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DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION CA725 CURRENT HUMAN EXPOSURES UNDER CONTROL

Prepared for
C & D Technologies, Inc
200 West Main Street
Attica, Indiana
USEPA ID #IND 000 810 754

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Project Number: 20500205

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS Code (CA725)

Current Human Exposures Under Control

Facility Name: **C & D Technologies, Inc.**
Facility Address: **200 West Main Street, Attica, Indiana 47918**
Facility EPA ID #: **IND 000 810 754**

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

*C&D Technologies' Facility in Attica, Indiana (the Site or Facility) is located within the Middle Wabash River Valley in west central Indiana. The Site is located along the eastern bank of the Wabash River and is within the Attica Wellhead Protection Area located southwest of the Site along the Wabash River (**Figure 1**).*

The Site is bounded on the southeast by Third Street; on the southwest by Main Street; on the northwest by the Wabash River; and is located in a mixed area of industrial, commercial, and residential use. The Facility is partially surrounded by chain-link fencing and occupies approximately 12.5 acres in which there are approximately 295,000 square feet of interconnected buildings. Building walls form entry barriers elsewhere.

The site has been used as an industrial Facility since the late 1800s. The earliest available historical record (1886 fire insurance map) identified the subject property as the Jas Martin & Company Grain Elevator, residential properties, a vacant foundry and a lumber yard. The current site use as a battery manufacturing operation began in 1955. Information regarding current and previous industrial use at the Site is presented in Section 2.2 of the RCRA Facility Investigation Work Plan (URS, 2007) ("RFI Work Plan").

*The RFI efforts for the Site consist of collecting environmental samples from 13 Solid Waste Management Units (SWMUs) and two Areas of Concern (AOCs), identified based on current and historical site usage, as presented in the Current Conditions Report (Clayton, 2007) ("CCR"). **Figure 2** shows the SWMUs/AOCs, monitoring wells and soil sample locations. Laboratory analytical data from samples collected as part of the RFI for the Site were used in the preparation of the EI.*

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 the 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			*In the December 2007-January 2008 groundwater sampling event, lead and volatile organic compounds (VOCs) were not detected in site shallow groundwater monitoring wells (MW-1S, -2S, -3S, -4S, -5S, -6S, -7S, and -8S) at concentrations equal to or greater than the drinking water maximum contaminant level (MCL). In the June 2008 sampling event, lead was detected in well MW-4S at 22.2 ug/L, above the MCL of 15 ug/L.*
Air (indoors)[2]		x		*Most of the Site is covered with structures, pavement, and concrete. Area 5 is covered in gravel. Buildings on site do not have basements and all building slabs are 4 to 6 inches thick. The depth to the water table in the shallow hydrostratigraphic unit is approximately 30 feet below ground surface (bgs) within coarse-grained sand and gravel deposits (RFI Work Plan, Section 2.1.2), which suggests that the soil is fairly permeable and may allow volatilization of VOCs, if present, from groundwater or soils to indoor air.* *Indoor air is not expected to be impacted because:* • *VOCs were detected in groundwater at levels below the target groundwater screening levels provided in the USEPA document entitled "Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils" (USEPA, 2002).* • *Although screening levels for VOCs in soil are currently unavailable, volatilization of VOCs from soil to indoor air is expected to be insignificant from a risk perspective because VOCs were only detected at trace levels in soil.*
Surface Soil (e.g., <2 ft)	x			*Metals (lead and arsenic at Area 3, lead at Area 5, lead at Area 11, arsenic at Area 15, arsenic, lead and cadmium in Riverbank soil, and lead in off-site soil) were present in individual samples at concentrations greater than the IDEM RISC Industrial Soil Default Closure Level (DCL).* • ***Area 3*** *--Average concentration of lead (836 mg/kg) is below the IDEM RISC Industrial Soil DCL of 970 mg/kg. Detected concentrations of arsenic exceeded its IDEM RISC Industrial DCL of 20 mg/kg at one location (31.7 mg/kg at CD-SB-14). This location is under concrete.*

[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) suggests 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.

