DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: **Kimberly-Clark PA, LLC**
Facility Address: **Front Street & Avenue of the States, Chester, PA 19013**
Facility EPA ID #: **PAD002274991**

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units [SWMU], Regulated Units [RU], and Areas of Concern [AOC])

   [X] If yes – check here and continue with #2 below.

   [ ] If no – re-evaluate existing data, or

   [ ] If data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

X If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

The Kimberly-Clark PA, LLC facility (Kimberly-Clark or facility) is situated between State Route 291 and the Delaware River at the intersection of Front Street and Avenue of the States in Chester, Pennsylvania. The facility's operating area consists of 74 acres that has a variety of buildings including process areas, plant offices, and final product storage and distribution warehouses, as well as a raw water filter plant, a cogeneration plant (power plant), and outdoor coal pile storage and handling areas. The majority of the operating area is covered with impermeable surfaces (i.e., buildings and asphalt-paved or concrete roads/parking lots); however, there are relatively small localized gravel areas throughout the property. These areas are located directly north of the mill building (Mill Area Underground Storage Tank [UST] Removal Area), in the vicinity of the raw water filter plant (No. 2 Fuel Oil Area), and along the banks of the Delaware River. In the coal handling and storage area (Penn Steel Area), the western half of the surface consists of asphalt paving. The eastern half of the property is compacted gravel and coal, and the coal storage and handling structures. Topography at the site slopes gently toward the Delaware River with approximately six to 10 feet of relief from Front Street to the Delaware River. Access to the property is limited. A chain link fence surrounds the entire property. The facility is secured by a 24-hour guard service.

The area is an "enterprise zone" designated by the City of Chester planning commission. Other industrial/commercial areas are located adjacent to the facility along the Delaware River. Physician offices are located to the north, Harrah's Casino and Race Track are located directly east, and a highway maintenance department is located to the west of the facility. The Delaware River and the New Jersey/Pennsylvania border form the south/southeast boundary of the facility. Chester Creek flows through the property and separates the coal pile storage and handling area from the facility's operational areas and the cogeneration plant. Kimberly-Clark owns the majority of the surrounding adjacent properties which are used primarily for parking.

Records indicate that the Chester Shipping Company, a ship building facility, operated some areas of the facility from the early 1900s until the 1940s (Atlantic Environmental Consulting Services, LLC [Atlantic], 2000). Scott Paper Company (Scott) took ownership of the property and began operating in 1910. Chester Shipping Company continued to operate in several of the easternmost buildings until the 1940s. Scott then merged with Kimberly-Clark Corporation in December 1995 and the name changed to Kimberly-Clark Tissue Company effective 1996. On December 15, 2000, the facility notified Pennsylvania Department of Environmental Protection (PADEP) that Kimberly-Clark Tissue Company was to be liquidated and the assets were to be distributed to the parent company, Kimberly-Clark Corporation. The ownership and name changed to Kimberly-Clark Pennsylvania, LLC effective January 1, 2003. Collectively, these three entities will be referred to as Kimberly-Clark hereafter. Kimberly-Clark Pennsylvania, LLC continues to maintain operations to date.

Kimberly-Clark currently operates as a small quantity generator (SQG) facility under United States Environmental Protection Agency (USEPA) ID No. PAD002274991. The facility also operates under a Title V Operating Permit (TVOP-23-0014) for air emissions, a National Pollutant Discharge Elimination System (NPDES) permit (PA0013081) for

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

effluent outfall discharges, and a Delaware County Regional Water Quality Control Authority (DELCORA) Industrial Discharge Permit (1DE 01-04) for discharges of treated wastewater from the manufacture of sanitary paper products, river water clarification, and associated utilities.

The facility obtains its process water directly from the Delaware River via its raw water intake. The raw water is piped from the intake, through the wet well and into the raw water filter plant, where it is treated in three of four clarifiers. The raw river water is mixed with a polymer. The mixture is then gravity settled in sand filters. Clean water is then held in the mill water silo prior to use.

The facility operates a permit-by-rule (PBR) wastewater elementary neutralization system that treats spent sulfuric acid and sodium hydroxide from the demineralizer bed regeneration process in the raw water filter plant. The demineralizer system treats mill supply water (raw water drawn from the Delaware River and/or city water) prior to use as boiler feed water. Treated wastewater (including water removed from the clarifiers during cleaning) generated at the facility is discharged into the DELCORA system under permit.

The facility also operates and maintains its own cogeneration power plant. The cogeneration power plant (Boiler No. 10) provides steam to the mill using anthracite culm mixed with bituminous coal that is obtained from the Poconos area of Pennsylvania. The culm is stored outdoors or in sheds directly on the ground surface in the Penn Steel Area, a 14-acre parcel located directly southwest of, and across Chester Creek from the mill area of the facility.

