SITE REMEDIATION WORK PLAN

Former OmniSource Property
1610 North Calhoun Street
Fort Wayne, Allen County, Indiana
EPA RLF Cooperative Agreement #BF-00E48101-B
EPA ACRES ID:
Indiana Brownfield Site ID: 4180207

Prepared for:

Mr. Ken Coad, Project Manager
Indiana Brownfields Program
100 N. Senate Ave., Rm. 1275
Indianapolis, Indiana 46204

Prepared by:

IWM Consulting Group, LLC
7428 Rockville Road
Indianapolis, Indiana 46214
(317) 347-1111

Project: FW 19-709-30

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1.0 INTRODUCTION

Industrial Waste Management Consulting Group, LLC (IWM Consulting) prepared this site-specific Remediation Work Plan (RWP), which will discuss in detail the proposed remediation activities for the Former OmniSource Property (Site) located at 1610 North Clinton Street, Fort Wayne, Indiana. A Site Location Map is presented as **Figure 1**.

The remedial activities will be performed for the Indiana Finance Authority (IFA) through the Indiana Brownfields Program (IBP). This work is being funded through United States (U.S.) Environmental Protection Agency (EPA) Revolving Loan Fund (RLF) Cooperative Agreement #BF-00E48101-B for IBP Site No. 4180207.

Documentation regarding previous environmental sampling and analyses performed at the Site was reviewed in the Indiana Department of Environmental Management (IDEM) Virtual File Cabinet (VFC). A review of Phase I Environmental Site Assessments (ESAs) completed in 2013 and 2017 identified the Site as a former scrap metal recycling facility, a former railroad service yard, and several other manufacturing facilities since at least 1902. Numerous reports detailing underground storage tank (UST) closures, soil sampling and analysis from test pit excavations and soil borings, and groundwater sampling and analysis from temporary and permanent groundwater monitoring wells was reviewed.

Previous Site investigations have included soil and/or groundwater analyses for volatile organic compounds (VOCs), poly-aromatic hydrocarbons (PAHs), poly-chlorinated biphenyl (PCBs), total 8 RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), chromium VI (Cr VI), and dissolved 8 RCRA metals (groundwater only). There are currently five (5) permanent groundwater monitoring wells located on the Site. A Site Plan prepared by IWM Consulting is included as **Figure 2** and identifies the approximate permanent well locations on the Site.

Based on the results identified in previous Site investigation reports presented in the VFC, primarily the *Test Pit Soil Sampling and Analysis Report* (VFC Document No. 80628084) dated November 15, 2007, the *Further Site Investigation* (VFC Document No. 82581631) dated May 11, 2018, the *Soil Fill Pile and Sump Area Sampling and Analysis* (VFC Document No. 82580052) dated June 25, 2018, and the *Soil Fill Pile Chromium VI Sampling and Analysis* (VFC Document No. 82600374) dated August 10, 2018, IWM Consulting has prepared this RWP.

All of the soil and groundwater samples collected and analyzed as part of this remediation project will be compared to the applicable IDEM Remediation Closure Guide (RCG) Screening Levels.

2.0 PROJECT BACKGROUND

2.1 Project Location

The Site is located at 1610 North Calhoun Street, Fort Wayne, Allen County, Indiana. The Site includes the properties between North Harrison Street and North Clinton Street between Putnam and Sixth Streets, the properties along the west side of North Calhoun Street between Sixth and Fourth Streets, and the properties between North Calhoun Street and North Clinton Street between Sixth and Fourth Streets. Geographically, the Site is located in the southeast ¼ of Section 35, Township 31 North, Range 12 East and the northeast ¼ of Section 2, Township 30 North, Range 12 East in Allen County as shown on the Fort Wayne West, Indiana 7.5-minute USGS topographic quadrangle map. More specifically, the Site is located at 41.09025º north latitude and 85.14132º west longitude. A Site Location Map is presented as **Figure 1**.

2.2 Physiographic Setting

The Site is irregularly shaped, contains approximately 29 acres, and is located in the north portion of the Fort Wayne central business district. The Site is located in an urban area of Fort Wayne in a mixed commercial/residential setting that is serviced by city water and sewer services. Surrounding properties include the Science Central exhibition center, Lawton Park and Headwaters Park, an automobile sales and service dealership, a primary/middle school, residences, and commercial facilities. No surficial waters are present on the Site. The Site slopes to the south towards the easterly flowing St Marys River, which is located approximately 150 to 200 feet south-southeast of the Site. Previous Site investigations indicate that the groundwater flow direction is southerly towards the St Marys River.

2.3 Site History

There are no buildings located on the Site. However, there are several former building pads/foundations. There are also several mounded areas of soil on the Site used as landscape features. These soils were deposited on the Site by the City of Fort Wayne and associated contractors from municipal building/construction projects.

Historical review (IWM Consulting Phase I ESAs from February 2013 and December 2017) indicated the Site has been commercially developed since at least 1902. Information regarding Site usage prior to 1902 was not available for review. Readily available documents (historical Sanborn Fire Insurance Maps) indicate the Site was occupied by a wood products manufacturer, a railroad roundhouse, and a junk yard in 1902. A railroad freight station had been constructed on the area of the junk yard on the southeast Site corner by 1918. City directories indicate the railroad roundhouse and locomotive repair facility occupied the central portion of the Site through the late 1940s. Other Site occupants during that time period included an engineering and manufacturing company, a sand and gravel company, a truck equipment and oil company, an auto wrecking yard, an iron and metal company, a pump manufacturer, and a wholesale liquor

distributor. The railroad facility was not listed at the Site in city directories from the 1950s, but fire insurance maps show the roundhouse and locomotive repair facility on the central portion of the Site through at least 1951. A transformer manufacturer was also shown on the west-central portion of the Site from 1950 through the mid-1960s.

Superior Waste Material and Tri State Scrap Baling were listed in city directories on the southwest portion of the Site in 1950, and Superior Waste continued to be listed on the Site under varying company names through the 1980s. Fire insurance maps show the area of the roundhouse in the 1960s was occupied by an auto parts warehouse, an auto wrecking yard, and a junkyard. Superior Waste Material was replaced by OmniSource Corp, a scrap iron and metals dealer, in directories in the 1990s. Other Site occupants noted on the Site during the period between the 1950s and the 1990s included several warehouse facilities, an automobile paint and body shop, and retail facilities on the north portion, while most properties on the southwest portion of the Site, west of Calhoun Street, were primarily residences. Most of the residences had been removed by the 1980s, and OmniSource utilized the properties west of Calhoun Street for additional storage space or retail operations. Aerial photographs from the 1960s through the 1990s show most Site buildings were located on the west portion of the Site, while the east portion was vacant land covered with piles of debris.

The recognized environmental conditions (RECs) from the IWM Consulting, February 2013 (VFC Document No. 80628086) and December 2017 (VFC Document No. 80628089) Phase I ESAs included the following:

- The potential for environmental impact associated with unreported/undetected releases of *hazardous substances* and/or *petroleum products* associated with former manufacturing, railroad, and scrap yard operations on the Site since about 1902.
- Reported historical spills consisting of 25-gallons of transformer oil in 1989, 2,400-gallons of caustic soda to the municipal sewer in 1994, 60-gallons of chromate cleaning solution to the sanitary sewer in 1996, and an alleged petroleum spill in 2002.
- Soil samples were collected from five (5) randomly selected locations across the Site in 2000. Laboratory testing results indicated lead, arsenic, cadmium, and mercury were present in the soil samples at concentrations exceeding their respective Risk-Integrated System of Cleanups (RISC) Residential Default Closure Levels (RDCLs). PCBs were present at concentrations exceeding the RDCL at four (4) sampling locations.

