

**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**

**Interim Final 2/5/99**

**RCRA Corrective Action**

**Environmental Indicator (EI) RCRAInfo code (CA725)**

**Current Human Exposures Under Control**

**Facility Name:** DuPont Parlin

**Facility Address:** 500 Cheesequake Road, Parlin, NJ 08859-1094

**Facility EPA ID #:** NJD 002444024

**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 Control” 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, GPRRA). 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 RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

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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.

Rationale and Reference(s):

An initial groundwater assessment was conducted October 1986 through April 1987 primarily to determine the potential impacts on groundwater quality beneath the site. In early to mid-1990's, four potential groundwater contamination source areas were investigated, which included soil, groundwater, and soil-gas sampling along with groundwater monitoring and bioventing well installations. The three (3) rounds (Phase I, II, and III) of a remedial investigation were conducted between 1988 and 2002 on 19 SWMUs/AOC that were selected as priorities for investigation out of the 61 SWMUs/AOC at the facility. Further investigation on SWMUs/AOC will continue. As a follow-up to the Phase III investigation, groundwater samples were collected from all perimeter wells during June 2003 and further groundwater sampling will continue. Data obtained during these investigations have been utilized for the evaluation of this EI determination.

References: (1) Environmental Indicator Determination Report, Parlin Current Human Exposures Under Control (CA725), DuPont Parlin Facility, Parlin, New Jersey, dated August 2003; (2) Initial Indoor Air Assessment for the DuPont Parlin Site, dated July 15, 2003; (3) Response to EPA Comments dated October 30, 2003 on the Environmental Indicator Determination Report, Parlin Current Human Exposures Under Control (CA725), DuPont Parlin Facility, Parlin, New Jersey, dated March 26, 2004; (4) Additional Information for EI 725 Determination, DuPont Parlin Facility, Parlin, New Jersey dated August 3, 2004; (5) E-Mail Response dated September 29, 2004 from Albert Boettler to Barry Tornick and Andrew Park, Parlin EI-725 Addendum.

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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)?

	Yes	No	?	Rationale / Key Contaminants <sup>1</sup>
Groundwater	<b>X</b>			Primarily Volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals
Air (indoors) <sup>2</sup>	<b>X</b>			Potential vapor intrusion from contaminated groundwater.
Surface Soil (e.g., <2 ft)	<b>X</b>			Primarily VOCs, SVOCs, metals
Subsurface Soil (e.g., >2 ft)	<b>X</b>			Primarily VOCs, SVOCs, metals
Surface Water		<b>X</b>		Contaminated groundwater migrating off-site; Surface water flow through Drainage Channel
Sediment		<b>X</b>		Sediment in a lake in Kings Park potentially impacted.
Air (outdoors)		<b>X</b>		

\_\_\_\_\_ If no (for all media) – skip to #6, and enter “YE,” status code after providing or citing appropriate “levels,” and referencing sufficient supporting documentation demonstrating that these “levels” are not exceeded.

**X** \_\_\_\_\_ 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 Reference(s):

**GROUNDWATER:** The primary constituents of concern are chlorinated VOCs, particularly vinyl chloride and benzene. A few other constituents – primarily SVOCs and metals – also exceed their respective New Jersey Groundwater Quality Criteria. Two (2) biovent systems operated from 1995 to 1999, extracting soil-gas beneath the former tank farms. A groundwater pump and treat system has been in operation since 1999, pumping groundwater at a rate of approximately 150 gallons per minute to capture contaminated groundwater and to influence off-site migration. Groundwater monitoring is continuing to assess the effectiveness of the system.

**AIR (INDOOR):** On-site and off-site indoor air could be potentially impacted through vapor intrusion from contaminated groundwater underneath.

**SURFACE SOIL:** Surface soil is contaminated with primarily VOCs, SVOCs, and metals exceeding their respective NRDCSCC and RDCSCC.

**SUBSURFACE SOIL:** Subsurface soil is contaminated with primarily VOCs, SVOCs, and metals exceeding their respective NRDCSCC.

<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.

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**SURFACE WATER:** Contaminated groundwater migrates and discharges off-site to the northeast at quarry faces, which discharge into a lake in Kings Park. Based on the groundwater data collected at the perimeter wells to the northeast of the facility from 1994 to 2004 (prior to and after the beginning in 1999 of the groundwater pumping), the groundwater migration would have no adverse impacts on surface water. The Drainage Channel is not active but serves as a storm drain during periods of high precipitation. Based on the data collected as part of the plant's storm water management system and its location, it appears to pose no adverse off-site exposures.

**SEDIMENT:** Based on the groundwater data collected at the perimeter wells to the northeast of the facility from 1994 to 2004 (prior to and after the beginning in 1999 of the groundwater pumping), the groundwater migration would have no adverse impacts on sediment in a lake in Kings Park.