- ***Area 5*** *– Detected concentrations of lead exceeded the Soil Industrial DCL of 970 mg/kg at one location (7,840 mg/kg at CD-SB-22). Additional soil samples were collected in the vicinity of CD-SB-22. The results of this investigation indicated that the elevated level of lead detected in the sample collected at CD-SB-22 was extremely localized (see* ***Figure 3****). An average concentration (including 7,840 mg/kg at CD-SB-22) of 913.6 mg/kg was calculated for lead in all surface soil samples, which was below the IDEM RISC Industrial Sol DCL of 970 mg/kg. The surface soil at CD-SB-22 will be excavated and replaced (or covered) as an added measure.*
- ***Areas 11 and 15*** *– Lead was detected at levels exceeding the IDEM RISC Industrial Soil DCL of 970 mg/kg at one location each at Area 11 (2,930 mg/kg at CD-SB-36) and Area 15 (1,140 mg/kg at CD-SB-50). The presence of lead at these locations is not expected to pose any adverse impacts to human health because both areas are under pavement.*

Surface Water	___	**x**	___	*Except for arsenic and lead, concentrations of chemicals in surface water samples collected from the Wabash River adjacent to the Site (see* ***Figure 4****) were below IDEM's SWQS (outside of mixing zone) or federal Ambient Water Quality Criteria for the protection of human health. A SWQS for lead based on protection of human health outside of a mixing zone is unavailable. However, lead was detected in all three surface water samples from the Wabash River at levels (ranging from 2.5μ g/L to 2.6μ g/L), below its SWQS of 50 μ g/L at point of water intake. Therefore, surface water quality is not impacted by lead. Although arsenic was also detected in river water samples at levels (2.6μ g/L at CD-SW-01 and 2.7μ g/L at CD-SW-02 and CD-SW-03) exceeding its SWQS of 0.175μ g/L, these concentrations were essentially the same as the concentration detected in an upgradient (background) surface water sample (2.6 μ g/L at CD-SW-BKG)* ***(Table 43)****. Therefore, surface water is not contaminated.*
Sediment	___	**x**	___	*Concentrations of chemicals in sediment samples collected from the Wabash River adjacent to the Site (see* ***Figure 4****) were below IDEM's DCLs for industrial soil, selected as conservative screening criteria for evaluating potential risks to recreational receptors due to the lack of risk-based screening criteria for recreational exposure to sediments.*
Subsurface Soil (>2 ft)	**x**	___	___	*Lead at Areas 3, 8, and 15, and arsenic at Areas 7 and 8, was present at concentrations greater than the IDEM RISC Industrial Soil DCLs in individual samples. These areas are under concrete or asphalt.*
Air (outdoors)	___	**x**	___	*Most of the Site is covered with structures, pavement, and concrete which acts as an engineered barrier that prevents*

emission of chemicals (as vapor or particulates) from soil and groundwater. There are grass/gravel covered areas adjacent to Area 1, but, with the exception of trichloroethylene (TCE) at SB-21 (0 – 1 ft bgs) and SB-21B (0-1 ft) in Area 4, no VOCs have been detected in soil at concentrations greater than RISC Industrial Soil DCLs for the direct contact exposure scenario (ingestion, dermal contact, and inhalation). Samples for SB-21 and SB-21B were collected outside of the plant building under concrete. Therefore, the pathway for volatilization of TCE from soil to outdoor air is incomplete due to the presence of a concrete barrier.

_____ 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. **(In order to present a more complete representation of the status of the site, the reviewer has chosen not to skip to #6)**

Rationale and Reference(s):

IDEM, 2006. RISC Technical Guide. Indiana Department of Environmental Management.
URS, 2007a. RCRA Facility Investigation Work Plan. C&D Technologies. September 2007.
URS, 2007b. Addendum to RCRA Facility Investigation Work Plan. C&D Technologies. December 2007.

Soil

Soil samples were collected from each of the 14 areas evaluated for the Site as well as two off-site residential areas. The northernmost residential area is located due east of Area 5 in an area bounded by West Columbia and West Yount Streets. The southernmost residential area is located east of the trailer storage area on North Perry Street and is bounded by West Yount to the northeast, North Fifth Street to the southeast and North Perry Street to the northwest.

*Screening comparisons of the soil data collected from each area of the site are provided as **Tables 1** through **38** to this EI. The soil data collected from background areas (soil samples from 7 locations approximately 2 miles northeast of the facility from an undeveloped area that is used for agriculture; the general soil type (Battleground silt loam) and geology (riverbank/floodplain) are similar to that encountered at C&D) are presented in **Table 39**. Off-site soil data were compared to the IDEM RISC Residential Soil DCLs for Direct Contact (IDEM, 2006). On-site soil data were compared with the lower of IDEM RISC Industrial Soil DCLs for Direct Contact, Construction or Soil Contact (IDEM, 2006).*