The ESAs also identified a floor drain and sump located near the east end of the northwest building foundation. The sump contained some liquid at the time of the Site inspection, but it was not determined if the sump discharged to the municipal sewer system. No unusual odors were noted in the sump, and no surface staining or etching was observed on the floor around the drain. No other evidence of disposal of petroleum products or hazardous substances to the drain was observed.

Two (2), 4,000-gallon capacity gasoline USTs located on the west-central portion of the Site between Fifth and Sixth Streets were manifolded together to form one (1) UST (owner designated UST #8). UST #8 was apparently removed from the site in the 1980s. Two (2), 10,000-gallon gasoline and diesel USTs were removed from an area north of Sixth Street and

east of Harrison Street in 1994 (designated by the owner as USTs #2 and #3). One (1), 550-gallon gasoline UST and one (1), 10,000-gallon diesel fuel UST (owner designated tanks #4 and #5) were removed from an area east of the intersection of Calhoun and Fifth Streets on the site in 2000. The Site received a No Further Action (NFA) status letter for a reported release from USTs #4 and # 5 in 2005.

An Initial Site Characterization (ISC) report prepared for the Site in 2000 included the installation of groundwater monitoring wells. The groundwater was gauged periodically over several years (2000 to 2005) and groundwater flow was consistently calculated to be in a southerly direction, toward the St. Mary's River. The depth to groundwater was measured to be between 13 and 15 feet below grade on the west-central area of the Site by USTs #4 and #5. These four (4) wells were abandoned in 2005 following the NFA.

Water well records available from the Indiana Department of Natural Resources indicate one (1) water supply well has been registered on the Site. The well log indicates the well is located on the corner of Fifth Street and Calhoun Street and was installed in 1967 for Superior Iron and Metal. The well depth was recorded as 168 feet and bedrock was encountered at 93 feet below grade. No information regarding the abandonment of this well could be identified in the available records reviewed for the Site.

As part of a pending property transaction in 2007 between the City of Fort Wayne and the Site owner, the Site was investigated with the advancement of fourteen (14) soil borings, identified as B-1 through B-14. The borings were advanced on the Site at the locations of previously removed USTs, areas with oil-stained soils, and at random locations. Soil samples were analyzed for various analyses, depending on the potential contamination on that portion of the Site. The analyses consisted of total petroleum hydrocarbons (TPH-GC) using SW-846 Method 8015B Modified with a gasoline standard (GRO), TPH using SW-846 Method 8015 Modified with extended range organics (ERO), benzene, toluene, ethylbenzene, total xylenes (BTEX), and methyl tertiary butyl ether (MTBE) using SW-846 Method 8260, VOCs analysis using SW-846 Method 8260 following Method SW-846 5035 sample collection procedures, total 8 RCRA metals using Methods 6010B and 7471, and/or for PCBs using SW-846 Method 8082. PCB analytes included seven (7) Aroclor constituents.

Soil samples collected from surface/near-surface soils in borings B-10 through B-14 in August 2007 were analyzed for metals and PCBs and had elevated concentrations of arsenic, cadmium, lead, mercury, and/or total PCBs in excess of their respective IDEM RISC RDCLs for soils. Several of the constituent concentrations exceeded the IDEM RISC Industrial Default Closure Levels (IDCLs) for soils

Arsenic, cadmium, and mercury were found to exceed the IDEM RISC RDCLs in some of the samples. Lead was found to exceed the closure level in each of the samples analyzed. Total lead values that exceeded 1,000 mg/kg were also analyzed for the toxicity characteristic leaching procedure (TCLP) to assess if the lead was leachable from the soil at a concentration greater than 5.0 mg/kg, indicating a characteristically hazardous waste for disposal purposes. Samples B-11, B-12, and B-13 were analyzed for TCLP lead. Boring B-13 had detectable TCLP lead at a

concentration of 6.29 mg/kg. The samples from boring B-11 and B-12 had concentrations less than 5.0 mg/kg.

PCBs were detected above the IDEM RISC RDCLs of 1.8 mg/kg in borings B-10, B-11, B-12, and B-14. No PCBs were detected in boring B-13.

During the week of October 1, 2007, four (4) soil borings were advanced and thirty-three (33) test pits were excavated on the Site. The test pits were excavated at randomly selected locations on the Site. The locations were selected based upon a one-acre grid of the Site with each one-acre grid being subdivided into 16 sections. Each sample location was selected using a random number generator with a low bound of 1 and an upper bound of 16. The grid area included areas adjacent to site buildings, within the former auto salvage yard, along railroad spurs, and in the location of former building footprints.

The soil borings and test pits were performed to identify the thickness of fill material on the Site and to assess if contaminants previously identified as having constituent concentrations exceeding the IDEM RISC RDCLs existed throughout the Site. Soil samples were typically collected from the near surface (0.0 to 0.5 ft) soils, at a depth consistent with half the fill thickness, and at the apparent top of the underlying, native soils. Soil samples collected from each horizon were analyzed for total metals (arsenic, cadmium, lead, and mercury) and total PCBs.

The results of the 2007 test pit soil analyses indicated that a large portion of the Site had concentrations of lead and arsenic in excess of the IDEM RISC RDCLs and IDCLs. PCBs were identified at several locations at concentrations less than the RISC RDCLs. Cadmium and mercury were detected at most locations but at concentrations less than the RISC RDCLs. Several locations had cadmium concentrations exceeding the RISC RDCLs, but below the RISC IDCLs. One (1) location had a mercury concentration exceeding both the RISC RDCL and IDCL.

Ten (10) soil samples with elevated lead concentrations were also analyzed using the TCLP. Three (3) of the samples analyzed had detectable lead above 5.0 mg/kg.

Groundwater monitoring wells (MW-1 through MW-5) were installed on the Site in October 2007 in order to collect and analyze groundwater for total metals (arsenic, cadmium, chromium, lead, mercury, nickel, and zinc), TPH-ERO, TPH-GRO, PCBs, VOCs, and semi-volatile organic compounds (SVOCs). No elevated concentrations of these constituents were identified in the groundwater beneath the Site.

Based on the sampling and analyses performed on the Site to date, the majority of Site surface and near-surface soils had been impacted with total metals (specifically arsenic, cadmium, lead, and mercury) in excess of the IDEM RISC RDCLs. A majority of the total lead and arsenic results were also found in excess of the IDEM RISC IDCLs. Some locations had also been impacted by cadmium, mercury and PCBs having concentrations greater than both the RISC RDCLs and IDCLs.

The Site encompasses approximately 28 acres. Therefore, the locations of the test pits, soil borings, and monitoring wells were identified using global positioning with a hand-held GPS unit. The locations were recorded in latitude and longitude using a degree decimal format.

A geophysical investigation was performed at the Site in 2018 to try and determine the presence of historical railroad turntables, USTs, and other subsurface anomalies located beneath the Site. This investigation was performed beginning on the west side of the Site along Harrison Street, following the line for the abandoned railroad siding (identified in historic aerial photographs and shown on the Plat map for the Site) and then east towards Clinton Street, south along Clinton Street to approximately the abandoned portion of Sixth Street, then west along the abandoned portion of Sixth Street to Calhoun Street.

The geophysical survey identified several areas on the north-central and east-central portions of the Site with circular anomalous features that appeared consistent with former railroad turntables identified on historical railroad maps of the Site. The survey also identified large amounts of buried metal across the eastern half of the Site. Two (2) metallic anomalies located on the western portion of the Site, north of Sixth Street and west of North Calhoun Street, were identified as possible USTs. These anomalies are located in an area previously developed with several commercial/industrial buildings.

