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: **Griffin Pipe Products Company**
Facility Address: **10 Adams Street, Lynchburg, Virginia 24504**
Facility EPA ID #: **VAD065417008**

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 nearterm 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"**[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			See below
Air (indoors) [2]		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):

Groundwater: There are 21 wells on the Griffin Pipe Products facility (Facility) that were sampled as part of the RFI in March 2010. The groundwater was sampled for Appendix IX volatile organic compounds (VOCs), Appendix IX semi volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), Appendix IX metals, plus sulfide, cyanide, hexavalent chromium, and polychlorinated biphenyls (PCBs) for one well (RFI-3). No PCBs were detected, and therefore they will not be discussed further. The groundwater data from the March 2010 sampling event was screened against the following criteria:

EPA Region 3 Tap Water Screening Criteria (May 2010); and
EPA Maximum Contaminant Levels (MCLs).

For screening purposes, the EPA Tap Water Screening Criteria for non carcinogens was multiplied by a Hazard Quotient of 0.1 to account for multiple non carcinogenic detections.

The following thirteen (13) compounds were detected in at least one well at levels that exceeded screening criteria. Bolded compounds exceed the EPA MCL in at least one of three wells only:

benzene, chloroform, ethylbenzene, 2 Methylnapthalene, benzo(a)anthracene, **benzo(a)pyrene**, dibenz(a,h)anthracene, dibenzofuran, indeno(1,2,3 cd)pyrene, naphthalene, **arsenic**, cobalt, and vanadium

However, the Facility receives its potable water from the City of Lynchburg and the groundwater is not being used as a drinking water source.

Air (indoor and outdoor): The inorganics and multiple SVOCs, which are the primary constituents of concern at this Facility, are not volatile; hence air (indoor and outdoor) is not a media of concern. The

detected VOC and SVOC compounds that are volatile were screened by DEQ (as indicated in a letter dated June 6, 2011) and were determined not to present a risk for this pathway.

Surface and Subsurface Soil:
There were 24 soil borings collected on the Facility as part of the Phase I RCRA Facility Investigation (RFI) in January 2010. A total of 71 soil samples (surface and subsurface) were submitted to the laboratory for analysis from nine SWMUs and eleven AOCs. The samples were analyzed for some or all of the following compounds: Appendix IX volatile organic compounds (VOCs); Appendix IX semi-volatile organic compounds (SVOCs); total petroleum hydrocarbons (TPH); Appendix IX metals plus sulfide, cyanide, hexavalent chromium; and polychlorinated biphenyls (PCBs).

The soil data from the January 2010 sampling event was screened against the following criteria:

EPA Region 3 Residential Soil Screening Criteria (May 2010);
EPA Region 3 Industrial Soil Screening Criteria (May 2010);
EPA Region 3 Transfer to Groundwater Soil Screening Criteria (May 2010); and
MCL Transfer to Groundwater Soil Screening Criteria.

For screening purposes, the EPA Residential and Industrial Soil Screening Criteria for non carcinogens were multiplied by a Hazard Quotient of 0.1 to account for multiple non carcinogenic detections. Because of the comprehensive monitoring well network and robust groundwater data set, the transfer to groundwater screening will not be discussed. The Facility is industrial; therefore screening discussed in this document will be for industrial land use only.

Soil has the following compounds detected above human health screening criteria:

Ethylbenzene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, dibenz(a,h)anthracene, indeno(1,2,3 cd)pyrene, 2 methylnaphthalene, naphthalene, antimony, arsenic, barium, beryllium, chromium, cobalt, copper, lead, vanadium, zinc, hexavalent chromium, mercury, and PCB Aroclor 1242

Sediment: There were two sediment samples collected in the outfall ditch within the Facility boundaries and one sediment sample collected in the base of the canal (all three part of the Facility's industrial stormwater conveyance system which discharges to the James River). Although access from the river is possible during times of high water, it is unlikely that trespassers or recreational users would access the property. Workers can be exposed to onsite sediments; therefore, these samples were compared to industrial screening criteria and exceeded screening for three compounds: arsenic, lead, and vanadium.

References:

- Final Phase I RFI Workplan, August 2009
- Final Phase I RFI, June 2011
- Industrial Land Use Supporting Documentation, July 2011
- Facility Survey of Pervious Areas, August 26, 2011
- Facility LUC Sign Location Figure and Photos, September 1, 2011

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 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.

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[3]
Groundwater	__No___	__No___	__No___	__No___	__No___	__No___	__No___
~~Air (indoors)~~	~~_____~~	~~_____~~	~~_____~~	~~_____~~	~~_____~~	~~_____~~	~~_____~~
Soil (surface, e.g., <2 ft)	__No___	__No___	__No___	__No___	__No___	__No___	__No___
~~Surface Water~~	~~_____~~	~~_____~~	~~_____~~	~~_____~~	~~_____~~	~~_____~~	~~_____~~
Sediment	__No___	__No___	__No___	__No___	__No___	__No___	__No___
Soil (subsurface e.g., >2 ft)	__No___	__No___	__No___	__No___	__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.

__**X**__ 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):

The Facility is fenced except for the steep river bank with controlled access through a guard gate; therefore, the likely potential exposure will only be to plant workers and construction workers. The Facility is largely covered by hardscape that prevents worker exposure to soils. A survey was performed on August 26, 2011 to determine the location and extent of the pervious areas at the Facility (areas not covered by pavement or buildings). All soil sample locations are situated in the hardscaped areas of the Facility with one exception. This sample was collected from an area adjacent to railroad tracks where materials or equipment are temporarily staged. Activity in this area is very sporadic and employees rarely

enter the area. The plant workers will not be exposed to groundwater as the groundwater is not used at the Facility. The plant workers and construction workers will not be exposed to the sediment as the sediment sample locations are not readily accessible and no construction activities are anticipated to be conducted in this area. Although access from the river is possible during times of high water, it is unlikely that trespassers or recreational users would access the property. Ten no trespassing signs were installed in August 2011 along the Facility boundary restricting access.

The depth to groundwater at the Facility is over 10 feet below grade which eliminates groundwater contact from the construction worker scenario. Construction worker exposure to soils is possible, however, no construction activities are currently planned at the Facility. If construction activities which disturb the soil occur in the future, a site safety plan specific for that activity would be developed and construction workers would be trained on the safety concerns and proper handling of the excavated material.

References:

- Same as above

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

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (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):

[4] 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.

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):

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 the Griffin Pipe Products facility, EPA ID #VAD065417008, located at Lynchburg, VA 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) Karen M Doran Date 9/9/2011
(print) Karen Doran
(title) Remedial Project Manager

Supervisor (signature) Jutta Schneider Date 9/9/2011
(print) Jutta Schneider
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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.