Groundwater

*Site-specific groundwater data are available for the Site (**Table 40**). Wells MW-3 and MW-3S are considered as background groundwater data for the deeper and shallower intervals, respectively. Existing data indicate no chemicals were detected in shallow groundwater monitoring wells at concentrations greater than the IDEM Residential Groundwater DCLs (IDEM, 2006). Detections of TCE exceeding the DCLs occurred in deeper groundwater monitoring wells CD-MW-1 (located southwest of Area 10), and CD-MW-2 (located off-site where West Main Street terminates at the railroad tracks). These deeper groundwater TCE detections are related to the local off-site TCE plume in the City of Attica, currently being investigated by US Environmental Protection Agency (USEPA) Region 5, and are not associated with releases attributable to C&D Attica.*

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	Yes	No	No	No	No	No	Yes
Air (Indoors)	Yes	No	No	No	No	No	No
Soil (Surface, < 2 feet)	Yes	Yes	No	Yes	No	Yes	No
Surface Water	No	No	No	No	No	Yes	No
Sediment	No	No	No	No	No	Yes	No
Soil (Subsurface > 2 feet)	No	No	No	Yes	No	No	No
Air (Outdoors)	No	No	No	Yes	No	No	No

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):

Residential - Groundwater

The USEPA Region 5 Administrative Order of Consent (RCRA-05-2007-003, USEPA ID NO.: IND 000 810 754) indicates that the city of Attica's municipal drinking water well field is located approximately 0.25 miles southwest of the Site. Results from groundwater samples collected in December 2007 and January 2008 indicate that TCE is not present in shallow groundwater wells at concentrations greater than the Primary Drinking Water Standard (i.e., MCL)(USEPA, 2003) and the IDEM Residential Groundwater DCL (IDEM, 2006). The detections of TCE exceeding the DCLs were in deeper monitoring wells CD-MW-1D (located southwest of Area 10), and CD-MW-2D (located off-site where West Main Street terminates at the railroad tracks). These data are provided as ***Table 40****.*

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

Residential - Soil

Composite soil samples (from 0 to 1 ft bgs) were collected in January 2008 from off-site locations adjacent to the residential areas (CD-SB-60 through CD-SB-66). Concentrations of lead detected in these samples ranged from 5.7 mg/kg to 777 mg/kg. To delineate the extent of lead in the residential area, additional composite surface soil samples were collected in March 2008 from residential yards east of the site in the area bounded by West Yount and West Columbia Streets. The range of detected concentrations in nine samples collected from these areas was 117.5 to 280 mg/kg. Composite surface soil samples (0-1 ft bgs) were also collected from the residential area east of the site in the area bounded by North Fifth and North Perry Streets. The range of detected concentrations for these samples is 129.25 to 203 mg/kg. The average concentration of all of the detected concentrations was 180.43 mg/kg, below the IDEM Residential Soil DCL for Direct Contact (400 mg/kg). ***Figure 2*** *shows the soil sample locations. These data are provided as* ***Table 38****.*

Workers - Groundwater

Water for all operational use is obtained from the city of Attica. VOCs have been detected in the municipal drinking water wells. Samples collected from newly installed shallow groundwater monitoring wells in December 2007 and January 2008 indicate that TCE was not detected in groundwater at concentrations greater than the MCL (USEPA, 2003) and the IDEM Industrial Groundwater DCL (IDEM, 2006). The detections of TCE exceeding the DCLs were in deeper monitoring wells CD-MW-1D (located southwest of Area 10), and CD-MW-2D (located off-site where West Main Street terminates at the railroad tracks). The shallow groundwater data indicate that the Site is not the source of these VOCs and the pathway for worker exposure to VOCs in onsite groundwater is incomplete.

Workers - Soil

The pathway for industrial worker exposure to surface soil at the Site is only potentially complete at Area 5 (gravel-covered) the majority of the Site (>95% based on a review of the aerial photograph, ***Figure 2****) is covered with buildings or pavement. There is also one gravel parking area located northeast of the Site but the area is limited in extent and covers any soils that may have been exposed historically.*

The pathway for industrial worker exposure to chemicals in subsurface soil is incomplete because industrial workers are not expected to come into direct contact with subsurface soil while performing daily activities.

Day-Care and Sensitive Receptors - Groundwater

This pathway is incomplete based on the land use for the Site vicinity because no day care facilities or sensitive receptors have been identified within a 2,500-foot radius of the Site (*See* ***Figure 5*** *and US EPA Database "Window to My Environment," at http://134.67.99.109/wme/myWindow.asp?requestTimeout=300&xl=-87.272838&yt=40.312566&xr=-87.224506&yb=40.276317*).