Additional test pits were performed on the Site in 2018, similarly to the ones completed in 2007. Several of the 2018 test pit locations were based on the results of the geophysical survey and were located within a large turntable located on the northeastern portion of the Site, within a potential turntable on the north-central portion of the Site, and within a turntable located on the east-central portion of the Site. Other test pit locations included areas on the Site not previously investigated in 2007 and/or previously sampled test pit locations from 2007. The 2018 test pit investigation analyzed soil from the near surface (0.0 to 0.5 feet), the mid-depth of the apparent fill/reworked soil, and from the native soil beneath the fill/reworked soils.

IWM Consulting collected soil samples from sixteen (16) locations on the Site, nine (9) locations not previously sampled for PCBs and/or metals. Seven (7) test pit locations were excavated near previously sampled test pits in 2007. Test pits were performed in close proximity to the previous locations to try and determine if the soils in the approximate vicinity of these test pits were also impacted with previously identified PCBs and/or metals.

The 2018 test pit soil samples were analyzed for VOCs, PAHs, PCBs, and total RCRA metals. No VOCs were detected above their respective laboratory reporting limits, Remediation Closure Guide (RCG) Residential Soil Exposure Direct Contact Screening levels (RDCSLs) or Commercial/Industrial Soil Exposure Direct Contact Screening Levels (IDCSLs) in the samples analyzed. Benzo(a)pyrene was the only PAH detected in excess of its RCG RDCSL. It was detected at sample location TPL-10 (23”). Several sample locations had arsenic, cadmium, lead, and/or mercury in excess of their respective RCG RDCSLs and/or IDCSLs. PCB Aroclor 1248, Aroclor 1254, and/or Aroclor 1260 were detected in excess of their respective RCG RDCSLs and/or IDCSLs at several sample locations.

Ten (10) soil samples, including two (2) duplicate samples, with total lead concentrations greater than 1,000 mg/kg were also analyzed for TCLP lead. One (1) soil sample (SB-4 (4-5') had a detectable TCLP lead concentration of 5.7 mg/L.

Soil samples from soil borings and/or test pits with total chromium values in excess of 200 mg/kg were analyzed for low level chromium VI using SW-846 Method 7199. Due to the prevalence of total chromium (chromium III) in the soil samples analyzed from the Site and the high RCG RDCSL/IDCSL for chromium III of 100,000 mg/kg, an arbitrary value of 200 mg/kg was chosen as the value for chromium VI analysis. No chromium VI was detected in the soil samples analyzed in excess of its RCG RDCSL or IDCSL.

The thickness of fill on the Site was measured from soil borings and test pit locations during this investigation and varied from approximately 2 feet to 10.5 feet.

As part of the 2018 Site investigation work, six (6) soil borings/temporary wells (SB-1 through SB-6) were advanced/installed at locations where groundwater was not previously sampled. Soil boring/temporary well soil and groundwater samples were collected and analyzed for VOCs, PAHs, total RCRA metals, and PCBs. Two (2) sample locations, SB-4 (4-5') and SB-6 (15-16'), had detectable concentrations of arsenic and/or lead in excess of their respective RCG RDCSLs and/or IDCSLs. Groundwater samples collected from temporary wells were analyzed for VOCs, PAHs, total RCRA metals, dissolved RCRA metals, and PCBs. Two (2) sample locations, SB-2W and SB-6W, had analyte concentrations in excess of their respective RCG Residential Tap Groundwater Screening Levels (Res TAP GWSLs) for trichloroethane, total arsenic, and/or dissolved arsenic.

Groundwater samples were collected for analysis from permanent wells MW-2, MW-4, MW-5, MW-6, and MW-7. Monitoring wells MW-6 and MW-7 were installed in 2013 as part of a proposed property transaction but were not sampled until 2018. The groundwater was analyzed for VOCs, PAHs, PCBs, and total 8 RCRA metals. Wells MW-4, MW-5, and MW-7 were resampled and analyzed for dissolved RCRA metals due to total metals identified (total arsenic and total lead) during the initial sampling event. No VOCs, PAHs, PCBs, or dissolved RCRA metals were found to exceed their respective RCG Res TAP GWSLs.

The locations of each test pit, soil boring, and monitoring well sampled and/or advanced/excavated during 2018 were also identified using global positioning with a hand-held GPS unit. The locations were recorded in latitude and longitude using a degree decimal format.

2.4 Potential and Known Contaminants of Concern

Based upon the historical information obtained regarding the subject Site, the Site remedial activities will be focused on the following potential contaminants of concern (COC):

- Volatile Organic Compounds (VOCs)
- Poly Aromatic Hydrocarbons (PAHs)

- RCRA 8 Metals & Hexavalent Chromium (Cr VI)
- Polychlorinated Biphenyl's (PCBs)

2.5 Proposed Reuse of the Site

The Site is currently vacant. The exact future use of the property is not known at this time but it is anticipated that the future use will be commercial. For this reason, the soil and groundwater analytical results obtained as part of the proposed RWP activities will be compared with both the 2019 residential and commercial/industrial screening levels found in Table A-6, Appendix A, of the IDEM Remediation Closure Guide (RCG), updated March 4, 2019.

3.0 REMEDIATION WORK PLAN (RWP)

This site-specific RWP will discuss in detail the proposed remediation activities and include information pertaining to the proposed confirmation sampling locations, explain the rationale for laboratory sample selection, and provide a summary of the corresponding analytical methods to be utilized during the remediation project. A summary of the total number of each type of sample will be included and a discussion will be provided regarding the appropriate number of duplicate samples and matrix spike/matrix spike duplicate (MS/MSD) samples

IWM Consulting understands that an EPA approved Quality Assurance Project Plan (QAPP), a site-specific Health and Safety Plan (HASP), and a site-specific Analysis of Brownfield Cleanup Alternatives (ABCA) will need to be generated and submitted to the IBP for review and approval prior to implementing the field activities.

3.1 Quality Assurance Project Plan (QAPP) and Health and Safety Plan (HASP)

All sampling activities and analytical methods will be conducted in accordance with the EPA approved QAPP. IWM Consulting will prepare a site-specific Quality Assurance Project Plan (QAPP). The QAPP will provide an overview of the Site history and present information pertaining to the remedial and data quality objectives, briefly describe the proposed work activities, and identify specific quality assurance (QA) and quality control (QC) measures associated with the confirmation sampling activities being performed at the Site. The QAPP will also describe the specific protocols which will be followed for sampling, sample handling and storage, chain-of-custody controls, and laboratory analysis.

It should be noted that IWM Consulting has experience with the U.S. EPA and knows that the U.S. EPA funded projects require equipment and trip/field blanks, field audits for each Site at least once during the sampling activities, and an individual data evaluation report. A brief discussion of the field audit and data evaluation will be included within the site-specific remediation completion report and the audit form/data evaluation report will be included as attachments to the site-specific remediation completion report.

IWM Consulting anticipates that the QAPP will be submitted on, or before, field activities are initiated with an anticipated submittal date of approximately 2-3 weeks after receiving a signed contract from the IBP to conduct these work activities.

A Site-specific HASP has been prepared for the Site and will be followed during on-site field activities. Task specific Standard Operating Procedures (SOPs) and Job Safety Analysis (JSAs) are included as part of the HASP, as well as pertinent information relating to potential COCs, on-site hazards, and emergency contact (telephone numbers and directions to the nearest hospital) information. The HASP will be located on-site during all field activities and will be reviewed by the on-site personnel and with all subcontractors prior to initiating the field work. A copy of the HASP is presented in **Appendix A**.

