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: **Lonza, Inc. – Riverside Plant**
Facility Address: **900 River Road, Conshohocken, PA 19428**
Facility EPA ID #: **PAD980550412**

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, 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).

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"**[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			Bis(2-ethylhexyl)phthalate, methylene chloride, MTBE, arsenic, beryllium, and lead above PADEP used aquifer NR MSC, but below nonuse aquifer NR MSCs. Point of compliance wells not impacted above used aquifer NR MSCs. Groundwater not used as potable water source at or in vicinity of facility. Groundwater use prohibited via institutional / engineering controls.
Air (indoors)[2]		X		Releases have occurred to soil and groundwater; however, VOCs and SVOCs detected were not above risk-based levels.
Surface Soil (e.g., <2 ft)	X			Arsenic and lead above PADEP direct contact NR MSCs, likely related to historical steel manufacturing operations. Facility demonstrated attainment of site-specific standard via pathway elimination. Institutional / engineering controls and a PRCP have been implemented at facility.
Surface Water		X		No surface water bodies on-site.
Sediment		X		No surface water bodies on-site.
Subsurface Soil (e.g., >2 ft)	X			Arsenic and lead (likely related to historical steel operations) above PADEP used aquifer NR MSCs but below nonuse aquifer NR MSCs. Facility demonstrated attainment of site-specific standard via pathway elimination. Institutional / engineering controls and a PRCP have been implemented at facility.
Air (outdoors)		X		Facility operates under Title V air permit for emissions sources. No known releases to outdoor air.

____ 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.

[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.

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):

The Lonza, Inc. - Riverside Plant (Lonza or facility) was owned and operated until 2010 by Lonza and is located approximately 15 miles northwest of Philadelphia, in Upper Merion Township, within a heavy industrial zoning district in Conshohocken, Montgomery County, Pennsylvania). As of November 1, 2010, Johnson Matthey purchased the facility. Johnson Matthey will operate the facility with intentions to increase production by maintaining the same operations as Lonza.

Located between the Schuylkill River (to the east) and River Road (to the west), the facility consists of two industrial complexes that occupy approximately 29.2 acres that were graded approximately one foot above the l00-year floodplain of the Schuylkill River, according to the RCRA Facility Assessment (RFA) Phase II Report (A.T. Kearney, 1989). The Riverside facility is separate from the Upper Merion complex facility owned by GlaxoSmithKline. A rail line runs through the facility property, though the facility does not, nor ever has, used the rail line for any transportation purposes.

The facility historically and currently operates under USEPA ID No. PAD980550412 for its hazardous waste operations. It is a large quantity generator (LQG) of hazardous waste, operates a hazardous waste incinerator under a treatment/storage/disposal (TSD) permit and operates a hazardous wastewater treatment (WWT) plant under Pennsylvania Department of Environmental Protection (PADEP) permit by rule (PBR) regulations. Waste treatment facilities include evaporation, stripping, liquid and gaseous (volatile organic carbon) waste incineration, bio-oxidation, clarification, and sand filtration.

An RFA Phase II and a Remedial Investigation (RI) study were performed during the 1980s. Several solid waste management units (SWMUs) and releases were identified at the facility. Several spills, releases, and cleanup activities were reported to PADEP between 2003 and 2009. Three Notices of Intent to Remediate (NIR) have been submitted under PADEP's Land Recycling Program (LRP) (Act 2). On January 21, 2011, Lonza submitted to PADEP the Act 2 Combined RI Report/Risk Assessment Report (Combined RIR/RAR). On May 4, 2011, PADEP provided Lonza a deficiency letter. On July 5, 2011, Lonza submitted an addendum to the Combined RIR/RAR. On July 28, 2011, PADEP approved the RIR in accordance with the provisions of Act 2.

