

**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**  
**RCRA Corrective Action**  
**Environmental Indicator (EI) RCRIS code (CA725)**  
**Current Human Exposures Under Control**

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

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, 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 #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 "Current Human Exposures Under Controls" EI**

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "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 "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

**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).

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2. Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be "contaminated"<sup>1</sup> above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale/Key Contaminants</u>
Groundwater	_____	<u>X</u>	_____	See rationale below.
Air (indoors) <sup>2</sup>	_____	<u>X</u>	_____	See rationale below.
Surface Soil (e.g., <2 ft)	_____	<u>X</u>	_____	See rationale below.
Surface Water	_____	<u>X</u>	_____	See rationale below.
Sediment	_____	<u>X</u>	_____	See rationale below.
Subsurface Soil (e.g., >2 ft)	_____	<u>X</u>	_____	See rationale below.
Air (outdoors)	_____	<u>X</u>	_____	See rationale below.

- X If no (for all media) – skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient support documentation demonstrating that these "levels" are not exceeded.
- \_\_\_\_\_ If yes (for any media) – continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.
- \_\_\_\_\_ If unknown (for any media) – skip to #6 and enter "IN" status code.

**Rationale and References**

**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

<sup>1</sup> "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 appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

<sup>2</sup> Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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.

*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<sup>(175)</sup>. 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.

## **Potential Exposure Pathways:**

### **1. 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.

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.

### **2. Indoor and Outdoor Air:**

Generally, exposure to onsite workers via the indoor air pathway can be attributed to regular plant operations due to the usage of solvents, paints, particulates, etc. Johnson Diversey's operations included permitted controls on the indoor air pathway at the Site via stack emissions and fabric collectors for specific processes. Thus, it is presumed that this exposure was/is controlled by the applied air permitting control measures and in compliance with OSHA regulations. Information obtained from PADEP eFACTS website (2007) and the PADEP archives indicate that air quality compliance inspections have been occurring at the Site on a yearly basis since July 1986. No violations were recorded during these compliance inspections.

As discussed in Section 2.4.3 of the EI Report, an accidental liquid chlorine release occurred inside the Facility in April 1992 when a valve on a chlorine tank was mistakenly opened instead of closed. PADEP issued a Notice of Violation for the incident and Diversey Corporation was fined \$3,000. The effects of this release to receptors would have been short-term and not relevant at this time. Chlorine was phased out of the production process in 1992; however, it is still used for wastewater neutralization.

Because there have been no known/documented releases to Site soils or groundwater relative to Johnson Diversey's former operations, subsurface investigation data to conduct a vapor intrusion assessment is not available, nor is it believed to be warranted based on the public information reviewed per the EI Report.

### **3. Surface Soils and Subsurface Soils**

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.

### **4. Surface Water and Sediment:**

The nearest surface water body is the Brodhead Creek located west of the RCC facility. No signs of stained soil, oily sheens, or stressed vegetation were observed on the Site at the time of URS' August 2007 Site visit. The April 6, 2001, FEMA floodplain map identifies this waterway as the Brodhead Creek (**Figure 4** of the EI Report). The northwestern corner of the Facility is within the 100 year floodplain. The entire Facility is within the 500 year floodplain. URS did not observe the creek at the time of the August 2007 Site visit; however, there have been no documented releases to Brodhead Creek during the Facility's operating period.

Royal Chemical has no NPDES permitted discharges. Wastewater generated on Site 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 and then the high phosphate wastewater is discharged to the loading facility via above ground pipeline and trucked to a disposal facility. The neutralized non-phosphate wastewater is discharged to the publicly owned treatment works in Stroud Township.

Site storm water is allowed to drain via infiltration and runoff. However, secondary containment and sumps are located throughout the Facility and tie directly in to a captive elementary neutralization system in case of a material spill. If necessary, storm water can be redirected from the storm water outfalls via gate valves to a 40,000 gallon cement containment tank located in the southwest corner of the Facility.

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3. Are there complete pathways between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential Human Receptors (Under Current Conditions)

<u>"Contaminated Media"</u>	<u>Residents</u>	<u>Workers</u>	<u>Daycare</u>	<u>Construction</u>	<u>Trespassers</u>	<u>Recreation</u>	<u>Food<sup>3</sup></u>
Groundwater							
Air (indoors)							
Soil (surface, e.g., <2 ft)							
Surface Water							
Sediment							
Soil (subsurface e.g., >2 ft)							
Air (outdoors)							

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strikeout specific Media including Human Receptors -- spaces for Media, which are not "contaminated" as identified in #2 above.
2. Enter "yes" or "no" for potential "completeness" under each "Contaminated" Media – Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations, some potential "Contaminated" Media – Human Receptor combinations (Pathways) do not have check spaces ("\_\_\_\_\_"). While these combinations may not be probable in most situations, they may be possible in some settings and should be added as necessary.

\_\_\_\_\_ If no (pathways are not complete for any contaminated media –receptor combination) – skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet) to analyze major pathways.

\_\_\_\_\_ If yes (pathways are complete for any "Contaminated" Media – Human Receptor combination) – continue after providing supporting explanation.

\_\_\_\_\_ If unknown (for any "Contaminated" Media – Human Receptor combination) – skip to #6 and enter "IN" status code.

**Rationale and Reference(s):**

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No rationale warranted.

<sup>3</sup> Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **“significant”**<sup>4</sup> (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?
- If no (exposures can not be reasonably expected to be significant (i.e., potentially “unacceptable”) for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”
  - If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”
  - If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

Rationale and Reference(s):

No rationale warranted.

<sup>4</sup> If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health Risk Assessment specialist with appropriate education, training and experience.

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5. Can the “significant” exposures (identified in #4) be shown to be within acceptable limits?
- If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).
  - If no - (there are current exposures that can be reasonably expected to be “unacceptable”)- continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.
  - If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code.

**Rationale and Reference(s):**

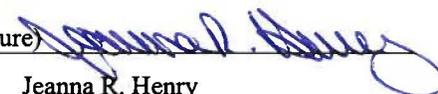
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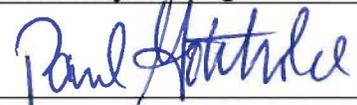
No rationale warranted.

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI (event code CA725), 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, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Former Johnson Diversey, Inc. Facility, EPA ID No. PAD000736975, located at 880 Crowe Road, East Stroudsburg, Pennsylvania under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.
- NO - "Current Human Exposures" are NOT "Under Control."
- IN - More information is needed to make a determination.

Completed by: (signature)  Date 10/24/11  
(print) Jeanna R. Henry  
(title) Remedial Project Manager

Supervisor: (signature)  Date 10-24-11  
(print) Paul Gotthold  
(title) Associate Director  
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Locations where References may be found:

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