3.2 Analysis of Brownfield Cleanup Alternatives (ABCA) & EPA Reporting

The ABCA will provide background information about the Site, identify the applicable regulatory screening levels, and identify a minimum of three (3) cleanup alternatives (including no cleanup activities), including the associated costs and ease of implementation. The ABCA will then identify the selected cleanup approach and provide an approximate timeline for implementing the activities. The ABCA will be available for public review and comment and will be presented at a public meeting in a location in close proximity to the Site.

Additional activities included for this phase of the project includes attending meetings pertaining to Davis-Bacon Wage reporting requirements, Minority Business Enterprise/Woman Owned Business Enterprise (MBE/WBE) solicitation and documentation, development and implementation of a Community Relations Plan (CRP), and other pre-planning activities which may be required by the IBP as part of this remediation project. IWM Consulting will also assist the IBP with any additional EPA submittals, as requested. IWM Consulting will work closely with the IBP and the City of Fort Wayne regarding an appropriate CRP, including identification of key community/regulatory contacts and the location of the local repository, generation of public announcements/notifications, ensuring opportunities for public comments, and developing responses to any public comments received. IWM Consulting will also assist the IBP with any additional EPA submittals, as requested.

3.3 Utility Clearance and Geophysical Investigation

Potentially buried underground utilities will be identified, marked, and mapped by Ground Penetrating Radar Systems, LLC (GPRS) at least 72-hours prior to performing any Site activities that requires the disturbance of surface and/or subsurface soils, structures, or debris. IWM Consulting will also contact the Indiana Underground Plant Protection Service (IUPPS) and request an on-site joint meeting to identify, mark, and map public utilities located on, or adjacent to, the Site.

3.4 Soil and Groundwater Confirmation Analytical Methods

Based on the results of previous Site investigation activities, primarily the *Test Pit Soil Sampling and Analysis Report* (VFC Document No. 80628084) dated November 15, 2007, the *Further Site Investigation* (VFC Document No. 82581631) dated May 11, 2018, the *Soil Fill Pile and Sump Area Sampling and Analysis* (VFC Document No. 82580052) dated June 25, 2018, and the *Soil Fill Pile Chromium VI Sampling and Analysis* (VFC Document No. 82600374) dated August 10, 2018, the following analytical methods will be utilized for soil and groundwater remediation confirmation samples collected during the course of this project:

Soil Analytical Parameters:

- VOCs using SW-846 Method 8260;
- PAHs using SW-846 Method 8270 SIM;

- Total RCRA 8 Metals using the appropriate SW-846 Method;
- Cr VI using SW-846 Method 7199;
- PCBs using SW-846 Method 8082; and,
- Percent moisture.

Utilizing SW-846 Method 7199 instead of SW-846 Method 7196A for the Cr VI analysis will ensure that lower laboratory detection and reporting limits are achieved during this phase of the investigation.

Groundwater Analytical Parameters:

- VOCs using SW-846 Method 8260;
- EDB using SW-846 Method 8011:
- PAHs using SW-846 Method 8270 SIM;
- Total RCRA 8 Metals using the appropriate SW-846 Method;
- Dissolved RCRA 8 Metals using the appropriate SW-846 Method;
- Cr VI using SW-846 Method 218.6; and,
- PCBs using SW-846 Method 8082.

3.5 Soil Disposal Considerations

Total RCRA metals concentrations for arsenic, cadmium, lead, and/or mercury were detected in some Site soils in excess of their respective RCG RDCSLs and/or IDCSLs. In order to dispose of the Site soils at a local soil disposal facility as a non-hazardous solid waste, the Republic Services National Serv-All Disposal Facility has confirmed that additional testing will be required to determine if the potentially leachable arsenic, cadmium, lead, and/or mercury renders the soils hazardous. Consequently, TCLP analysis is required to determine the leachability of those specific metals in soils where concentrations of metals exceed their respective toxicity TCLP values. The toxicity limits for arsenic (5.0 mg/L), cadmium (1.0 mg/L), lead (5.0 mg/L), and mercury (0.2 mg/L) determine whether or not the soil is classified as a non-hazardous solid waste or a hazardous waste. Hazardous waste codes for arsenic, cadmium, lead, and mercury are D004, D006, D008, and D009, respectively.

Some of the soils have previously been analyzed using TCLP analysis for arsenic, lead, and/or silver. No arsenic or silver was detected, however; numerous soil samples did have TCLP lead values in excess of 5.0 mg/L. Soils with TCLP lead values in excess of 5.0 mg/L were identified from sample locations B-13, TP-15, TP-16, and SB-4 as shown on Figures 7 and 7a of the 2018 *Further Site Investigation.*

Soils determined to be hazardous based on TCLP analyses will be conditioned in order to try and change the leachability of the metals in the soil. The pH of the soil will be altered by mixing a calcium silicate-based powder (Blastox® 215) with a pH of between 11 and 12 in the soil at a ratio of approximately 3 to 5%, depending on the TCLP results. Soil samples from the mixed materials will be re-analyzed for TCLP metals and those results will then be used to determine if

the soils are still considered hazardous. If the soil stabilization is successful, the soils will be disposed as a non-hazardous solid waste instead of a hazardous waste.

The soil sample analyzed from TP-32 had a TCLP lead value of 3.31 mg/L and a total lead value of 33,622. Soil from the TP-32 area will be also be conditioned due to the elevated total lead concentration.

Some soil samples with total lead values in excess of 800 mg/kg were previously analyzed for TCLP lead and had detections of TCLP lead <5.0 mg/L. These soils will be disposed without any conditioning and are located at sampling locations B-12, TP-6, TP-9, TPL-7, TPL-12, and TPL-13. Additional soil sampling locations may be analyzed for TCLP lead and/or mercury based on their total metal detections. These locations include B-11, TP-4, TP-8, TP-12, TP-13, TP-16, TP-20, TP-24, TP-25, TPL-3, TPL-8, TPL-10, TPL-14, and TPL-15. The locations are depicted on **Figure 2.**

The soil disposal facility confirmed that soils containing <50 mg/kg of total PCBs can be disposed as a special waste. The soils from B-11 and B-12 have PCBs <50 mg/kg. Soils with PCBs >50 mg/kg will require special handling, transportation, and disposal. Soils from TPL-3 have a total PCB concentration >50 mg/kg (**Figure 2**).

3.6 Site Remediation Activities

Based on current Site conditions, the layout of the Site, former Site structures, and the analytical results obtained during previous Site investigations completed in 2007 and 2018, the following information summarizes the proposed remediation activities.

- Prior to initiation of the Site activities, on-site and off-site underground utilities will be located and marked as previously discussed.
- Fourteen (14) of the previous soil sampling locations including B-11, TP-4, TP-8, TP-12, TP-13, TP-16, TP-20, TP-24, TP-25, TPL-3, TPL-8, TPL-10, TPL-14, and TPL-15 with elevated concentrations of total lead and/or mercury, which were not previously analyzed for TCLP metals, will be sampled and analyzed using TCLP testing to determine if the metals present in the soils are leachable at concentrations in excess of the allowable TCLP limits, rendering them as hazardous.
- Assuming that the initial TCLP sampling confirms that the soil is characteristically non-hazardous, these soils (except for TPL-3 and TP-16) will be removed and transported to the Republic Services National Serv-All Disposal Facility in Fort Wayne, Indiana for disposal as a non-hazardous solid waste. TPL-3 is already hazardous for PCBs and TP-16 has elevated TCLP lead requiring conditioning.
- If the TCLP sampling results confirm that some or all of the soil is characteristically hazardous due to leachability, then these soils and soils from B-13, TP-15, TP-32, and SB-4 (approximately 800 tons) will be mixed with Blastox® 215, a granular, calcium silicate-based additive for stabilizing heavy

metals in soils. The Blastox® will be mixed at a ratio of between approximately 3% and 5% by weight into the soils, depending on the TCLP concentrations.

