parts per million generally must be either disposed of at a TSCA chemical landfill (but only after all PCB oils are drained) or incinerated in a TSCA-approved incinerator. The drained oil must be sent to a TSCA-approved incinerator or otherwise disposed in accordance with the federal PCB regulations.

[6] For example, sections 761.61(a)(5) and 761.62 of Part 761 identify specific types of bulk PCB remediation waste and PCB bulk product wastes that may be disposed in a RCRA hazardous waste landfill or solid waste landfill and the requirements that must be followed for such disposal.

2.2.2 Other Regulations

KHF also operates under a RCRA permit that the California Department of Toxic Substances Control (DTSC) issued in 2003. DTSC modified the RCRA permit in 2014 to allow for the construction and operation of Landfill B-18 Phase III.[7] Phase III has been constructed and is currently accepting RCRA and state-only hazardous wastes and certain PCB remediation wastes and bulk product wastes. KHF submitted an application to renew its RCRA permit on May 15, 2013 and has updated and revised the application several times including the latest submittal that DTSC received on March 16, 2018. DTSC is reviewing the application and is in the technical review phase of the process that will lead to a permit decision.[8]

In addition to U.S. EPA and DTSC permits, KHF is also regulated by the California Department of Resources Recycling and Recovery (CalRecycle), the Central Valley Regional Water Quality Control Board (RWQCB), Kings County, and the San Joaquin Valley Air Pollution Control District (SJVAPCD) (Table 1).

TABLE 1 Permits for KHF Operations.

Agency/Permit	Description	Permit No.	Date Issued
U.S. EPA/TSCA-Regulated Waste	Disposal of nonliquid PCB waste in Landfills B-14, B-16, and B-19 and PCB storage units	N/A	1988 (amended 1990)
	Disposal of nonliquid PCB waste in Landfill B-18, Phase I and Phase II; prohibition on disposal of PCB waste in Landfill B-14	N/A	1992
DTSC/Hazardous Waste	Disposal of RCRA and state-only hazardous waste	02-SAC-03	2003 (modified 2014)
SJVAPCD/Air Pollution	Facility-Wide Requirements	C-283-0	2017
	Emergency Generator Internal Combustion Engine	C-283-8	2017
	Landfill B-18	C-283-11	2017
	Impoundment P-9	C-283-14	2017
	Impoundment P-14	C-283-15	2017
	Impoundment P-16	C-283-17	2017
	Final Stabilization Unit 9	C-283-19	2017
	10,000-gallon Gasoline Underground Tank	C-283-20	2017
	Landfill B-19 Bioreactor	C-283-22	2017
	Reagent “Guppy”	C-283-24	2017
	Landfill B-17	C-283-25	2017
RWQCB/Waste Discharge Requirements	Waste Discharge Requirements (Class II/III Landfills)	R5-2006-0122	2006
	Waste Discharge Requirements	R5-2014-0003	2014
CalRecycle/Solid Waste Facility Permit	Class II/III Wastes in Landfill B-17	16-AA-0027	2006
	Class II/III Wastes in Landfill B-19	16-AA-0021	2008
CalRecycle/Registration Permit	Nonhazardous, Non-putrescible, Industrial Solid Waste in Landfill B-18	16-AA-0023	2012
Kings County Community Development Agency/Land Use Permits and Approvals	Various Conditional Use Permits, Administrative Approvals, etc.	Various	Various

[7] Greenaction for Health and Environmental Justice and El Pueblo para el Aire y Agua Limpia filed a complaint on March 19, 2015 with U.S. EPA’s External Civil Rights Compliance Office under Title VI of the Civil Rights Act of 1964 and its implementing regulations. The complaint was against the California Environmental Protection Agency and DTSC for discriminating on the basis of race and national origin in approving the expansion of the Facility and in limiting the participation of the minority residents of Kettleman City in the permit decision-making process. The External Civil Rights Compliance Office accepted this complaint on April 17, 2015 and a settlement agreement was reached on August 10, 2016. More information can be found on DTSC’s website at **dtsc.ca.gov/chemical-waste-management-inc-kettleman-hills-facility/**.

[8] More information about the RCRA permit and renewal application is available on DTSC’s KHF website at **www.dtsc.ca.gov/HazardousWaste/Projects/CWMISiteDescription.cfm**.

3. Community Information

In this section, U.S. EPA uses available data from several sources to identify environmental burdens and the presence of social and health factors that may make KHF's neighboring community more vulnerable to the impacts of pollution.

3.1 Description of Kettleman City

U.S. EPA focuses this analysis on Kettleman City due to its location and proximity with respect to the Facility and history of community concerns about impacts related to the Facility (Figure 2). Avenal, the next closest city to KHF, is not included in this analysis due to its location and distance from KHF (approximately 6.5 miles northwest, upwind of KHF) and it not being on or near a truck route to KHF.

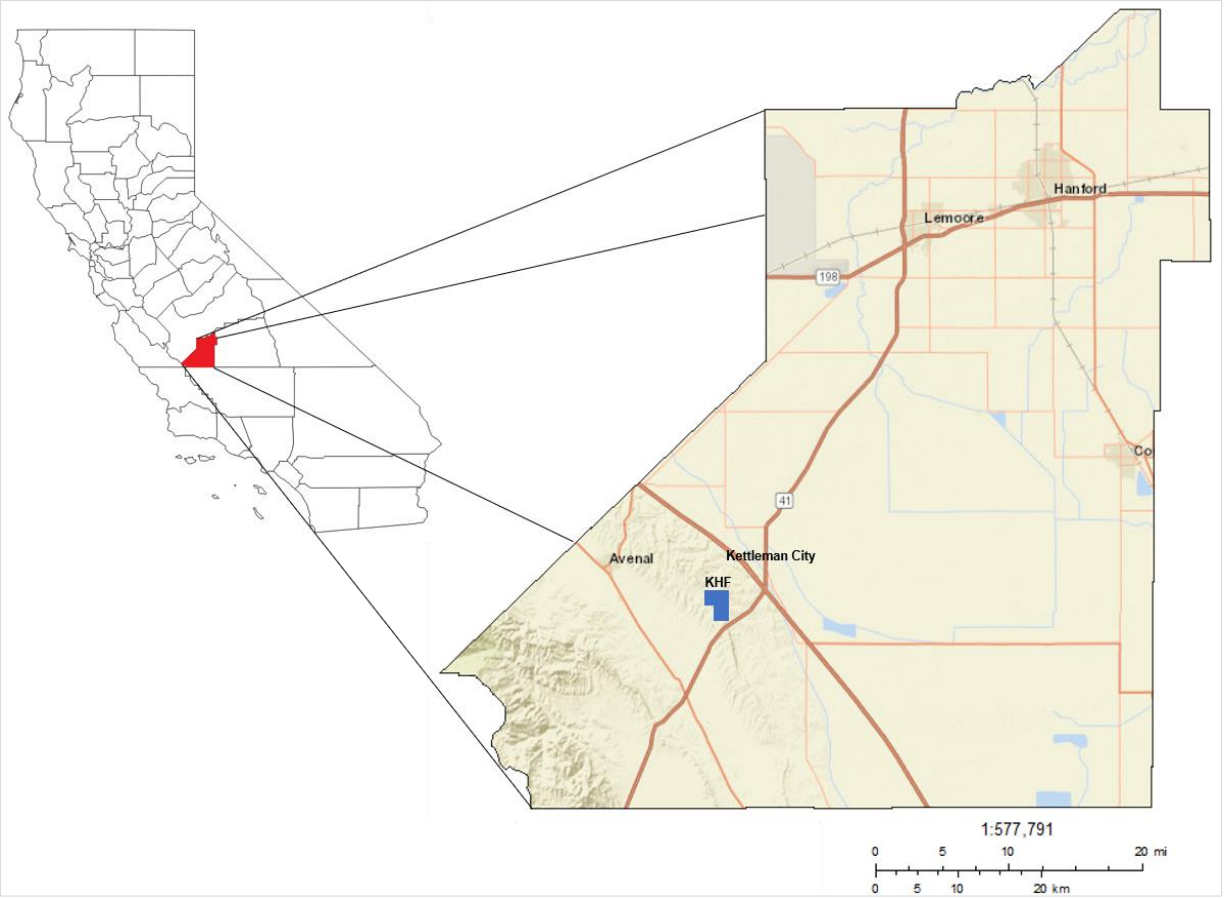


FIGURE 2 Location of Kettleman City, Avenal, Kings County, and the Facility.

Kettleman City is approximately 3.5 miles northeast of the Facility, located along State Route 41 (SR-41) and two miles north of the Interstate 5 (I-5) and SR-41 intersection (Figures 3 and 4). Kettleman City is a rural, unincorporated area of Kings County with two distinct areas separated by the California Aqueduct: a residential community to the north and a commercial area to the south. The residential area of Kettleman City is bounded to the north, east, and west by agricultural fields.

Kettleman City has a population of 1,574 with approximately 350 residential units averaging 1,100 square feet in size [U.S. Census Bureau 2019; California Environmental Protection Agency (CalEPA) and California Department of Public Heath (CDPH) 2010]. Homes are found on both sides of SR-41.

There is one school, Kettleman City Elementary School, and one church in Kettleman City [U.S. EPA 2018c]. Three oil pipelines, a Chevron oil processing facility, and an XPO Logistics freight transfer station are located at least 0.35 miles south of the residential area (Figure 4) [CalEPA and CDPH 2010].

FIGURE 3 Residential Communities Near KHF.

FIGURE 4 Land Use Near Kettleman City.

3.2 Environmental Burdens

3.2.1 Air Quality

U.S. EPA has established National Ambient Air Quality Standards (NAAQS) for several pollutants considered harmful to public health and the environment, including ozone, particulate matter

less than 2.5 micrometers in diameter ($PM_{2.5}$), and particulate matter less than 10 micrometers in diameter (PM_{10}).[9] Ground-level ozone and particulate matter pollution are associated with a number of health effects.[10]

Air quality near Kettleman City is above the NAAQS for ozone, $PM_{2.5}$, and PM_{10} (Table 2) [U.S. EPA 2018b]. In addition, the California Communities Environmental Health Screening Tool (CalEnviroScreen)[11] identifies that the census tract[12] that includes Kettleman City has $PM_{2.5}$ values higher than 95 percent of all census tracts in California and ozone values higher than 85 percent of all census tracts in California [CalEPA 2019].

TABLE 2 2015-2017 Design Values for Violating Air Quality Monitors Near Kettleman City.

NAAQS	2015-2017 Design Value[a]	Monitor Location[d, e]	Level of NAAQS
2015 Ozone 8-hour	0.084 ppm[b]	807 South Irwin St., Hanford, CA	0.070 ppm
2012 $PM_{2.5}$ Annual	22.2 µg/m^3 [c]	1520 Patterson Ave., Corcoran, CA	12.0 µg/m^3
2006 $PM_{2.5}$ 24-hour	72 µg/m^3	1520 Patterson Ave., Corcoran, CA	35 µg/m^3
1987 PM_{10} 24-hour	2.7 average estimated exceedances	1520 Patterson Ave., Corcoran, CA	1.0 average estimated exceedances

[a] A design value is a statistic that describes the air quality status of a given location relative to the level of NAAQS and is often based on concentrations measured over multiple years of data. The 2015-2017 $PM_{2.5}$ design values at Corcoran are based on data from January 1, 2015 to February 6, 2015 and from January 1, 2016 to December 31, 2017; data from February 7, 2015 to December 31, 2015 are not available due to a fire that destroyed the site. Based on design value calculation methodologies described in the regulations, these design values are considered valid despite the missing 2015 data. The 2015-2017 $PM_{2.5}$ design values at Hanford are 16.4 µg/m^3 for annual NAAQS and 54 for 24-hour NAAQS, and include data measured for three complete years (January 1, 2015 to December 31, 2017).

[b] Parts Per Million (ppm)

[c] Micrograms Per Cubic Meter (µg/m^3)

[d] These monitors are part of the California Air Resource Board's regulatory air monitoring network

[e] Kettleman City is approximately 26 miles from the Corcoran monitor location and 30 miles from the Hanford monitor location.

3.2.2 Traffic

Low-income and minority populations often live in or near areas with high traffic [CalEPA and Office of Environmental Health Hazard Assessment (OEHHA) 2017]. Major roads and highways can bring air pollutants into neighborhoods and can cause several different types of health problems [CalEPA and OEHHA 2017]. In Kettleman City, SR-41 runs through the community and Interstate 5 (I-5) is located less than a mile to the west. (Figure 5).

The California Department of Transportation's (Caltrans) Traffic Census Program collects data on California's state highway system. Traffic volumes may be estimated or counted at north and south or east and west of an intersection and represents the annual average daily traffic (AADT), which is the total volume for the year divided by 365 days. Caltrans data from 2002-2017 shows that AADT for all vehicles and truck-only traffic are increasing on I-5 at the I-5/SR-41 intersection (Figures 5-7) [Caltrans 2019a]. Trucks account for approximately 25-30 percent of all traffic on I-5 at this location (Figure 7) [Caltrans 2019a, 2019b].

---

[9] More information about NAAQS is available at **www.epa.gov/criteria-air-pollutants/naaqs-table**.

[10] More information about the health effects of ground-level ozone and particulate matter is available at **www.epa.gov/criteria-air-pollutants**.

[11] CalEnviroScreen is CalEPA's online screening tool that "identifies California communities by census tract that are disproportionately burdened by, and vulnerable to, multiple sources of pollution." More information is available at **www.oehha. ca.gov/calenviroscreen**.

[12] A census tract is a geographic region used by the U.S. Census Bureau and defined for the purpose of taking a census.

FIGURE 5 Major Intersections Near Kettleman City, California.

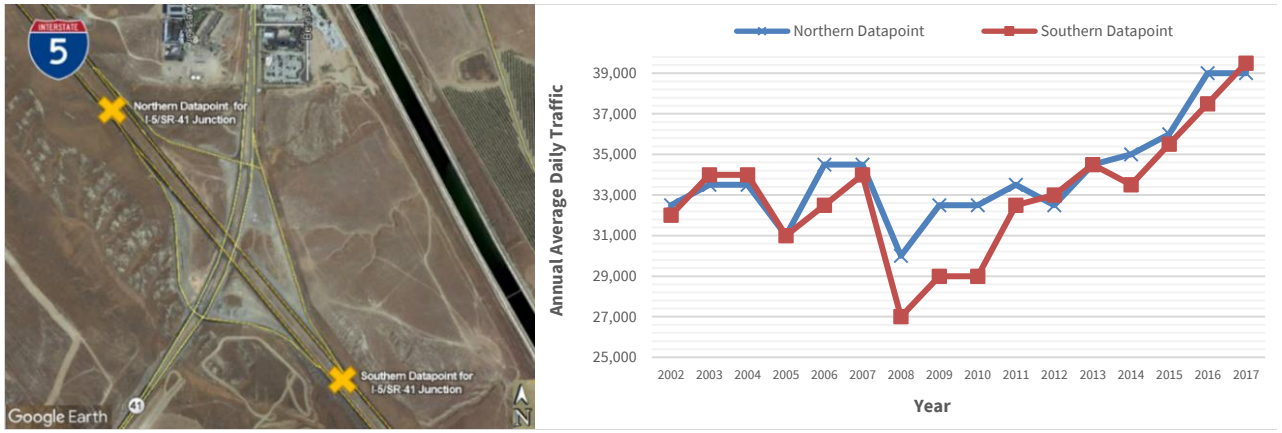


FIGURE 6 All-Vehicle AADT from 2002-2017 on I-5 at the I-5/SR-41 Intersection.

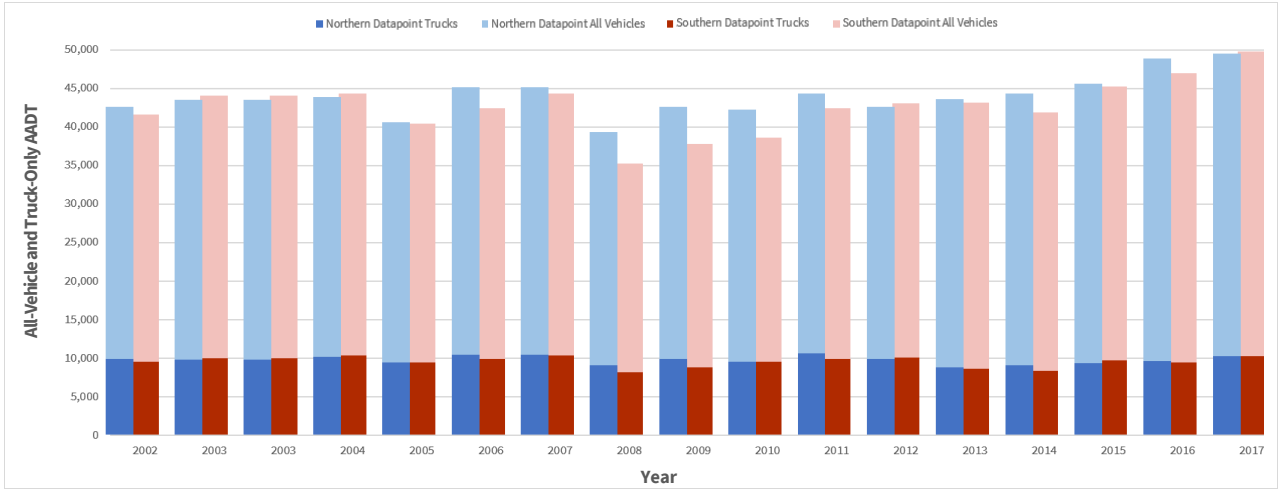


FIGURE 7 All-Vehicle and Truck-Only AADT from 2002-2017 on I-5 at the I-5/SR-41 Intersection.

From 2014-2017, Caltrans data shows a large increase in traffic at the SR-41/Bernard Drive intersection, a location that includes many amenities including gas stations, restaurants, and hotels (Figures 8 and 9) [Caltrans 2019a]. Data indicates this increase in vehicles returns to I-5 and does not result in a traffic increase in Kettleman City (Figures 9 and 10) [Caltrans 2019a, 2019b].

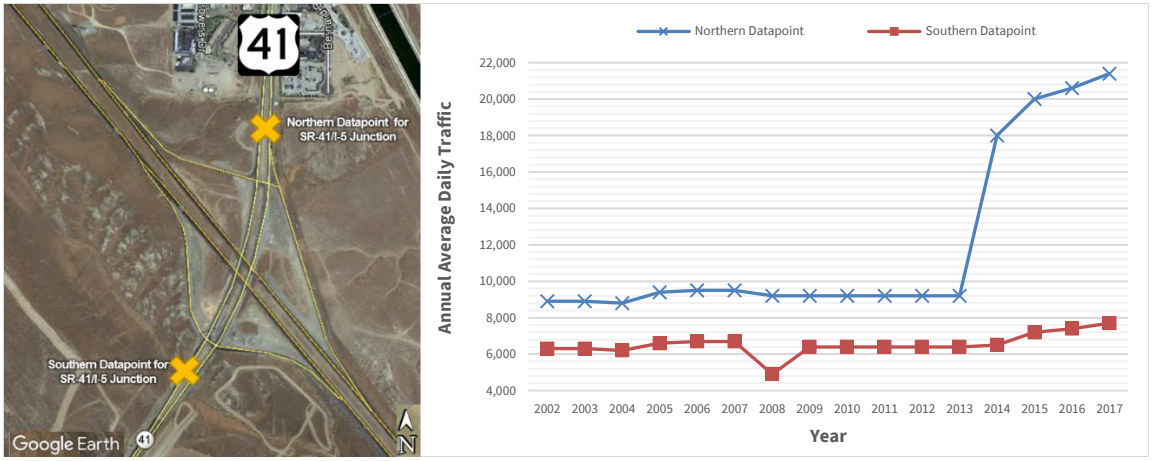


FIGURE 8 All-Vehicle AADT from 2002-2017 on SR-41 at the SR-41/I-5 Intersection.

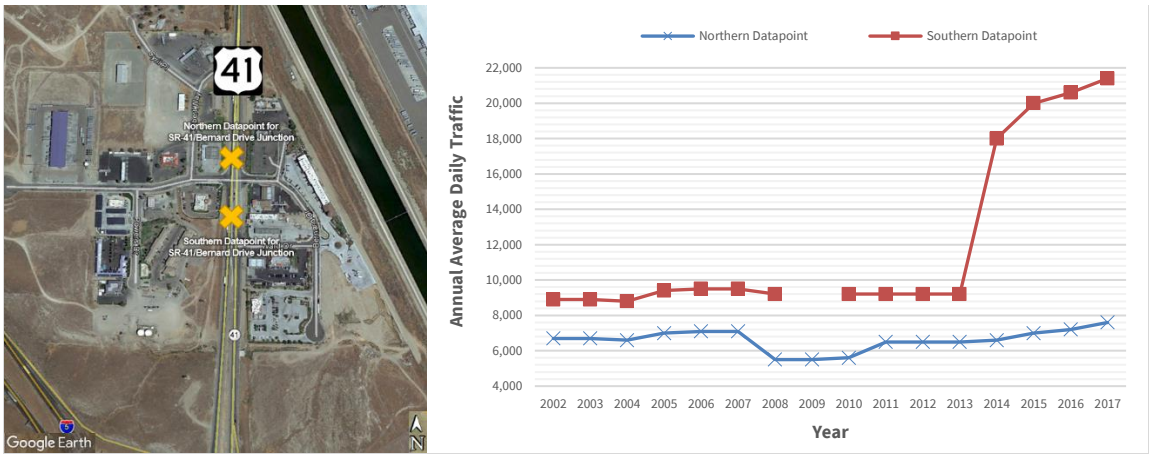


FIGURE 9 All-Vehicle AADT from 2002-2017 on SR-41 at the SR-41/Bernard Drive Intersection.

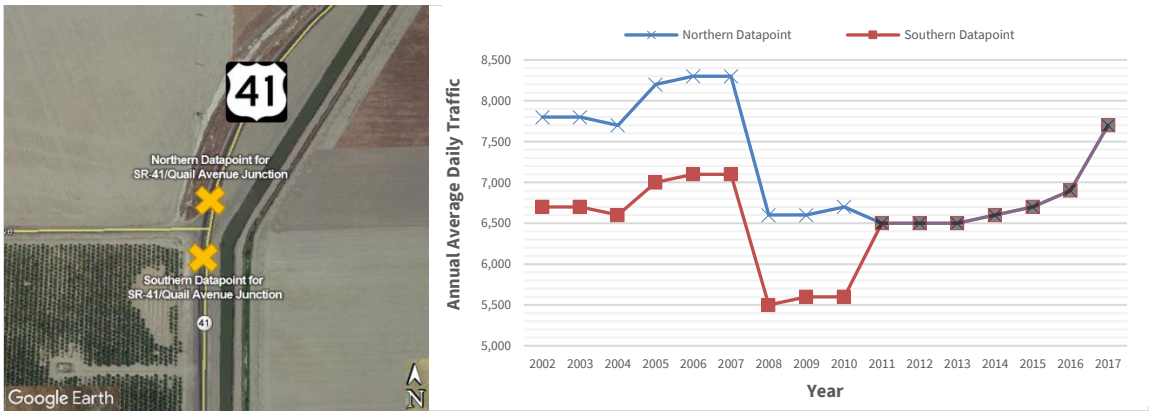


FIGURE 10 All-Vehicle AADT from 2002-2017 on SR-41 at the SR-41/Quail Avenue Intersection.

The Kettleman City truck-only AADT is estimated from the southern datapoint of the SR-41/Quail Avenue intersection (Figure 11) [Caltrans 2019b]. Truck traffic has slightly varied from 2008-2017 [Caltrans 2019b]. Data prior to 2008 is not available.

