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:	Ferro Glass & Color Corporation (formerly Degussa Metals Corporation)
Facility Address:	251 West Wylie Avenue, PO Box 519, Washington, PA 15301-0519
Facility EPA ID #:	PAD 041 731 670

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 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).

2. Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be "contaminated"[1] 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
Groundwater	X			Total Pb and Cd above MSCs
Air (indoors)[2]		X		
Surface Soil (e.g., <2 ft)	X			Pb, Cd above MSCs
Surface Water		X		
Sediment		X		
Subsurface Soil (e.g., >2 ft)	X			Pb, Cd above MSCs
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 support 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

Groundwater sampling has been performed at the site in 1982 (shallow and deep wells), 1983 (shallow wells), 1984-1990 (shallow wells) and from 1993 to the present (shallow wells, with the exception of deep wells that were sampled during the initial round in 1993, but were then suspended from the program since results were non-detect). Since 1984, groundwater samples have been collected on a semi-annual basis. Contaminants of concern in the present monitoring program are cadmium and lead, after they were detected in soil samples during office expansion activities in 1991. June 2009 results showed total cadmium and lead levels greater than the MSCs. However, dissolved cadmium and lead levels were either non-detect or below MSCs. Based on these and prior historic results, cadmium and lead do not appear to be mobile in groundwater at the site. June 2009 groundwater sample results below indicate that contamination exists above MSCs.

Constituent	MSC	WO-1SA	WO-2S	WO-3S
Cadmium, Total (Unfiltered)	0.005	<0.001	**0.081**	**0.100**
Cadmium, Dissolved (Filtered)	0.005	<0.001	<0.001	0.002

[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 appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] 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.

Constituent	MSC	WO-1SA	WO-2S	WO-3S
Lead, Total (Unfiltered)	0.005	**0.033**	**0.062**	**2.6**
Lead, Dissolved (Filtered)	0.005	<0.002	<0.002	<0.002

All results in mg/L.
Bold indicates an exceedance of the MSC.

INDOOR AND OUTDOOR AIR

Although no recent air sampling results were provided, the facility utilizes dust collectors and wet gas scrubbers for air pollution control for metals (including cadmium and lead). Although some releases have occurred in the past, all were immediately corrected. All air pollution sources are permitted; no violations or compliance issues have been noted.

SURFACE AND SUBSURFACE SOIL

A soil sample collected in the vicinity of the three former lagoons (<8 feet deep) in 1983 exhibited high levels of cadmium and lead. The lagoons were reportedly closed approximately 10 years prior. The area was filled with earthen and demolition materials, re-graded, and used as a parking lot. No documentation was found in PADEP or USEPA files indicating that a closure plan was prepared or approved by either agency. The area is gravel-covered today. Sample results from spring 1983 sampling are as follows:

Parameter	Composite 1&2 (mg/kg)	Composite 3&4 (mg/kg)
Cadmium	287	3,785
Chromium	98	1,895
Lead	3,034	16,730
Nickel	44	124
Hex-chrome	ND	ND

DLA (the facility's contractor) reported that groundwater sample results indicated none of the waste materials in the former pond area solubilized and entered the shallow, perched groundwater system. DLA also noted that natural soil filtration may also prevent migration of the metals from the former ponds.

When soil sampling was performed during excavation activities for new construction at the site, all soil that exceeded regulatory limits was removed and properly disposed. Soil containing compounds less than regulatory limits was either used as fill or properly disposed. The most recent samples were collected and analyzed in October 2003. TCLP results indicated that at least some of the excavated soil exceeded TCLP limits for lead and cadmium. A total of 50 cubic yards of contaminated soil was shipped to American Environmental Services, Inc. in Morgantown, WV.

Due to the fact that a site-wide soil investigation has not been performed (to deny soil contamination) and that the lagoons were not properly closed, soil is expected to be contaminated.