The Penn Steel Area was formerly utilized as a saw mill and coal yard until the late 1880s and as a steel casting facility by the Penn Steel Casting and Machine Company (Penn Steel), from the early 1890s into the 1960s (Atlantic, 2001). The western portion of the parcel was acquired by Scott in 1971 to undertake a Brownfield's initiative and return the abandoned industrial property into a functional entity of the facility. During the 1970s, Scott paved the Penn Steel Area and utilized it as a parking area for tractor trailers that stored finished goods prior to off-site shipment. In the 1980s, Scott developed the eastern half of the property as coal pile storage and handling areas that support the cogeneration plant. Kimberly-Clark entered into a 100-year lease agreement with the City of Chester in 1985 for the eastern portion of the Penn Steel Area (Atlantic, 2001). The majority of the flat-lying surface of the Penn Steel Area is capped with asphalt and the remaining areas are covered with coal piles, buildings, and coal handling/sorting structures. A buffer zone of small trees and overgrowth lies between the fenced portion of the Penn Steel Area, and Chester Creek and the Delaware River.

There have been major investigations and remedial activities completed at three areas of concern (AOCs): (1) the No. 2 Fuel Oil Area located within the mill area, (2) the Mill Area UST Removal Area, and (3) the Penn Steel Area. Contaminated soil and groundwater were identified in each of the three areas. The facility has requested no further action determinations from PADEP for the No. 2 Fuel Oil Area and the Penn Steel Area; however, available records indicate that formal determinations have not been issued. (Note: These two areas of investigation were not formally entered into the PADEP Land Recycling Program [Act 2].) In addition, while a remediation system was proposed to treat contaminated soil and groundwater at the Mill Area UST Removal Area, facility representatives indicate that no response to the proposal was received from PADEP and the remediation system was never installed.

Waste Types and Quantities

On August 13, 1980, Scott submitted a Notification of Hazardous Waste Activity to USEPA for generation and treatment/storage/disposal (TSD) of hazardous wastes. With its submittal, the facility indicated it was filing as a TSD facility as a precautionary measure in the event wastes would accumulate beyond 90 days due to circumstances beyond its control. The facility was assigned USEPA ID No. PAD002274991 on October 9, 1980.

According to the facility's historical waste permitting documents, hazardous wastes generated at the facility have included:

- D-listed wastes D001 (characteristically ignitable); D002 (characteristically corrosive); D003 (characteristically reactive); D007 (chromium); D008 (lead); D009 (mercury); and D039 (tetrachloroethene [PCE])
- F-listed wastes F001 and F002 (spent halogenated solvents) and F003, F004, and F005 (spent non-halogenated solvents)
- P-listed wastes P030 (cyanide) and P105 (sodium azide)

- U-listed wastes U002 (acetone); U044 (chloroform); U122 (formaldehyde); U144 (acetic acid/lead acetate); U154 (methanol/methyl alcohol); U159 (methyl ethyl ketone [MEK]); U226 (1,1,1-trichloroethane [TCA]); and U239 (xylene)

The facility currently operates as a SQG, generating minor quantities of solvents and paint related wastes (brushes, rollers, empty paint cans, etc.). The facility also generates nonhazardous wastes including oil from machine maintenance, waste water-based polymers (glue), fluorescent/sodium vapor light bulbs and ballasts, baghouse wastes, wood wastes, refractory brick, and ash. The facility routinely submits biennial residual waste reports identifying these nonhazardous waste streams.

The paint-related wastes, waste oils, and glue are stored in 55-gallon drums or totes in Building 81 located on the east end of property. The hazardous wastes are stored in a caged area that consists of four bermed sections that are locked at all times. This area also stores empty 55-gallon drums. The light bulbs and ballasts are stored in a universal waste storage area located inside of the mill.

Groundwater: There have been no known releases to groundwater from the facility's regulated hazardous waste accumulation area (Building 81); however, releases to groundwater have been documented for the three AOCs.