Day-Care and Sensitive Receptors - Soil

This pathway is incomplete based on the land use for the Site vicinity because no day care facilities or sensitive receptors have been identified within a 2,500-foot radius of the Site (See ***Figure 5*** *and US EPA Database "Window to My Environment," at http://134.67.99.109/wme/myWindow.asp?requestTimeout=300&xl=-87.272838&yt=40.312566&xr=-87.224506&yb=40.276317)*.

Construction Workers - Groundwater

Construction workers are inclusive of workers who might be involved with excavation of subsurface soil for construction, maintenance or utilities repair. Based on the RFI Work Plan (URS, 2007), utilities may be present at depths up to 20 feet bgs, primarily due to stormwater piping in the central to northeastern section of the facility. Since the shallow groundwater depth was measured at 25 to 36 feet bgs at wells MW-1 through -5 (near the building) for the VOC Investigation Report (Clayton, 2006), and consistently deeper than 20 feet bgs at well MW-3S (on the northeast corner of the building) during three groundwater measurement events in 2008, exposure to chemicals in groundwater via dermal contact is incomplete.

Construction Workers - Soil
The pathway for construction worker exposure to chemicals in surface and subsurface soil is potentially complete based on the potential for subsurface utilities repair/maintenance or construction.

Trespassers - Groundwater
Trespassers are defined as unauthorized persons within the fenced Site boundaries. Current data indicate depth to groundwater is about 25 to 30 ft. There is no complete pathway for trespasser exposure to groundwater.

Trespassers - Soil
*The pathway for trespasser exposure to surface soil at the Site is incomplete because the majority of the Site (>95% based on a review of the aerial photograph, **Figure 1**) is covered with buildings or pavement. There is one gravel parking area located northeast of the Site but the area is limited in extent and covers any soils that may have been exposed historically.*

Recreational Users - Groundwater
Recreational users are defined as persons outside the fenced Site boundaries. The pathway for recreational users exposed to groundwater is incomplete because (1) recreational users are not anticipated to excavate soils to depths at which groundwater may be encountered (between 15 and 20 ft bgs at wells nearest the river); and (2) no groundwater seeps are known to be present.

Recreational Users - Soil
The Site property inside the fenceline is used for industrial purposes and has no recreational value. In addition, the majority of soil onsite is covered by buildings or pavement. The pathway for recreational exposure to soil is only potentially complete for the area along the riverbank.

Recreational Users – Sediment
*The Wabash River is used for recreational purposes. The pathway for exposure to exposed sediments on sand and gravel bars of the Wabash River adjacent to the Site is potentially complete. Three sediment samples were collected along the Wabash River adjacent to the Site (CD-SED-01 through CD-SED-03). In addition, sediment samples were collected from up- and down-stream locations (**Figure 3**). As indicated on **Table 42**, only two chemicals (arsenic and acrolein) were detected at levels exceeding their IDEM RISC Residential Soil DCLs. Background sample data are shown in **Table 43**.*

This pathway is insignificant from a risk perspective because:

- *The use of the Residential Soil DCL in the evaluation of sediment data represents a conservative approach. The magnitude and extent of exposure associated with the recreational receptor contact with site-related chemicals in sediments while wading is expected to be significantly less than that associated with the residential exposure to chemicals in soil.*
- *Concentrations detected in sediment samples collected from locations adjacent to the Site were similar to concentrations detected in the up -stream background and downstream (CD-SED-03 and CD-SED-04) locations.*

Recreational Users – Surface Water
*The Wabash River is used for recreational purposes; therefore, the pathway for exposure to surface water is potentially complete. Three surface water samples were collected adjacent to the Site for analyses (CD-SW-01 through CD-SW-03 on **Figure 3**). None of the chemicals were detected at levels exceeding the IDEM SWQS for the protection of human health or background levels (**Tables 41 and 43**). Therefore, this pathway is insignificant from a risk perspective.*

Food - Groundwater
The pathway for exposure to food items contaminated with chemicals in groundwater is potentially complete because food items could be grown using groundwater for irrigation.

Food – Soil

Food grown onsite represents an incomplete pathway. However, this is a potentially complete pathway for consumption of food items that could be grown in gardens within residential areas adjacent to the Site. However, this pathway is considered insignificant from a risk perspective because the average concentrations of lead detected in soil samples collected from the off-site residential area (180.43 mg/kg) are below the IDEM Default Residential Soil DCL of 400 mg/kg, which was established for the protection of the most sensitive population (i.e., young children) by considering potential exposures to lead in multiple media in a residential setting.

