

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: Royal Chemical Company (Formerly Johnson Diversey, Inc.)
Facility Address: 880 Crowe Road, East Stroudsburg, Pennsylvania 18301
Facility EPA ID #: PAD000736975

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)), been considered in this EI determination?

- If yes - check here and continue with #2 below.
- If no - re-evaluate existing data, or
- if data are not available, skip to #8 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).

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

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?
- 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):

Background:

Royal Chemical Company (RCC) currently owns the 43-acre Facility located at 880 Crowe Road, East Stroudsburg, Monroe County, Pennsylvania. Formerly the Facility has operated under the following names/ownership:

- Johnson Diversey from May 2002 until November 2006;
- Diversey Lever from October 1996 until May 2002;
- Diversey Corporation from April 1991 to October 1996;
- Diversey Wyandotte from April 1991 to April 1980; and,
- BASF Wyandote Corporation from January 1969 to April 1980.

Johnson Diversey manufactured specialty cleaning chemicals used in the industrial, institutional, and food markets. Products were produced in a batch mixing operation where raw materials were added by bulk lines, drums, and/or bags to mixing vessels. After mixing, the product was sent to holding tanks and then on to the packaging line. In 2006, Johnson Diversey was acquired by RCC, a liquid custom chemical compound and contract manufacturer headquartered in Macedonia, Ohio. The East Stroudsburg Facility is one of five RCC facilities throughout the continental United States.

Prior to November 2006, the Former Johnson Diversey Facility operated as a Large Quantity Generator (LQG) of hazardous waste under the EPA ID No. PAD000736975. However, the current operations under RCC do not generate hazardous waste. A detailed operational history for the Facility, including a listing and quantity summary of hazardous materials previously stored or generated at the Facility, is provided in Section 2.3 of the November 2007 EI Inspection Report (EI Report).

Solid Waste Management Units and Areas of Concern:

Summaries of historic and/or current Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) present at the Site as a result of past or present operations are provided in the following paragraphs and are described in further detail in Section 3.0 of the EI Report.

Wastewater Neutralization Tanks: Located on the west side of the Facility are two 10,000 gallon stainless steel-lined, concrete tanks. These tanks are located in the 100-year floodplain for Brodhead Creek. In 1992, these structures were reinforced, their walls extended above the floodplain, and all piping to and from these structures was brought above ground. Wastewater is piped via aboveground lines from the detergent production facility to the neutralization tanks. High phosphate waste materials are contained in one tank while non-phosphate wastewater is contained in the adjacent tank. The contents of both tanks are neutralized to a pH of approximately 7 before being discharged. The high phosphate wastewater is discharged to the loading facility via an aboveground pipeline and trucked to a disposal facility. The neutralized non-phosphate wastewater is discharged to the local Publicly Owned Treatment Works (POTW) in Stroud Township. There have been no documented releases or violations on record relative to these neutralization tanks.

Footnotes:

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).

Former Materials Unloading/On-loading Area: The original raw material unloading/product on-loading area was located on a concrete pad outside the southwest corner of the production facility. It was indicated during URS' August 2007 site visit that use of this area for unloading and on-loading ceased when the new facility was constructed in 1992. In addition to decommissioning the drain in this area at that time, according to site personnel, drains throughout the Site were reconstructed in 1992 so that, in the event of a spill situation, all runoff could be redirected to a 40,000 gallon poured-in-place concrete underground holding tank located south of the new raw materials unloading/product on-loading facility in the southwest corner of the Site. There have been no documented releases or violations on record relative to the former materials loading area.

Current Materials Unloading/On-loading Facility: South of the wastewater treatment facility is the current raw material unloading/product on-loading facility. This facility contains three truck bays; two tanker truck bays and a bay with two waste storage ASTs and a chlorine AST (which is used to neutralize the waste stream). Each of the tanker truck bays has secondary containment with sumps and a computerized system used to monitor raw material offloading and waste material on-loading. No internal washing of tanker trucks is performed at the Site. According to site personnel any spillage is contained through the secondary containment system, neutralized, and appropriately disposed.

As indicated by RCC during URS' August 2007 site visit, the current unloading/on-loading facility was constructed in 1992 during facility renovations. All lines entering, exiting, and within the Facility are above ground. There have been no documented releases or violations on record relative to the current materials loading area.