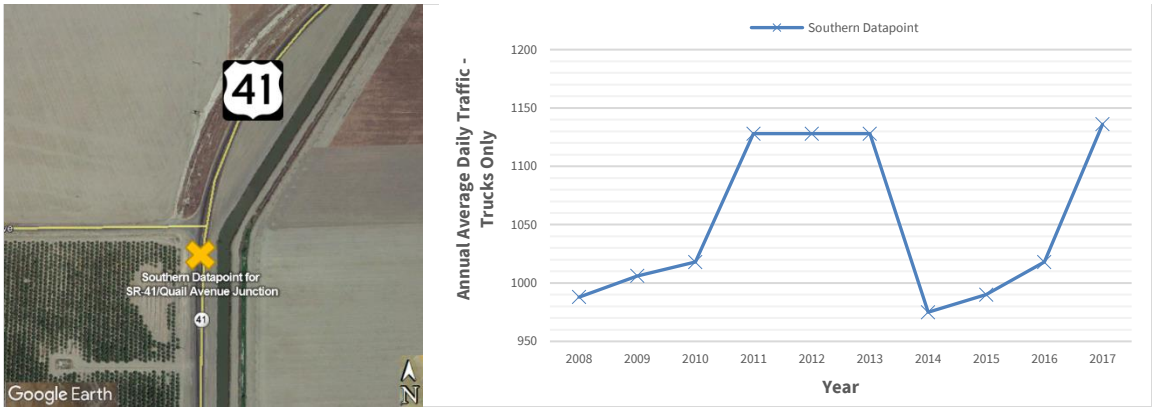


FIGURE 11 Truck AADT from 2008-2017 on SR-41 at the SR-41/Quail Avenue Intersection.

Traffic volume may result in higher levels of diesel particulate matter from the of exhaust of diesel cars, trucks, or buses. Diesel particulate matter includes hundreds of different chemicals, of which many are harmful to health [CalEPA and OEHHA 2017]. Diesel particulate matter levels are often highest near freeways [CalEPA and OEHHA 2017].

CalEnviroScreen identifies that the census tract that includes Kettleman City has diesel particulate matter values lower than approximately 93 percent of all census tracts in California and traffic volumes lower than 89 percent of all census tracts in California [CalEPA 2019].

3.2.3 Drinking Water Quality

Kettleman City has been impacted by naturally-occurring arsenic and benzene in drinking water. Two different public water systems serve the community: Kettleman City Community Services District (KCCSD) Public Water System (PWS) with two wells and the Kettleman City Elementary PWS with one well. The two municipal wells have had benzene and arsenic concentrations measured above the state drinking water standards while the Kettleman Elementary School well has exceeded the state drinking water standard for arsenic [CalEPA and CDPH 2010].

In 1998, the city equipped the two municipal wells with an aeration treatment system to remove benzene to less than the state drinking water standard. However, aeration treatment does not remove arsenic. As a result, the treated water still contains arsenic above the state drinking water standard and city residents cannot safely drink water from the tap. KCCSD and the Reef-Sunset Unified School District[13] have been working with the State Water Resources Control Board (Water Board) towards a solution to treat and reduce arsenic concentrations to less than the state drinking water standard. More information can be found in Sections 6.3.5 and 6.3.6.

[13] Kettleman City Elementary School is part of the Reef-Sunset Unified School District.

3.2.4 Pesticides from Agricultural Operations

Agricultural pesticides may migrate to Kettleman City primarily via drift of airborne particles or gases from the application site or by transport on wind-blown dust [California Department of Pesticide Regulation (CDPR) 2010]. Exposure to pesticides within the community may occur from air, food, water, soil, dust, surfaces, or work clothing.

Past pesticide data shows that based on pounds applied the most used pesticides between 2007-2009 within 5 miles of Kettleman City were metam potassium, sulfur, mineral oil, petroleum oil, and metam sodium, [CDPR 2010]. Recent pesticide use data shows a shift in the most used pesticides, most significantly no metam sodium was used in 2015 or 2016 (Table 3) [CDPR 2018]. Table 4 shows the top pesticide application crop sites for 2015 and 2016 within one and five miles of Kettleman City based on pounds applied [CDPR 2018].

CalEnviroScreen identifies that the census tract that includes Kettleman City has 1,719 pounds of pesticide applied per square mile,[14] which is higher than 91 percent of all census tracts in California [CalEPA 2019]. More information about pesticides can be found in Section 6.5.

TABLE 3 Top Five Pesticide Active Ingredient Applications Near Kettleman City, California.

Rank	5 Miles - 2015	5 Miles - 2016	1 Mile - 2015	1 Mile - 2016
1	Mineral Oil	Mineral Oil	Mineral Oil	Mineral Oil
2	Metam Potassium	Metam Potassium	Petroleum Oil	Sulfur
3	Sulfur	Sulfur	Sulfur	Petroleum Oil
4	Petroleum Oil	Petroleum Oil	Ziram	Ziram
5	Ziram	Kaolin	Glyphosate (Potassium Salt)	Glyphosate (Potassium Salt)

TABLE 4 Top Five Pesticide Application Crop Sites Near Kettleman City, California.

Rank	5 Miles - 2015	5 Miles - 2016	1 Mile - 2015	1 Mile - 2016
1	Almond	Almond	Almond	Almond
2	Soil Fumigation	Onion	Apricot	Pistachio
3	Peach	Tomatoes (for Processing)	Pistachio	Nectarine
4	Nectarine	Peach	Nectarine	Apricot
5	Pistachio	Soil fumigation	Plum	Plum

3.3 Demographic Data

U.S. EPA's evaluation of demographic (that is, social) data for potential environmental justice concerns focused on Kettleman City (as described in Section 3.1) and compared this data with information available for Kings County, California, and the nation (Table 5) [U.S. Census Bureau 2019].[15] This information shows that the majority of Kettleman City residents are minority and low-income and that Kettleman City has an above average number of adults with less than a high school education and an above average number of linguistically isolated residents.

[14] This value is calculated from 2012-2014 data of 70 of the most pesticide active ingredients that people may be exposed in California agriculture [CalEPA and OEHHA 2017, CalEPA 2019].

[15] Data is generated from the U.S. Census Bureau's 2013-2017 American Community Survey, a nationwide survey that collects and produces information on social, economic, housing, and demographic characteristics [U.S. Census Bureau 2017].

TABLE 5 Demographic Information for Kettleman City, Kings County, California, and the Nation.

Metric	Kettleman City	Kings County	California	National
Population	1,574	150,183	38,982,847	321,004,407
Percent Population Under 5 Years of Age	7.4%	7.9%	6.4%	6.2%
Percent Population Over 65 Years of Age	4.6%	9.5%	13.3%	14.9%
Percent Minority Population	98.2%	66.9%	62.1%	38.5%
Percent Low Income Population	28.7%	20.9%	15.1%	14.6%
Percent Linguistically Isolated Population	22.0%	9.0%	10.0%	5.0%
Percent Less than High School Education	68.2%	44.6%	17.5%	12.6%

3.3.1 Minority Population

Minority population refers to individuals who list their racial status as a race other than white. Minority communities may bear greater exposure and disease burdens associated with where they live, work, or play that can increase their risk of adverse health effects from environmental hazards [U.S. EPA 2016]. Almost all people in Kettleman City are minority (Latino), which is higher than the county, state, and national percentages (Table 5) [U.S. Census Bureau 2019].

3.3.2 Children and Elderly Populations

In this analysis, children and elderly populations are sensitive groups that can be more susceptible to environmental pollution [U.S. EPA 2016]. The most sensitive groups consist of populations under the age of five (5) and over the age of 64. Table 5 shows the percentage of the Kettleman City population under the age of five (5) is approximately seven (7) percent and over the age of 64 is approximately five (5) percent [U.S. Census Bureau 2019]. The population under the age of five (5) is similar to the county rate and higher than the state and national average. The elderly population in Kettleman City is more than two times lower than the county, state, and national percentages.

3.3.3 Low-Income Population

In this analysis, low-income refers to the population where the income is two times below the poverty threshold.[16] Low-income populations may bear greater exposure to pollution and suffering from health effects compared to more affluent communities [CalEPA and OEHAA 2017]. One out of three persons in Kettleman City is considered low-income (Table 5) [U.S. Census Bureau 2019]. CalEnviroScreen shows the poverty level of the census tract that includes Kettleman City is 86 percent higher than all census tracts in California [CalEPA 2019].

3.3.4 Linguistically Isolated Population

Linguistic isolation may limit a population's capacity to engage in the regulatory process [U.S. EPA 2016]. Twenty-two percent of Kettleman City households are linguistically isolated, which means that no one over the age of 14 speaks English well, speaks English at all, or speaks a language other than English [U.S. EPA 2018a]. According to the U.S. Census Bureau's 2013-2017 American Community Survey (ACS), approximately 98.6 percent of Kettleman City residents speak Spanish [U.S. Census Bureau 2019b]. The percentage of linguistically isolated households in Kettleman City is higher than the county, state, and national percentages [U.S. EPA 2018a].

[16] The poverty threshold is the income dollar amount used by the U.S. Census Bureau as a standard for comparison to determine a household's poverty status.

3.3.5 Population with Less Than High School Education

Education level may influence susceptibility and vulnerability to environmental pollution [U.S. EPA 2016]. Almost 70 percent of persons over the age of 25 in Kettleman City do not hold a high school diploma [U.S. Census Bureau 2019]. CalEnviroScreen also shows that over half of the persons over the age of 25 in the census tract that includes Kettleman City have less than a high school education and that the percent of adults without a high school diploma is higher than 93 percent of all census tracts in California [CalEPA 2019].

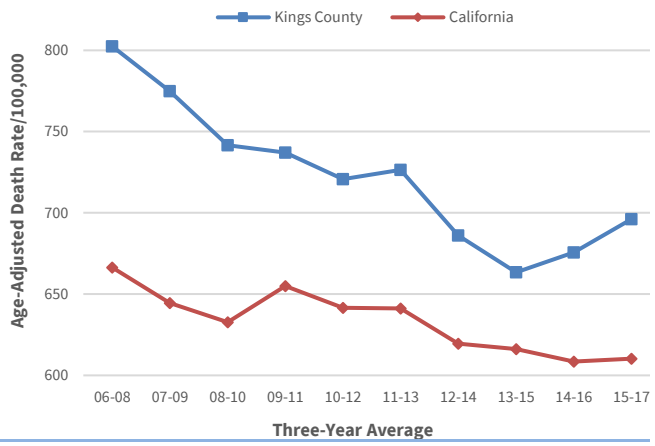
3.4 Health Data

3.4.1 Mortality

General and infant mortality are measures of health status in a population [U.S. EPA 2018d]. The CDPH's County Health Status Profiles[17] age-adjusted death rates due to all causes for Kings County and California from 2006-2017 (three-year averages) show that Kings County death rates have decreased but remain above the state-wide rate (Table 6 and Figure 12) [CDPH 2010-2019].

TABLE 6 / FIGURE 12 Age-Adjusted Death Rates Due to All Causes for Kings County and California from 2006-2017 (Three-Year Averages).

Three-Year Average	Age-Adjusted Death Rate per 100,000	
	Kings County	California
2006-2008	802.5	666.4
2007-2009	774.8	644.6
2008-2010	741.7	632.7
2009-2011	737.0	654.9
2010-2012	720.7	641.5
2011-2013	726.5	641.1
2012-2014	686.0	619.6
2013-2015	663.4	616.2
2014-2016	675.6	608.5
2015-2017	696.2	610.3



The California infant death rate has decreased consistently as seen in Table 7 [CDPH 2010-2019]. U.S. EPA reviewed the information available on infant mortality in Kings County but could not assess the infant death rate because the number of deaths was too few to generate a reliable infant death rate according to CDPH [CDPH 2010-2019]. Table 7 also lists the number of live births and the total number of infant deaths under the age of one (1) in Kings County from 2006-2017 (three-year averages) [CDPH 2010-2019].

[17] More information can be found at **www.cdph.ca.gov/Programs/CHSI/Pages/County-Health-Status-Profiles.aspx**.

TABLE 7 California Infant Death Rate and Kings County Infant Live Births and Deaths Under One-Year of Age from 2006-2017 (Three-Year Averages).

Three-Year Average	Per 1,000 Live Births California Infant Death Rate	Kings County Live Births	Kings County Infant Deaths (< One Year of Age)
2006-2008	5.3	2,673.0	15.3
2007-2009	5.3	2,725.3	16.0
2008-2010	5.2	2,712.0	11.7
2009-2011	5.0	2,620.7	14.3
2010-2012	4.9	2,572.0	15.3
2011-2013	4.8	2,476.3	16.0
2012-2014	4.7	2,438.7	14.3
2013-2015	4.6	2,364.7	12.0
2014-2016	4.4	N/A*	N/A*
2015-2017	4.4	2,288.7	<11.0

* Data was not provided based on CDPH's data de-identification guidelines.

3.4.2 Infant Health

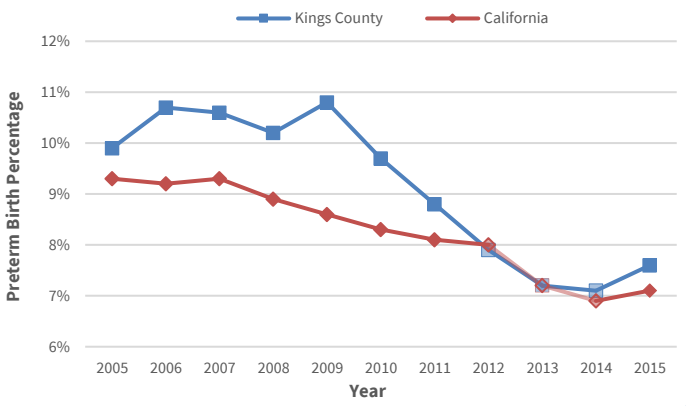
Infant health can determine the health of the next generation [U.S. EPA 2018d]. Preterm birth, low birth weight, access to prenatal care, and birth defects can lead to infant death or lifelong health disabilities [United States Department of Health and Human Services (DHHS) 2018].

Preterm Birth

Preterm birth is defined as a birth prior to 37 weeks of gestation. The California Environmental Health Tracking Program (CEHTP)[18] Maternal and Infant Health Data Query's [2019b] preterm birth percentages for Kings County and California from 2005-2015 show that, as the preterm births have decreased, Kings County is getting closer to the state-wide average (Table 8, Figure 13) [CEHTP 2019b].

TABLE 8 / FIGURE 13 Preterm Birth Percentages for Kings County and California from 2005-2015.

Year	Kings County	California
2005	9.9%	9.3%
2006	10.7%	9.2%
2007	10.6%	9.3%
2008	10.2%	8.9%
2009	10.8%	8.6%
2010	9.7%	8.3%
2011	8.8%	8.1%
2012	7.9%	8.0%
2013	7.2%	7.2%
2014	7.1%	6.9%
2015	7.6%	7.1%



[18] CEHTP is a collaboration of CDPH and the Public Health Institute and is funded by the Centers for Disease Control and Prevention. More information can be found at **www.cehtp.org/page/main**.

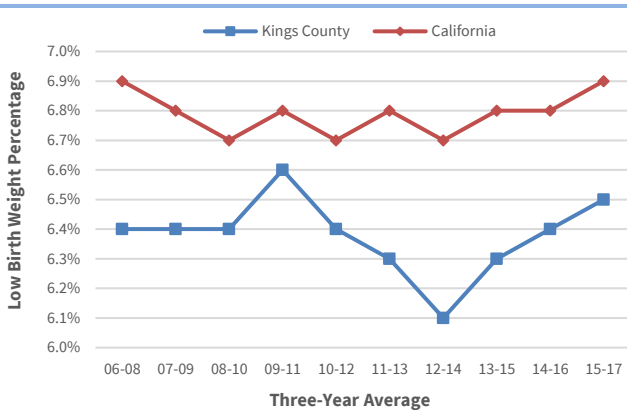
Low Birth Weight

As part of the "Investigation of Birth Defects and Community Exposures in Kettleman City" report, CDPH assessed the low birth weight rate for the census tract that includes Kettleman City from 2000-2006. CDPH modeled rates because the number of babies born in Kettleman City during this time was too small to compute rates conventionally. CDPH concluded that the rates were not different from the rates for Kings County or California during the same period.

Recent infant health data from CDPH's County Health Status Profiles show that Kings County low birth weight percentages from 2006-2017 (three-year averages) were similar to California, with both remaining relatively consistent over time (Table 9, Figure 14) [CDPH 2010-2019].

TABLE 9 / FIGURE 14 Low Birth Weight Percentages in Kings County and California from 2006-2017 (Three-Year Averages).

Three-Year Average	Kings County	California
2006-2008	6.4%	6.9%
2007-2009	6.4%	6.8%
2008-2010	6.4%	6.7%
2009-2011	6.6%	6.8%
2010-2012	6.4%	6.7%
2011-2013	6.3%	6.8%
2012-2014	6.1%	6.7%
2013-2015	6.3%	6.8%
2014-2016	6.4%	6.8%
2015-2017	6.5%	6.9%

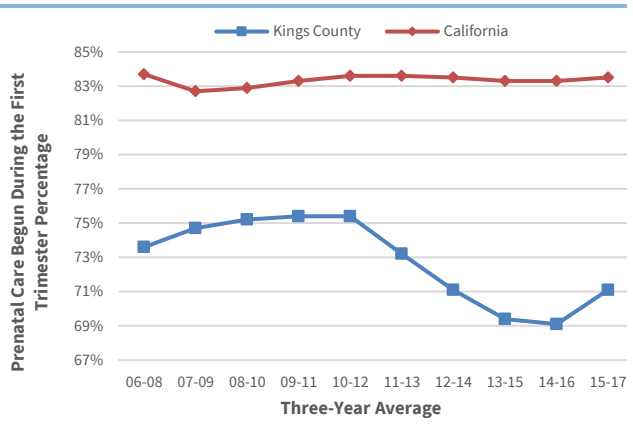


Access to Prenatal Care

CDPH's County Health Status Profiles show that women in Kings County are receiving less prenatal care in the first trimester and less overall adequate prenatal care[19] than the state from 2006-2017 (three-year averages) (Tables 10 and 11, Figures 15 and 16) [CDPH 2010-2019]. Fewer women in Kings County received care over the past decade.

TABLE 10 / FIGURE 15 Prenatal Care Begun During the First Trimester Percentages in Kings County and California from 2006-2017 (Three-Year Averages).

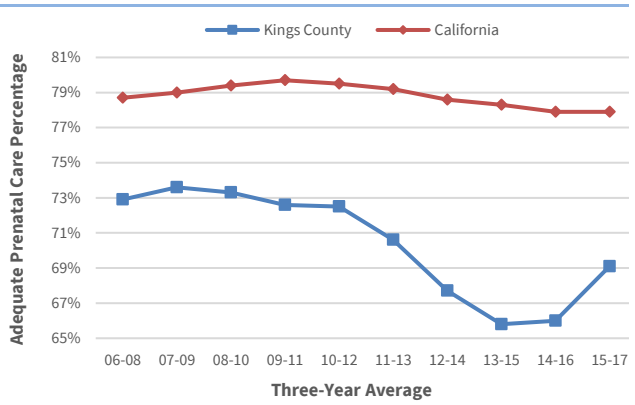
Three-Year Average	Kings County	California
2006-2008	73.6%	83.7%
2007-2009	74.7%	82.7%
2008-2010	75.2%	82.9%
2009-2011	75.4%	83.3%
2010-2012	75.4%	83.6%
2011-2013	73.2%	83.6%
2012-2014	71.1%	83.5%
2013-2015	69.4%	83.3%
2014-2016	69.1%	83.3%
2015-2017	71.1%	83.5%



[19] Adequate prenatal care refers to care that began by the fourth month of pregnancy and received at least 80 percent of the recommended visits [CDPH 2018].

TABLE 11 / FIGURE 16 Adequate Prenatal Care Percentages in Kings County and California from 2006-2017 (Three-Year Averages).

Three-Year Average	Kings County	California
2006-2008	72.9%	78.7%
2007-2009	73.6%	79.0%
2008-2010	73.3%	79.4%
2009-2011	72.6%	79.7%
2010-2012	72.5%	79.5%
2011-2013	70.6%	79.2%
2012-2014	67.7%	78.6%
2013-2015	65.8%	78.3%
2014-2016	66.0%	77.9%
2015-2017	69.1%	77.9%



Birth Defects

The report "Investigation of Birth Defects and Community Exposures in Kettleman City, CA" evaluated the number of infants born with birth defects to Kettleman City residents from 2007 through March 31, 2010 and concluded that this number was higher than expected based on the historical pattern. Eleven children whose mothers lived in Kettleman City for part or all of their pregnancies were born with birth defects during this time. CDPH determined that three of the children born during this time died during the first year of life [CalEPA and CDPH 2010]. Additional discussion on the investigation is provided in Section 6.6.2.

The California Birth Defects Monitoring Program (CBDMP) provided U.S. EPA updated birth defects data[20] for Kings County and the five-county area of Fresno, Kern, Kings, Madera, and Tulare counties. Table 12 includes CBDMP registry data collected on infants born with birth defects from 1988-2016 (two-year averages). The types of birth defects include select chromosomal defects (trisomy 13, trisomy 18 and Down syndrome); orofacial defects; heart defects; neural tube defects; and specific eye, ear, gastrointestinal, genitourinary, and musculoskeletal defects [CBDMP 2019].

According to CBDMP's analysis, the overall rate of these specific birth defects in the five-county area has remained relatively stable over the span of twenty-nine years (1988-2016). Kings County birth defect rates have also remained stable with the exception of the increase seen in years 2008-2009 [CBDMP 2019]. CBDMP stated the 2008-2009 increase was not statistically significant when compared to years 2006-2007 and 2010-2011 in Kings County [CBDMP 2019]. According to CBDMP, birth defect rates in Kings County appear to have since returned to rates seen before 2008-2009 [CBDMP 2019]. CBDMP continues to monitor birth defects in the five-county area and to expedite the review of all possible cases of birth defects in Kings County [CBDMP 2019].

[20] CBMP data collection staff review medical records at hospitals, genetic offices and certain laboratories and collect data on all live births and pregnancy losses with eligible birth defects [B. Warmerdam, personal communication, August 23, 2019].

TABLE 12 Two-Year Rates of Birth Defects (Cases Per 100 Live Births) in Kings County and the Five-County Area.

	Cases per 100 Live Births	
Two-Year Average	**Kings County**	**Five-County Area***
1988-1989	1.00	1.02
1990-1991	0.85	0.92
1992-1993	0.80	0.91
1994-1995	0.90	0.99
1996-1997	0.97	0.87
1998-1999	0.98	0.96
2000-2001	0.92	0.91
2002-2003	1.20	0.86
2004-2005	1.02	1.03
2006-2007	1.01	1.03
2008-2009	1.61	1.02
2010-2011	1.16	0.97
2012-2013	1.12	0.95
2014-2015	0.87	0.98
2016**	1.16	0.97

*Fresno, Kern, Kings, Madera, and Tulare
**One-year rate

3.4.3 Cancer

Several factors can influence the development of cancer, including genetics, health behavior, diet, physical or biological agents, and certain chronic environmental exposures. In response to community concerns about potential elevated cancer rates, the California Cancer Registry (CCR) conducted an evaluation[21] of cancer occurrence in the Kettleman City area as part of the "Investigation of Birth Defects and Community Exposures in Kettleman City, CA" report [CalEPA and CDPH 2010].

In its report, CCR evaluated cancer incidence rates[22] from 1996-2008 for the census tract that includes Kettleman City. CCR looked at 30 different types of cancer, including urinary bladder, liver, lung, breast, prostate, and acute lymphocytic leukemia, to determine if the occurrence of cancer in Kettleman City's census tract is relatively high or low compared to the state [CalEPA and CDPH 2010]. CCR also calculated rates for specific types of cancer that have been associated with arsenic and PCBs, which include urinary bladder, liver, and lung cancers. The results from the study revealed no unusual patterns of any type of cancer occurrence in the census tract [CalEPA and CDPH 2010].

For updated cancer incidence rates, U.S. EPA used the CCR data query[23] and used data from 1996 to the most recently published data in 2015. This data is for Kings County while the information from CCR's 2010 evaluation was calculated for the census tract that includes Kettleman City. Figure 17 indicates a decreasing cancer incidence trend across time for both Kings County and California [CCR 2019].

