

**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:** Brush Wellman, Inc. (Materion Corporation)  
**Facility Address:** 100 Shoemakersville Road, Shoemakersville, PA 19107  
**Facility EPA ID #:** PAD 002 387 835

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).

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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>	<u>      </u>	<u>      </u>	<u>Nitrate-nitrogen and beryllium</u>
Air (indoors) <sup>2</sup>	<u>      </u>	<u>X</u>	<u>      </u>	<u>No indication of contamination</u>
Surface Soil (e.g., <2 ft)	<u>      </u>	<u>X</u>	<u>      </u>	<u>Remedial actions taken for releases</u>
Surface Water	<u>      </u>	<u>X</u>	<u>      </u>	<u>Recent discharges in compliance with NPDES permit</u>
Sediment	<u>X</u>	<u>      </u>	<u>      </u>	<u>Limited sampling taken for release</u>
Subsurface Soil (e.g., >2 ft)	<u>      </u>	<u>X</u>	<u>      </u>	<u>Remedial actions taken for releases</u>
Air (outdoors)	<u>      </u>	<u>X</u>	<u>      </u>	<u>No indication of contamination</u>

\_\_\_\_\_ 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. (In order to present a more accurate picture of site conditions, the reviewer has chosen not to skip to #6.)

**Rationale and Reference(s):**

Background

The Brush Wellman facility consists of approximately forty acres located almost one mile northeast of the Schuylkill River in Shoemakersville, Pennsylvania. Operations at the site began in 1960 to manufacture beryllium-copper alloy strip. Prior to 1981, Brush Wellman also performed cadmium plating of beryllium-copper string.

Brush Wellman first submitted an application for Treatment, Storage, or Disposal facility status in November 1980 when a Part A Hazardous Waste Permit Application was filed. In a July 20, 1981 letter USEPA notified Brush Wellman that its Part A Application was complete and the facility met requirements for Interim Status. A Part B Application was submitted in April 1984, noting that the facility was operating under Interim Status. A revised Part A Application was submitted in November 1985. The revised application noted that Brush Wellman no longer generated wastes D006 (cadmium) and F006 (electroplating sludge). On April 18, 1989 PADEP returned the Part B Application following approval of the surface impoundment closure, as this was the only unit for which a RCRA operating permit was required.

<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.

## Wastewater treatment

Brush Wellman operates an Industrial Wastewater Treatment Plant, which treats all non-sanitary wastewater, under a NPDES Permit. In a March 17, 1995 letter PADEP granted Brush Wellman Permit by Rule (PBR) status for the Industrial Wastewater Treatment Plant.

Historically, the Industrial Wastewater Treatment System included three settling lagoons and a clay lined surface impoundment. The Settling Lagoons were closed in 1982. Use of the Surface Impoundment ceased prior to 1984 when Brush Wellman discontinued the electroplating process that used cadmium. This surface impoundment was never permitted. According to an August 15, 1984 letter this unit was the only one requiring a hazardous waste permit. With the approval of PADEP and USEPA, Brush Wellman opted to close the Surface Impoundment instead of continuing with the hazardous waste permit application.

Brush Wellman opted to remove all of the hazardous waste from this unit to avoid post closure care obligations. A closure plan was submitted to USEPA in 1985. PADEP approved the closure plan in 1987. PADEP also noted that prior to clean closure, groundwater samples were to be collected from 5M, 6M, 7M, 8M, 9M, 10M, and 11M.

## Past Releases

Other than the groundwater impacts of the former units of the Industrial Wastewater Treatment Plant discussed below, the facility has had a few spills of hazardous material over the years, primarily nitric acid. Most of these releases were small and promptly contained and cleaned up, resulting in no environmental impact. The exception was a wastewater discharge in 2001. Approximately 5,800 gallons of wastewater containing dissolved copper were discharged from the wastewater treatment plant to the unnamed tributary when a valve was left open. As the effluent came in contact with the unnamed tributary, metals precipitated out and settled to the creek bed. A grab sample of "blue sediment" was collected from pooled areas in the creek. The copper concentration was found to be 620 mg/kg. In response to this incident, a ball valve was replaced. Limited records of the remedial work are available. On-site sediment may be impacted from this release.

## Groundwater

Quarterly groundwater monitoring has been on-going at the Brush Wellman facility since the early 1980s. Monitoring was initiated in response to elevated nitrate-nitrogen concentrations observed in the production wells at the facility. Upon closure of the Surface Impoundment, monitoring parameters were expanded to include metals associated with the discharge to this former unit (i.e. nickel, cyanide, and cadmium.)

Groundwater results have been compared to PADEP's Medium Specific Concentrations (MSCs). Through the years, beryllium, cadmium, and nitrate-nitrogen occasionally have been found above their respective MSCs. Primarily, nitrate-nitrogen exceed its MSC of 10 mg/l in the late 1990s and early 2000s with levels up to 22 mg/l in wells 7M, 8M, 10M, and 11M. Sampling in recent years shows consistent levels that do not exceed MSCs.