- After conditioning the soil in-situ, or within isolated soil piles, up to fourteen (14) TCLP soil sample locations (one (1) per soil excavation area) will be re-sampled using the TCLP test to determine if the soil mixing with Blastox® 215 has altered the metals leachability, making the soils characteristically non-hazardous. If areas still exceed the TCLP limits, additional Blastox® 215 will be thoroughly mixed with soil and that area will be retested.
- Assuming that the subsequent TCLP sampling confirms that the soil is characteristically non-hazardous, up to 800 tons of soil from the up to fourteen (14) excavation areas will be removed and transported to the Republic Services National Serv-All Disposal Facility for disposal as a non-hazardous solid waste.
- If the soil cannot be amended in a manner that allows the soil to be characteristically non-hazardous, the soil will need to be removed and disposed off-site as characteristically hazardous soil. The soil will be transported to (via HAZMAT approved transporters/containers) and disposed at U.S. Ecology in Belleville, Michigan. A large quantity generator hazardous waste identification number will also need to be secured via submittal of a Hazardous Waste Generator ID application.
- Up to 1,200 tons of soil previously identified with total lead in excess of 800 mg/kg, but less than 5 mg/L TCLP lead, will be removed and transported to the Republic Services National Serv-All Disposal Facility in Fort Wayne, Indiana for disposal as a non-hazardous solid waste.
- Up to 280 tons of soil previously identified with PCBs in excess of the current RCG RDCSLs and/or IDCSLs, but less than 50 mg/kg total PCBs, will be removed and transported to the Republic Services National Serv-All Disposal Facility in Fort Wayne, Indiana for disposal as a non-hazardous solid waste.
- Up to 120 tons of soil previously identified with PCBs in excess of 50 mg/kg total PCBs will be removed and transported to the U.S. Ecology disposal facility in Belleville, Michigan as a hazardous solid waste.
- Soil confirmation samples will be collected from each 20 lineal feet of excavation sidewall (up to 100 samples) and each 400 square feet of excavation bottom (up to 25 samples) for analysis of total 8 RCRA metals, PCBs, and percent moisture.
- Soil confirmation samples will be collected directly from the base and sidewalls of the excavations while wearing dedicated, disposable nitrile gloves and using a disposable plastic scoop, or directly from the excavation base/sidewall by hand while wearing disposable nitrile gloves. Only dedicated, disposal sampling supplies (i.e., new gloves and plastic scoops) will be utilized for each sampling location.
- One (1) duplicate and one (1) MS/MSD soil sample will be obtained during the sampling activities at a rate of one (1) sample per every twenty (20) confirmatory soil samples. The duplicate and MS/MSD samples will be analyzed for the same analytical parameters. Since no VOCs are being analyzed, no trip blank samples will be submitted for analysis as part of this investigation.
- Post excavation and sampling activities, the excavations will be backfilled with granular material obtained from an off-site borrow source. The backfill will be

placed into the excavation and compacted using the tracks and/or wheels of the excavation equipment. No engineered backfill is being proposed.

- The top 4-inches of each excavated area will be topped with No. 53 crushed limestone and compacted using the tracks and/or wheels of the excavation equipment.
- In accordance with the anticipated QAPP Requirements, IWM Consulting has also included the cost to conduct a field audit during the sampling activities to document that the sampling activities are being conducted in accordance with the approved QAPP and site-specific SAP. If deficiencies are observed during the audit, the observed deficiencies will immediately be discussed with the field personnel and deficiencies will be rectified prior to concluding the audit. A Field Audit checklist will be utilized during the audit and a copy of the checklist will be provided as an attachment to the site-specific Remediation Implementation/ Completion report.
- The soil sample analytical results will be compared to the most recent version of the IDEM RCG RDCSLs, IDCSLs, and MTGSLs for soil exposure .
- A Remediation Implementation/Completion report will be generated summarizing the soil remediation activities/results and submitted to the IBP. The report will also include a site-specific data evaluation report, which evaluates the usability of the analytical data obtained during the remediation activities.

3.7 Well Installation and Groundwater Monitoring Activities

The IBP has requested the installation and long-term monitoring of up to ten (10) groundwater monitoring wells on the Site. The exiting groundwater wells on the Site are to be included in the quarterly monitoring activities. The new wells are to be installed following the soil remediation activities.

There are currently five (5) permanent groundwater monitoring wells located on the Site. These wells range in depth from 19.55 feet below surface grade (bsg) to 30 feet bsg and were installed in 2007 (MW-2, MW-4, and MW-5) and 2013 (MW-6 and MW-7). The most recent groundwater gauging event (March 2018) identified groundwater beneath the Site ranging in depth from 7.86 feet (MW-4) to 17.45 feet (MW-2). The existing wells are located on the north, central, and southern portions of the Site as shown on **Figure 2**. Monitoring wells MW-1 and MW-3, installed in 2007, were apparently destroyed through Site demolition and/or grading activities. Based on current Site conditions, the layout of the Site, and the analytical results obtained during the *Further Site Investigation* (VFC Document No. 82581631), dated May 11, 2018, IWM Consulting proposes to install permanent wells at the locations shown on **Figure 2**.

IWM Consulting anticipates installing five (5) of the wells adjacent to soil borings/temporary wells (SB-1, SB-2, SB-3, SB-4, and SB-6) sampled during the 2018 *Further Site Investigation* activities. Up to five (5) additional locations have been identified on areas of the Site where groundwater has not previously been sampled for analysis. Per the RFP, it is assumed that the following tasks will be completed as part of the monitoring phase of the project (if necessary):

- Install up to ten (10), 2-inch diameter, pre-packed schedule 40 flush-threaded PVC monitoring wells (MW-8 through MW-17) at the Site in order to monitor the groundwater conditions on a long-term basis (four (4) calendar quarters). The monitoring wells will be installed and developed by an Indiana licensed well driller. The monitoring well borings will be advanced using 3.75-inch outside diameter tooling pushed into the ground using hydraulic-push technology. This method of well installation will almost eliminate the generation of soil cuttings requiring disposal. Development/purge water generated during monitoring well installation and groundwater development/purging activities will be containerized on-site for subsequent disposal at an approved facility within one (1) month of generation.
- Based upon previous Site investigation activities identified in the IDEM VFC and the depth to groundwater as measured in existing on-site wells, IWM Consulting has assumed that the monitoring wells will be installed to depths of between approximately 16 and 24 feet bsg. The screens of the monitoring wells will intersect the first aquifer encountered and the wells will be constructed with ten (10) feet of 2-inch diameter PVC factory slotted screen (0.010 slot) with a pre-pack sand filter and appropriate length of 2-inch diameter PVC casing. Additional silica or washed quartz sand will be manually installed in the annular space to 1.0 foot above the screen interval, bentonite chips will extend from the top of the quartz sand interval approximately 2.0 feet. The remainder of the annular space to the within 0.5 feet of the surface will be filled with bentonite grout. The monitoring wells will be completed with a lockable, stick-up protective cover and associated concrete pad. IWM Consulting will gain approval from the IFA IBP Project Manager prior to finalizing the monitoring well locations.
- The exact locations of the monitoring wells have not been determined at this point. However, it is likely that up to five (5) of the monitoring well(s) may be installed in locations that correspond with recently installed soil borings (SB-1, SB-2, SB-3, SB-4, and SB-6). Consequently, IWM Consulting has assumed that the borings for these well locations will be blank drilled during the installation activities.
- Where applicable, collect soil samples continuously from the surface to the final depth of the boring. Screen soils with a photo-ionization detector (PID) and containerize up to two (2) soil samples from the boring location for analysis of VOCs using SW-846 Method 8260, PAHs using SW-846 Method 8270, total RCRA metals using the appropriate SW-846 Method, low-level Cr VI using SW-846 Method 7196A, PCBs using SW-846 Method 8082, and percent moisture.
- Survey the permanent groundwater monitoring well elevations to the nearest one-hundredth ($1/100^{th}$) of a foot, spatially to within $1/10^{th}$ of a foot, and determine the groundwater flow direction and gradient. The wells, boring locations, and other Site features will be spatially located on a Site plan.
- Gauge the five (5) existing and the ten (10) monitoring wells installed as part of this project located on the Site.
- The initial and final groundwater sampling events will include low-flow purging and sampling of the fifteen (15) wells for chemical analyses consisting of VOCs,