Raw Materials AST Area: The raw material AST area is located in the southwest corner of the manufacturing building. The details regarding the Site's ASTs history, contents, permitting, and inspections are provided in Section 2.4 of the EI Report. Following third party inspections in 2001, the total number of historic ASTs documented at the Site was 51; although by 2002 only 12 of these were still present and regulated by the Administration of Storage Tank and Spill Prevention Program. The 2001 inspection report indicated that all tanks appeared to be in excellent condition at the time of the inspection and no leaks or spills were reported at that time.

At URS' August 2, 2007 site visit, a secondary containment area was observed around the AST area with a closed drain system which is connected to the neutralization pits. No leaks or spills were observed and there have been no documented releases or violations on record relative to the AST area.

Mixing Area: In 1992, a facility expansion and renovation occurred which required the upgrading of the mixing area and the addition of nine process blenders and 20 ASTs. At that time all underground lines at the Facility were brought above grade. The mixing area was observed by PADEP and URS during the August 2, 2007 site visit. Secondary containment exists at the base of each mixer and mixers are inspected daily. If leaks do occur use is discontinued until repairs are made. There have been no documented releases or violations on record relative to the mixing area.

Former Drum Storage Area: The former drum storage area for the Facility was located inside the building, on the south side, adjacent to the raw materials unloading area. There have been no documented releases or violations on record relative to the former drum storage area.

Stack Emissions: Review of PADEP documents indicate that air quality inspections for air permit 45-313-003, covering three silos and a baghouse, date back to October 1981. Air inspections were first initiated in 1982 and no violations were noted over the course of Johnson Diversey's operations.

The most recently listed air permit for the Facility (first issued to DiverseyLever in 2002) is Air Quality Program State Operation Permit number 34-1864731-1⁽¹⁷⁵⁾. The sources listed for this permit are three chemical storage, blending, and holding tanks, three polyphosphate silos, and the phosphate loading hopper. This PADEP air permit number is currently listed as a Minor Source Operating Permit, active under RCC's operations, albeit the air emissions sources may have changed. Annual air inspections from 1996 through 2007 indicate no violations for these air controls.

Groundwater:

According to facility personnel all onsite water is provided by Stroud Township. There are no industrial wells located on the RCC Site, however groundwater use is not deed restricted. All residents within the vicinity of the Site that are not serviced by public water are assumed to use groundwater obtained from private water supply wells. Information obtained from the Pennsylvania Groundwater Inventory System (PaGWIS) indicates thirty-four wells are within a one mile radius of the Site with eight wells with a half-mile radius. Depth to bedrock averages 15 feet in the wells closest to the Site. The closest private water supply well to the Site is located within 2,000 feet according to PAeMAP (Figure 5 of EI Report).

There have been no known/documented releases to Site soils or groundwater relative to Johnson Diversey's former operations and therefore no detailed site-specific geologic or hydrogeologic studies have been conducted at the Site within a regulatory framework, nor is there evidence available to presume that such work is warranted.

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

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)?
- 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):

No rationale warranted.

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.

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

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

- 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):

No rationale warranted.

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

5. Is the **discharge**³ of “contaminated” groundwater into surface water likely to be “**insignificant**” (i.e., the maximum concentration³ 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)?
- If yes - skip to #7 (and enter “YE” status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration³ 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 concentration³ 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 concentrations³ 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):

No rationale warranted.

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

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

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 implemented⁴)?
- 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-assessment⁵, 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):

No rationale warranted.

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.

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

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):

No rationale warranted.

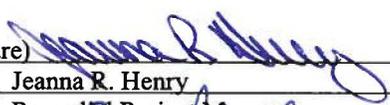
**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

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).

- 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 Former Johnson Diversey, Inc. Facility, located at 880 Crowe Road, East Stroudsburg, Pennsylvania 18301. 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) <u></u>	Date <u>10/24/11</u>
	(print) Jeanna R. Henry	
	(title) Remedial Project Manager	
Supervisor	(signature) <u></u>	Date <u>10-24-11</u>
	(print) Paul Gotthold	
	(title) Associate Director	
	<u>EPA Region III</u>	

Locations where References may be found:

US EPA Region III
Land and Chemicals Division
1650 Arch Street
Philadelphia, PA 19103

Contact telephone and e-mail numbers

(name) Jeanna R. Henry
(phone #) 215-814-2820
(e-mail) henry.jeannar@epa.gov