---

[21] The report, "An Evaluation of the Pattern of Cancer Occurrence in the Vicinity of Kettleman City, California," can be found in Part 1.B. of the "Investigation of Birth Defects and Community Exposures in Kettleman City, CA."

[22] The National Cancer Institute defines a cancer incidence rate as the number of new cancers of a specific site/type occurring in a specified population during a year, usually expressed as the number of cancers per 100,000 population at risk. More information can be found at **www.seer.cancer.gov/statistics/types/incidence.html**.

[23] The data query is available at **www.cancer-rates.info/ca/**.

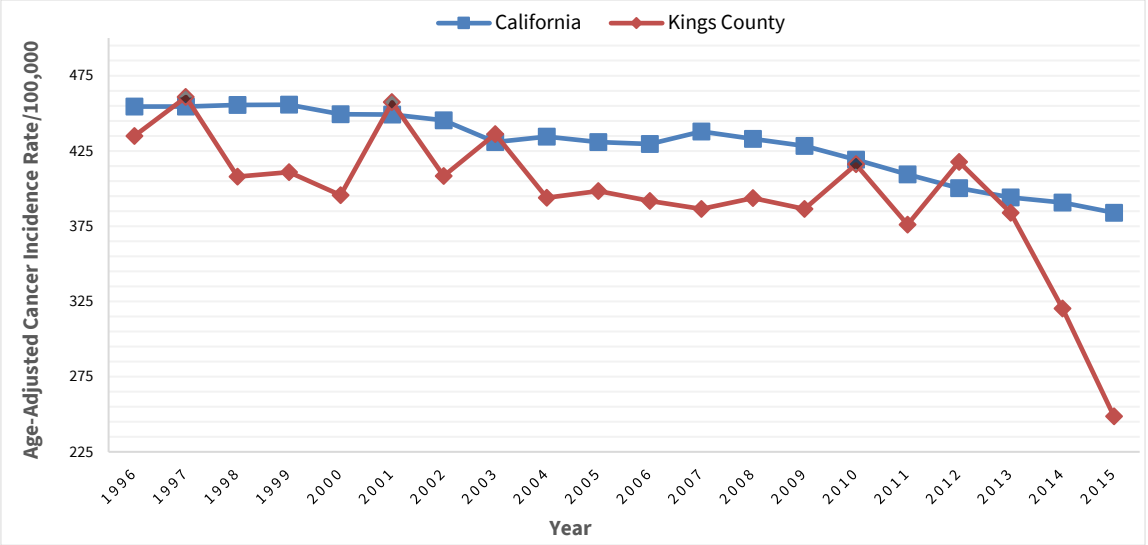


FIGURE 17 California and Kings County Cancer Incidence Rates from 1996-2015.

3.4.4 Asthma

Exposures to ground-level ozone and particulate matter pollution are associated with irritation of the respiratory system, including aggravation of asthma. Exposure to particulate matter pollution has also been linked to an increase in asthma-related hospital admissions and emergency department visits [U.S. EPA 2019]. Children and older adults are among the most susceptible populations to ground-level ozone and particulate matter pollution.

As part of CDPH and CalEPA's report "Investigation of Birth Defects and Community Exposures in Kettleman City, CA," CDPH assessed the burden of asthma in Kettleman City and Kings County by examining the number of asthma-related hospital emergency department visits and the number of hospitalizations [CalEPA and CDPH 2010]. From 2005-2007, the rate of asthma-related emergency department visits was 35.7 visits per 10,000 residents in Kettleman City. This rate was lower than the rates estimated for Kings County and California, which were 61.5 and 43.6 visits per 10,000 residents, respectively. From 2006-2008, there were no asthma hospitalizations in Kettleman City, which was lower than the rates estimated for Kings County and California, which were 8.9 and 9.1 visits per 10,000 residents, respectively.

The following tables and figures present more recent asthma data for Kings County and California for three age categories: zero to four (0-4) years old, 65 years old and over, and all ages [CEHTP 2019a]. Table 13 and Figure 14 show age-adjusted hospitalization rates due to asthma per 10,000 residents from 2006-2016. Between 2009 and 2015, Kings County exceeded the state average for all three age categories. The Kings County rate for 65 years and older was nearly twice as high as the state from 2011-2013. The data shows an overall decrease of asthma-related hospitalizations for all three age categories in California.

Table 14 and Figure 15 show age-adjusted asthma-related emergency department visit rates per 10,000 residents from 2006-2016 [CEHTP 2019]. Kings County rates were higher for almost every year for all three age categories. The Kings County zero to four (0-4) asthma-related emergency department visit rate was twice as high as the state from 2008-2012. All ages and 65 years old and over were also approximately twice as high as the state from 2012-2013.

TABLE 13 Age-Adjusted Hospitalization Rates Due to Asthma in Kings County and California from 2006-2016.

	Hospitalizations per 10,000 People					
	Kings County			California		
Year	0-4	65+	All Ages	0-4	65+	All Ages
2006	24.1	20.5	8.9	25.4	20.7	9.4
2007	24.3	23.8	8.5	23.9	20.3	9.0
2008	26.3	19.4	9.0	23.2	22.8	9.5
2009	35.8	31.1	11.3	24.6	22.0	10.0
2010	41.2	29.8	13.1	24.2	21.4	9.5
2011	27.8	38.2	15.2	21.9	20.0	8.8
2012	36.9	42.3	15.8	22.0	18.0	8.6
2013	21.4	42.6	12.4	20.6	18.0	8.1
2014	22.1	27.1	12.1	19.5	15.2	7.6
2015	20.2	30.1	10.1	18.2	14.1	7.0
2016	10.1	N/A	4.0	16.9	4.6	4.8

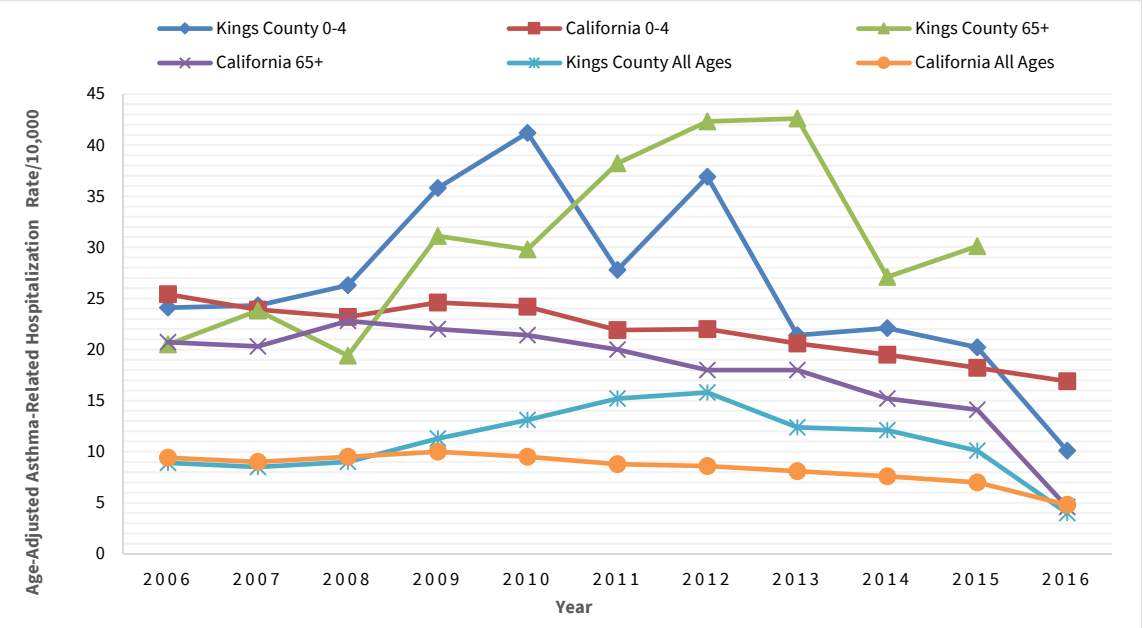


FIGURE 18 Age-Adjusted Hospitalization Rates Due to Asthma in Kings County and California from 2006-2016.

TABLE 14 Age-Adjusted Emergency Department Visit Rates Due to Asthma in Kings County and California from 2006-2016.

	Emergency Department Visits per 10,000 People					
	Kings County			California		
Year	0-4	65+	All Ages	0-4	65+	All Ages
2006	153.8	48.7	61.0	104.4	36.2	44.0
2007	163.8	55.2	58.6	106.4	36.2	43.7
2008	210.5	44.7	65.4	107.8	39.2	45.4
2009	216.4	91.8	75.9	118.3	38.4	50.4
2010	264.2	72.7	78.5	119.6	39.0	48.6
2011	227.5	73.2	83.5	110.0	39.2	48.0
2012	205.8	105.2	94.7	112.4	38.5	49.7
2013	187.9	101.9	90.1	104.9	39.6	48.9
2014	164.8	56.0	79.2	102.5	36.1	49.3
2015	170.1	59.8	78.4	98.1	36.3	50.3
2016	156.8	27.4	64.8	94.5	21.4	45.6

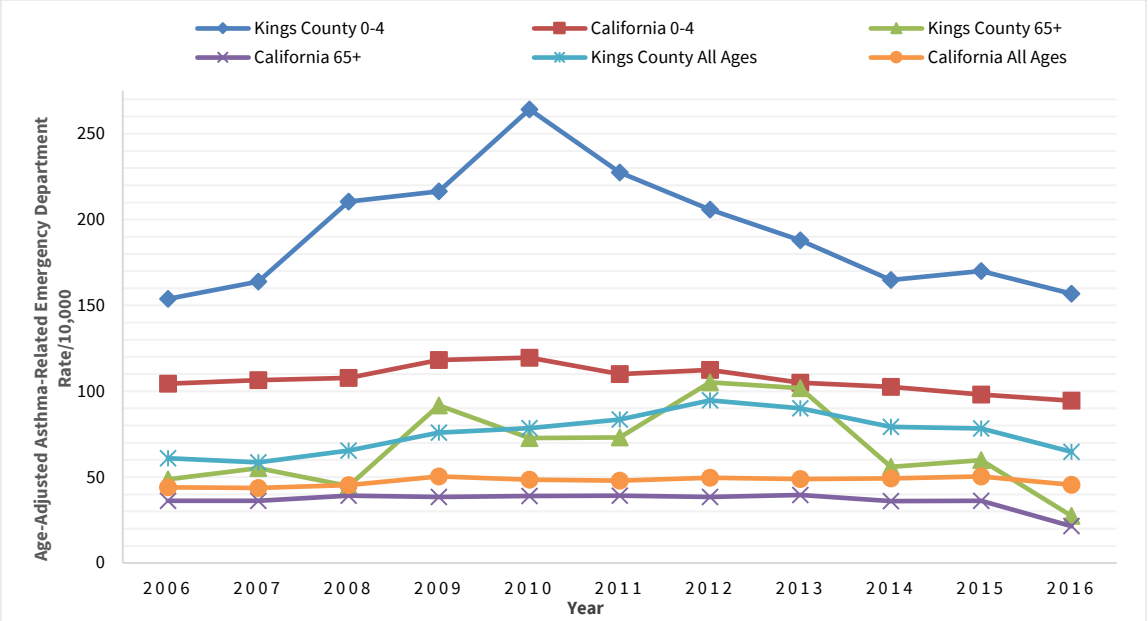


FIGURE 19 Age-Adjusted Emergency Department Visit Rates Due to Asthma in Kings County and California from 2006-2016.

CalEnviroScreen relies on asthma emergency department data as the best available way of describing differences in asthma across the state at the census tract scale [CalEPA2018]. CalEnviroScreen identifies that emergency department visits for asthma for the census tract that includes Kettleman City are higher than 73 percent of all census tracts in California (for available data from 2011-2013) [CalEPA 2019].

3.4.5 Access to Healthcare

Limited access to health care can inhibit a community's ability to prevent, withstand, or recover from environmental impacts [U.S. EPA 2016]. Kettleman City is located in a Health Professional Shortage Area (HPSA), which is defined by the federal Health Resources and Services Administration (HRSA) to mean there are health care provider shortages which may be geographic, population, or facility-based [HRSA 2018a].[24] Specifically, Kettleman City is in a High Needs Geographic HPSA for primary care and mental health. Kettleman City is also considered to be a Medically Underserved Area/Population, which is defined by HRSA to mean it is a geographic area and/or population with a lack of access to primary care services [HRSA 2018b].[25]

According to the U.S Census Bureau 2013-2017 ACS, approximately 90 percent of Kings County residents and 87 percent of Kettleman City residents have health insurance [U.S. Census Bureau 2019].

[24] More information can be found at: **www.bhw.hrsa.gov/shortage-designation/hpsas**.

[25] More information can be found at: **www.bhw.hrsa.gov/shortage-designation/muap**.

4. Facility Information

4.1 Facility Location and Description

KHF is a commercial hazardous waste treatment, storage, and disposal facility located in Kings County, California, southwest of the I-5 and SR-41 intersection, approximately 3.5 miles southwest of Kettleman City, and 6.5 miles southeast of Avenal (see Figures 2 and 3 in Section 3.1). The Facility owns and occupies approximately 1,600 acres of property, of which 695.5 acres are permitted by Kings County for the management of federal and state-listed hazardous wastes[26] and municipal solid and designated wastes. Of the 695.5 acres, 555 acres are within the fenced operational area (see Figure 1 in Section 2.1).

The Facility is located on the southwestern edge of the Kettleman Hills, an area that has been used for natural gas and oil exploration and extraction and grazing. The Facility is surrounded by general agriculture and grazing lands for several miles in all directions, with some oil and gas exploration operations. The closest non-agricultural areas and the nearest group of permanent residents are located in Kettleman City (see Section 3.1).

4.2 Facility History

KHF has been used to dispose of hazardous waste since 1975. CWM purchased and began operating the Facility in 1979. At that time, Kings County and California authorized it to manage and dispose of hazardous waste on 211 acres. It was subsequently permitted in 1993 and 2003 by DTSC to manage and dispose of RCRA and state-only hazardous waste.

CWM received its initial permit from U.S. EPA in 1981 to dispose of nonliquid PCB waste in Landfill B-14. It then received permits to dispose of nonliquid PCB waste in Landfill B-16 in 1983, Landfill B-19 in 1988, and Landfill B-18 (Phase I and Phase II) in 1992. Landfills B-14, B-16, and B-19 are now closed and no longer accept PCB wastes.[27] The only remaining active landfill permitted by U.S. EPA to accept PCB waste is Landfill B-18 Phase I and Phase II. KHF continues to operate under the permits issued in 1988 (amended in 1990 to include the storage of PCB waste at the PCB F/SU) and 1992. Although these permits expired in 1997 and 1998, respectively, they have been extended because CWM has submitted timely TSCA permit applications.[28]

Over time, CWM has submitted a number of application updates as well as additional information that U.S. EPA has requested. U.S. EPA received the most recent revised application on October 2, 2018. U.S. EPA has reviewed the 2018 permit application, which covers both storage units and the landfills, to determine whether to issue or deny a TSCA permit to CWM. A timeline of these selected KHF permitting actions can be found in Table 15.

---

[26] The Facility accepts most types of hazardous waste, including PCBs, but does not accept forbidden explosives, compressed gas cylinders (excluding aerosol cans), most radioactive waste, and biological agents or infectious wastes.

[27] A closed landfill is capped with an engineered cover that limits water infiltration. The cap is inspected and regularly maintained. Leachate from the landfill and groundwater under the landfill are also regularly monitored.

[28] The Administrative Procedures Act provides for permits to be administratively extended if the permittee submits a timely permit renewal application.

TABLE 15 Timeline of Selected KHF Permitting Actions.

Year	Event
1960-1975	McKay Trucking Company uses site for the disposal of municipal sewage.
1975	Kings County issues a Conditional Use Permit to the McKay Trucking Company for disposal of oilfield wastes on 60 acres.
1977	Kings County revises the Conditional Use Permit to the McKay Trucking Company to include evaporation ponds and land disposal of industrial wastes.
1978	The California Department of Health Services issues a Hazardous Waste Permit to the McKay Trucking Company allowing it to accept more types of hazardous waste; McKay Trucking changes its name to Environmental Disposal Services, Inc. Also, RWQCB issues a waste discharge requirements order reclassifying the site as a Class I disposal site.
1979	Kings County issues a Conditional Use Permit to Environmental Disposal Services, Inc. to operate a Class I (Hazardous Waste) treatment and disposal facility on 211 acres; CWM purchases KHF from Environmental Disposal Services, Inc.
1980	CWM submits a Part A RCRA Application and obtains interim status under RCRA.
1981	U.S. EPA issues a TSCA permit allowing disposal of nonliquid PCB waste in Landfill B-14.
1982	The California Department of Health Services issues a Hazardous Waste Permit to CWM allowing it to operate KHF as a Class I disposal site (modified 1983).
1983	U.S. EPA issues a TSCA permit allowing disposal of nonliquid PCB waste in Landfill B-16.
1985	Kings County issues a Conditional Use Permit to include Landfills B-17, B-18 (Phase I and Phase II), and B-19 allowing hazardous waste operations on 499 acres.
1987	RWQCB issues waste discharge requirements.
1988	The California Department of Health Services and U.S. EPA issue a RCRA hazardous waste permit to CWM (permits were revised in 1989 and 1991); U.S. EPA issues TSCA permit allowing disposal of nonliquid PCB waste in Landfills B-16 and B-19.
1990	U.S. EPA issues modification to the 1988 TSCA permit to include the PCB storage facility and prohibit disposal of PCB waste in Landfill B-14.
1992	U.S. EPA issues TSCA permit allowing disposal of nonliquid PCB waste in Landfill B-18 Phase I and Phase II. Disposal in Phase II is allowed only after approval of the construction quality assurance document for Phase II (approved in 1993).
1993	DTSC (the successor organization for the California Department of Health Services for hazardous waste permitting) renews 1988 RCRA permit.
1997	CWM applies to U.S EPA to renew its TSCA permits for Landfill B-18 Phase I and Phase II and PCB storage unit. (A timely application administratively extends the existing permit conditions.) Kings County modifies Conditional Use Permit to include municipal solid waste operations at Landfill B-19.
2003	DTSC issues a ten-year hazardous waste RCRA permit renewal for KHF; CWM requests U.S. EPA to grant a TSCA Coordinated Approval.
2007	U.S. EPA proposes a TSCA Coordinated Approval covering Landfill B-18 Phase I and Phase II and PCB storage unit. (A Coordinated Approval recognizes the state RCRA permit as the primary TSCA approval document.) U.S. EPA holds a public meeting and hearing on proposed Coordinated Approval.
2008	CWM submits a RCRA permit modification request to DTSC to expand the Landfill B-18 for RCRA waste; U.S. EPA requests CWM carry out the PCB Congeners Study (see Section 6.1.1).
2009	CWM submits an application to U.S. EPA to expand Landfill B-18 for PCB waste; Kings County modifies Conditional Use Permit to include Landfills B-18 Phase III and B-20 allowing hazardous waste operations on 696 acres.
2011	U.S. EPA informs CWM that U.S. EPA would not be doing a Coordinated Approval with DTSC.
2013	CWM submits RCRA permit renewal application.
2014	DTSC approves RCRA permit modification allowing construction and operation of Landfill B-18 Phase III; RWQCB issues revised waste discharge requirements order to include approval of Landfill B-18 Phase III.
2017-2018	CWM submits revised permit renewal applications to U.S. EPA and DTSC for TSCA and RCRA, respectively.

4.2.1 KHF PCB Operations

Most PCB waste received at KHF is soil, concrete, and other types of debris from cleanup sites contaminated with PCBs. Other types of PCB waste received are building debris with PCB-containing material such as caulk and paint, electrical equipment such as transformers and capacitors which contain PCB liquids, fluorescent light ballasts, and liquids containing PCBs (e.g., liquids generated during the decontamination of PCB items) [CWM 2007, 2008a, 2009a, 2010-2011, 2012a, 2013-2017, 2018a]. The annual amount of PCB waste received at KHF has varied greatly. See Figure 20 for the amount of PCB waste received at KHF from 2006-2017 [CWM 2007, 2008a, 2009a, 2010-2011, 2012a, 2013-2017, 2018a].

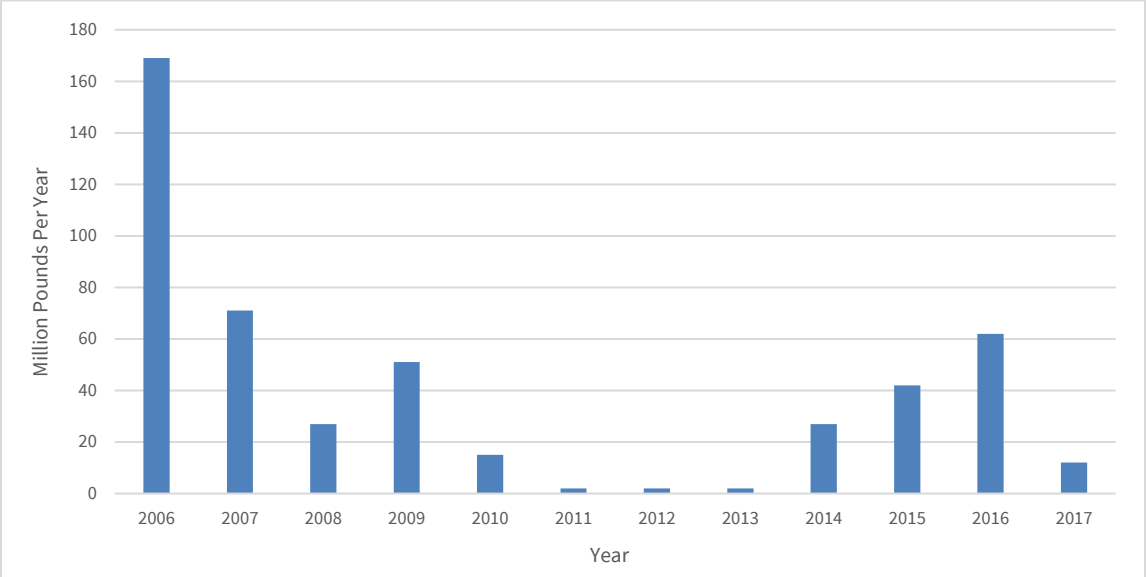


FIGURE 20 PCB Waste Received at the Facility from 2006-2017.

Prior to any PCB waste being shipped, KHF works with the generator to make sure that the waste can be managed at the Facility under its permits. All PCB waste received at KHF is accompanied by a hazardous waste manifest. Once received at KHF, the waste is visually inspected to ensure the manifest information is correct. Differences between the waste and the manifest are resolved prior to its acceptance for storage or disposal. If the differences cannot be resolved, the waste is rejected and sent back to the generator. More information on KHF's procedures for accepting PCB and hazardous waste is provided in the Facility's Waste Analysis Plan.[29]

Once accepted, electrical equipment and small containers are sent to the PCB F/SU for storage draining and/or flushing. The PCB F/SU is a 35-foot by 65-foot enclosed building with a similarly-sized outside containment area. Both areas have a continuous sealed concrete floor and curb with no openings where liquids can escape.

The proposed permit will allow temporary storage in the outside containment area and bulking (combining into larger storage containers), repackaging, and solidification of incidental liquid operations at the PCB F/SU in addition to the currently-permitted draining and flushing operations and storage in the enclosed building. The proposed permit limits the amount as well as the length of time that PCB waste can be stored there to one year from removal from

[29] This Waste Analysis Plan can be found in Chapter 12 of the *Hazardous Waste Facility Permit Renewal Application, Operation Plan*, CWM KHF Revision 3, March 16, 2018.

service for the enclosed building and 30 days from removal from service for the outside containment area.