including lead scavengers, using SW-846 Method 8260, PAHs using SW-846 Method 8270 SIM, total and dissolved RCRA metals using the appropriate SW-846 Method, low level Cr VI using SW-846 Method 218.6, and PCBs using SW-846 Method 8082. The initial and final sampling events will also include analysis of 1,2-dibromoethane (EDB) using SW-846 Method 8011. The groundwater samples will be collected using low-flow sampling techniques with natural attenuation parameters recorded for dissolved oxygen, oxygen reduction potential, temperature, specific conductance, and pH.

- If no PAHs, Cr VI, PCBs, and/or EDB/DBCP are detected above their respective laboratory reporting limits during the first sampling event, IWM Consulting will request from the IBP PM that these parameters be omitted during the second, third and fourth quarter sampling events.
- Purge and sample the fifteen (15) monitoring wells existing on the Site and those installed as part of this investigation for the three (3) remaining quarterly sampling events (Events 2 – 4) for analysis of VOCs and total and dissolved RCRA metals. Groundwater samples will be collected using low-flow sampling techniques with natural attenuation parameters recorded for dissolved oxygen, oxygen reduction potential, temperature, specific conductance, and pH.
- Per the QA/QC guidelines outlined in the RCG, one (1) duplicate groundwater sample and one (1) MS/MSD groundwater sample will also be obtained during the first and last quarterly groundwater sampling events and analyzed for the same parameters. One (1) trip blank will also be submitted for VOC analysis from each sampling event.
- Per the QA/QC guidelines outlined in the RCG, one (1) duplicate groundwater sample will also be obtained during the second and third quarterly groundwater sampling events and analyzed for the same parameters. One (1) trip blank will also be submitted for VOC analysis from each sampling event.
- The results of the monitoring well installation activities will be summarized in the first quarterly groundwater monitoring report (QMR).
- Preparation of three (3) additional QMRs summarizing the analytical results and field activities. The last report will request that the IBP PM assign the Site a NFA designation.
- An Indiana licensed well driller will perform well abandonment activities for the wells installed during this investigation once the Site is assigned an NFA designation.

It should be noted that the well installation activities at this Site will be attempted using hydraulic-push technology with the installation of 2-inch, pre-packed well screens. This well installation method will greatly reduce the amount of soil cuttings generated using traditional hollow-stem auger techniques.

4.0 ANTICIPATED TIMELINE AND REPORTING

IWM Consulting anticipates the following timeline in relation to completing this project:

Proposed Project Timeline Former OmniSource Property, 1610 North Calhoun Street Fort Wayne, Allen County, Indiana		
Task	***Estimated Timeline***	***Comments***
Federal Documentation Submittal, including ABCA, CRP, MBE/WBE, and Davis-Bacon	March 19, 2019	
Submittal of RWP, HASP, and QAPP	March 19, 2019	
Collection and analysis of TCLP soil samples to determine metal leachability	April 22, 2019	Following approval of RWP and QAPP. Assumes collection of up to fourteen (14) samples and 5 days for analysis
Installation of ten (10) permanent monitoring wells	June 24, 2019	Assumes up to 3 days for installation and development
Initial groundwater sampling event and site survey by registered land surveyor	June 24, 2019	Low-flow sample fifteen (15) wells, 2 days to complete
Soil mixing with Blastox® 215	Initiated week of April 22, 2019	Two-week delivery time required for Blastox®, soil mixing up to 2.5 days
Re-collection and re-analysis of TCLP soil samples following soil mixing	Initiated week of April 22, 2019	Assumes collection of eighteen (18) samples in one (1) day and expedited turnaround, 2 days for analysis
Removal, transportation, and disposal of up to 2,000 tons of non-hazardous metals soil at National Serv-All	Initiated week of April 22, 2019	Assumes TCLP results are non-hazardous for each sample analyzed, up to 5 days for removal, transportation, disposal
Removal, transportation, and disposal of up to 280 tons of non-hazardous PCB soil at National Serv-All	Initiated week of April 22, 2019	up to 5 days for removal, transportation, disposal included above
Removal, transportation, and disposal of up to 120 tons of hazardous PCB soil at US Ecology	Initiated week of April 22, 2019	Assumes acceptance of analytical results and large quantity generator application with no additional soil treatment

Task	*Estimated Timeline*	*Comments*
Soil Confirmation Sampling	Initiated week of April 22, 2019	Confirmation sampling to begin immediately following removal of soil for transportation and disposal
Transportation and placement of up to 2,260 tons of granular fill and 140 tons of No. 53 crushed limestone	Initiated week of April 22, 2019	Includes placement and equipment compaction of granular fill and crushed limestone
Quarterly Sampling with QMR submittals	June 2019, September 2019, December 2019, March 2020	Four (4) continuous quarterly sampling events
Soil Remediation Implementation/ Completion Report submittal	August 15, 2019	
Final Quarterly Invoice submittal	August 15, 2020	

IWM Consulting understands that two (2) paper copies and two (2) electronic pdf format copies (on compact disc) of each report will be prepared with one (1) copy of each submitted to the IBP PM and one (1) copy of each to the community representative. One (1) electronic copy will also be submitted to the U.S. EPA, if requested. The reports will be printed on recycled paper and double sided. Additionally, all maps (non-aerials) and tables will be printed legibly in black and white.

IWM Consulting will generate reports summarizing the results of the remedial activities. The reports will include soil boring logs and/or monitoring well logs, tabulated analytical data, a scaled diagram displaying the sampling locations, and a copy of the laboratory report(s).

5.0 MISCELLANEOUS INFORMATION/GREEN REMEDIATION STRATEGIES

IWM Consulting contacted the City of Fort Wayne regarding the stockpiled, mounded soil currently located on the central portion of the Site. The City has no plans for this material and indicated that it could be used as backfill material for the resulting excavations on the Site. This material was sampled and analyzed in 2018 (*Soil Fill Pile and Sump Area Sampling and Analysis* – VFC Document No. 82580052 and *Soil Fill Pile Chromium VI Sampling and Analysis* – VFC Document No. 82600374) at the request of the IBP. Analytical results did not identify VOCs, PAHs, total 8 RCRA metals, Cr VI, or PCBs in excess of their respective RCG Res MTGSLs, RDCSLs, or IDCSLs. The use of the on-site backfill material would replace the transportation and purchase of 2,260 tons of granular material from an off-site borrow source.