On July 31, 2012, PADEP notified Roux that they had received and reviewed the June 7, 2012, Final Report for Soil and Groundwater. The final report described the area(s) of the property characterized, contaminants identified, remediation performed, and that a site-specific standard was attained. PADEP approved this report for the substances identified in soil and groundwater and remediated to an Act 2 standard within the site(s) specified. As such, the facility attained the nonresidential (NR) site-specific standard for the following compounds in soil: arsenic and lead via pathway elimination. The site-specific standard has been attained for the following compound in groundwater: bis(2-ethylhexyl)phthalate via pathway elimination.

Per a PADEP Techmemo (LRP #722393), since the site-specific standard was selected for soil and groundwater via pathway elimination, an environmental covenant is required for the site and includes the following activity and use limitations:

- The environmental covenant prohibits the use of groundwater.
- The environmental covenant will restrict the use of the property to nonresidential purposes.
- The current asphalt, concrete, and gravel cap present across the site will be maintained to eliminate exposure to surface soils in localized areas where impacts above direct contact values are documented.

To eliminate the exposure pathway to soils where the direct contact numeric values are exceeded in localized areas, the asphalt/concrete and gravel cap will be maintained (as an engineering control) across these areas of the site and an annual inspection will be performed as part of the Post Remediation Care Plan (PRCP). A PRCP is not required for downgradient properties since the dissolved phase plume will attain the statewide health standard on the site.

Groundwater

Groundwater is present at a depth of 50 to 80 feet bgs within bedrock fractures, bedding planes, and solution channels. Closer to the river, monitoring wells screened within the overburden encountered shallower groundwater depths (less than approximately 30 feet bgs) within the facility area (ES, 1987). Groundwater beneath the facility was encountered in the overburden with depths ranging from 11 to 28 feet bgs. Based on the proximity of the facility to the Schuylkill River, the net flow is expected to be from west to east across the site; however, different hydrogeologic conditions can alter the groundwater flow (Roux, 2011). Groundwater elevation contour maps were prepared for the October and November 2010 sampling events; groundwater flow was generally to the west toward River Road at an average gradient of approximately 0.02.

Groundwater usage in the vicinity of the facility was primarily for industrial purposes such as cooling and lawn irrigation. There were no known production wells at the facility. There were no known drinking water wells within one mile of the facility. Potable water for the area was obtained from local water utility, which received water from various sources such as wells, surface water, and reservoirs (ES, 1987).

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							
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.

__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):

PADEP approved the Final Report for the site citing that the facility had demonstrated attainment of the NR site-specific standard for arsenic and lead in soil and bis(2-ethylhexyl)phthalate in groundwater via pathway elimination. In addition, VOCs and SVOCs detected in soil did not exceed direct contact NR or soil to groundwater used aquifer NR MSCs. No further action or investigations are planned for soil or groundwater.

Since the facility demonstrated attainment of the site-specific standard through pathway elimination for the site, an environmental covenant has been recorded that includes the following activity and use limitations:

- No use of groundwater for potable or agricultural purposes.
- Restricted use of the property to nonresidential purposes.
- Maintenance of the fencing and the current asphalt, concrete and gravel cap present across the site to eliminate exposure to surface soils in localized areas where impacts above direct contact values sre documented.

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[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):

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):

[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.

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 **Lonza, Inc – Riverside Plant** facility, EPA ID # **PAD980550412**, located at **900 River Road, Conshohocken, PA 19428** 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 9/18/19

(print) Grant Dufficy

(title) RCRA Project Manager

Supervisor (signature) _____ Date 9/18/19

(print) Luis Pizarro

(title) Assoc. Director Office of Remediation

(EPA Region or State) EPA Region III

Locations where References may be found:

USEPA Region III
Land & Chemicals Division
1650 Arch Street
Philadelphia, PA 19103

PADEP
South East Regional Office
2 E. Main Street
Norristown, PA 19401

Contact telephone and e-mail numbers:

Grant Dufficy
215-814-3455
Dufficy.grant@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.

Facility Name: Lonza, Inc. – Riverside Plant
EPA ID# PAD980550412
City/State Conshohocken, PA 19428

CURRENT HUMAN EXPOSURES UNDER CONTROL (CA725)