Most liquid PCB waste, including any PCB liquids removed from electrical equipment, is sent to a U.S. EPA-approved TSCA incinerator for final disposal.[30] Currently, KHF sends its liquid PCB waste to an incinerator in Texas. Drained and, if required, flushed electrical equipment and containers are sent to the Landfill B-18 for disposal.

PCB waste that does not contain liquids is sent to Landfill B-18 for disposal. Landfill B-18 is the only unit where PCB waste disposal occurs at KHF. Landfill B-18 is 67 acres in area and has a maximum total capacity of 15.6 million cubic yards. It was constructed in three phases. Currently, only Phase I and Phase II, with a total area of 53 acres and a capacity of 10.7 million cubic yards, are approved by U.S. EPA for disposal of nonliquid PCB waste.[31] The proposed permit allows disposal of most types of nonliquid PCB waste in Phase III. Landfill B-18 is constructed with primary and secondary liner systems, primary, secondary, and vadose zone leachate collection and removal systems, stormwater collection and holding facilities, and a groundwater monitoring system.

KHF's recordkeeping system tracks all PCB waste at the Facility. In addition, KHF is required to record the physical location on a three-dimensional grid of all PCB waste disposed of in Landfill B-18. It must also regularly inspect all aspects of the Facility and provide an annual report to U.S. EPA on its PCB waste storage and disposal activities.

4.2.2 Potential Mechanisms for PCB Releases from KHF

For the Facility, potential mechanisms for PCB releases are air emissions or contamination of water. Air dispersion of PCBs can occur from volatilization (evaporation) of PCB liquids from open containers, from spills and leaks, and from the surface of the landfill. It can also occur if PCB-containing soils become airborne during storage, treatment or disposal operations or during high winds. Water contamination can occur if stormwater contacts PCB waste and is not properly managed onsite and if leaks from the PCB landfills impact groundwater.

Leaks from the PCB F/SU (even without stormwater) can occur if the containment area is not maintained properly and the Facility has a spill of PCB oils that leach down. U.S. EPA's proposed permit addresses this potential route of exposure by proposed condition V.H.4. that requires maintenance of the containment areas without cracks, gaps or other openings.

4.2.3 Monitoring Requirements

KHF has ambient air and groundwater environmental monitoring programs that can detect releases of PCBs from the Facility. These programs were designed in conjunction with DTSC and RWQCB to provide the information needed to protect human health and the environment. In addition to these environmental monitoring programs, KHF has a comprehensive facility inspection program that requires daily, weekly, and monthly checks of all aspects of the Facility's

[30] For all liquid PCB waste, Condition IV.C.3. of the proposed permit requires disposal by methods allowed by the federal PCB regulations.

[31] As discussed in Section 2.2.1, certain types of PCB waste may be disposed of in a RCRA-only approved landfill. Currently CWM is allowed to dispose of certain PCB wastes, mainly PCB remediation waste from sites with U.S. EPA-approved PCB cleanup plans, in Landfill B-18 Phase III under the PCB regulations and its state RCRA permit.

operations, a stormwater management plan and infrastructure, and quarterly tests of surfaces in the PCB F/SU for PCB contamination.

Ambient Air Monitoring Program

The Facility's Ambient Air Monitoring Program (AAMP) measures PCBs, volatile organic compounds (VOCs), carbonyls, pesticides, metals, and PM_{10} in order to evaluate the risk to human health from Facility emissions. The program includes four monitoring stations[32] near the Facility property line: one upwind, two southeast of Landfill B-18, and one between the Facility and Kettleman City. Ambient air samples are collected for a 24-hour period every 12-days at all four stations for PCBs, VOCs, carbonyls, pesticides, metals, and PM_{10}.[33] Since October 2016, month-long PCB/pesticide samples are collected once per quarter at all four monitoring locations. See the Site-Specific Ambient Air Monitoring Plan for more information [Wenck 2016a].

Regular reports on environmental monitoring results allows U.S. EPA to evaluate whether the Facility's permit continues to ensure that the operations of the Facility do not pose an unreasonable risk of injury to health and the environment or if revisions are necessary to prevent any unreasonable risk. CWM submits air monitoring reports quarterly and uses the data to complete an annual screening level risk assessment, which is submitted to DTSC in March each year. U.S. EPA and other state and local agencies are copied on the submittals. The air monitoring reports are also available to the public on the DTSC's EnviroStor website under "Site/Facility Docs" at **www.envirostor.dtsc.ca.gov/public/hwmp_profile_report.asp?global_id=CAT000646117&starttab**.

Groundwater Monitoring

KHF has a current network of 41 groundwater wells monitoring both open and closed landfills and evaporative ponds. The TSCA (PCB) groundwater monitoring network is a subset of this larger groundwater monitoring system and has 23 wells monitoring the four TSCA landfills units. Under its current RCRA permit, KHF is required to tests all wells quarterly. Under the current RWQCB order, wells are required to be tested semiannually. Quarterly/semiannual testing is limited to the Detection Monitoring Parameters listed in MRP R5-2014-0003 Table 2 with testing for a more extensive list of constituents, including PCBs, every five years [RWQCB 2014]. Because PCBs have been rarely been detected in groundwater at the Facility, U.S. EPA proposes that groundwater wells for the operating landfill, Landfill B-18, be tested annually for PCBs and wells in the closed landfills be tested every 5 years for PCBs.

CWM submits quarterly groundwater monitoring reports to DTSC and semi-annual reports to RWQCB. U.S. EPA also receives these reports. The reports provide details on analytic results, trends, the groundwater flow rates and status of the corrective action areas. The groundwater monitoring

[32] The AAMP regularly collected air measurements at three monitoring locations since 2006. The 2014 RCRA permit modification required installation of a fourth permanent station, which began operating in 2016. The additional location was located to assess releases of VOCs, semi-VOCs (including PCBs), metals and particulates that are emitted when the predominant wind direction is toward Kettleman City.

[33] From mid-April 2008 until early January 2011, PCB monitoring under the Facility's AAMP was discontinued with DTSC's approval because no PCBs above the detection limit had been identified in the 18 months of sampling prior to 2008 [Wenck 2010, p. 2-6.]. However, during this period air monitoring for PCBs was conducted throughout 2009 as part of the PCB Congeners Study [Wenck 2010, p. 3-5] and again between mid-June and September 2010 for the Kettleman City Air Quality Assessment [CARB 2010].

reports are available to the public on the Water Board's GeoTracker website under "Site Maps/Documents" at **geotracker.waterboards.ca.gov/profile_report?global_id=SLT5FZ064603**.

Facility Inspection Program

CWM employees inspect KHF in regularly scheduled intervals (daily, weekly and monthly) in order to identify and prevent issues that could cause a release of hazardous waste or PCBs to the environment and/or threaten health and safety. These inspections cover all aspects of the Facility, including site security, environmental monitoring systems, surface water management, safety and emergency equipment, leachate systems, and all waste management units on site. These inspections are documented on inspection forms.[34] Completed inspection forms must be kept as part of the Facility's operating record. These inspections will continue under the proposed permit. See RCRA Operation Plan, Chapter 31 "Inspection Program Plan."

Leachate Collection, Removal, and Monitoring Requirements

Leachate[35] is collected, removed, and monitored to protect a landfill's liners, provide early detection of possible leaks from a landfill, and to protect groundwater under the landfill. The proposed permit requires the Facility to provide, maintain, and operate leachate collection and removal systems at the landfills. These requirements include regularly monitoring the liquid level in each leachate collection sump. It also requires the removal of leachate from each sump, as needed, to prevent liquid levels from exceeding a specified head or trigger level.

The proposed permit also requires annually testing leachate for PCBs, immediate reporting to U.S. EPA if any PCBs are detected, and submittal of an annual report on the results of the leachate testing.

Stormwater Management

The Facility has a stormwater infrastructure capable of handling stormwater from "probable maximum precipitation" event of 10.3 inches in a 24-hour period. All stormwater run-on to each landfill is caught prior to contact with the waste and directed by surface drainage channels to stormwater discharge basins on the Facility. Stormwater that collects in the landfill and contacts waste is collected and stored until disposal. A sample from the first collection of stormwater that contacted waste in Landfill B-18 after each storm event will be analyzed for PCBs. If PCBs are detected in a sample taken from the accumulated precipitation, CWM must notify U.S. EPA within 24 hours of reviewing the analytical report [CWM 2018d].

KHF maintains and implements a Stormwater Pollution Prevention Plan [Golder 2016]. U.S. EPA proposes to require compliance with this in its proposed permit and to incorporate this Plan into the permit.

Quarterly PCB Sampling Plan

Under the proposed permit, CWM must conduct random wipe sampling of the PCB F/SU each quarter. Once per year, it must use a third party to conduct the sampling. If PCB contamination

[34] These inspections forms are included in the Renewal Application and will be incorporated into any final permit (proposed permit, Appendix B-1.8). Any changes to these inspection forms must be pre-approved by U.S. EPA before they can be used by CWM (proposed permit Table 3).

[35] Leachate is any liquid that has percolated through or drained from a hazardous waste landfill.

is discovered, CWM must notify U.S. EPA and decontaminate the PCB F/SU. CWM is already conducting this wipe sampling.

4.2.4 Other CWM Facilities

CWM's parent company, Waste Management, owns 15 non-hazardous waste management facilities and 22 transfer stations in U.S. EPA Region 9 (Arizona, California, and Nevada) [Waste Management 2018b]. KHF is the only PCB disposal facility that CWM owns in Region 9. CWM owns four hazardous waste landfill facilities outside Region 9, three of which have TSCA permits for disposal of PCB waste.

4.3 Facility Compliance History

U.S. EPA reviews a facility's compliance history as part of its permit decision-making process as to whether to grant a permit under TSCA. It does so for several reasons. First, under 40 C.F.R. § 761.65(d)(2)(vii), the environmental compliance history of the applicant, its principals, and its key employees may provide a sufficient basis for denial of a permit if the history of environmental civil violations or criminal convictions establishes, in U.S. EPA's judgement, the applicant's unwillingness or inability to comply with the regulations. Second, remedies to non-compliance, such as changes to operational procedures, may need to be incorporated into a permit. Finally, information developed through compliance monitoring, and the inspection reports they generate, increases familiarity with a facility, allowing for a better and more comprehensive permit.

KHF is inspected by U.S. EPA and a number of state and local agencies including DTSC, RWQCB, SJVAPCD, and Kings County. This Draft EJ Analysis focuses on U.S. EPA and DTSC's inspections and enforcement actions taken from 1992 to the present because these actions are most relevant to the proposed TSCA permit (Table 16).[36]

U.S. EPA found a number of violations of the PCB regulations during inspections at the Facility. CWM also self-disclosed some violations. U.S. EPA describes several of these violations in Section 4.3.1 as well as RCRA violations that DTSC and U.S. EPA found Section 4.3.2. Each of these violations have been remedied and, in some cases, proposed permit conditions have been added to prevent reoccurrences.

U.S. EPA also reviewed the violations at the Facility that have resulted in the assessment of penalties during the past ten years. The Facility had penalties assessed for eleven violations during this period: two from DTSC, three from U.S. EPA, and six from the SJVAPCD.[37] U.S. EPA and DTSC enforcement actions are discussed in Sections 4.3.1 and 4.3.2.

Most of the inspections did not result in a finding of violations or other issues of concern. Based on U.S. EPA's review, U.S. EPA does not find that the compliance history of the Facility suggests a pattern or practice of noncompliance that demonstrates CWM's unwillingness or inability to comply with the regulations.

4.3.1 TSCA Violations

In February 2004, CWM disclosed that it had failed to perform required monthly monitoring of lysimeters at one of four PCB disposal landfills from June 1996 to November 2003 [CWM 2004]. A consent agreement between U.S. EPA and CWM for these violations included a $10,000

[36] U.S. EPA also reviewed the last five years of inspection reports by other agencies that inspect the Facility. Copies of these reports can be found in CWM's response to U.S. EPA's Notice of Deficiency [CWM 2018c].

[37] Most of the air violations are related to operations of the Facility's flare. This flare controls gases from the municipal solid waste landfills and is not part of the Facility's hazardous or PCB waste operations. See Renewal Application, Table 6.

penalty and $37,500 to purchase emergency response equipment for the Kings County Environmental Health Services Department [U.S. EPA 2005]. To ensure the Facility continues to monitor for leachate from operating and closed PCB landfills, the proposed permit includes weekly inspection of the leachate removal systems in Landfill B-18 and monthly inspections in closed Landfills B-14, B-16, and B-19. See proposed permit conditions VI.E.3.d. and e. and VII.B.3.b in Table 22 in Section 7 or the Statement of Basis.

In August 2005, U.S. EPA's National Enforcement Investigations Center (NEIC) conducted a TSCA investigation of the Facility (Phase 1 of its multi-media investigation) and found several areas of non-compliance, including improperly calibrating laboratory instruments analyzing PCBs [U.S. EPA 2006]. U.S. EPA issued a Notice of Noncompliance (NON), which required documentation of appropriate laboratory procedures [U.S. EPA 2007a; U.S. EPA 2007b]. CWM provided the required information [CWM 2008b]. Accordingly, U.S. EPA found that CWM had remedied the issues of noncompliance and did not assess a penalty [U.S. EPA 2010a].

In February and June 2010, U.S. EPA inspectors documented violations of the permit and TSCA PCB regulations, including:

- Failure to indicate removal from service date on PCB containers. PCB regulations require disposal of PCB waste within one year of its removal from service and the labeling of PCB items including containers with this date.
- Failure to properly complete manifests by not including removal from service dates or weights on some manifests.
- Continued use of a PCB-contaminated building. PCB regulations prohibit the continued use of items and structures that are contaminated with PCBs unless they are first appropriately decontaminated.
- Improper disposal of PCBs. High-levels of PCBs were found in the building and in the soil around the PCB F/SU that were the result of leaks and spills, both of which are considered disposal. [U.S. EPA 2010b, U.S. EPA 2010c].

To settle these violations, CWM was required to clean up the contamination around the PCB F/SU and to pay a penalty of over $300,000 [U.S. EPA 2010d, U.S. EPA 2010e]. DTSC also took enforcement action against CWM for PCB releases around the PCB F/SU and required the Facility to take corrective action [DTSC 2011]. The final corrective action remedy included construction of the outside containment area at the PCB F/SU with a sealed concrete floor and curb to prevent releases to soil around the PCB F/SU [ADE 2011].

In May 2012, CWM self-reported that it failed to test leachate from Landfill B-18 prior to its disposal, as required by conditions in its 1992 permit [CWM 2012b]. Subsequent testing of the remaining leachate, however, did not detect the presence of PCBs. CWM paid a penalty of $9,750 [U.S. EPA 2012].

U.S. EPA most recently inspected KHF in 2017 and found no violations [U.S. EPA 2017].

4.3.2 RCRA Violations

In December 2005, NEIC conducted a follow-up RCRA/TSCA investigation (Phase 2 of its multi-media investigation). The focus of this investigation was on CWM's testing and sampling methodologies and protocols. In its report of the 2005 investigation, NEIC documented problems with CWM's hazardous waste sampling, laboratory, and testing protocols that

indicated that CWM may have improperly disposed of hazardous wastes that did not meet RCRA treatment standards [U.S. EPA 2007a].

In February 2010, U.S. EPA and DTSC jointly conducted an inspection of KHF and U.S. EPA found the following violations [U.S. EPA 2011a]:

- Failure to determine whether waste meets the hazardous waste Land Disposal Treatment Standards prior to land disposal. Specifically, the Facility generated leachate from its hazardous waste landfill and surface impoundments and did not thoroughly evaluate whether the waste met treatment standards before land disposal.
- Impermissible land disposal of prohibited hazardous waste. The Facility reported instances where it excavated hazardous waste that was land disposed without proper treatment. In addition, U.S. EPA review of laboratory analysis found instances where the Facility disposed of hazardous waste that did not fully meet treatment standards.
- Failure to comply with the Hazardous Waste Permit – non-compliance with U.S. EPA Method Lab Methods (Test Method 6010B). Both the Facility's RCRA permit and California and federal RCRA regulations require that the Facility comply with a particular laboratory method for analysis of hazardous waste. During review of laboratory records, U.S. EPA found that the Facility did not follow specific laboratory quality control requirements.
- Failure to comply with container requirements for several universal waste fluorescent lamps stored in the drum storage unit.

In August 2011, U.S. EPA and CWM reached a $1 million settlement for the 2010 violations [U.S. EPA 2011b]. The settlement required CWM to pay a $400,000 penalty and spend an estimated $600,000 to make physical and operational improvements at the Facility. The compliance activities included:

- Continued use of an outside laboratory for post-treatment metals analysis for a minimum of two years until an independent audit demonstrates that the Facility can produce reliable results.
- Replacement of lab equipment.
- Installation of new laboratory software.
- Annual characterization of landfill leachate.
- Covering and elimination of stormwater from entering the leachate tanks.
- Modification of cyanide treatment procedures.
- Sampling of liquids and sludge from onsite surface impoundment P-16.

In March 2013, DTSC penalized CWM over $290,000 for failure to report 72 hazardous waste spills at the Facility over a four-year period (from June 2008 to 2012) [DTSC 2013]. The penalty also addressed violations identified during DTSC's April 2012 inspection. DTSC reviewed these spills, including the size, location, offsite consequences, clean-up response, and causes of these spills. Of the 72 spills, the largest spill was estimated at five to eight gallons and 13 spills were less than a pint. The largest number of spills involved non-RCRA hazardous waste between a quart and a gallon. Most of these spills (60 out of 72) occurred at the sampling platforms and untarping racks, where the Facility samples incoming loads for analysis [DTSC 2012].

DTSC required CWM to construct a containment system at the sampling platforms and untarping racks to isolate any spills of hazardous waste from contact with the ground [DTSC 2003]. Construction of the containment system was completed in 2016 [Golder 2017].

TABLE 16 KHF RCRA/TSCA Inspections from 1992 to Present.

Date	Type of Inspection	Agency	Findings
05/07/1992	Financial Record Review	DTSC	No violations.
05/12/1992	Compliance Evaluation Inspection	DTSC	RCRA violations: $65,000 penalty. Return to compliance 06/25/1992.
05/14/1992	Compliance Evaluation Inspection	U.S. EPA	No violations.
08/15/1992	Operations and Maintenance Inspection	DTSC	No violations.
09/18/1992	Follow-up Inspection (to 05/12/1992 Inspection)	DTSC	RCRA violations: $65,000 penalty. Return to compliance 08/08/1993.
11/03/1992	Compliance Evaluation Inspection	DTSC	RCRA violations: one 55-gallon container and 2 bags of PCB waste not labeled. Two containers of incompatible waste stored next to each other. Penalty of $1,100. Return to compliance 01/21/1993.
11/12/1992	Financial Record Review	DTSC	No violations.
03/27/1993	Operation and Maintenance Inspection	DTSC	No violations.
04/23/1993	Compliance Evaluation Inspection	U.S. EPA	RCRA violations: related to land disposal restrictions and container management. Return to compliance 12/14/1993.
11/01/1993	Compliance Evaluation Inspection	DTSC	No violations.
12/08/1993	TCA PCB Inspection	U.S. EPA	No violations.
04/05/1994	Compliance Evaluation Inspection	U.S. EPA	RCRA violations: related to land disposal restrictions and container management. Return to compliance 10/05/1994.
11/07/1994	Compliance Evaluation Inspection	DTSC	No violations.
05/03/1995	Compliance Evaluation Inspection	U.S. EPA	RCRA violations. Return to compliance 10/13/1995.
05/15/1995	Operation and Maintenance Inspection	DTSC	No violations.
08/31/1995	TSCA PCB Inspection	DTSC (as grantee to U.S. EPA)	No violations.
11/07/1995	Compliance Evaluation Inspection	DTSC	RCRA violations. Return to compliance 11/17/1995.
04/15/1996	Operation and Maintenance Inspection	DTSC	RCRA violations: related to groundwater monitoring. Return to compliance 07/19/1996.
10/18/1996	Financial Record Review	DTSC	No violations.
11/19/1996	Compliance Evaluation Inspection	DTSC	No violations.
02/12/1997	Compliance Evaluation Inspection	DTSC	No violations.
03/31/1997	Compliance Evaluation Inspection	DTSC	No violations.
04/01/1997	Compliance Evaluation Inspection	DTSC	No violations.
04/08/1997	TSCA PCB Inspection	DTSC (as grantee to U.S. EPA)	No violations.
05/12/1997	Compliance Evaluation Inspection	DTSC	No violations.
06/23/1997	Compliance Evaluation Inspection	DTSC	No violations.
10/03/1997	Compliance Evaluation Inspection	DTSC	No violations.
10/22/1997	Compliance Evaluation Inspection	DTSC	No violations.
11/19/1997	Compliance Evaluation Inspection	DTSC	No violations.
12/03/1997	Compliance Evaluation Inspection	DTSC	No violations.
02/23/1998	Compliance Evaluation Inspection	DTSC	No violations.
04/13/1998	Compliance Evaluation Inspection	DTSC	No violations.
05/12/1998	Compliance Evaluation Inspection	DTSC	No violations.
06/18/1998	Compliance Evaluation Inspection	DTSC	No violations.
07/21/1998	Compliance Evaluation Inspection	DTSC	No violations.
08/27/1998	Compliance Evaluation Inspection	DTSC	No violations.
10/06/1998	Compliance Evaluation Inspection	DTSC	RCRA violation: emergency shower not operational. Return to compliance 10/09/1998.
10/14/1998	TSCA PCB Inspection	U.S. EPA	No violations.
11/24/1998	Compliance Evaluation Inspection	DTSC	No violations.
12/30/1998	Compliance Evaluation Inspection	DTSC	No violations.
02/02/1999	Compliance Evaluation Inspection	DTSC	No violations.
03/10/1999	Follow-up Inspection	DTSC	No violations.
04/30/1999	Follow-up Inspection	DTSC	No violations.

Date	Type of Inspection	Agency	Findings
05/21/1999	Follow-up Inspection	DTSC	No violations.
06/16/1999	Compliance Evaluation Inspection	DTSC	No violations.
09/08/1999	Compliance Evaluation Inspection	U.S. EPA	No violations.
09/28/1999	Follow-up Inspection	DTSC	No violations.
11/18-19/1999 & 12/01-02/1999	Financial Records Review	DTSC	RCRA violation: CWM reduced the face amount of their closure insurance without written approval from DTSC. $5,000 penalty. Return to compliance 03/21/2000.
04/06/2000	Financial Record Review	U.S. EPA	No violations.
10/30/2000 – 11/03/2000	Compliance Evaluation Inspection	DTSC	RCRA violation: biennial report data error from 1996-2000 and broken eyewash unit in the lab. Return to compliance 11/03/2000.
05/02/2001	Groundwater Operation and	DTSC	No violations.
09/17/2001	Compliance Evaluation Inspection	DTSC	No violations.
10/25/2001	TSCA PCB Inspection	U.S. EPA	No violations.
02/26/2002	Groundwater Operation and	DTSC	No violations.
09/16/2002	Compliance Evaluation Inspection	DTSC	No violations.
11/19/2002	Closure/Post Closure Inspection	U.S. EPA	No violations.
06/10/2003	Groundwater Monitoring Evaluation	DTSC	RCRA violation: related to sampling procedures - written informal enforcement action. Return to compliance 06/20/2003.
01/21/2004	Compliance Evaluation Inspection	DTSC	No violations.
02/13/2004	Facility Self Disclosure	CWM	TSCA violations (see description in narrative).
03/15/2004	Compliance Evaluation Inspection	DTSC	No violations.
04/14/2004	TSCA PCB Inspection	U.S. EPA	No violations.
06/15/2004	Groundwater Operation and Maintenance Inspection	DTSC	No violations.
09/30/2004	Financial Records Review	DTSC	No violations.
10/15/2004	Compliance Evaluation Inspection	U.S. EPA	No violations (RCRA inspection only).
11/09/2004	Compliance Evaluation Inspection	DTSC	No violations.
03/23/2005	Compliance Evaluation Inspection	DTSC	No violations.
08/22-23/2005	Multimedia - TSCA/RCRA (Phase 1)	U.S. EPA (NEIC)	TSCA violations (see description in narrative).
12/05-16/2005	Multimedia - TSCA/RCRA (Phase 2)	U.S. EPA (NEIC)	RCRA violations (see description in narrative).
01/11/2006	Compliance Evaluation Inspection	DTSC	No violations.
09/22/2006	Financial Records Review	U.S. EPA	No violations.
11/06-16/2006	Compliance Evaluation Inspection	DTSC	No violations.
03/01/2007	Financial Records Review	DTSC	No violations.
11/15/2007	Compliance Evaluation Inspection	DTSC	No violations.
10/02/2008	Compliance Evaluation Inspection	DTSC	No violations.
10/29/2008	Compliance Evaluation Inspection	DTSC	No violations.
03/13/2009	Financial Records Review	DTSC	No violations.
09/15/2009	Compliance Evaluation Inspection	DTSC	No violations.
10/06/2009	Financial Records Review	DTSC	No violations.
02/07-12/2010	Compliance Evaluation Inspection & TSCA PCB Inspection	DTSC/ U.S. EPA	RCRA and TSCA violations (see description in narrative).
06/02/2010	TSCA PCB Inspection	U.S. EPA	TSCA violations (see description in narrative).
11/12/2010	Air Monitoring of Evaporation Ponds	U.S. EPA	No violations.
02/22/2012	Operation and Maintenance Inspection	DTSC	No violations.
04/09-10/2012 & 04/12-13/2012	Compliance Evaluation Inspection	DTSC/ U.S. EPA	RCRA violation: failure to properly treat hazardous waste prior to disposal and failure to resolve a significant manifest discrepancy within 15 days of discovery. Minor, failure to sign and check the certification on CWM-KHF's Waste Treatment and Disposal Form. Return to compliance 03/22/2013.
05/09/2012	Facility Self Disclosure	CWM	TSCA violations (see description in narrative).
06/12/2012	Financial Records Review	DTSC	No violations.

