

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures Under Control

Facility Name: Johnson Matthey, Inc.
Facility Address: 1401 King Road, West Chester, PA 19380
Facility EPA ID #: PAD067362327

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 #8 and enter "IN" (more information needed) status code.

BACKGROUND

The Johnson Matthey facility is located at 1401 King Road in West Chester, PA. The approximately 20-acre site conducts production operations involving various forms of several precious metals. Johnson Matthey began operations at the site on September 22, 1971. Prior to 1971, the property had been used for farming.

Waste produced at the facility included TCE from the degreasing of metal products, acid wastes from the pickling of metal products, waste caustic from scrubbing of acid vapors from the pickling operations, spent plating baths, and various laboratory wastes.

The Solid Waste Management Units included Liquid Gold Drain Field, Western Drain Field (Leach Field "A"), and Eastern Drain Field (Leach Field "B"). During the 1970s and 1980s, the facility discharged to on-site tile fields. Wastewater from lab and process sinks, acid rinse water, and supernatant from the waste acid neutralization tank discharged into two septic tanks and an onsite tile fields. There was a west system that received sewage and an east system that received drainage from process sinks in manufacturing areas. In December 1981, PADEP determined this discharge on industrial wastewater without a permit to be a violation of the Clean Stream Law.

As a result of the violation, groundwater investigations/remediation have been performed at the facility. Groundwater monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6 were installed at the facility. Groundwater found to be contaminated with VOCs and leach field "B" was the source of GW contamination. TCE, TCA and PCE were detected in groundwater at concentrations above the MCLs.

In 1989 Johnson Matthey began construction of the groundwater remediation system to remediate the groundwater contaminant plume containing TCE, TCA, and PCE. A groundwater recovery well was installed in the area of the old spring house and a second recovery well was installed adjacent to MW-4. The air stripper was located in a building attached to the spring house and was used to treat groundwater recovered from the spring house and from the recovery well adjacent to MW-4. The system was activated in 1990 and has operated continuously to present.

Currently, Johnson Matthey performs semi-annual groundwater monitoring of MW-1 through MW-4, the spring house water and the pond. Sentinel wells MW-5 and MW-6 are sampled annually. Groundwater monitoring sampling has been performed routinely and reported to the PADEP under a NPDES permit. GW monitoring results showed that extent of groundwater contamination plume is within the facility property boundary and concentrations of TCE, TCA, and PCE have decreased to levels below the respective MCLs since 2007.

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, 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)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater		X		Concentrations of TCE, TCA, and PCE in groundwater are detected at concentrations below the MCLs
Air (indoors) ²		X		Releases not documented
Surface Soil (e.g., <2 ft)		X		Releases not documented
Surface Water		X		Concentrations of TCE in surface water (the pond) are below the PADEP surface water standard of 2.5 ug/l
Sediment		X		Releases not documented
Subsurf. Soil (e.g., >2 ft)		X		Releases not documented
Air (outdoors)				NA

- 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.
- 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):

GW monitoring results showed that TCE, TCA, and PCE have been detected in groundwater at concentrations below the respective MCLs since 2007.
 Since VOCs are detected at concentrations below the MCLs, Air (indoors) should not be a concern.
 VOCs were released to below ground septic tank leach fields, therefore, surface soil should not be a concern.
 Analytical results of surface water (pond) sampling demonstrated that concentrations of TCE in the pond water meet the PADEP surface water standard of 2.5 ug/l.
 Although likely to be below appropriate standards, TCE impacts to sediment are not known at this time. Sediment will be investigated under the PADEP Act 2 program. EPA will re-evaluate the Human Exposure under Control Environmental Indicator as new information become available.
 TCE impacts to Subsurface soil are not known at this time. Given the location of the subsurface soil, construction worker exposures would be protected thru PPE.

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.

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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)

<u>“Contaminated” Media</u>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	_____	_____	_____	_____			_____
Air (indoors)	_____	_____	_____				
Soil (surface, e.g., <2 ft)	_____	_____	_____	_____	_____	_____	_____
Surface Water	_____	_____			_____	_____	_____
Sediment	_____	_____			_____	_____	_____
Soil (subsurface e.g., >2 ft)				_____			_____
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).
- 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):

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

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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.

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5. Can the “significant” **exposures** (identified in #4) be shown to be within **acceptable** limits?

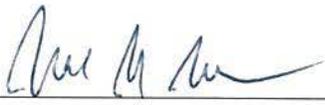
- If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).
- 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.

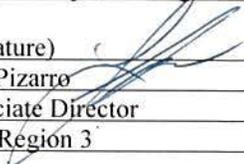
Rationale and Reference(s):

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6. Check the appropriate 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 (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 Johnson Matthey, Inc. facility, EPA ID # PAD067362327, located at 1401 King Road, West Chester, PA 19380 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 9/25/2018
(print) Tran Tran
(title) Project Manager

Supervisor (signature)  Date 9/25/2018
Luis Pizarro
Associate Director
EPA Region 3

Locations where References may be found:

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