Given the location of the Site, IWM Consulting anticipates on managing and utilizing staff from the Fort Wayne, Indiana office to implement the proposed work activities. Mark Anderson from the Fort Wayne office will be the primary point of contact for this contract.

IWM Consulting is familiar with the Best Management Practices (BMPs) associated with implementing Green Remediation Strategies and will make every attempt to utilize as many BMPs as possible when completing this scope of work. The objective of the Green Remediation Strategies is to minimize the number of mobilizations required to implement the activities, utilize as many local subcontractors as possible to reduce energy/fuel usage and minimize the associated air emissions/carbon footprint, implement energy conservation measures during the work activities to reduce potential air emissions, and select Site investigation methods that minimize mobilizations, energy/air emissions, and generate the least amount of investigation derived waste (IDW). At a minimum, the following BMPs are anticipated to be implemented for this project:

1) Instructing workers to avoid unnecessary engine idling during implementation of the work activities, thus minimizing air emissions;
2) Transportation and disposal of non-hazardous soils and miscellaneous debris at Republic Services National-Serv All Disposal Facility in Fort Wayne, Indiana;
3) Potentially using an on-site soil source for backfilling of excavations, in lieu of trucking soil from an off-site borrow pit;
4) Installation of permanent wells using techniques and materials reducing soil cuttings generated during soil boring activities:
5) Utilization of IWM Consulting staff located in the closest office to complete the field activities, and;
6) Utilize a laboratory that employs green technologies (**Attachment B**).

IWM Consulting will document the above activities via documentation regarding the steps taken to minimize unnecessary idling of equipment, documentation of the laboratory used for the project, and documentation of the soil disposal documentation generated during the remediation activities.

IWM Consulting appreciates this opportunity to provide the Indiana Brownfields Program with this site-specific RWP. If you have any questions regarding this transmittal, please contact the undersigned at 260-442-3017.

Sincerely,

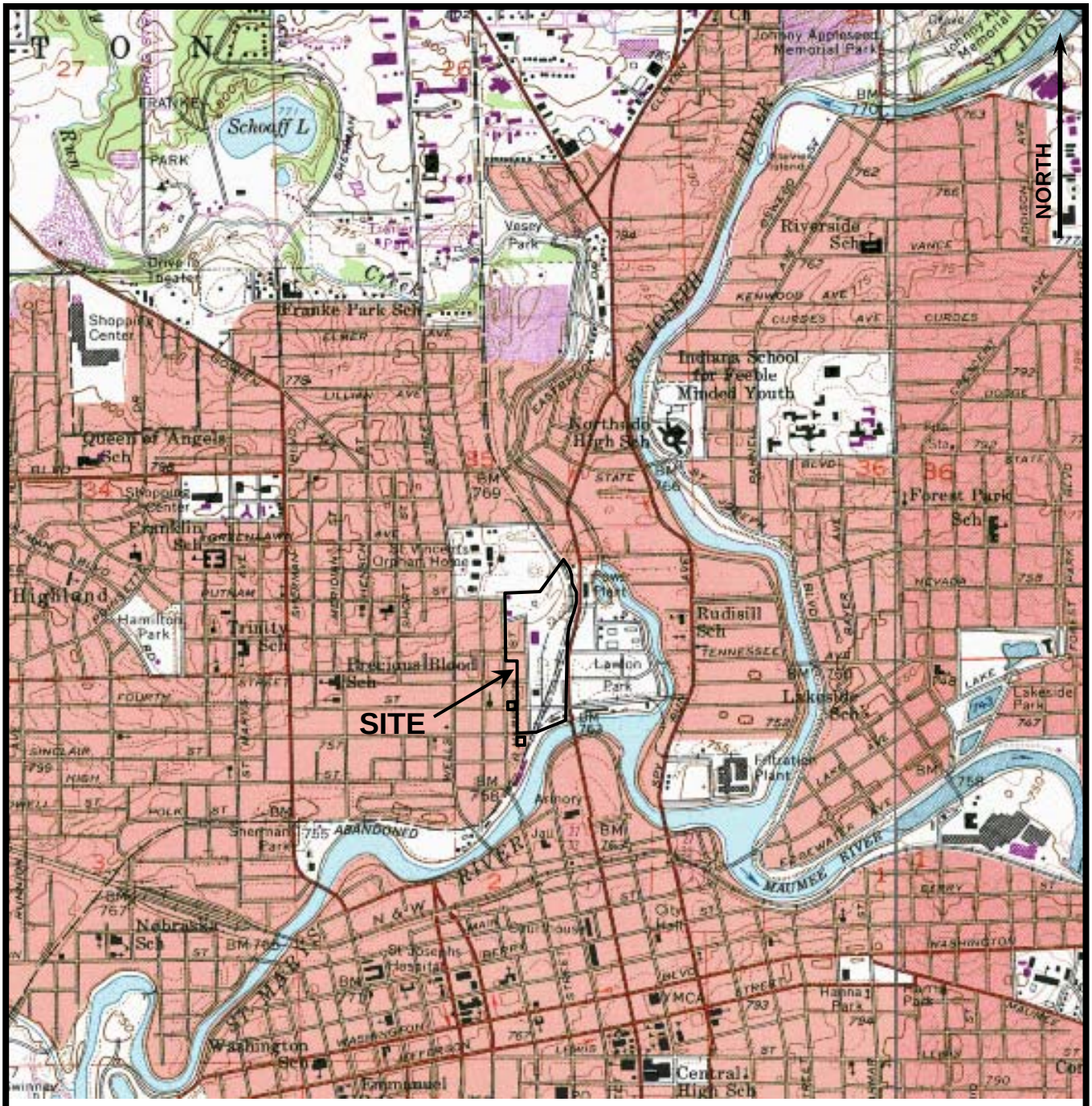
IWM CONSULTING GROUP, LLC

Neal Johnson, LPG No. 1746
Sr. Geologist

Mark Anderson, LPG No. 1403
Sr. Project Manager

cc: U.S. EPA Region 5 Project Manager

FIGURES



SCALE: 1 INCH = 2,000 FT; CONTOUR INTERVAL = 10 FT, DOTTED LINES REPRESENT 5 FT CONTOURS

SOURCE: FORT WAYNE WEST, INDIANA, USGS TOPOGRAPHIC QUADRANGLE MAP, 1963, REVISED 1981

iWM CONSULTING GROUP
1015 Production Road, Fort Wayne, IN 46808
(260) 497-9620 Fax: (260) 470-7071