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)?

__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

Monitoring well data are available for the groundwater at and downgradient of the Site. Data presented in the VOC Investigation Report (Clayton, 2006), and analytical results for groundwater samples collected from shallow wells MW-1S through MW-8S representing groundwater immediately beneath the Site in December 2007, January 2008, and June 2008 indicate that TCE is not present at concentrations greater than the MCL (USEPA, 2003) and the IDEM Groundwater Residential and Industrial DCLs (IDEM, 2006). These data indicate that the Site is not a source of the VOCs detected in the municipal wells.

Surface Soil

Soil data collected in the off-site residential areas located east of the Site indicate average lead levels do not exceed the residential screening level of 400 mg/kg.

*Riverbank soil data (**Table 36**) indicate there are three metals (arsenic, cadmium and lead) detected at levels exceeding IDEM Residential Soil DCLs (IDEM 2006).*

- *Arsenic was detected at levels exceeding its Residential DCL in twelve of fourteen samples. However, except for the concentration reported in the sample collected from CD-SB-59 (21 mg/kg), concentrations detected in other samples (4.8 mg/kg to 7 mg/kg) were within the range reported in samples collected from background locations (5 to 10.5 mg/kg, as presented on **Table 39**).*

[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.

- *Cadmium at CD-SB-59 (14.4 mg/kg) slightly exceeded its IDEM RISC Residential DCL of 12 mg/kg. Cadmium in all other samples was detected at levels below its RISC Residential DCL.*
- *Lead was detected at levels exceeding its IDEM RISC Residential DCL of 400 mg/kg in two surface soil samples (CD-SB-55: 1,050 mg/kg; CD-SB-59: 6,260 mg/kg). Risks potentially associated with recreational receptor exposure to lead in riverbank soil were evaluated based on the mean concentration of lead in surface soil along the riverbank (558 mg/kg) and receptors visiting the site once and twice per week. as described below:*

  - *For adults, the Adult Lead Model (ALM) (USEPA, 2005) was used to estimate blood lead concentrations. This represents a conservative approach because the ALM was designed to evaluate risks for adult females of child bearing age in a non-residential setting based on the protection of the most sensitive receptors (i.e., developing fetuses). Blood lead concentrations estimated based on an exposure frequency of one visit per week (1.7 μ g/dL, on Table 44) and two visits per week (1.9 μ g/dL, on Table 45) are below the target blood lead level of concern (i.e., 10μ g/dL,).*

  - *For children, the Integrated Exposure Uptake Biokinetic Model (IEUBK (USEPA, 2002) was used to estimate blood lead concentrations. A time-weighted approach, as descriebd in "Assessing Intermittent or Variable Exposures at Lead Sites" (USEPA, 2003), was used to estimate concentrations of lead in soil based on the assumed exposure frequency of one visit per week or two visits per week:*

    --For 1 visit/week,
    *PbSw = (PbSyard *EFyard) +PbSsite*EFsite*
    = (180.43 6/7) + (558*1/7)*
    = 234.37 mg/kg

    `
    where:
    PbSw = Time-weighted concentration of lead in soil (mg/kg)
    PbSyard = Concentration of lead in residence (mg/kg)
    PbSsite= Concentration of lead at site (mg/kg)
    EFyard = Exposure frequency expressed as fraction of the week when children stay home
    EFsite = Exposure frequency expressed as fraction of the week when children visit the site

    --For 2 visits/week,
    *PbSw = (PbSyard *EFyard) +PbSsite*EFsite*
    = (180.43 5/7) + (558*2/7)*
    = 288.31 mg/kg

  - *As indicated on the output tables (Tables 46 and 47), estimated blood lead concentrations using these time-weighted soil concentrations are below the target blood lead level of concern (i.e., 10μ g/dL,).*

  Therefore, levels of lead detected in surface soil samples collected along the river bank do not pose adverse impacts to human health.

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 C&D Technologies facility, EPA ID # IND 00810754, located at 200 West Main St, Attica, IN 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 _____ Date _____
(print)
_____
(title)
_____
(EPA Region or State)

Supervisor _____ Date _____
(print)
_____
(title)
_____
(EPA Region or State)

Locations where References may be found:

_____
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Contact telephone and e-mail numbers

(Name)_____
(Phone)_____
(E-mail)_____

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: C & D Technologies, Inc.
EPA ID#: IND 000 810 754
City/State: Attica, Indiana

CURRENT HUMAN EXPOSURES UNDER CONTROL (CA 725)