Extensive groundwater investigation and remediation work was completed at the No. 2 Fuel Oil Area. Available groundwater data suggests that the removal of separate-phase liquid (SPL) occurred to the extent possible and the operation of the groundwater remediation system was successful at remediating groundwater at and southeast of the source area (Monitoring Well [MW]-1) below appropriate regulatory levels. According to the Final Report (Atlantic, 2000) submitted to PADEP in April 2000, an isolated area of SPL (less than 0.1 inches thick) remains near MW-1. This area is covered with ballast and asphalt surfaces. The most recent groundwater sample, which consisted of groundwater in direct contact with the SPL, was collected from the source area monitoring well (MW-1) in July 1999. The sample was analyzed for the PADEP Short List of Petroleum Products for Fuel Oil Nos. 2, 4, 5, and 6. Low concentrations of benzene (0.3 [J] ug/L), cumene (1.5 ug/L), fluorene (2 [J] ug/L), and phenanthrene (3 [J] ug/L) were detected in the sample. The 1999 concentrations are below the current PADEP used aquifer total dissolved solids (TDS) less than 2,500 milligrams per liter (mg/L) non-residential medium specific concentration (MSCs) of 5 micrograms per liter (ug/L) for benzene; 3,500 ug/L for cumene; 1,900 ug/L for fluorene; and 1,100 ug/L for phenanthrene. Downgradient wells MW-11, SUMP-1, SUMP-2, and GW-1 were last sampled January 1998. These samples were analyzed only for benzene, toluene, ethylbenzene and xylenes (BTEX) and naphthalene, none of which were detected above laboratory detection limits; therefore, it is unknown whether polynuclear aromatic hydrocarbons (PAHs) are present in groundwater southeast of the source area. Soil samples collected directly downgradient of MW-11 and GW-1 in 1998 suggest that these constituents may have been present in groundwater at the time of the sampling although likely at low concentrations. The chemical quality of the groundwater southwest (vicinity of the No. 6 fuel oil aboveground storage tank [AST]) of the source area is unknown. Relatively high total petroleum hydrocarbons (TPH) concentrations were detected in soil samples in the vicinity of the No. 6 fuel oil AST and petroleum odors and sheens were observed on groundwater that infiltrated trenches dug around the bulkhead. No monitoring wells were installed; therefore, no groundwater data is available for this area.

In 1990, concentrations of benzene and ethylbenzene were detected above appropriate regulatory levels in two of the monitoring wells (MW-4 and MW-8) installed directly north of Buildings 20 and 21 in the Mill Area UST Removal Area. The 1990 concentrations of benzene detected in monitoring wells MW-4 (6.4 ug/L) and MW-8 (43 ug/L) are above the current PADEP non-residential MSC of 5 ug/L. The 1990 concentration of ethylbenzene detected in monitoring well MW-8 (1,500 ug/L) is above the current MSC of 700 ug/L. Elevated concentrations of xylenes were also present ranging from 40 ug/L in monitoring well MW-9 to 8,800 ug/L in monitoring well MW-5. These concentrations are below the MSC of 10,000 ug/L for total xylenes. Although a dual-phase vacuum extraction system was proposed to remediate groundwater, it was reportedly never implemented. The UST removal area, particularly directly north of Buildings 20 and 21, is gravel covered.

Groundwater analytical data for the Penn Steel Area suggests that while residual SPL remains, it is no longer degrading groundwater above appropriate regulatory levels. Groundwater samples collected from the groundwater/SPL interface at monitoring wells MW-8 and MW-10 during five sampling events conducted from March 2000 through May 2001 showed that none of the analytes analyzed for were detected above the PADEP non-residential MSCs, except for benzene that was

detected at monitoring well MW-8 (6.2 ug/L) above the MSC of 5 ug/L during one sampling event (May 2001). Benzene was not detected in either MW-8 or MW-10 above laboratory detection limits during any of the other sampling events. Removal of the SPL was deemed infeasible because it is present in isolated pockets or discontinuous sheens. According to the Final Report (Atlantic, 2001), the facility maintains the asphalt parking lot that was placed over the former Penn Steel operations, and the areas where SPL was identified.

Groundwater at or in the vicinity of the facility is not used for municipal, domestic, or agricultural use. In addition, the majority of the property is asphalt or concrete covered, and it is not expected that contaminated groundwater or residual SPL would be easily accessible during daily operations. In addition, the facility is entirely fenced and continuously monitored by security, which further limits accessibility to potentially contaminated areas to authorized personnel. Therefore, it is not expected that additional controls are needed for daily operations. However, because groundwater is shallow (three to five feet below the ground surface [bgs]), additional controls may be required for subsurface work (i.e., utility work) that may encounter contaminated groundwater.

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

X If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

The groundwater data suggests that the contamination has stabilized.

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

__X__ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

The groundwater discharges to the neighboring Delaware river and Chester creek.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

X If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

Due to the time that has based since the last sampling, natural attenuation has likely decreased the contamination on site. The facility will be conducting additional groundwater sampling as AST are removed.

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

_____ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

__X__ YE Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the **Kimberly-Clark PA, LLC** facility, EPA ID # **PAD002274991** located at **Front Street & Avenue of the States, Chester, PA 19013**. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater". This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

____ IN - More information is needed to make a determination.

Completed by (signature) _____ Date 9/19/2017

(print) Catheryn Blankenbiller

(title) RPM

Supervisor (signature) _____ Date ~~9/19/2017~~ 9-22-17

(print) Paul Gotthold

(title) Associate Director

(EPA Region or State) Region 3

Locations where References may be found:

USEPA Region III
Waste and Chemical Mgmt. Division
1650 Arch Street
Philadelphia, PA 19103

PADEP
South East Regional Office
2 E. Main Street
Norristown, PA 19401

Contact telephone and e-mail numbers

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