**AIR (OUTDOOR):** Based on the data from the investigations, there is no issue with outdoor air.

References: (1) Environmental Indicator Determination Report, Parlin Current Human Exposures Under Control (CA725), DuPont Parlin Facility, Parlin, New Jersey, dated August 2003; (2) Initial Indoor Air Assessment for the DuPont Parlin Site, dated July 15, 2003; (3) Response to EPA Comments dated October 30, 2003 on the Environmental Indicator Determination Report, Parlin Current Human Exposures Under Control (CA725), DuPont Parlin Facility, Parlin, New Jersey, dated March 26, 2004; (4) Additional Information for EI 725 Determination, DuPont Parlin Facility, Parlin, New Jersey dated August 3, 2004; (5) E-Mail Response dated September 29, 2004 from Albert Boettler to Barry Tornick and Andrew Park, Parlin EI-725 Addendum.

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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)**

<b>Contaminated Media</b>	<b>Residents</b>	<b>Workers</b>	<b>Day-Care</b>	<b>Construction</b>	<b>Trespassers</b>	<b>Recreation</b>	<b>Food<sup>3</sup></b>
Groundwater	No	No	No	No	No	No	No
Air (indoors)	No	OSHA	No				
Soil (surface, e.g., <2 ft)	No	Yes		Yes	Yes	No	No
Soil (subsurface e.g., >2 ft)	No	No		Yes	No	No	No
Surface Water							
Sediment							
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).
3. Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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).

  X   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):

GROUNDWATER: There is no direct contact between contaminated groundwater and on-site workers. Any potential off-site usages of contaminated groundwater appear to pose no unacceptable health risks to people.

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

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AIR (INDOOR): It is noted that there is no exceedence of the screening criteria - the Occupational Health and Safety Administration (OSHA) PEL and the American Conference of Governmental Industrial Hygienist (ACGIH) threshold limit values (TLV) - within 100 feet of any on-site buildings currently occupied. However, potential exposure risks to on-site workers are deferred to OHSA. Potential risks to off-site residents through vapor intrusion appear to be negligible because of the depths of contaminated groundwater and the existence of a geological formation exerting an in-between barrier.

SURFACE SOIL: On-site workers and trespassers may contact with and be exposed to contaminated surface soils.

SUBSURFACE SOIL: On-site construction workers may contact with and be exposed to contaminated subsurface soils.

References: (1) Environmental Indicator Determination Report, Parlin Current Human Exposures Under Control (CA725), DuPont Parlin Facility, Parlin, New Jersey, dated August 2003; (2) Initial Indoor Air Assessment for the DuPont Parlin Site, dated July 15, 2003; (3) Response to EPA Comments dated October 30, 2003 on the Environmental Indicator Determination Report, Parlin Current Human Exposures Under Control (CA725), DuPont Parlin Facility, Parlin, New Jersey, dated March 26, 2004; (4) Additional Information for EI 725 Determination, DuPont Parlin Facility, Parlin, New Jersey dated August 3, 2004; (5) E-Mail Response dated September 29, 2004 from Albert Boettler to Barry Tornick and Andrew Park, Parlin EI-725 Addendum.

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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)?

    X 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):

There are institutional controls in place, with 24-hour security and perimeter fences completely surrounding the property. In addition, there are various internal fences installed to eliminate unauthorized access to various areas of the property, eliminating potential for on-site workers and trespassers to be exposed to contaminated surface and subsurface soils. Construction workers are required to wear personal protective equipment (PPE) in compliance with the internal standard operating procedures which eliminates potential exposures to contaminated surface and subsurface soils.

References: (1) Environmental Indicator Determination Report, Parlin Current Human Exposures Under Control (CA725), DuPont Parlin Facility, Parlin, New Jersey, dated August 2003; (2) Initial Indoor Air Assessment for the DuPont Parlin Site, dated July 15, 2003; (3) Response to EPA Comments dated October 30, 2003 on the Environmental Indicator Determination Report, Parlin Current Human Exposures Under Control (CA725), DuPont Parlin Facility, Parlin, New Jersey, dated March 26, 2004; (4) Additional Information for EI 725 Determination, DuPont Parlin Facility, Parlin, New Jersey dated August 3, 2004; (5) E-Mail Response dated September 29, 2004 from Albert Boettler to Barry Tornick and Andrew Park, Parlin EI-725 Addendum.

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<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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6. Check the appropriate RCRA INFO 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 (and 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 **DuPont Parlin Plant**, EPA ID # **NJD 002444024**, located at **500 Cheesecake Road, Parlin, New Jersey**, 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
	(print) Andrew Park	
	(title) Project Manager	

Reviewed by	(signature)	Date
	(print) Barry Tornick	
	(title) Chief, New Jersey Section	

Approved by	Original signed by:	Date: 9/30/2004
	(print) Adolph Everett	
	(title) Chief, RCRA Programs Branch	
	EPA Region 2	

Locations where References may be found:

EPA Region 2, RCRA Records Center, 15<sup>th</sup> Floor, 290 Broadway, NY, NY 10007-1866  
NJDEP, 401 East State Street, Trenton, New Jersey 08625

Contact telephone and e-mail numbers

EPA	<u>Andrew Park, 212-637-4184, <a href="mailto:park.andy@epa.gov">park.andy@epa.gov</a></u>
NJDEP	<u>Anil Singh, 609-984-0289, <a href="mailto:anil.singh@dep.state.nj.us">anil.singh@dep.state.nj.us</a></u>
DuPont	<u>Albert Boettler, 302-892-0647, <a href="mailto:albert.j.boettler@usa.dupont.com">albert.j.boettler@usa.dupont.com</a></u>

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.