Date	Type of Inspection	Agency	Findings
11/29/2012	TSCA PCB Inspection	U.S. EPA	No violations.
04/23-24/2013	Compliance Evaluation Inspection	DTSC	No violations.
05/20/2013	Financial Records Review	DTSC	No violations.
02/14/2014	Facility Self Disclosure	CWM	RCRA violations: one load of hazardous waste was disposed of in Landfill B-18 that exceeded the Universal Treatment Standard for selenium. Return to compliance 03/29/2014.
02/19/2014	Focused Compliance Inspection (Groundwater)	DTSC	No violations.
03/18/2014	Compliance Evaluation Inspection	DTSC	No violations.
08/11/2014	Financial Records Review	DTSC	No violations.
09/24/2014	Focused Compliance Inspection	DTSC	No violations.
12/10/2014	Focused Compliance Inspection	DTSC	No violations.
03/17-18/2015	Compliance Evaluation Inspection	DTSC	RCRA violations: failure to enter most appropriate hazardous waste code for manifest in two manifests and the appropriate unit volume in one manifest. Return to compliance 03/18/2015.
04/28/2015	Financial Records Review	DTSC	No violations.
09/30/2015	Focused Compliance Inspection	DTSC	No violations.
10/02/2015	Facility Self-Disclosure		RCRA violations. Return to compliance 10/02/2015.
12/29/2015	Focused Compliance Inspection	DTSC	No violations.
02/09/2016	Compliance Evaluation Inspection	DTSC	RCRA violation: failure to enter a California waste code on a manifest. Return to compliance 02/09/2016.
02/29/2016	Financial Records Review	DTSC	No violations.
09/14/2016	Focused Compliance Inspection	DTSC	No violations.
10/13/2016	Non-Financial Record Review	DTSC	RCRA violations: failure to conduct and analyze the monitoring parameters listed in the Operation Plan of its RCRA Permit. DTSC concluded the groundwater data required were not received for many evaluation monitoring program wells for the 2014 calendar year. Additionally, wells within the Class I monitoring program were not monitored quarterly. Return to compliance 10/13/2016.
02/01/2017	Compliance Evaluation Inspection	DTSC	RCRA violation: failure to label one hazardous waste container per RCRA regulations. Return to compliance 02/01/2017.
03/15/2017	Financial Records Review	DTSC	No violations.
05/02-03/2017	Focused Compliance Inspection (Groundwater)	DTSC	No violations.
08/17/2017	Compliance Evaluation Inspection	DTSC	No violations.
09/28/2017	TSCA PCB Inspection	U.S. EPA	No violations.
03/27-28/2018	Compliance Evaluation Inspection	DTSC	RCRA violations: mistake on manifest paperwork, failure to close a single 55-gallon drum containing used oil filters, cracking in perimeter flooring of the drum storage unit with no mention of cracking in the weekly KHF reports. Return to compliance 04/26/2018.
04/10/2018	Financial Records Review	DTSC	No violations.
06/28/2018	Focused Compliance Inspection	DTSC	No violations.
09/11/2018	Focused Compliance Inspection	DTSC	No violations.
02/07/2019	Focused Compliance Inspection	DTSC	No violations.
04/16/2019	Compliance Evaluation Inspection	DTSC	Minor violations. Return to compliance 04/16/2019.
05/21/2019	Financial Records Review	DTSC	No violations.

5. Public Participation and Outreach Activities

The permit decision-making process provides U.S. EPA with a unique opportunity to be involved with the community and hear about its issues, including those issues that are not related to the Facility's TSCA permit. The U.S. EPA and DTSC permit decision-making processes have provided the Kettleman City community with a way to raise concerns, highlight important issues, and gain broader attention and understanding from other state and local government agencies.

Since 2007, U.S. EPA has worked for open communication and meaningful involvement with the Kettleman City community and encouraged involvement by other federal and non-federal government agencies. Continued public outreach for this proposed permit decision is a priority for U.S. EPA. During the public comment period, U.S. EPA is offering an opportunity for the community to learn about and formally comment on the proposed permit decision, Statement of Basis, and supporting analyses and documents, including this Draft EJ Analysis (Section 5.2). Public comments on all aspects of the proposed permit and its supporting determinations and analyses are welcome.

5.1 Outreach Activities for the Proposed Permit Action

U.S. EPA recognizes its responsibility to engage with and consider the concerns of the Kettleman City community in its process to determine whether to permit the Facility, including the need to be transparent in its decision-making. Since receiving the 2017 TSCA permit renewal application,[38] U.S. EPA has taken actions to provide citizens access to information on its permit decision-making process (information on prior outreach activities can be found in Section 5.4). U.S. EPA's permit decision-making process for CWM's permit application is shown in Figure 21. This process gives the public opportunities to learn about and formally comment on the proposed permit decision, Statement of Basis, and supporting analyses and documents (such as this Draft EJ Analysis).

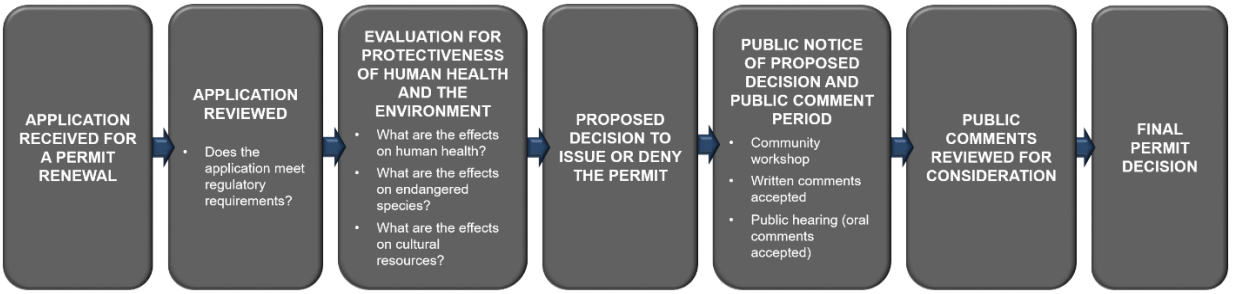


FIGURE 21 U.S. EPA's Permit Decision-Making Process.

U.S. EPA has been involved in the following outreach activities since 2017:

1) U.S. EPA had a booth at the Kettleman Public Safety Fair on October 19, 2017 to provide information to the community about CWM's TSCA permit application. Six U.S. EPA employees attended, two of which were fluent Spanish speakers. U.S. EPA and DTSC jointly notified members of the public about their attendance at the event through a "Save-the-Date" mailer sent both in English and Spanish [DTSC and U.S. EPA 2017a].

[38] U.S. EPA has received three revised TSCA permit renewal applications from CWM since 2017. The first was received on July 15, 2017. U.S. EPA reviewed this application and issued a Notice of Deficiency on December 21, 2017. CWM submitted revised TSCA permit renewal application on April 20, 2018. CWM submitted another revised application on October 2, 2018, which included minor revisions to the April 2018 submittal.

2) U.S. EPA and DTSC held a public meeting on November 16, 2017 at the Kettleman City Elementary School. During this meeting, members of the public were informed about the RCRA and TSCA permit decision-making processes and specific information relating to the Facility (see Figure 21 for the TSCA permit decision-making process). The meeting was conducted in Spanish with real-time translation into English. All presentations were in English and Spanish on side-by-side dual screens. U.S. EPA and DTSC notified members of the public about the meeting through mailers sent both in English and Spanish [DTSC and U.S. EPA 2017b, 2017c].

3) U.S. EPA attended CWM's annual Facility meeting on April 26, 2018 at the Kettleman City Elementary School.

4) U.S. EPA had a booth at the Kettleman Public Safety Fair on October 11, 2018 to provide information to the community about CWM's TSCA permit application. Five U.S. EPA employees attended, one of which was a fluent Spanish speaker.

5) U.S. EPA had four conference calls with Greenaction for Health and Environmental Justice (Greenaction), El Pueblo Para el Aire y Agua Limpio, and the California Rural Legal Assistance on March 25, 2018, May 30, 2018, May 8, 2019, and May 22, 2019 to discuss the permit decision-making process and this Draft EJ Analysis.

6) U.S. EPA attended CWM's annual KHF meeting on April 23, 2019 at the Kettleman City Elementary School.

7) U.S. EPA posted information related to KHF on its public website, at **www.epa.gov/ca/kettle man-hills**. The website contains information about the Facility, a discussion explaining the permit decision-making process for the Facility, the public participation process for this permitting action, public meeting announcements, and personnel at U.S. EPA Region 9 for interested parties to contact. The website has important documents, which include the revised permit application,[39] proposed permit, Statement of Basis, and other supporting analyses and documents (such as this Draft EJ Analysis).

8) U.S. EPA has provided and will provide Spanish translation for community members. U.S. EPA has provided mailers and fact sheets in both English and Spanish, which also included a separate phone number for the Spanish language contact at U.S. EPA. U.S. EPA has provided and will provide translation services for public meetings. Information in Spanish can be found on the U.S. EPA website listed above. Documents that provide the public information on what the proposed permit contains, and certain parts of the Statement of Basis were translated into Spanish. A Spanish translation of this Draft EJ Analysis is available for community members. U.S. EPA will accept written comments in Spanish and will provide responses to the comments in Spanish as well.

5.2 Public Meeting and Public Hearing

U.S. EPA wants to hear from the public and will hold a public meeting and question and answer session to provide interested parties with additional information and an opportunity for informal discussion of the proposed permit, Statement of Basis, and this Draft EJ Analysis. Immediately following the public meeting, U.S. EPA will hold a public hearing to provide the public the opportunity to submit written or spoken comments and relevant data pertaining to the proposed permit. The public meeting will be held

[39] The July 15, 2017 TSCA permit application and the April 20, 2018 revised TSCA permit application were posted on the website until U.S. EPA proposed its draft permit decision.

from 5:30 to 7:00 p.m. and the public hearing will start at 7:30 p.m. on October 10, 2019 at the Kettleman City Elementary School.

Prior to 2017, the community voiced concerns about not having public events or meetings translated into Spanish or not allowing enough time for translation. As part of the current proposed permit decision-making process, U.S. EPA is providing translation services and ensuring sufficient time to be allocated for translation of comments.

5.3 Public Comment Period

5.3.1 How to Submit Comments

U.S. EPA will consider all written and spoken comments submitted during the public comment period, including those provided at the public hearing, before taking final action on the proposed permit decision.[40] Any interested person may submit written comments regarding the proposed permit, Statement of Basis, and other supporting documents. All written comments must be submitted, postmarked or emailed on or before November 1, 2019. Written comments can be submitted on **www.regulations.gov** [docket number U.S. EPA-R09-RCRA-2019-0088], or mailed or emailed to:

Frances Wicher, Kettleman Hills Project Manager
Permits Office, Land, Chemical, and Redevelopment Division (LND-4-2)
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105
Phone Number: (415) 972-3957
Email: **r9Landsubmit@epa.gov** or **wicher.frances@epa.gov**

All comments that are received by email or through www.regulations.gov will be included in the administrative record for the proposed permit without change and will be available to the public, including any personal information provided with the comments. If a commenter sends email directly to U.S. EPA, the sender's email address will be automatically captured and included as part of the public comment. Comments submitted to the U.S. EPA through the U.S. mail or any other non-electronic delivery method will also be included in the administrative record without change and will be available to the public, including any personal information provided, unless the comment includes Confidential Business Information (CBI) or other information the disclosure of which is restricted by law. Information that is considered to be CBI or otherwise protected should be clearly identified as such and should be submitted only through U.S. mail or a non-electronic delivery method; such information should not be submitted through www.regulations.gov or email. For the full U.S. EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit **https://www.epa.gov/dockets/commenting-epa-dockets**.

The proposed permit, Statement of Basis (including this Draft EJ Analysis), and revised TSCA permit application can be found by visiting **www.regulations.gov** [docket number U.S. EPA-R09-RCRA-2019-0088], U.S. EPA's Kettleman Hills project website at **www.epa.gov/ca/kettleman-hills**, or the following address:

[40] Any comment made in Spanish will be responded to in Spanish.

Kettleman City Library
104 Becky Pease Street
Kettleman City, CA 93239

5.3.2 U.S. EPA Response to Comments

U.S. EPA will review, summarize, and provide written responses to all substantive comments received during the public comment period and at the public hearing prior to making a final decision on CWM's application to renew and modify its TSCA permit for the Facility. U.S. EPA will send notice of the final decision to each person who provides contact information (email and/or mailing address) and who: 1) submits comments during the public comment period, including spoken comments provided at the public hearing, or 2) requests notice of the final permit decision. U.S. EPA will also post the final decision, U.S. EPA's response to comments, a copy of the public hearing transcript, and other relevant documents on U.S. EPA's Kettleman Hills website.

5.4 Outreach Activities Prior to 2017

This Draft EJ Analysis was prepared as part of the Statement of Basis for the 2019 proposed permit decision that is based on the renewal application submitted on October 2, 2018; however, U.S. EPA has been involved in many public participation activities related to prior permit applications. Table 17 lists the community outreach activities that occurred between 2007 and 2012.

On February 20, 2007, U.S. EPA proposed a TSCA PCB Coordinated Approval[41] covering Landfill B-18 Phase I and Phase II and the PCB F/SU. As part of this proposal, U.S. EPA prepared a Draft Refined Environmental Justice Assessment in conjunction with its proposed Coordinated Approval. On March 27, 2007, U.S. EPA held a public meeting and public hearing on the proposed Coordinated Approval and Draft Refined Environmental Justice Assessment and received over 300 public comments.

In 2008, U.S. EPA concluded that sampling and a risk assessment for PCB congeners was warranted, based in part on the community's concerns and comments. On December 2, 2008, U.S. EPA requested that CWM carry out a PCB congeners study that is discussed in Section 6.1.1. U.S. EPA worked with community members and environmental activists to plan meetings and select presentation topics. U.S. EPA held several public meetings to discuss the TSCA permit decision-making process and the "Dioxin-Like PCB Congeners Study Report" (PCB Congeners Study) and provided the community with multiple opportunities to provide input into the study design. U.S. EPA hosted public workshops to discuss the preliminary results of the Study on December 16, 2009 and March 27, 2010 (see Section 6.1.2). The final PCB Congeners Study and a Spanish-language summary were submitted to U.S. EPA on November 5, 2010.

In June 2009, CWM submitted an application to U.S. EPA to expand Landfill B-18 for PCB waste. In September 2011, U.S. EPA informed CWM that U.S. EPA believed that a standard TSCA permit is preferable to a Coordinated Approval that relied on the RCRA permit and that any future proposed action would supersede the February 2007 proposed decision.

On December 1, 2009, U.S. EPA removed the Draft Refined Environmental Justice Assessment from its website because certain information and conclusions in the assessment were out of date and should not be cited. U.S. EPA subsequently referred to more current environmental assessment efforts at the

[41] A Coordinated Approval recognizes the state RCRA permit as the primary TSCA permit document.

CalEPA website describing the efforts being undertaken for the "Investigation of Birth Defects in Kettleman City" (see Sections 3.4.2 and 6.6.2) and "Kettleman City Community Exposure Assessment" reports (see Sections 6.2.3, 6.3.4, and 6.5.1).

Between 2010 and 2012, the Technical Assistance Services for Communities (TASC) Program, funded by U.S. EPA to provide educational and technical assistance from non-U.S. EPA experts, wrote a series of memos to the community related to CalEPA and CDPH's "Investigation of Birth Defects and Community Exposures in Kettleman City, CA" report. Dr. Daniel Wharton wrote these memos to help Kettleman City residents better understand the issues and to be well informed while participating in the permit decision-making process.

After 2012, U.S. EPA decided that it would act on a permit application after DTSC made a final decision on the CWM permit expansion (see Section 2.2.2). Effective May 2014, DTSC approved the CWM permit expansion to allow construction and operation of Landfill B-18 Phase III. U.S. EPA received CWM's next permit renewal application on July 15, 2017.

TABLE 17 Public Participation Activities for Prior TSCA and RCRA Permit Applications from 2007-2012.

Date	Public Participation Activity	Sponsor	Participants
03/12/2007	Kettleman City public meeting about the draft TSCA permit and Draft Environmental Justice Assessment.	U.S. EPA	Community residents, environmental organizations
03/27/2007	Kettleman City public meeting and public hearing on the draft proposed TSCA permit and Draft Refined Environmental Justice Assessment.	U.S. EPA	Community residents, environmental organizations
07/12/2007	Kettleman City public meeting and public hearing on the RCRA permit modification.	DTSC	Community residents, environmental organizations
11/2008	Outreach conference calls to explain U.S. EPA's draft TSCA permit decision-making process and U.S. EPA's intent to require additional monitoring by CWM prior to making a re-proposed decision.	U.S. EPA	Environmental organizations
02/04/2009	Public meeting about the TSCA permit decision-making process and additional PCB sampling.	U.S. EPA	Community residents, environmental organizations
06/11/2009	Public meeting to hear community concerns on the CWM KHF Landfill B-18 expansion.	DTSC	Community residents, environmental organizations
07/28/2009	Interagency phone call to discuss birth defects issues.	U.S. EPA	DTSC, CalEPA, CDPH, Kings County
08/12/2009	Kettleman City public listening session to hear community's concerns regarding birth defects.	Green-action	U.S. EPA, state and local agencies, community residents, environmental organizations
09/28/2009	Interagency phone call to discuss birth defects issues.	U.S. EPA	DTSC, CalEPA, CDPH, Kings County
12/16/2009	Kettleman City public workshop to present the preliminary results of the PCB Congeners Study and receive community input.	U.S. EPA	Community residents, environmental organizations, state and local agencies
02/09/2010	Briefing on CDPH's proposed birth defects investigation in Kettleman City.	CDPH	Community residents, environmental organizations, U.S. EPA, state and local agencies
03/27/2010	Kettleman City public workshop to present the preliminary results of the PCB Congeners Study and receive community input.	U.S. EPA, DTSC	Community residents, environmental organizations

Date	Public Participation Activity	Sponsor	Participants
04/06/2010	Memo to Kettleman City residents on observations and suggestions regarding CalEPA's proposed exposure assessment for Kettleman City.	TASC	Community residents
04/14/2010	Memo to Kettleman City residents on considerations of the reported health status of residents and suggestions for next activities.	TASC	Community residents
06/16/2010	Memo to Kettleman City residents summarizing the 04/06/2010 memorandum.	TASC	Community residents
06/16/2010	Memo to Kettleman City residents summarizing the 04/14/2010 memorandum.	TASC	Community residents
10/04/2010	Memo to Kettleman City residents on "what can be done to help Kettleman City residents now."	TASC	Community residents
10/04/2010	Memo to Kettleman City residents summarizing the 10/04/2010 memorandum.	TASC	Community residents
12/01/2010	Memo to Kettleman City residents on comments and recommendations in response to CalEPA and CDPH's "Investigation of Birth Defects and Community Exposures in Kettleman City, CA" Public Review Draft.	TASC	Community residents
12/27/2010	Memo to Kettleman City residents summarizing the 12/01/2010 memorandum.	TASC	Community residents
11/17/2011	Public workshop and meeting on Landfill B-18, drinking water, enforcement, permit decision-making process, monitoring, and the pesticide study.	U.S. EPA, DTSC	Community residents, environmental organizations, state and local agencies
11/20/2011	Memo to Kettleman City residents on comments and recommendations in response to CalEPA and CDPH's "Investigation of Birth Defects and Community Exposures in Kettleman City, CA" Draft (Part 2).	TASC	Community residents
08/20/2012	Memo to Kettleman City residents on incidence patterns of birth defects and cancer in Kettleman City and California's Central Valley, including CDPH's response to community concerns.	TASC	Community residents

5.5 Community Concerns

Through community outreach and public participation activities listed in Sections 5.1 and 5.4, U.S. EPA heard an array of concerns both related and unrelated to the proposed permit decision (Table 18). Prior to U.S. EPA proposing this permit decision, U.S. EPA and state and local agencies have taken multiple actions to address Kettleman City's community concerns. U.S. EPA has taken part in several public events, held public meetings to inform the community about the permit decision-making process, and mailed important information in both English and Spanish to community members (see Sections 5.1 and 5.4). Multiple studies have been completed to address the community's concerns about potential environmental and health impacts, including the PCB Congeners Study (see Section 6.1.1) and the "Investigation of Birth Defects and Community Exposures in Kettleman City, CA" report (see Sections 6.2.3, 6.3.4, 6.5.1, and 6.6.2). U.S. EPA also played a role in addressing concerns outside the scope of the permit, testing for and educating the public about pesticides (see Sections 6.5.2 and 6.5.3) and providing grant funding for a diesel emission reduction program (see Section 6.2.4). CWM has also undertaken and will continue to undertake outreach to engage with the local community (see Section 6.4).

TABLE 18 Concerns Voiced by the Kettleman City Community from 2007-2019.

