

**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**

Interim Final 2/5/99

**RCRA Corrective Action**

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

**Current Human Exposures Under Control**

**Facility Name:** P. H. Glatfelter Company  
**Facility Address:** 228 South Main Street, Spring Grove, PA, 17362  
**Facility EPA ID #:** PAD 003003407

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?

  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 "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 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).

**Current Human Exposures Under Control  
Environmental Indicator (EI) RCRIS code (CA725)**

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	X			
Air (indoors) <sup>2</sup>		X		
Surface Soil (e.g., <2 ft)		X		
Surface Water	X			
Sediment	X			
Subsurf. Soil (e.g., >2 ft)	X			
Air (outdoors)		X		

\_\_\_\_\_ 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):**

P. H. Glatfelter operates a bleached Draft fine paper mill in York County, Pennsylvania. The facility can be separated into two distinct area, the Mill and the Impoundments. This Environmental Indicator will review the human exposure potential of each area of the facility separately.

**Impoundments**

A number of site investigation involving sampling of groundwater, surface water, impoundment sludge and seeps from impoundments have been performed. The results of these investigations show that the residual waste impoundments do not pose a threat to human health.

Potable Water Supply

As described below, the groundwater and surface water impacted by the facility’s industrial activities do not have an effect on the potable water supplies in the area.

The site is located on the southern banks of Codorus Creek. Groundwater under the site, on the south side of Codorus Creek flows northward, toward the Creek. Groundwater from the north side of Codorus Creek flows southward, also toward the Creek. Thus, site-impacted groundwater does not effect the residential areas in the surrounding communities.

Surface run-off from the majority of the industrial sections of the site is diverted by a Muller Valve to the on-site Wastewater Treatment Plant (WWTP), where it is treated before being released to Codorus Creek through an outfall. All water released through facility’s outfalls must meet the water quality standards stated in the facility’s National Pollution Discharge Elimination System (NPDES) Permit.

Groundwater and surface water are the sources of potable water for individuals within a four-mile radius of the site. The surrounding area are served by either the Spring Grove Water Company (operated by Glatfelter), the York Water Company, Jefferson Borough Municipal Waterworks, or private wells. The Spring Grove Water Company obtains its water from a surface intake at the lower end of two reservoirs on

**Current Human Exposures Under Control**  
**Environmental Indicator (EI) RCRIS code (CA725)**  
Page 3

Powder Mill Creek, located 0.75 miles southwest of the site. It also has a secondary source on Codorus Creek, upstream of the site.

The York Water Company obtains its water from a surface water source located on the South Branch Codorus Creek; not in a portion of the watershed that is potentially influenced by drainage from the site.

Jefferson Borough Municipal Waterworks obtains water from springs and wells located more than four miles from the site.

The remainder of the surrounding area uses groundwater from private wells. The nearest private well is located across Codorus Creek from the site, effectively upgradient from the site.

Groundwater

A number of off-site and on-site groundwater monitoring wells have been sampled since 1987. Ten wells are currently used for groundwater quality assessment. Of particular note are the monitoring wells downgradient of the surface impoundments located along Codorus Creek. These wells monitor the impacts the impoundments have to the groundwater, and ultimately, Codorus Creek. Generally they have shown little or no impact from the impoundments. As shown in the table below, in 1997, one on-site well showed boron slightly above (7.2 ppm) the health based level of 3.3 ppm. This health-based level was obtained from the EPA Region III Risk-Based Concentration Tables (RBCs). Also in 1997, a different on-site monitoring well showed a level of nickel slightly above (1.1 ppm) the Maximum Contaminant Level (MCL) which is a health-based level of 0.1 ppm. The MCLs are health-based levels developed by EPA for drinking water quality. No other exceedances health-based levels for hazardous constituents have been noted.

In several of the groundwater monitoring wells, levels of sodium, iron and manganese exceed their Secondary Maximum Contaminant Levels (MCLs), levels set for aesthetic reasons, rather than a health basis. Note that Trigger levels refer to Form 14R Mandatory Abatement Trigger Levels (also Secondary MCLs). These are aesthetic trigger values, not health-based levels.

Constituent	Compared Value	Trigger, MCL, or RBC	Overburden Exceedances ppm	Overburden locations	Bedrock Exceedances ppm	Bedrock locations
Boron	3.3	RBC	7.2	MW-20S	none	
Nickel	0.1	MCL	1.1	MW-19S	none	
Chloride	250	Trigger	690,295, 350	MW-22S, MW-11, MW-7	none	
Sulfate	250	Trigger	410, 261, 258	MW-11, SP-01, MW-17S	418, 340, 261	MW-17D, MW-20D, SP-01
Iron	0.3	Trigger	0.5 to 13.2	all locations, peak at SP-01 at SE end of Lagoon 19	none	

**Current Human Exposures Under Control**  
**Environmental Indicator (EI) RCRIS code (CA725)**  
Page 4

Manganese	0.05	Trigger	0.1 to 2.0 generally	all locations, peak at PZ-6 (15.7) at SE end of Lagoon 19	none	
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This earlier data appears to be consistent with data collected more recently (below).