Surface Water and Sediment

The facility was not aware of any surface water or sediment samples collected to date for Chartiers Creek. However, the quickest way for onsite contamination to reach the creek would be via stormwater outfalls. Stormwater is addressed via the facility's NPDES permit. No violations of their NPDES permit limits have occurred, as stormwater results have consistently been low for the sample parameters, which include metals, oil and grease.

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)						
"Contaminated Media"	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[1]
Groundwater	NO	NO	NO	YES	NO		NO
Air (indoors)	NA	NA	NA				
Soil (surface, e.g., <2 ft)	NO	YES	NO	YES	YES	NO	NO
Surface Water	NA	NA			NA	NA	NA
Sediment	NA	NA			NA	NA	NA
Soil (subsurface e.g., >2 ft)				YES			NO
Air (outdoors)	NA	NA	NA	NA	NA		

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):

See following page for response to Question #3 (Rationale and Reference(s)).

[1] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

QUESTION #3 (RATIONALE & REFERENCES - CURRENT HUMAN EXPOSURES UNDER CONTROL
Response

Residents
The location of the nearest potable well is not known. However, the area including and surrounding the site is reported to be served by the Pennsylvania American Water Company (PAWC). Therefore, residents are not expected to be exposed to potentially contaminated groundwater. As the facility is fenced and guarded and the residential area is upgradient from the site, residents are not expected to be exposed to contaminated soils.

Workers
Groundwater is not used at the facility for drinking water or process water. Therefore, workers are not expected to be exposed to potentially contaminated groundwater. Workers are also not expected to be exposed to contaminated subsurface soils since the only operations conducted outside are storage of raw materials and loading/unloading of materials. The likelihood of workers being exposed to surface soil contamination is low as no operations are conducted outdoors.

Day-Care
There are no known day-care facilities near the facility.

Construction Workers
If intrusive operations were to be conducted at the facility for expansion or other reasons, construction workers could be exposed to potentially contaminated groundwater and subsurface soils.

Trespassers
The facility is fenced for access control. Due to the depth to groundwater and subsurface soils, it is not anticipated that a trespasser could be exposed to potentially contaminated groundwater and subsurface soils. Trespassers could be exposed to surface soil contamination (if it exists).

Recreation
There are no known recreational areas near the facility.

Food
There are no known food supplies (i.e. fish or gardens) that could be affected by potentially contaminated groundwater and contaminated subsurface soils.

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"** (i.e., potentially[2] " unacceptable" levels) 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):

Groundwater contamination exceeds the MSCs for total cadmium and lead; however, due to the fact that the area surrounding the facility receives its potable water from the PAWC, groundwater contamination is not expected to be a significant exposure.

It is expected that future construction and onsite work activities would not be of a duration that would constitute a significant exposure. It is also expected that proper health and safety procedures (i.e. personnel protective equipment) would be followed to prevent exposure.

The brief duration trespassers might be exposed to any existing surface soil contamination at the facility is unlikely to result in a significant exposure. Furthermore, the area of exposed surface soil on the facility has continued to decrease due to several building expansions and parking lot/paving projects.

[2] 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 a "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 a "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 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 (and attach appropriate supporting documentation as well as a map of the facility):

X 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 Ferro Glass & Color Corporation (formerly Degussa Corporation) facility, EPA ID PAD 041 731 670, located at 251 West Wylie Avenue, PO Box 519, Washington, PA 15301-0519, 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) /Griff E. Miller/ Date 10/15/09

(print) Griff Miller

(title) Remedial Project Manager

Supervisor: (signature) /Paul J. Gotthold/ Date 11/10/09

(print) Paul Gotthold

(title) Associate Director

(EPA Region or State) EPA Region III

Locations where References may be found:

References have been appended to the Environmental Indicator Report and can also be found at PADEP's Pittsburgh office and USEPA's Region III office.

Contact telephone and e-mail numbers:

(name) Griff Miller

(phone #) 215-814-3407

(e-mail) miller.griff@epa.gov

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.