Community Concern	Section*
Benzene concentrations in drinking water in 1993-1995 and the length of time to address.	3.2.3, 6.2.3
Arsenic concentrations in drinking water.	3.2.3, 6.3.5, 6.3.6
Birth defects and a questioned linkage to KHF and other environmental exposures.	3.4.2, 6.2.3, 6.6.2
The high number of cancer deaths in Kettleman City.	3.4.3
The high number of cases of childhood asthma in Kettleman City.	3.4.4
Residents lack of access to health care.	3.4.5
Need for air monitoring in the community.	4.2.3, 6.4.1
The Facility's compliance history.	4.3
Spanish translations of written material are needed at public meetings.	5.1, 6.4.2
Wording of public notice for the permit does not encourage public participation.	5.1, 5.2
Mailings to the community need to be bilingual and easily understandable.	5.1, 5.2
Ability to influence U.S. EPA and DTSC and affect permit decisions.	5.1, 5.2, 5.3, 5.4
Community repositories are not available during convenient hours.	5.2
PCBs may volatilize from unclosed units.	6.1.1, 6.1.3, 6.2.1, 6.2.2, 6.2.3, 6.4.1
PCBs could migrate from KHF as air emissions and impact Kettleman City.	6.1.1, 6.1.3, 6.2.1, 6.2.2, 6.2.3, 6.4.1
Wind-blown PCB particles from KHF operations could be deposited off-site and taken up into the food chain.	6.1.1, 6.1.2, 6.1.3, 6.2.1, 6.2.3, 6.4.1
Air monitoring for PCBs was suspended in 2008.	6.1.3, 6.4.1
Weather event could carry chemicals from KHF's stabilization ponds and expose the community.	6.2.1, 6.2.2, 6.4.1
Diesel exhaust from trucks going to and from the Facility	6.2.4, 6.2.5, 6.2.6
Air toxics from the facility will affect surface water supplies.	6.1.3, 6.2.1, 6.2.3, 6.4.1
Facility actions may impact groundwater and surface water supplies.	6.1.3, 6.2.1, 6.3.1, 6.3.2, 6.3.4, 6.4.1
Access to the Facility's monitoring data.	6.4.1, 6.4.3
What would happen at the facility during a natural disaster, such as an earthquake.	6.4.2
Potential for truck accidents, how they would be handled, and their potential impacts on the local community.	6.4.2
Community is not receiving time for public participation at CWM's annual KHF meeting.	6.4.2
Community does not have access to KHF's disaster plan, including terrorist attacks.	6.4.2
No clear direction on whom to call with odor problems and other concerns.	6.4.3
Residents concerned about pesticide exposure.	6.5.1, 6.5.2, 6.5.3
Residents do not know who to contact for complaints about crop duster spray.	6.5.3
Residents have requested biological monitoring studies of its community members.	6.6.3
Lack of testing of birth mothers during the State's evaluation of birth defects.	CalEPA and CDPH's "Investigation of Birth Defects and Community Exposures in Kettleman City, CA" Report
Closure plans for KHF are not adequate, and the Facility will not be properly maintained after the landfills are full and the on-site staff has left.	Statement of Basis

* Numbers are sections of this Draft EJ Analysis.

6. Community Concerns and Actions Taken

The community's involvement in the U.S. EPA and DTSC permit decision-making processes has highlighted health and environmental community concerns that are consistent with the information presented in Section 3 of this document. By raising these important issues, the community has been a critical force in helping to improve Kettleman City. Federal, state, and local government and environmental organizations have bolstered the efforts of the community by taking actions to address concerns related to KHF operations and other non-TSCA related activities since 2007.

6.1 PCB Contamination

The community raised concerns that wind-blown PCB particles from KHF 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 KHF as air emissions and impact Kettleman City. See Table 18 in Section 5.5.

6.1.1 PCB Congeners Study

In December 2008, U.S. EPA requested that CWM complete a PCB congeners[42] study in response to community concerns and possible off-site impacts that PCB disposal operations at KHF may present to human health or the environment (see Section 4.2.2) [U.S. EPA 2008b]. U.S. EPA requested CWM to collect soil, vegetation, and air samples at the Facility perimeter and assess risk to human health and the environment from PCB operations at the Facility. These studies are collectively referred to as the "PCB Congeners Study." This study is the first scientific study of this magnitude conducted at a TSCA-regulated PCB storage and disposal facility.

Because of the magnitude, U.S. EPA worked closely with CWM to: 1) design the study, 2) review and approve all sampling plans to ensure that U.S. EPA's standards and protocols were met, 3) oversee sample collection, 4) collect soil split samples, 5) review all of CWM's data against U.S. EPA quality assurance/quality control standards, and 6) review and approve the risk analysis report [CWM 2009b-2009c, U.S. EPA 2009a-d]. U.S. EPA also worked closely with the community, including providing multiple opportunities for study design input (see Table 17) and hosting two public meetings to discuss the study results. (see Section 6.1.2).

A total of 720 soil samples and 720 vegetation samples, representative of the entire Facility perimeter, were collected. Air samples were collected continuously over a 12-month period to characterize then-present-day conditions at the Facility perimeter. Monitoring included upwind and downwind stations. Samples that CWM collected were analyzed by Test America Laboratories, an independent State-certified laboratory, located in West Sacramento, CA.

U.S. EPA directed CWM to use the soil, vegetation, and air PCB congener data in a U.S. EPA-approved multi-pathway risk model to assess potential risk to human health and the environment. To address community concerns, U.S. EPA directed CWM to evaluate several different exposure scenarios including a hypothetical resident living at the fence line (perimeter) of the Facility and a hypothetical subsistence resident rancher living at the fence

[42] A PCB congener is any single, unique well-defined chemical compound in the PCB category.

line (perimeter) of the Facility [U.S. EPA 2011]. A subsistence resident rancher would consume home-grown beef, food crops, and dairy products over 30 continuous years.

U.S. EPA reviewed the PCB Congeners Study and found no evidence suggesting that PCBs from operations at KHF migrate off-site at concentrations that would adversely impact the health of nearby residents or the environment. Based on the results of the PCB Congeners Study, U.S. EPA concluded:

1) Concentrations of the most toxic PCB congeners in soil samples collected at the perimeter of the Facility are significantly below U.S. EPA's health-based clean-up levels.
2) Risk of health impacts from PCB congener concentrations measured in soils, vegetation, and air near the perimeter of the Facility are in the same range as risk of health impacts in other rural areas without known PCB activities or sources.
3) Concentrations of PCB congeners measured in soils, vegetation, and air at the Facility perimeter as well as those collected at the Landfill B-18 drainage swale do not adversely affect ecological species.
4) There is no evidence suggesting that PCBs are migrating off-site at concentrations that would adversely affect the health of local community residents or the environment.

6.1.2 Meetings to Present and Explain Preliminary PCB Congener Study Results

Prior to the completion of the PCB Congeners Study in November 2010, U.S. EPA held two meetings on December 19, 2009 and March 27, 2010 to present the preliminary results of the study, answer questions, and listen to community concerns.

6.1.3 Review of PCB Monitoring Data

U.S. EPA reviewed available air quality monitoring data[43] collected at the Facility's monitoring stations (see Section 4.2.3 for locations) since the conclusion of the PCB Congeners Study (see Section 6.1.1). U.S. EPA also reviewed groundwater monitoring data [44] collected after completion of the "Kettleman City Community Exposure Assessment" report (see Section 6.2.3). U.S. EPA reviewed this data to determine if PCB releases from the Facility have been detected since these studies concluded.

From the start of routine air monitoring at the Facility in October 2006 until 2016, air samples for PCB analysis were collected once every 12 days for 24-hours each.[45] In 2016, month-long sampling for PCBs was added [DTSC 2016, Wenck 2016e]. U.S. EPA reviewed air monitoring reports submitted by the Facility between 2011 and 2018 to determine if PCBs have been

[43] The air quality and groundwater monitoring programs at the Facility have been on-going for many years under the Facility's state RCRA permit and waste discharge order (see Section 4.2.3) [DTSC 2003; RWQCB 2014].

[44] The Facility's previous TSCA permits also required groundwater monitoring [U.S. EPA 1992].

[45] From mid-April 2008 until early January 2011, PCB monitoring under the Facility's AAMP was discontinued with DTSC's approval because no PCBs above the detection limit had been identified in the 18 months of sampling prior to 2008 [Wenck 2010, p. 2-6.]. However, during this period, air monitoring for PCBs was conducted throughout 2009 as part of the PCB Congener Study [Wenck 2010, p. 3-5] and again between mid-June and September 2010 for the "Kettleman City Environment Assessment" report [CARB 2010].

detected at the Facility's air monitors.[46] No PCBs have been detected above the applicable detection limits [Wenck 2011b-d, Wenck 2012a-d, Wenck 2013a-d, Wenck 2014a-d, Wenck 2015a-d, Wenck 2016b-e, Wenck 2017a-d, Wenck 2018a-d].

Groundwater monitoring data has been collected at KHF for over 30 years. Currently, groundwater samples are tested for PCBs once every five years as part of the constituents of concern testing. The last constituents of concern testing was conducted in the fourth quarter of 2016 (October through December 2016) [AMEC 2017]. Previous constituents of concern testing was performed in the first quarter of 2012 [AMEC 2012]. PCBs were not detected in either of these groundwater samples.[47,48]

6.1.4 Other California State and Local Agency Actions

The California Air Resources Board (CARB) conducted an assessment of Kettleman City's air quality to evaluate potential risks to human health in the Facility area. This study is discussed in Section 6.2.3.

DTSC has included requirements for air monitoring, dust mitigation, etc. in the RCRA permit. DTSC and RWQCB designed the groundwater monitoring system. A more detailed discussion of the required air and ground water monitoring is discussed in Section 4.2.3.

6.2 Air Quality

The community has voiced multiple concerns about air quality. See Table 18 in Section 5.5.

6.2.1 Ambient Air Monitoring Program

See Section 4.2.3 for information about the Facility's air monitoring.

6.2.2 U.S. EPA Air Emissions Inspection of Facility Ponds

U.S. EPA Office of Enforcement and Compliance Assurance's Air Enforcement Division and Region 9 conducted an unannounced inspection at KHF on November 12, 2010 to assess

---

[46] Air monitoring data prior to 2009 were reviewed as part of the PCB Congener Study. No PCBs were identified above the detection limit [Wenck 2010, p. 2-6].

[47] PCBs have been detected twice in groundwater at the Facility [CWM 1999/CWM 2018i]:

1. A sample collected from corrective action monitoring (CAM) well A02 on May 21, 1985 detected PCBs at concentrations of 0.0015 ppm. CAM well A02 monitors releases from closed ponds P-12 and P-12A. No subsequent quarterly samples have detected any PCBs.
2. A sample collected from CAM well A05 on March 20, 1995 detected PCBs at a concentration of 0.002 ppm. CAM well A02 monitors releases from pond P-9. No subsequent quarterly samples have detected any PCBs.

In 1995 and 2004, PCBs were detected in samples collected from sounding well B14MW2 [CWM 2018i]. Sounding well B14MW2 was one of four shallow (42-102 feet below ground level) sounding wells installed in 1981 on the perimeter of Landfill B-14 to monitor for and collect fluids that could potentially migrate out of the landfill [Geomatrix 2006].

The Landfill B-14 sounding wells were checked regularly for fluids. In 1995, surface water from heavy rains entered the B14MW2 well. Testing of the water in the well detected PCBs at a concentration of 0.002 ppm in February 1995 and 0.0007 ppm in March 1995 [CWM 2018i]. In 2004, all residual water was removed from the well and tested. PCBs were detected at a concentration of 0.0027 ppm [CWM 2018i]. No liquids were ever found in the other three sounding wells surrounding Landfill B-14 [Geomatrix 2006]. All four Landfill B-14 sounding wells were decommissioned in 2009 with U.S. EPA's Approval [U.S. EPA 2008a]. Potential releases to groundwater from Landfill B-14 are currently monitored by well K-50 [AMEC 2014].

[48] No PCBs have ever been detected in groundwater detection wells monitoring the four landfills approved for disposal of PCBs at KHF.

whether KHF emits significant concentrations of VOCs (which can contribute to ozone formation). The air monitoring data collected during the inspection indicated that the three hazardous waste ponds (and associated leachate tanks) and the drum storage unit[49] were not significant sources of VOCs at the time of inspection. Furthermore, inspection of ponds did not show significant emissions of organic gases. U.S. EPA also reviewed the reported concentrations in CWM's Quarterly AAMP Program Data Report for April through June 2010. After reviewing the quarterly report and collecting survey data, U.S. EPA concluded that KHF did not appear to be a significant source of the measured air pollutants at the time of inspection.

6.2.3 Kettleman City Community Exposure Assessment

In response to community concerns, former Governor Arnold Schwarzenegger directed CalEPA to assess possible environmental contaminants in the air, groundwater, and soil to determine whether those contaminants may have contributed to the increase in birth defects in Kettleman City [CalEPA and CDPH 2010]. The report "Kettleman City Community Exposure Assessment" was undertaken by CalEPA and OEHHA, with technical assistance provided by CDPH and U.S. EPA. CalEPA developed a comprehensive list of chemicals known to cause birth defects and other development effects. Through public meetings and comments, the comprehensive list contained 182 compounds for chemical analysis of air, groundwater, or soil. Results from the assessment were used by CalEPA and CDPH to make determinations in the "Investigation of Birth Defects and Community Exposures in Kettleman City, CA" report. The assessment's comprehensive testing of air did not find any exposure to hazardous chemicals likely to be associated with birth defects [CalEPA and CDPH 2010].

Kettleman City Air Quality Assessment

As part of the "Kettleman City Community Exposure Assessment" report, CARB conducted the "Kettleman City Air Quality Assessment" in 2010 to evaluate potential risks to human health in the Facility area [CARB 2010]. To perform this risk assessment, CARB selected three residential locations: the Kettleman City Elementary School, one location upwind of KHF, and one location downwind of KHF. To address air quality concerns, samples of air were analyzed for toxic compounds (specifically VOCs, metals, PCBs, dioxin and furan congeners) and criteria air pollutants (sulfur dioxide, $PM_{2.5}$, and nitrogen dioxide).

Ambient air concentrations of toluene, carbon disulfide, benzene, ethylbenzene, lead, nickel, arsenic, cadmium, manganese, and hexavalent chromium were below health screening levels [CARB 2010]. Ambient air concentrations of sulfur dioxide, $PM_{2.5}$, and nitrogen dioxide were below state and federal air quality standards [CARB 2010].

PCB, dioxin, and furan congeners monitoring results for the three monitoring sites were compared with historical data from CARB's California Ambient Dioxin Air Monitoring Program (CADAMP) monitoring network.[50] The assessment found that all Kettleman sites had combined PCB, dioxin and furan congeners values lower than the other CADAMP monitoring sites for the same time of year as the sampling period (June-August) [CARB 2010]. CARB found no significant health concerns with the Kettleman City levels for PCB, dioxin and furan congeners.

[49] The drum storage unit is not used to store PCB waste and the ponds are not used to dispose of PCB waste.

[50] More information about CADAMP can be found at: **www.arb.ca.gov/aaqm/qmosopas/dioxins/dioxins. htm**.

CARB assessed diesel particulate matter in Kettleman City by using air dispersion modeling of emissions from trucks and other local diesel sources. Facility diesel particulate matter emissions were not included in the assessment because a ridge and three miles separate the Facility from Kettleman City and the predominant wind direction carries KHF emissions away from Kettleman City [CARB 2010]. CARB's modeling found that the majority of air emissions come from highway (I-5 and SR-41) and agricultural emissions [CARB 2010].

CARB also assessed the public's exposure to benzene in the air near two drinking water wells in Kettleman City by collecting grab samples downwind of two municipal water well treatment units (located at the southeast and southwest corner of Kettleman City) Ambient air concentrations of benzene exceeded the air cancer risk screening level; however, these measured concentrations were below the CalEPA reference exposure level for non-cancer health effects of 60 µg/m^3 (Table 19).

TABLE 19 Kettleman City Air Quality Assessment Benzene Air Concentrations at Well Treatment Units.

	Average µg/m^3			
Sample Date	**SE Unit**	**SW Unit**	**School (Tisch Sampler)**	**School (Xontech Sampler)**
July 14	0.39	4.9	-	-
August 11	0.48	0.11	-	-
August 25	0.35	26	-	-
June-August (range)	-	-	0.36 – 0.94	0.21 – 0.49
Limit of Detection	0.23	0.23	0.16	0.16
Air Cancer Risk	0.034	0.034	0.034	0.034

Because the southwest unit grab samples were much higher on two of the three days, CARB used air modeling to further evaluate the public's potential exposure to benzene downwind of the unit [CARB 2010]. CARB found that the exposure of potential concern is limited to approximately 50 meters of the benzene treatment unit, and estimated air concentrations beyond this distance were similar to Kettleman Elementary School and the cities of Fresno and Bakersfield [CARB 2010].

CARB recommended further evaluation, and SJVAPCD determined that permits and emission controls were required to reduce benzene emissions from both drinking water wells. SJVAPCD worked with KCCSD on design changes to reduce benzene emissions from the treatment units. SJVAPCD issued permits for the operation of the treatment units with controls to reduce benzene emissions in 2017.

6.2.4 Grant Funding to Reduce Diesel Emissions

In 2011, U.S. EPA awarded Greenaction a $25,000 grant to reduce diesel emissions in San Joaquin Valley communities by conducting outreach to educate the community, trucking companies, and drivers on the impact of diesel emissions, and encourage equipment changes that would lead to emissions reduction.

Greenaction successfully identified local diesel idling "hot spots" where illegal idling took place. They then educated 230 truckers, more than 20 businesses, two schools and one daycare center about anti-idling laws and government grant programs that are available to help pay for diesel vehicle retrofits. Over 2,000 Kettleman City and Avenal residents were educated through bilingual fact sheets, house and community meetings and trainings, and door-to-door education. From project beginning to end, Greenaction saw a ninety percent reduction in truck idling and

encouraged nine businesses that use diesel vehicles to sign "Good Neighbor Agreements," an effort to educate employees about unhealthy emissions and the law's restrictions on idling.

6.2.5 2014 RCRA Permit Modification Heavy-Duty Diesel Truck Condition

As part of the 2014 RCRA permit modification (see Section 2.2.2), DTSC added provisions to reduce the diesel emissions from trucks transporting hazardous waste to the Facility. Under this provision, CWM must prohibit entry to any truck that does not meet CARB's 2010 engine emission standards as of January 1, 2018.

6.2.6 Diesel Emissions Reduction Program

California has identified diesel particulate matter as a toxic air contaminant based on its potential to cause cancer, premature death, and other health problems. Diesel engines also contribute to the state's $PM_{2.5}$ air quality problems. To address diesel particulate matter, California has adopted a wide-ranging set of controls and other programs to reduce diesel engine emissions including controls on new and in-use trucks, construction equipment, agricultural equipment, stationary engines (e.g., irrigation pumps) and diesel fuels. More information on California's diesel control programs is on CARB's website at **www.arb.ca.gov/diesel/diesel.htm**.

6.3 Water Quality

During public meetings from 2007-2010 and previous TSCA permit renewal public comment periods, the community raised concerns that facility actions may impact groundwater and surface water supplies. The community also voiced concerns about naturally-occurring arsenic in the drinking water supply (see Section 3.2.3). See Table 18 in Section 5.5.

6.3.1 Groundwater Isolation

Studies have indicated that groundwater beneath KHF is not connected to the groundwater beneath Kettleman City [CalEPA and CDPH 2010; RWQCB 2014]. Consequently, groundwater below KHF is hydraulically isolated from Kettleman City's drinking water source and groundwater is not considered to be a possible exposure pathway for contaminants to reach nearby residents. In 1989, RWQCB determined that groundwater beneath the Facility had no municipal or domestic beneficial use [RWQCB 2014, p. 5].

6.3.2 Groundwater Monitoring

See Section 4.2.3 for information about the Facility's groundwater monitoring.

6.3.3 Stormwater Monitoring

See Section 4.2.3 for information about the Facility's stormwater monitoring.

6.3.4 Kettleman City Community Exposure Assessment

As part of the "Kettleman City Exposure Assessment" report, DTSC collected water samples from 11 homes, Kettleman City's three wells (see Section 3.2.3), the California Aqueduct, and an agricultural drainage canal. Samples were analyzed for metals, VOCs, and total coliform bacteria and E. coli bacteria. [CalEPA and CDPH 2010]. Three of the residential water samples and all well and canal samples were also analyzed for PCBs. Nearly all 11 water samples collected from home faucets had elevated levels of arsenic that exceeded the federal Maximum

Contaminant Level[51] (standard). Both the aqueduct and drainage canal had arsenic present, though below the federal standard. Benzene was found in the two municipal wells at levels exceeding the federal standard; however, the benzene treatment system appeared to work properly because benzene was not detected in the home samples (see Section 3.2.3). No benzene was found in the water from the aqueduct and drainage canal. No PCBs were detected in any samples.

6.3.5 New Drinking Water Source

In response to the elevated arsenic contaminant levels, CDPH provided the KCCSD with $225,676 on June 30, 2010 to evaluate alternatives for a cost-effective long-term solution to reduce arsenic in drinking water [Water Board 2016]. It was determined that the most cost-effective solution was to construct a new surface water treatment plant and to use surface water from the California Aqueduct [Water Board 2016].

Construction will consist of two phases: The first phase will construct a surface water treatment plant, which was underway as of September 17, 2017, with an expected completion date of October 15, 2019 [T. Wathen, personal communication, February 13, 2019, C. Fischer, personal communication, August 20, 2019]. The second phase consists of building a commercial tank facility consisting of two 250,000-gallon welded steel water tanks near the commercial area at the interchange of I-5 and SR-41. As of February 2019, the design and construction of the second phase was not yet underway [C. Fischer, personal communication, February 26, 2019].

KCCSD submitted an application for a new drinking water source in Fall 2011. The total approved cost of construction came to $9.4 million from the State Revolving Fund Principal Forgiveness ($3 million), Proposition 84 grant ($4.5 million), and U.S. Department of Agriculture Rural Development ($1.9 million) [State Water Board 2016]. In addition, Kings County helped secure water rights to deliver surface water from the California Aqueduct to the community for at least 20 years.

The Reef-Sunset Unified School District applied for Water Board $395,000 of Prop 84 funds in June 2018 to install separate water pipelines to tie the Kettleman City Elementary School into the Kettleman City water system that will receive water from the new surface water treatment plant [E. Brasfield, personal communication, April 12, 2019].

All residents are updated on the status of the surface water treatment plant through a quarterly public notification. There were no scheduled meetings between the Water Board and the residents in 2018, and there are none scheduled for 2019 [C. Fischer, personal communication, February 26, 2019]. The engineering firm for the surface water treatment plant had a booth at the Kettleman Public Safety Fair on October 11, 2018 and disseminated information about upcoming milestones, including completing the new system and putting it online.

6.3.6 Interim Drinking Water Source

Kettleman City Community Services District Public Water System

KCCSD received multiple funds from the Water Board to fund the interim solution of distribution of bottled drinking water to residents due to arsenic contamination. On February 8, 2013, KCCSD

[51] A Maximum Contaminant Level is the maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

received $50,000 in funding under the CDPH Drinking Water Program's (DWP) Prop 84 Emergency Funding to provide bottled water to the residents [K. Hanagan, personal communication, August 23, 2018]. On July 1, 2014, the administration of the DWP was transferred from the CDPH to the Water Board.

On September 30, 2014, KCCSD received $333,033 in Cleanup and Abatement Account (CAA) (SB103) funding to replace the Prop 84 funding and continue to provide bottled water to KCCSD's customers for a period of up to 33 months or until a long-term solution is in place. The CAA SB103 funding provided the District with bottled water until June 30, 2017. On June 17, 2016, the Water Board approved an additional $101,569 in CAA funding (AB91) to continue the bottled water distribution until March 31, 2018. On July 3, 2018, the Water Board approved an additional $186,110 in CAA funding to continue the bottled water distribution from April 1, 2018 to March 31, 2019 [K. Hanagan, personal communication, August 23, 2018]. On February 15, 2019 the Water Board approved an additional $31,755 in CAA funding to continue the bottled water distribution for four months from April to July 2019 [M. Magtoto, personal communication, March 21, 2019]. Due to delays, the Water Board approved additional CAA funding on July 16 and August 15, 2019, for a combined total of $79,240. These funds will to continue the bottled water distribution until March 31, 2020 or until the plant starts delivering clean water, whichever comes first [M. Magtoto, personal communication, August 20, 2019].

Kettleman Elementary School PWS

Between 2012 and 2013, the Reef-Sunset Unified School District received $121,000 of Prop 84 funding from the state to install six point-of-use water filtering systems for drinking water fountains and certain kitchen faucets at the Kettleman Elementary School to remove the arsenic from the drinking water [E. Brasfield, personal communication, April 12, 2019]. The filters were installed on April 17, 2014 and labeled with signage for students and school personnel. To ensure the filtering systems are meeting the state's drinking water standards, each system is tested for arsenic twice a year on a rotating basis. They are also tested within 72 hours for total coliform and arsenic when filters are replaced.