Contaminant	Monitoring Wells	Concentrations (ppm)	Analysis Dates
Chloride	MW-7, MW-22S	310, 635	03/09/99, 03/24/99
Sulfate	MW-23S, MW-11, MW-20S	400, 560, 359	03/16/99

Surface Water and Sediments

Analysis of samples from surface water and sediment sources (Codus Creek and the unnamed tributary to Codorus Creek) detected low levels of copper and zinc and several poly aromatic hydrocarbons (PAHs). These constituents, in some instances, exceeded the Ambient Water Quality Criteria (AWQC) for protection of freshwater. Subsequently, several fish tissue studies have been done determine concentrations of contaminants in the fish in Codorus Creek. The studies indicate only low levels of contaminants in the fish, below any level of concern.

In addition the contaminants did not exceed the health-based limits set for direct contact; therefore contact with the surface water, sediments and fish of Codorus Creek is not of concern.

Impoundment Sludge

All lagoons were taken out of active service by July 1997, in accordance with the Pennsylvania Residual Waste Regulations. Currently, only closure and storage/transfer functions are performed in the area. 18 of the 19 sludge lagoons have been or are being stabilized and one is used for lime mud storage. Lime mud is not a hazardous waste.

The facility studied the sludges managed in the impoundments, to evaluate the potential risk posed by the leachates generated in the lagoons. The concern was the potential risk of leaching constituents into the groundwater through the impoundments and into the surface water via seeps found at the impoundments. Although some constituents of concern were detected in the leachates, all had levels well below action limits.

Although the closed/closing impoundments have been shown to contain hazardous constituents above direct contact RBC levels, only those involved with the closure activities would potentially have contact with those constituents. Pennsylvania's Residual Waste regulations require that such personnel have appropriate training to mitigate potential contact.

**Mill**

Air

An Air Quality Permit was issued by PADEP on April 09, 2001 for the operation of the mill. Included are appropriate requirements for performance of the facility's air emission control devices.

Soils

A number of historic releases to soils, have occurred on the site. The facility has responded by upgrading its PPC plan as well as materials handling. Additional investigation of subsurface soils may be necessary for final clean-up, but currently soils do not pose a contaminant exposure to off-site residents, on-site workers, or trespassers. Construction workers may encounter contamination during excavations. However, required appropriate training will

**Current Human Exposures Under Control**  
**Environmental Indicator (EI) RCRIS code (CA725)**  
Page 5

mitigate exposures.

Groundwater

The groundwater under the facility flows to Codorus Creek. There is no potential exposure to groundwater, other than for construction workers; required training will mitigate exposures..

Surface Water

A number of small releases to Codorus Creek from the mill area have been recorded and some small fish kills have been noted. For each instance repairs were made and appropriate changes in material handling were instituted. Currently, material handling lines are regularly inspected. Surface water quality data shows no evidence for concern for residential and recreational contact with the surface water and sediments.

**References:**

RCRA Site Inspection Report, P. H. Glatfelter Company, Final: April 08, 2003, prepared by USCOE

Site Inspection Prioritization, February 14, 1995, prepared by Halliburton NUS Corp.

Air Quality Permit, February 09, 2001, prepared by Commonwealth of Pennsylvania, Department of Environmental Protection

Site Inspection of P. H. Glatfelter Company site, June 06, 1989, prepared by NUS Corp.

Report on Geotechnical Engineering Investigation of Proposed Closure of Existing Sludge Basins and Existing Sludge Basins Requiring Approval, P. H. Glatfelter Co., January 1987, prepared by F. T. Kitlinski & Assoc.

Footnotes:

<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.

**Current Human Exposures Under Control**  
**Environmental Indicator (EI) RCRIS code (CA725)**  
Page 6

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><u>“Contaminated” Media</u></b>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food <sup>3</sup>
Groundwater	No	No	No	Yes	No	No	No
Air (indoors)							
Soil (surface, e.g., <2 ft)							
Surface Water	No	No	No	No	No	No	No
Sediment	No	No	No	No	No	No	No
Soil (subsurface e.g., >2 ft)	No	No	No	Yes	No	No	No
Air (outdoors)							

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out 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).

\_\_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, subsurface soils, sediment and surface water are contaminated above health-based limits. However, as discussed in Question #2 above, no-one is exposed to these with the exception of construction workers.

- Groundwater impacted by site activities is not used for potable purposes.
- Except construction workers, no-one on-site or off-site has access to contaminated groundwater.

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

**Current Human Exposures Under Control**  
**Environmental Indicator (EI) RCRIS code (CA725)**  
Page 7

- Surface water near the site is not used for potable purposes.
- Surface water and sediments have been shown to be safe for direct contact.
- Contaminant levels in fish are not of concern.
- Leachate from the lagoons is not of concern to groundwater or surface water.
- No one, except construction workers has access to contaminated subsurface soils.

References are listed under Question #2, above.

**Current Human Exposures Under Control**  
**Environmental Indicator (EI) RCRIS code (CA725)**  
Page 8

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):**

Appropriate training and documentation is required for those individuals involved in managing residual wastes. Proper contaminant exposure mitigation is part of such training. Therefore, the exposure potential for the construction workers is not significant.

<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.

**Current Human Exposures Under Control**  
**Environmental Indicator (EI) RCRIS code (CA725)**  
Page 9

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):**