Beryllium and other metals have not always been a part of the sampling parameters. As part of a split sampling event in 1999, PADEP collected groundwater samples and analyzed them for arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, cyanide, phenols, total organic carbon, and sulfate. Total beryllium concentrations of 4 µg/l (5M) and 2,330 µg/l (6M) were noted. Dissolved beryllium in 6M was 1,720 µg/l. The applicable standard is 4 µg/l. It should be noted that 6M was installed as an upgradient monitoring well for the Surface Impoundment. The source of this beryllium spike in well 6M has not been found. Recent sampling has shown beryllium to slightly exceed its MSC on occasion, with results ranging from non-detection to 5 µg/l.

## Indoor and Outdoor Air

There is no indication of indoor or outdoor air quality issues. Following a change in production, employees had complained of an irritating odor. Brush Wellman investigated these complaints and no recurring complaints were documented in the files. There were no odor complaints from surrounding residents noted in the files. All air emission sources at the Brush Wellman facility are permitted and found to be in compliance with applicable permits.

## Surface and Subsurface Soil

There have been no wide-spread investigations conducted to date. Files indicate all spills and releases have been promptly remediated, other than the 2001 wastewater discharge to the unnamed tributary discussed above. It should

be noted that all closure activities at the Brush Wellman facility (i.e. Surface Impoundment, Spent Solvent Low End Point Underground Storage Tanks, and #2 Fuel Oil Underground Storage Tanks) were approved by PADEP with soil above applicable standards being removed.

### **Surface Water & Sediment**

Limited information is available for surface water and sediment at the Brush Wellman site. There was one reported spill that reached the unnamed tributary. In June 2001 approximately 5,800 gallons of wastewater containing dissolved copper was accidentally discharged. As the effluent came in contact with the unnamed tributary, metals precipitated out and settled to the creek bed. A grab sample of “blue sediment” was collected from a pooled area in the creek. The copper concentration was found to be 620 mg/kg. Facility employees have stated there was a subsequent cleanout of the creek bed, however little information is available in the file. As recent discharges have been in compliance with NPDES permit requirements, there are no anticipated impacts to the Schuylkill River, which is the discharge point.

### **References:**

Final Environmental Indicator Inspection Report, December 2005  
Materion Response to USEPA, September 2012  
Results of Groundwater Sampling, from PADEP Landlinks database

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

**Residents**

Residential properties are not located in close proximity to the site such that residents could be exposed to potentially contaminated sediment in the unnamed tributary. Several residents in the vicinity of the Brush Wellman site rely on groundwater as a source of drinking water. However, as groundwater only slightly exceeds (at 5 ug/l) the MSC of 4 ug/l for beryllium at the on-site wells, it is not expected that any residents will be exposed to contaminated groundwater at residential wells.

**Workers**

Brush Wellman workers could be exposed to potentially contaminated sediment in the unnamed tributary. As the groundwater wells are used for production purposes, it is not anticipated that workers would be exposed to

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

contaminated groundwater.

**Day-Care**

There are no known day-care facilities in close proximity to the Brush Wellman facility.

**Construction**

Depending on the location and type of construction activities, construction workers could be exposed to contaminated groundwater in addition to potentially contaminated sediment, as part of intrusive construction activities.

**Trespassers**

Access to the site is well controlled such that trespassers would not be exposed to potentially contaminated media. Brush Wellman is operational 24 hours a day with a constant employee presence at the site. In times of shutdown, an outside security company is retained to provide access control.

**Recreational**

There are no known recreational activities in the immediate vicinity of the Brush Wellman facility.

**Food**

There is no potential for impacts to food from contaminated media.

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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"** (i.e., potentially<sup>4</sup> "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 (cannot 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):

**Workers exposed to potentially contaminated sediment**

Brush Wellman worker exposure is not expected to be significant. The majority of worker activity is conducted indoors which limits the frequency and duration of exposure to potentially contaminated media.

**Construction workers exposed to potentially contaminated groundwater and/or sediment**

Potential construction worker exposures are not expected to be significant. If future construction activities are planned for past or present SWMUs it is anticipated that proper Personnel Protective Equipment (PPE) would be used.

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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 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 the Brush Wellman (Materion Corporation) facility, EPA ID PAD 002 387 835, located at 100 Shoemakersville Road, Shoemakersville, PA 19107 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      09/30/2020

(print)      Linda Matyskiela

(title)      RCRA Project Manager

Supervisor:



Date      9/30/2020

(print) Paul Goitthold

(title) Chief, CA Branch No 2

(EPA Region or State) Region 3

Locations where References may be found:

All reference documents are appended to the EI Report which can be found at USEPA's Region III office in Philadelphia or PADEP's Southcentral Regional office in Harrisburg, PA.

Contact telephone and e-mail numbers:

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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.**