6.4 Communication, Community Awareness, and Emergency Response

The community expressed concerns related to KHF's communication, community awareness, and emergency response. See Table 18 in Section 5.5.

6.4.1 Air and Water Quality Monitoring Reports

The Kings County Local Assessment Committee and CWM agreed that the independent consultants hired by CWM to prepare air quality and water quality monitoring and compliance reports will prepare an annual summary of the reports in layperson's terms, in Spanish and English [Wenck 2019, Wood 2019]. The consultants will deliver copies of the summary to all post office box-holders in Kettleman City, with a copy to the Kings County Community Development Agency, on or before March 31st of each year.

6.4.2 Annual Community Education Meeting

As a condition of the 2014 RCRA permit modification, the Facility is required to provide annual community education each April in Kettleman City. The meeting provides information about KHF's contingency plan and assists the community in preparing a disaster plan for the residents. Public agencies responsible for emergency planning and response are invited to provide

information to local residents, such as the potential for accidents, how they would be handled, and their potential impacts on the local community. CWM notifies members of the public about the annual meeting through mailers, sent both in English and Spanish [Waste Management 2019].

6.4.3 CWM Reports

Federal and state law as well as KHF's RCRA permit, water permit (see Table 1), and current TSCA permit require CWM to prepare and submit reports routinely and when certain incidents occur (e.g., spills). Some of these reports are listed in Tables 20 and 21. These tables are for informational and summary purposes only and do not include all required reports. The tables also do not include any reports that U.S. EPA is proposing to require under the proposed TSCA permit.[52]

Copies of many past routine reports submitted to U.S. EPA may be found in the administrative record for the proposed permit. U.S. EPA's Kettleman Hills Project Manager may be contacted for information on how to obtain other reports (see Section 5.2.1 for contact information). Please note that some reports may only be obtained by filing a Freedom of Information Act request or may not be available because of a confidential business information claim or other reasons.

Many of the routine reports submitted to DTSC are available on the Department's Envirostor website at **www.envirostor.dtsc.ca.gov/public/hwmp_profile_report.asp?global_id=CAT000646117&starttab=**. Many of the routine reports submitted to RWQCB are available on the Water Board's Geotracker website at **geotracker.waterboards.ca.gov/profile_report?global_id=SLT5FZ064603**. U.S. EPA does not guarantee that a report will be available at these sites and recommends contacting the appropriate state agency for further information on the availability of a report. Note that some information may be obtainable only through a public records request or may not be available for public release.

6.4.4 KHF Community Contact

Kettleman City residents can contact KHF's Community Relations Manager, Cecilio Barrera, at (559) 309-7688 or **cbarrera@wm.com**.

[52] These tables also do not include reporting requirements imposed by other Facility permits or other applicable federal or state laws. For example, the Facility must comply with the reporting requirements for the Toxics Release Inventory (TRI) Program pursuant to Section 313 of the Emergency Planning and Community Right-to-Know Act. More information on the TRI program, including how to retrieve reported information by location or facility, can be found at **www.epa.gov/toxics-release-inventory-tri-program**.

TABLE 20 KHF PCB and Hazardous Waste-Related Routine Reporting Requirements.

Report Name	Required By	Frequency	Content
Waste Reports and Landfill Capacity			
PCB Annual Report	U.S. EPA	Annually	Amount of PCB waste by category received, stored, transferred, disposed, and remaining at KHF.
TSCA Monthly Report	U.S. EPA	Monthly	PCB waste received at KHF resulting from spills, leaks, or other uncontrolled discharges of PCBs; unusual events at KHF.
Survey of Active HW Landfills	DTSC	Annually	Data and summary from annual aerial or land survey of active landfills.
Annual Report	DTSC	Annually	Waste received, methods of transfer, treatment, storage and disposal of each hazardous waste, most recent closure and post-closure costs; environmental monitoring data; and other information required by 22 CCR 66264.75 (see **www.dtsc.ca.gov/HazardousWaste/AnnualReports/AFR.cfm**).
Biennial Report (odd years)	U.S. EPA/DTSC	Biennial	Information on types, amounts, and disposal of waste received and generated (see **www.dtsc.ca.gov/HazardousWaste/AnnualReports/BiennialReports.cfm#purpose**).
Incoming Waste	RWQCB	Monthly	Type and quantity of hazardous waste and designated waste accepted for disposal to the Class I waste management units.
Groundwater, Soil Gas, Stormwater, and Leachate Collection and Removal Systems Monitoring			
Groundwater Monitoring Report	RWQCB/ DTSC	Semi-annually/ Quarterly	Groundwater monitoring results, quality assurance/quality control requirements, other information as required
Annual Monitoring Summary Report	RWQCB	Annually	Summary of monitoring results; monitoring data in graphical format; discussion of compliance record and corrective actions taken; map of area and elevation of fill; evaluation of LCRS
Constituents of Concern Monitoring	RWQCB	Every Five Years	Results of constituents of concern monitoring (information included in groundwater monitoring report)
LCRS Constituents of Concern Testing	RWQCB	Annually	Results of analysis of liquids removed from the LCRS.
LCRS Fluid Levels	RWQCB	Monthly	Tabular and graphical summaries of daily leachate levels for LCRS sumps at waste management units.
LCRS Integrity Report	RWQCB	Annually	Results of testing for proper operation of LCRS and comparison of results with earlier tests under comparable conditions.
Annual Community Meeting	DTSC	Annually	Public meeting held by CWM to summarize the environmental monitoring results from the previous year
Air Monitoring			
AAMP Report	DTSC	Quarterly	Data collected during ambient air sampling; summary of met data and analytical results (chemicals-of-concern and detected/estimated non-chemicals-of-concern); description of waste received during monitoring
Health Risk Assessment Update	DTSC	Annually	Health risk assessment updated based on collected air monitoring data.
Annual Community Meeting	DTSC	Annually	Public meeting held by CWM to summarize the environmental monitoring results from the previous year
Closure and Post Closure			
Post-Closure Inspection	RWQCB	Annually	Inspection of the closed WMUs indicating compliance with Closure and Post-Closure Specifications G.7. and G.9. contained in the WDRs
Post-Closure Inspection and Maintenance Report	DTSC	Annually	Description of post-closure inspection results and maintenance activities during the previous year.

TABLE 21 KHF PCB and Hazardous Waste-Related Incident Reporting Requirements.

Report Name	Required By	Frequency	Content
Emergencies, Spills, and Other Releases			
Release of Hazardous Waste	DTSC	When required	Verbal report on discovery of a release, threat of release, or identification of a potential threat to human health or the environment. Written summary of identification of the released material, the amount released, and other specified info.
Follow-up to Emergency Incident	DTSC	When required	Written report detailing incident, response, and assessment of hazard to human health and environment, etc.
Spill report – PCB Quantities Over 1 lb in a 24-hour period	U.S. EPA	When required	Verbal report to the National Emergency Response Center.
Release/Change in Site Condition	RWQCB	When required	Written report of any evidence of a release, or change in site conditions (e.g., flooding, equipment failure, slope failure) which impair the integrity of waste or leachate containment facilities or of precipitation and drainage control structures.
Seepage from the Disposal Area	RWQCB	When required	Written report including a map with location(s) of seepage; estimate of the flow rate; nature of the discharge; and corrective measures.
Detection of PCBs in Environmental Media			
PCBs Detected in Leachate, Stormwater, or Groundwater	U.S. EPA	When required	Report within seven days of discovery.
Manifests			
Manifest Discrepancy	U.S. EPA (PCBs) and DTSC (HW)	When required	Description of the manifest discrepancy and efforts to reconcile it, and a copy of the manifest or shipping paper at issue.
Unmanifested Waste	U.S. EPA (PCBs) and DTSC (HW)	When required	Required for any unmanifested PCB/hazardous waste accepted at the Facility for which the generator cannot be contacted. Report requires information on waste, source, and disposition.
Non-Compliance and Other			
Notification of Noncompliance which may Endanger Health or the Environment	DTSC	When required	Within 24-hours: date, time, and type of incident, name and quantity of material involved, extent of injuries, if any; assessment of hazard to human health and environment, etc. Within five days: written report with a description of the noncompliance and its cause; the period of noncompliance including exact dates and times, and, if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
Notification of Noncompliance	RWQCB	When required	Nature, time and cause of noncompliance, measures taken to prevent recurrences, and timetable for corrective actions
Damage from Storm or Seismic Event	RWQCB	When required	Any damage and subsequent repairs necessary after a storm/seismic event.
Non-Compliant Truck Refusal of Entry	DTSC	When required	Notice of refused to a heavy-duty diesel truck not in compliance with engine model year requirements

6.5 Pesticides

Kettleman City residents have raised concerns about pesticide exposure. See Table 18 in Section 5.5. In addition, U.S. EPA staff observed new orchards planted to the north, east, and west of Kettleman City in 2010 with very little buffer between orchards and residences.

6.5.1 Kettleman City Community Exposure Assessment

As part of the report "Investigation of Birth Defects and Community Exposures in Kettleman City, CA," CDPR evaluated airborne pesticides in and around Kettleman City between 2006-2010 for their potential to have caused birth defects [CDPR 2010].

Evaluation of Pesticides in Air

CDPR modeling indicated that methyl isothiocyanate exceeded a screening level for developmental effects on one day between 2006 and 2009 [CDPR 2010]. CDPR also found that chlorpyrifos and diazinon exceeded screening levels for neurotoxicity on several days.

Overall, CDPR concluded that the risk of developmental effects from pesticides between 2006-2010 was very low. The study also stated that though the risk of other health effects from pesticides is uncertain, Kettleman City is likely lower risk than in other agricultural communities because historical air monitoring in other agricultural communities showed higher concentrations than detected in Kettleman City [CDPR 2010].

6.5.2 Indoor Pesticide Sampling

U.S. EPA staff observations and previous community concerns about pesticide exposure prompted U.S. EPA to collect a small number of samples from floors inside Kettleman City residences and one public building. At a February 2, 2011 public meeting, U.S. EPA shared its proposed Kettleman City indoor pesticide sampling process [U.S. EPA 2011d]. Samples were collected in March and July 2011 to determine whether pesticides primarily used in agriculture were present indoors [U.S. EPA 2011c]. Samples were analyzed for chlorpyrifos, diazinon, endosulfan, iprodione, phosmet, and propargite. The results indicated the presence of low levels of a few pesticides in some of the homes. Chlorpyrifos was detected most often (79 percent of homes sampled in March; 91 percent of homes sampled in July). Detection rates for the other pesticides in the study ranged from zero to 45 percent. Although levels of pesticides detected were below levels of concern, U.S. EPA encouraged residents to take steps to minimize pesticide exposure (see Section 6.5.3).

6.5.3 Pesticide Grant Funding/Safety Training

In response to the indoor pesticide sampling (see Section 6.5.2), U.S. EPA Region 9 granted $47,195 to Visión y Compromiso to implement an educational/outreach initiative in Kettleman City from November 4, 2010 to November 25, 2011 to provide women of childbearing age with information on how to protect themselves from home and/or occupational pesticide exposures. The outcome of the project increased women's knowledge about potential health effects from pesticide exposure and how to protect themselves and their unborn children from these exposures [Visión y Compromiso 2011].

Residents also voiced concerns that they have been sprayed by crop dusters and they did not know whom to call for complaints. In response to these concerns, U.S. EPA Region 9 provided

promotores[53] information on how to report incidents/complaints at the training. The promotores took the information and disseminated it in the community.

There are currently three methods to report an incident/complaint:

1) Kings County Agriculture Department / Measurement Standards
   680 N. Campus Drive, Suite B, Hanford, California 93230
   Hours of Operation: M - F (8am - 5pm)
   Email: **agstaff@co.kings.ca.us**
   Phone: (559) 852-2830
2) CDPR automated hotline: 1-877-378-5463
3) CalEPA complaint form:
   www.CalEPAcomplaints.secure.force.com/complaints/Complaint

6.6 Other

The community also had other concerns as identified in Table 18 in Section 5.5.

6.6.1 Facility Compliance

The community expressed concerns related to KHF's compliance history. See Section 4.3 for compliance history.

6.6.2 Birth Defects Investigation

Kettleman City residents raised concerns in 2009 about an observed increase in birth defects and questioned a linkage of birth defects to KHF and other environmental exposures. In response to these concerns, in January 2010 former Governor Arnold Schwarzenegger directed CDPH to investigate an apparent increase of infants born with births defects after 2006 in Kettleman City [CalEPA and CDPH 2010]. The objectives of the investigation were to evaluate the presence of known or suspected genetic, medical, or pregnancy-related risk factors and the potential for environmental contaminants that may be associated with an increased risk of birth defects. The completed report, "Investigation of Birth Defects and Community Exposures in Kettleman City, CA," was published in November 2010. Part 1.A of this report, "Investigation of Birth Defects in Kettleman City," specifically addressed birth defects.

CDPH conducted in-depth interviews with mothers of children who were born with birth defects and also reviewed their medical records. CDPH concluded that the number of infants born with birth defects to Kettleman City residents from 2007 through March 31, 2010 was higher than expected based on the historical pattern. Eleven children whose mothers lived in Kettleman City for part (or all) of their pregnancies were born during this time period with birth defects. Maternal medical, family, and pregnancy risk factors were unlikely to explain the higher than expected number of birth defects between 2007 and 2010. The mothers interviewed did not use alcohol, drugs, or tobacco, so these risk factors were not found to be a cause of these birth defects.

CDPH did not find a specific cause or environmental exposure among the mothers that would explain the increase in the number of children born in Kettleman City with birth defects and the

[53] Promotores are highly skilled community health members/leaders that advocate for individuals and community transformation. More information can be found at **www.visionycompromiso.org/wordpress/about-us/the-promotor-model/**.

observed birth defects did not represent a unique pattern nor were they all of the same type – characteristics that would be expected with a common underlying cause.

6.6.3 Biomonitoring

Biomonitoring for PCBS

Kettleman City residents have requested PCB biological monitoring (or biomonitoring) studies for members of the community. Biomonitoring involves the collection and analysis of human body samples for evidence of chemical exposure or for evidence of the adverse health impacts resulting from chemical exposures. Biomonitoring for PCBs can involve both invasive and non-invasive methods through the collection and analysis of urine, plasma, blood or fat tissues.

To date, no biomonitoring has been conducted on Kettleman City residents because U.S. EPA has determined that biomonitoring has considerable limitations:

1. **PCBs are Ubiquitous**

   PCBs are ubiquitous in the terrestrial environment.[54] Most, if not all, people living in the U.S. have measurable amounts of PCBs in their bodies. PCBs can remain in the environment for long durations of time cycling between air, water and soil. Humans can be exposed to PCBs from several major sources, including:

   - PCB contaminated foods, particularly meat, fish, and poultry (dominant source for most Americans) (Centers for Disease Control (CDC) 2014).
   - PCB impacted building materials (inhalation & incidental ingestion exposure routes).
   - PCB releases from contaminated terrestrial media (soils, water and air).

   Therefore, even if U.S. EPA conducts PCB biomonitoring of Kettleman City residents, the biomonitoring will not determine the source of PCB exposure because of the abundance and persistence of PCBs in the environment. Consequently, biomonitoring Kettleman City residents will not provide meaningful information regarding the potential PCB exposure threat from the Facility.

2. **Biomonitoring Variability, Uncertainty, and Lack of Reliability**

   Biomonitoring studies have a wide-degree of variability and uncertainty, regardless of any individual's PCB exposure potential. U.S. EPA and other public health organizations have not established reliable relationships between the total amount of PCBs retained by a human's body and the likelihood or magnitude of adverse health impacts in humans. In contrast, U.S. EPA relies on measuring the concentration of PCB intake from contaminated media (air, water or soils) or sources (food) to determine the likelihood of developing adverse health impacts due to PCB exposure.

Biomonitoring for Birth Defects

Appendix 2 of CalEPA and CDPH's report, "Investigation of Birth Defects and Community Exposures in Kettleman City, CA," explains why biomonitoring was considered but not conducted for the investigation.

[54] There are over 200 different types of individual PCBs, which have a range of toxicity.

6.6.4 Traffic

Kettleman City residents raised concerns about diesel exhaust from trucks going to and from the Facility. See Sections 6.2.2, 6.2.4, 6.2.5, and 6.2.6 for information about actions taken.

7. Conclusion

U.S. EPA prepared this Draft EJ Analysis to document the environmental justice considerations incorporated into the proposed permit decision. This analysis concentrates on Kettleman City due to its location and proximity with respect to the Facility and history of community concerns about impacts related to the Facility. U.S. EPA recognizes that Kettleman City has multiple environmental burdens, as well as the presence of social and other health factors that likely increase community vulnerability to the impacts of pollution (see Section 3).

The regulatory framework of TSCA makes it difficult for U.S. EPA to address public health challenges and environmental stressors which are outside the scope of the PCB action. Nevertheless, U.S. EPA's involvement in pursuing a regulatory action under TSCA has allowed U.S. EPA to invite a number of complementary state and local public health and regulatory agencies to the table – with the combined objective of addressing a subset of the multi-media environmental and public health challenges unique to Kettleman City. U.S. EPA has worked with these agencies to share information, coordinate studies, and provide public participation opportunities to ensure consideration of community concerns and the mitigation of localized environmental and public health impacts.

For the proposed permit decision, U.S. EPA considered publicly available data, tools, studies, and concerns expressed by the community to focus on potential health and environmental impacts that are within U.S. EPA's legal authority to address during the permit decision-making process. Multiple objective, site-specific and multidisciplinary scientific investigations have been completed since 2007, giving U.S. EPA information to better understand any exposure threat or potential health risks posed by Facility operations. Previous and more recent outreach activities have also helped U.S. EPA engage with Kettleman City to identify and address community concerns both inside and outside the scope of the PCB action. U.S. EPA's findings, based on the information detailed in the body of this report, can be summarized as follows:

1) U.S. EPA acknowledges that the majority of Kettleman City residents are minority and low-income. It also shows that Kettleman City has an above average number of residents whose primary language is Spanish and above average number of adults that did not graduate high school. Kettleman City faces several environmental burdens including poor air quality and drinking water that exceeds the state drinking water quality standards for arsenic. In past years, the community suffered an increased occurrence of birth defects. Mortality rates in Kings County are higher than the state-wide rates and children and older adults in Kings County are more impacted by asthma than the state average.
2) U.S. EPA reviewed air monitoring between 2011 and 2018. PCBs have not been detected above the applicable detection limits (see Section 4.2.3).
3) Groundwater monitoring has been conducted at the Facility for over 30 years. PCBs have rarely been detected (see Section 6.1.3).
4) The PCB Congeners Study found no evidence suggesting that PCB congeners from operations at the Facility are migrating off-site at concentrations that would adversely affect the health of local community residents or the environment (see Section 6.1.1).
5) CWM has been responsive to RCRA and TSCA compliance issues. While KHF has violated applicable requirements in the past, the corrective actions that the Facility implemented to address these violations include physical and operational improvements to reduce the potential for future violations and to prevent and contain future releases (see Section 4.3).

6) The proposed permit conditions listed in Table 22 will prevent or reduce releases, quickly discover and correct situations that could lead to releases or minimize releases that may happen and continue Facility-specific air and groundwater monitoring for PCBs.

U.S. EPA's analysis is that the proposed TSCA permit, if finalized, will ensure that PCB operations at KHF will not pose an unreasonable risk of injury to health and the environment. The proposed permit includes engineering and operational controls that prevent or reduce the likelihood of PCB releases from the facility. It also includes facility PCB monitoring requirements for air and water that will provide additional information to protect the community. The proposed permit decision is supported by a number of multidisciplinary public health investigations conducted or required by local, state and federal agencies. Collectively, these studies have shown no increased human health risk to the community from PCB operations at this facility. U.S. EPA is inviting comments on the proposed permit decision, Draft EJ Analysis, and other documents as mentioned in Section 5.3.

TABLE 22 Examples of Proposed Permit Conditions to Limit the Potential for PCB Releases.

Proposed Permit Condition	Description
IV.F.5, VI.D.8	Dust management practices
IV.G.1	Immediate notification of any PCB spills
IV.G.1., IV.G.2	Swift cleanup of spills
IV.O.11	Monthly report of unusual occurrences at the Facility
V.C.1	Limiting amount of PCB waste that can be stored at the PCB F/SU in the enclosed building and in the outside containment area to 25 percent of available containment volume
V.C.1, Renewal Application, Attachment 7	Sizing of outside containment area to take into account a maximum rain event
V.D.5	Keeping containers closed when waste is not being transferred in or out
V.E.1	PCB waste handling and storage operations to occur within containment areas
V.F.7	Maintaining a carbon filter on PCB Storage Tank vent
V.H.1	Regular inspections of containers and tanks for leaks
VI.B.1.i, VI.B.1.r	Solidification of liquids prior to landfilling
VI.D.7	Daily landfill cover
VI.F.1	Implementation of a pollution prevention program for stormwater
VI.F.1, VI.F.2, VI.F.3	Collection of stormwater that contacts waste (collected stormwater is treated as hazardous waste)
VI.F.1, VI.F.2, VII.B.3.e	Design of landfill to prevent run on and runoff
VI.C.2	No disposal of PCB liquids in Landfill B-18
VI.E.5.b, VI.F.4, VIII.B.6	Early notification of any detection of PCBs in groundwater, leachate, or stormwater
VI.E, VII.B.3.b	Leachate collection and removal systems
VI.H.4	Maintaining containment areas at the PCB F/SU to prevent any openings that would allow liquids to flow from the curbed areas
VI.H.4	Maintaining the enclosed building's roof and walls to prevent rain water from reaching PCB waste stored inside
VII.B.3.d	Inspection and maintenance of covers on closed landfills
VIII.A.3	Quarterly ambient air quality monitoring report
VIII.B.7	Annual groundwater monitoring reports
Renewal Application, Section 5.1	Lined landfills

8. References

ADE 2011 "PCB Outside Pad Replacement and Cleanup Completion Report – Kettleman Hills Facility, Kings County, California." Associated Design & Engineering, Inc. January 10, 2011 (revised July 20, 2011).

AMEC 2012 "Second Quarter 2012 Groundwater and Unsaturated Zone Monitoring and Constituents of Concern Report for Class I Waste Management Units – Kettleman Hills Facility, Kings County, California." AMEC Environment & Infrastructure, Inc. September 25, 2012.

AMEC 2014 "Revised Site-Specific Groundwater Monitoring Plan Class I Waste Management Units, Kettleman Hills Facility, Kings County, California." AMEC Environment & Infrastructure, Inc. April 14, 2014.

AMEC 2017 "Chemical Waste Management, Inc. - Kettleman Hills Facility Fourth Quarter 2016 Monitoring and Constituents of Concern Report for Class I Waste Management Units as Required by DTSC on March 6, 2015." AMEC Environment & Infrastructure, Inc. letter to DTSC. February 28, 2017.

CalEPA 2019 "CalEnviroScreen: Download Data" [Data File]. Retrieved July 7, 2019 from **www.oehha.ca. gov/calenviroscreen/maps-data/download-data**.

CalEPA and CDPH 2010 "Investigation of Birth Defects and Community Exposures in Kettleman City, CA." California Environmental Protection Agency and the California Department of Public Health. December 2010 (revised February 24, 2011).

CalEPA 2017 OEHHA 2017 "CalEnviroScreen 3.0." California Environmental Protection Agency and the Office of Environmental Health Hazard Assessment. January 2017.

Caltrans 2019a "Traffic Volumes: Annual Average Daily Traffic." [Data File]. Retrieved from **www.dot.ca.gov/trafficops/census/**.

Caltrans 2019b "Truck Traffic: Annual Average Daily Truck Traffic." [Data File]. Retrieved from **www.dot.ca.gov/trafficops/census/#tab2015d4**.

CARB 2010 "Report to the Office of Environmental Health Hazard Assessment – Kettleman City Air Quality Assessment." California Air Resources Board. December 2010.

CBDMP 2019 "RE: U.S. EPA Seeking Birth Defects Data from CBDMP." Barbara Warmerdam, California Birth Defects Monitoring Program to Sarah Samples and Patrick Wilson, U.S. Environmental Protection Agency. August 23, 2019.

CCR 2019 "Age-Adjusted Invasive Cancer Incidence Rates in California - All Sites 1996-2015 by County." Retrieved March 2019 from **www.cancer-rates.info/ca/**.

CDPH 2010 "County Health Profiles Status 2010." California Department of Public Health. 2010.

CDPH 2011 "County Health Profiles Status 2011." California Department of Public Health. 2011.

CDPH 2012 "County Health Profiles Status 2012." California Department of Public Health. 2012.

CDPH 2013 "County Health Profiles Status 2013." California Department of Public Health. 2013.

CDPH 2014 "County Health Profiles Status 2014." California Department of Public Health. 2014.

CDPH 2015 "County Health Profiles Status 2015." California Department of Public Health. 2015.

CDPH 2016 "County Health Profiles Status 2016." California Department of Public Health. 2016.

CDPH 2017 "County Health Profiles Status 2017." California Department of Public Health. 2017.

CDPH 2018 "County Health Profiles Status 2018." California Department of Public Health. 2019.

CDPH 2019 "County Health Profiles Status 2019." California Department of Public Health. 2019.

CDPR 2010 "Kettleman City Community Exposure Assessment – Evaluation of Pesticides in Air." California Department of Pesticide Regulation. December 2010.

CDPR 2018 "Pesticide Use Report Data" [Electronic Database]. California Department of Pesticide Regulation. Retrieved October 3, 2018 from **www.cdpr.ca.gov/docs/pur/purmain.htm**.

CEHTP 2019a "Asthma Data Query" [Electronic Database]. California Environmental Health Tracking Program. Retrieved March 28, 2019 from **www.cehtp.org/page/asthma/query**.

CEHTP 2019b "Maternal and Infant Health Data Query" [Electronic Database]. California Environmental Health Tracking Program. Retrieved June 28, 2019 from **https://trackingcalifornia.org/mih/query**.

CWM 2004 "Chemical Waste Management, Inc. - Kettleman Hills Facility Monitoring of Landfill B-16 Lysimeters." Paul E. Turek, Chemical Waste Management, Inc. to Max Weintraub, U.S. Environmental Protection Agency. February 13, 2004.

CWM 2007 "Chemical Waste Management, Inc. - Kettleman Hills Facility CAT000646117 2006 PCB Annual Report." Tracy Reddick, Chemical Waste Management, Inc. to Regional Administrator, U.S. Environmental Protection Agency. June 26, 2007.

CWM 2008a "Chemical Waste Management, Inc. Kettleman Hills Facility CAT000646117 Revised 2007 PCB Annual Report." Tracy Reddick, Chemical Waste Management, Inc. to Regional Administrator, U.S. Environmental Protection Agency. August 4, 2008.

CWM 2008b "Chemical Waste Management, Inc. - Kettleman Hills Facility Response To TSCA Notice Of Noncompliance Follow-Up Letter PCB Performance Evaluation Samples-Second Set." Paul Turek, Chemical Waste Management, Inc. to Christopher Rollins, U.S. Environmental Protection Agency. February 12, 2008.

CWM 2009a "Chemical Waste Management, Inc. - Kettleman Hills Facility CAT000646117 2008 PCB Annual Report." Tracy Reddick, Chemical Waste Management, Inc. to Regional Administrator, U.S. Environmental Protection Agency. July 15, 2009.

CWM 2009b "Chemical Waste Management, Inc. Kettleman Hills Facility Draft Dioxin-Like PCB Congeners Study Workplan Revision 1." Paul Turek, Chemical Waste Management, Inc. to Cheryl Nelson, U.S. Environmental Protection Agency. March 3, 2009.

CWM 2009c "Draft Dioxin-Like PCB Congeners Study Workplan (Revision 1)." Chemical Waste Management, Inc. January 2009 (revised March 2009).

CWM 2010 "Chemical Waste Management, Inc. - Kettleman Hills Facility CAT000646117 2009 PCB Annual Report." Tracy Reddick, Chemical Waste Management, Inc. to Regional Administrator, U.S. Environmental Protection Agency. July 8, 2010.

CWM 2011 "Chemical Waste Management, Inc. - Kettleman Hills Facility CAT000646117 2010 PCB Annual Report." Tracy Reddick, Chemical Waste Management, Inc. to Regional Administrator, U.S. Environmental Protection Agency. July 13, 2011.

CWM 2012a "Chemical Waste Management, Inc. - Kettleman Hills Facility CAT000646117 2011 PCB Annual Report." Tracy Reddick, Chemical Waste Management, Inc. to Regional Administrator, U.S. Environmental Protection Agency. July 6, 2012

CWM 2012b "Chemical Waste Management, Inc. - Kettleman Hills Facility Re: "Other" Noncompliance Report." Paul Turek, Chemical Waste Management, Inc. to Wayne Lorentzen, California Department of Toxic Substances Control. May 23, 2012.

CWM 2013 "Chemical Waste Management, Inc. - Kettleman Hills Facility CAT000646117 2012 PCB Annual Report." Tracy Reddick, Chemical Waste Management, Inc. to Regional Administrator, U.S. Environmental Protection Agency. July 8, 2013.

CWM 2014 "Chemical Waste Management, Inc. - Kettleman Hills Facility CAT000646117 2013 PCB Annual Report." Tracy Reddick, Chemical Waste Management, Inc. to Regional Administrator, U.S. Environmental Protection Agency. July 9, 2014.

CWM 2015 "Chemical Waste Management, Inc. - Kettleman Hills Facility CAT000646117 2014 PCB Annual Report." Tracy Reddick, Chemical Waste Management, Inc. to Regional Administrator, U.S. Environmental Protection Agency. July 8, 2015.

CWM 2016 "Chemical Waste Management, Inc. - Kettleman Hills Facility CAT000646117 2015 PCB Annual Report." Tracy Reddick, Chemical Waste Management, Inc. to Regional Administrator, U.S. Environmental Protection Agency. July 20, 2016.

CWM 2017 "Chemical Waste Management, Inc. - Kettleman Hills Facility CAT000646117 2016 PCB Annual Report." Tracy Reddick, Chemical Waste Management, Inc. to Regional Administrator, U.S. Environmental Protection Agency. July 5, 2017.

CWM 2018a "Chemical Waste Management, Inc. - Kettleman Hills Facility CAT000646117 2017 PCB Annual Report." Tracy Reddick, Chemical Waste Management, Inc. to Regional Administrator, U.S. Environmental Protection Agency. July 9, 2018.

CWM 2018b "Notifications correspondence from KHF to EPA-IX for PCB detections in groundwater monitoring results and leachate analytic results for TSCA-regulated units from 1992-2018." Attachment to CWM 2018c.

CWM 2018c "TSCA Permit Renewal Application, Chemical Waste Management, Kettleman Hills Facility." Chemical Waste Management, Inc. Revision 3: October 1, 2018.

CWM 2018d "TSCA Operation Plan, Landfill B-18 Phases I, II, and III; PCB Building and Outside Containment Area." Chemical Waste Management, Inc. Revision 3: October 1, 2018.

DHHS 2018 "Healthy People 2020: Maternal, Infant and Child Health." United States Department of Health and Human Services. Retrieved June 20, 2018 from **www.healthypeople.gov/2020/topics-objectives/topic/maternal-infant-and-child-health**.

DTSC 2003 "Hazardous Waste Facility Permit - Chemical Waste Management, Inc. Kettleman Hills Facility (Permit Number: 02-SAC-03)." California Department of Toxic Substances Control. Effective June 16, 2003 (modified May 5, 2005, July 25, 2006, September 21, 2007, and May 21, 2014).

DTSC 2011 "In the matter of Chemical Waste Management, Inc. Enforcement Order." California Department of Toxic Substances Control. May 20, 2011.

DTSC 2012 "Summary of Violations." Ignacio R. Dominguez, California Department of Toxic Substances Control to Bob Henry, Chemical Waste Management, Inc. October 22, 2012. (Includes enclosure: "Summary of Violations." California Department of Toxic Substances Control. October 22, 2012.)

DTSC 2013a "Complaint for Civil Penalties and Injunctive Relief, Case No. BC503092." California Department of Toxic Substances Control. March 18, 2013.

DTSC 2013b "Environmental Justice Review." California Department of Toxic Substances Control. June 2013.

DTSC 2016 "Revised Site-Specific Ambient Air Monitoring Plan for Location of Additional Downwind Monitoring Station and Month-Long PCB Sampling, Chemical Waste Management, Inc., Kettleman Hills Facility, 35251 Old Skyline Road, Kettleman City, Kings County, California 93239, Environmental Protection Agency Identification Number CAT000646117." Edward Nieto, California Department of Toxic Substances Control to Robert Henry, Chemical Waste Management, Inc. May 11, 2016.

DTSC and U.S. EPA 2017a "Come Visit Us at the Kings County Public Safety Event." California Department of Toxic Substances Control and U.S. Environmental Protection Agency. October 2017.

DTSC and U.S. EPA 2017b "Community Meeting." California Department of Toxic Substances Control and U.S. Environmental Protection Agency. October 2017.

DTSC and U.S. EPA 2017c "Save the Date: Community Meeting." California Department of Toxic Substances Control and U.S. Environmental Protection Agency. October 2017.

Geomatrix 2006 "Re: Recommendation for Decommissioning Sounding Wells, B-14 Waste Management Unit, Kettleman Hills Facility, Kettleman City, California." Letter, Bradley A. Loewen and Philip P Ross, Geomatrix Consultants, Inc. to Paul Turek, Chemical Waste Management, Inc. January 12, 2006.

Golder 2016 "Storm Water Pollution Prevention Plan Chemical Waste Management, Inc. - Kettleman Hills Facility." Golder Associates. June 2015 (amended March 2016).

Golder 2017 "Responses to DTSC Review Comments on the Phase 1 And Phase 2 Construction Quality Assurance (CQA) Reports Spill Isolation And Containment System at the Sampling Platforms and Untarping Racks Kettleman Hills Facility – Kings County, California." Letter, Ryan Hillman, Golder Associates Inc. to Reyna Verdin, Chemical Waste Management, Inc. March 2, 2017.

HRSA 2018a "HPSA Find" [Electronic Database]. Health Resources and Services Administration Retrieved November 28, 2018 from **https://data.hrsa.gov/tools/data-explorer**.

HRSA 2018b "MUA Find" [Electronic Database]. Health Resources and Services Administration Retrieved November 28, 2018 from **https://data.hrsa.gov/tools/data-explorer**.

RWQCB 2014 "Order R5-2014-0003 Waste Discharge Requirements for Chemical Waste Management, Inc. Class I/II Waste Management Units Kettleman Hills Facility Kings County." Central Valley Regional Water Quality Control Board. January 16, 2014.

TASC 2010a "Memo #1: Some observations and suggestions regarding California Environmental Protection Agency's Proposed Exposure Assessment for Kettleman City." Technical Assistance Services for Communities Program. April 6, 2010.

TASC 2010b "Memo #2: Some Consideration of the Reported Health Status of Residents of Kettleman City and Suggestions for Next Activities" Technical Assistance Services for Communities Program. April 14, 2010.

TASC 2010c "Memo #3: What can be done to help Kettleman City residents now?" Technical Assistance Services for Communities Program. October 4, 2010.

TASC 2010d "Memo #4: Comments and Recommendations in Response to the California Department of Public Health and California Environmental Protection Agency's Investigation of Birth Defects and Community Exposures in Kettleman City, CA Public Review Draft released November 22, 2010." Technical Assistance Services for Communities Program. December 1, 2010.

TASC 2011 "Memo #5: Comments and Recommendations in Response to the California Department of Public Health and California Environmental Protection Agency's Investigation of Birth Defects and Community Exposures in Kettleman City, CA Public Review Draft released November 22, 2010 (Part 2)." Technical Assistance Services for Communities Program. November 20, 2011.

TASC 2012 "Memo #6: Incidence Patterns of Birth Defects and Cancer in Kettleman City and California's Central Valley including California Department of Public Health's Response to Community Concerns." Technical Assistance Services for Communities Program. August 20, 2012.

U.S. Census Bureau 2017 "American Community Survey Information Guide." U.S. Census Bureau. October 2017.

U.S. Census Bureau 2019 "American Fact Finder" [Electronic Database]. U.S. Census Bureau. Retrieved from May 14, 2019 from https://factfinder.census.gov/.

U.S. EPA 1992 "Approval to Operate a Chemical Waste Landfill for PCB Disposal." David P. Howekamp, Region 9 Director Air and Toxics Division, U.S. Environmental Protection Agency. May 19, 1992.

U.S. EPA 2005 "Docket No. TSCA-09-2005-0002 Consent Agreement and Final Order Pursuant to 40 C.F.R. §§ 22.13 and 22.18." U.S. Environmental Protection Agency. May 3, 2005.

U.S. EPA 2006 "Transmittal of Final Report – 'Multimedia Compliance Investigation: Phase 1' Chemical Waste Management, Inc. Kettleman Hills, CA NEIC Project No.: VP0686." Memorandum, Diana A. Love, Director, National Enforcement Investigations Center (U.S. EPA) to Christopher Rollins, U.S. Environmental Protection Agency. January 17, 2006.

U.S. EPA 2007a "Notice of Noncompliance for Violations of Toxic Substances Control Act." Paula Bisson, U.S. Environmental Protection Agency to Paul Turek, Chemical Waste Management, Inc. June 26, 2007.

U.S. EPA 2007b "Notice of Noncompliance Follow Up Letter." Paula Bisson, U.S. Environmental Protection Agency to Paul Turek, Chemical Waste Management, Inc. November 28, 2007.

U.S. EPA 2008a "Decommissioning Landfill B-14 Sounding Wells." Letter, Adrienne Priselac, U.S. EPA to Chemical Waste Management, Inc. August 28, 2008.

U.S. EPA 2008b "Request for Additional Sampling of Air, Soil, and Biota/Vegetation and Analysis for PCB Congeners." U.S. Environmental Protection Agency. December 2, 2008.

U.S. EPA 2009a "Chemical Waste Management, Inc. Kettleman Hills Facility Draft Dioxin-Like PCB Congeners Study Workplan Technical Review." U.S. Environmental Protection Agency. February 12, 2009.

U.S. EPA 2009b "Kettleman Hills Facility - PCB Disposal Activity Impact Analysis." U.S. Environmental Protection Agency. February 2009.

U.S. EPA 2009c "Split Sampling Field Report: Chemical Waste Management, Inc. Kettleman Hills Facility." U.S. Environmental Protection Agency. November 30, 2009.

U.S. EPA 2009d "Technical Review: Draft Dioxin-Like Polychlorinated Biphenyl (PCB) Congener Study Work Plan, Revision 1." U.S. Environmental Protection Agency Memorandum. March 2009.

U.S. EPA 2010a "Violations of the Toxic Substances Control Act ("TSCA")." Amy C. Miller, U.S. Environmental Protection Agency to Paul Turek, Chemical Waste Management, Inc. February 4, 2010.

U.S. EPA 2010b "TSCA Compliance Evaluation Inspection Report, Chemical Waste Management, Inc. February 8-12, 2010." U.S. Environmental Protection Agency. March 12, 2010.

U.S. EPA 2010c "TSCA Compliance Evaluation Inspection Report, Chemical Waste Management, Inc. June 2, 2010." U.S. Environmental Protection Agency. July 27, 2010.

U.S. EPA 2010d "Polychlorinated Biphenyls (PCBs) - U.S. EPA Conditional Approval Under 40 CFR 761.61(a), Toxic Substances Control Act, Self-Implementing Cleanup of PCBs at PCB Building, Waste Management Kettleman Hills Facility." Arlene Kabei, U.S. Environmental Protection Agency to Bob Henry, Chemical Waste Management, Inc. September 23, 2010.

U.S. EPA 2010e "Docket No. TSCA-09-2011-0001 Consent Agreement and Final Order Pursuant to 40 C.F.R. §§ 22.13 and 22.18." U.S. Environmental Protection Agency. November 29, 2010.

U.S. EPA 2011a "Docket No. RCRA-09-2011-0016 Consent Agreement and Final Order Pursuant to 40 C.F.R. §§ 22.13 and 22.18." U.S. Environmental Protection Agency. August 23, 2011.

U.S. EPA 2011b "EPA Information Sheet: Results of the PCB Congeners Study." U.S. Environmental Protection Agency. January 2011.

U.S. EPA 2011c "Kettleman City Indoor Pesticide Sampling." U.S. Environmental Protection Agency. November 2011.

U.S. EPA 2011d "Kettleman City Indoor Pesticide Sampling Proposed." U.S. Environmental Protection Agency. February 2, 2011.

U.S. EPA 2011e "Questions and EPA Responses Received From Greenaction/Center on Race, Poverty, and the Environment Regarding CWM PCB Congener Study Report." U.S. Environmental Protection Agency. January 2011.

U.S. EPA 2012 "Statement of Basis, Approval for Commercial Storage and Disposal of Polychlorinated Biphenyls ("PCBs") U.S. Ecology Nevada, Inc. Beatty, Nevada U.S. EPA ID: NVT 330010000." U.S. Environmental Protection Agency. November 5, 2012.

U.S. EPA 2016 "Technical Guidance for Assessing Environmental Justice in Regulatory Analysis." U.S. Environmental Protection Agency. June 2016.

U.S. EPA 2017 "Region 9 Enforcement Division Inspection Report, 09/28/2017 Inspection Waste Management, Inc. Kettleman Hills Facility." U.S. Environmental Protection Agency October 27, 2017.

U.S. EPA 2018a "EJSCREEN Report: Kettleman City, California; Kings County, California" [Electronic Database]. U.S. Environmental Protection Agency. Retrieved June 20, 2018 from **www.ejscreen.epa.gov/mapper/**.

U.S. EPA 2018b "Nonattainment Areas for Criteria Pollutants (Green Book)" [Electronic Database]. U.S. Environmental Protection Agency. Retrieved August 2, 2018 from **www.epa.gov/green-book**.

U.S. EPA 2018c "NEPAssist Report: Kettleman Hills Facility" [Electronic Database]. U.S. Environmental Protection Agency. Retrieved July 20, 2018 from **www.epa.gov/nepa/NEPAssist**.

U.S. EPA 2018d "Report on the Environment: Health Status." U.S. Environmental Protection Agency. Retrieved June 20, 2018 from **www.epa.gov/report-environment/health-status**.

U.S. EPA 2019b "Particle Pollution and Respiratory Effects." U.S. Environmental Protection Agency. Retrieved from **www.epa.gov/particle-pollution-and-your-patients-health/health-effects-pm-patients-lung-disease**.

Visión y Compromiso 2011 "A Healthy Woman is a Healthy Family: Prevention of Pesticide Exposure Project." Visión y Compromiso. December 8, 2011.

Waste Management 2018a "Kettleman Hills Facility 3rd Annual Informational Meeting." Waste Management. March 2018.

Waste Management 2018b "Locations" [Electronic Database]. Waste Management. Retrieved June 21, 2018 from **www.wmsolutions.com/locations/#state=CA&zip=&distance=500&material=&lat=&lon=**.

Waste Management 2019 "Kettleman Hills Facility 4th Annual Information Meeting." Waste Management. March 2019.

Water Board 2016 "State Water Resources Control Board Board Meeting Session – Division of Financial Assistance." State Water Resources Control Board. December 6, 2016.

Wenck 2010 "Final Dioxin-Like Polychlorinated Biphenyl Congeners Study Report." Wenck Associates, Inc. November 2010.

- Executive Summary (en español)
- Appendices A through O, except D and G (Dispersion Modeling Report)
- Appendix D: Field Notes
- Appendix G: Laboratory Analytical Data

Wenck 2011a "Final 2011 Health Risk Assessment." Wenck Associates, Inc. September 2011.

Wenck 2011b "Quarterly Ambient Air Monitoring Program Data Report January 2011 – March 2011 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. June 2011.

Wenck 2011c "Quarterly Ambient Air Monitoring Program Data Report April 2011 – June 2011 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. September 2011.

Wenck 2011d "Quarterly Ambient Air Monitoring Program Data Report July 2011 – September 2011 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. December 2011.

Wenck 2012a "Quarterly Ambient Air Monitoring Program Data Report October 2011 – December 2011 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. March 2012.

Wenck 2012b "Quarterly Ambient Air Monitoring Program Data Report January 2012 – March 2012 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. June 2012.

Wenck 2012c "Quarterly Ambient Air Monitoring Program Data Report April 2012 – June 2012 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. August 2012.

Wenck 2012d "Quarterly Ambient Air Monitoring Program Data Report July 2012 – September 2012 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. November 2012.

Wenck 2013a "Quarterly Ambient Air Monitoring Program Data Report October 2012 – December 2012 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. March 2013.

Wenck 2013b "Quarterly Ambient Air Monitoring Program Data Report January 2013 – March 2013 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. June 2013.

Wenck 2013c "Quarterly Ambient Air Monitoring Program Data Report April 2013 – June 2013 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. August 2013.

Wenck 2013d "Quarterly Ambient Air Monitoring Program Data Report July 2013 – September 2013 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. December 2013.

Wenck 2014a "Quarterly Ambient Air Monitoring Program Data Report October 2013 – December 2013 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. March 2014.

Wenck 2014b "Quarterly Ambient Air Monitoring Program Data Report January 2014 – March 2014 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. May 2014.

Wenck 2014c "Quarterly Ambient Air Monitoring Program Data Report April 2014 – June 2014 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. August 2014.

Wenck 2014d "Quarterly Ambient Air Monitoring Program Data Report July 2013 – September 2013 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. December 2014.

Wenck 2015a "Ambient Air Monitoring Program Quarterly Report October 2014 – December 2014 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. February 2015.

Wenck 2015b "Ambient Air Monitoring Program Quarterly Report January 2015 – March 2015 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. June 2015.

Wenck 2015c "Ambient Air Monitoring Program Quarterly Report April 2015 – June 2015 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. September 2015.

Wenck 2015d "Ambient Air Monitoring Program Quarterly Report July 2015 – September 2015 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. December 2015.

Wenck 2016a "Ambient Air Monitoring Program Quarterly Report October 2015 – December 2015 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. March 2016.

Wenck 2016b "Ambient Air Monitoring Program Quarterly Report January 2016 – March 2016 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. June 2016.

Wenck 2016c "Ambient Air Monitoring Program Quarterly Report April 2016 – June 2016 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. September 2016.

Wenck 2016d "Ambient Air Monitoring Program Quarterly Report July 2016 – September 2016 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. December 2016.

Wenck 2016e "Site-Specific Ambient Air Monitoring Plan, Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. January 2016.

Wenck 2017a "Ambient Air Monitoring Program Quarterly Report October 2016 – December 2016 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. March 2017.

Wenck 2017b "Ambient Air Monitoring Program Quarterly Report January 2017 – March 2017 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. June 2017.

Wenck 2017c "Ambient Air Monitoring Program Quarterly Report April 2017 – June 2017 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. September 2017.

Wenck 2017d "Ambient Air Monitoring Program Quarterly Report July 2017 – September 2017 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. December 2017.

Wenck 2018a "Ambient Air Monitoring Program Quarterly Report October 2017 – December 2017 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. March 2018.

Wenck 2018b "Ambient Air Monitoring Program Quarterly Report January 2018 – March 2018 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. June 2018.

Wenck 2018c "Ambient Air Monitoring Program Quarterly Report April 2018 – June 2018 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. September 2018.

Wenck 2018d "Ambient Air Monitoring Program Quarterly Report July 2018 – September 2018 Chemical Waste Management, Inc. Kettleman Hills Facility (KHF)." Wenck Associates, Inc. December 2018.

Wenck 2019 "Air Quality Monitoring at the Kettleman Hills Facility." Wenck Associates, Inc. April 2019.

Wood 2019 "Kettleman Hills Facility Groundwater and Unsaturated Zone – 2018 Annual Summary." Wood Environment & Infrastructure Solutions, Inc. April 2019.