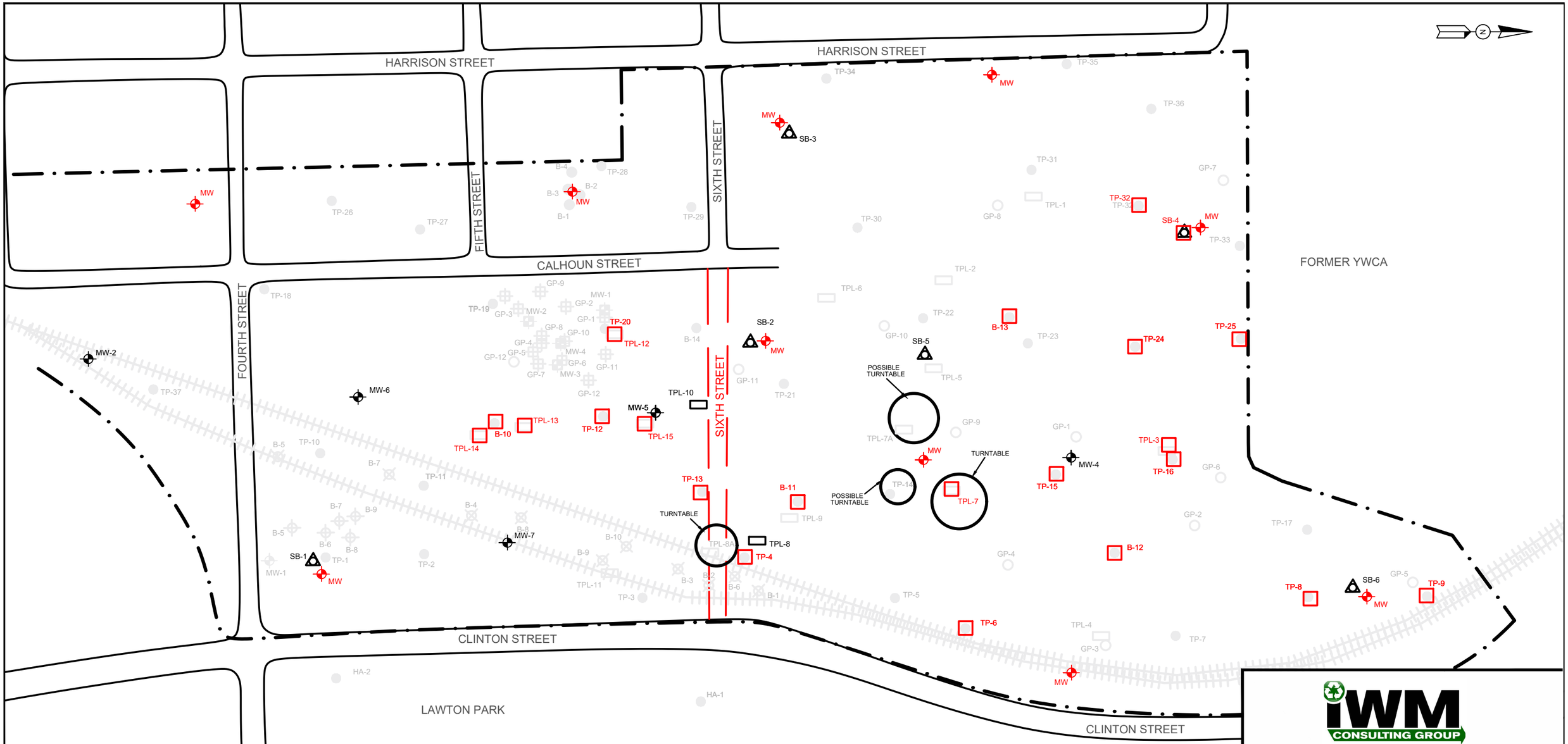
Project	Task	Size	Date
19-709	30	A	3/14/2019

TITLE

Site Location Map
North River Development
1610 North Calhoun Street
Fort Wayne, Indiana

CLIENT

INDIANA BROWNFIELDS PROGRAM
INDIANAPOLIS, INDIANA



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- SB-1 — SOIL BORING/TEMPORARY WELL LOCATION, APRIL 2018, IWM CONSULTING GROUP
- MW-2 — MW-MONITORING WELL LOCATION, OCTOBER 2007, AVANT GROUP
- TPL-11 — TEST PIT LOCATIONS, APRIL 2018, IWM CONSULTING GROUP
- TP-TEST PIT SOIL SAMPLING LOCATION, OCTOBER 2007, AVANT GROUP
- HA-HAND AUGER SOIL SAMPLING LOCATION, OCTOBER 2007, AVANT GROUP
- B-GEOPROBE SOIL SAMPLING LOCATION, OCTOBER 2007, AVANT GROUP
- SOIL SAMPLING LOCATION, AUGUST 2007, AVANT GROUP
- GP-GEOPROBE SOIL SAMPLING LOCATION, FEBRUARY 2000, ATC
- MW-MONITORING WELL LOCATION, JUNE 2000, TRIAD ENGINEERING
- SOIL BORING LOCATION:
  - GP-1 THROUGH GP-7, JUNE 2000, TRIAD ENGINEERING
  - GP-8 THROUGH GP-12, JULY 2002, AVANT GROUP
  - GP-13, OCTOBER 2002, AVANT GROUP
- SOIL SAMPLING LOCATION, AUGUST 1998, TRIAD ENGINEERING
- (5') — SAMPLE LOCATION DEPTH
- ALL ANALYTICAL RESULTS IN ug/L.
- ONLY ANALYTICAL RESULTS THAT EXCEED THE MARCH 2018 IDEM RCG RESIDENTIAL TAP GROUNDWATER SCREENING LEVELS (Res TAP GWSLs) ARE PRESENTED ON THE MAP.
- MW — PROPOSED MONITORING WELL LOCATION
- TP-4 — PROPOSED SOIL EXCAVATION AREA (20' x 20')

0 70' 140' 210'

APPROXIMATE SCALE: 1" = 140'

IWM CONSULTING GROUP

1015 Production Road, Fort Wayne, Indiana 46808
(260)497-9620 fax: (260)471-7071 www.iwmconsult.com

TITLE:
SITE PLAN, PROPOSED WELL LOCATION
AND SOIL EXCAVATION MAP
FORMER OMNISOURCE
1610 NORTH CALHOUN STREET
FORT WAYNE, ALLEN COUNTY, INDIANA

CLIENT:
INDIANA BROWNFIELDS PROGRAM
INDIANAPOLIS, INDIANA

DRAWN BY: CGP	DATE: 3/14/2019	DRAWING NUMBER	
CHECKED BY: MRA	DATE: 3/14/2019		
APPROVED BY: MRA	DATE: 3/14/2019		

PROJECT NUMBER	TASK	SIZE	FIG. NO.
19-709	30	B	2

APPENDIX A

HEALTH AND SAFETY PLAN

SITE HEALTH AND SAFETY PLAN

PREPARED FOR:

Former OmniSource Facility
1610 North Calhoun Street
Fort Wayne, Allen County, Indiana

PREPARED BY:

IWM Consulting Group, LLC
1015 Production Road
Fort Wayne, Indiana

Project No. 19-709-30

March 19, 2019	Ongoing
(Project Start Date)	(Project End Date)

Approved By:

Neal Johnson (Print Name)	Office H&S Coordinator (Title)	(Signature)	03-19-2019 (Date)
Mark Anderson (Print Name)	Project Manager (Title)	(Signature)	3/19/09 (Date)

Purpose: This document defines the Health and Safety considerations for the on-site management activities by IWM personnel and contractors. This document is required by IWM policies and programs and OSHA 29 CFR 1910.120. The basic requirements for the health and safety of the project workers are delineated in the IWM Health and Safety procedures. All personnel on-site will be informed about the pertinent sections of the Health and Safety Plan.

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APPENDICES

I. TYPE OF PROJECT

Check appropriate categories (more than one may apply):

□	Tank Decontamination	■	Geophysical/GPR Survey/Utility Locating
□	Tank Excavation and Removal	□	ORC Application
■	Soil Excavation	■	Drilling/Soil Sampling
□	Filter Press Operation/Dewatering	■	Groundwater Gauging/Sampling
□	Drum Sampling & Management	■	Well Abandonment
■	Other Soil Mixing with Blastox®	□	Other – System Operation and Maintenance

A. Scope of Work

(Detailed description of project, including types of major equipment to be used, quantities of material to be managed, contaminants, number of specific job locations, (i.e., number of tanks, number of wells, sumps, etc.).

1) Conduct a ground-penetrating radar survey of the property for utility locations and possible buried structures.
2) Sample previously sampled locations for TCLP metals. Mix soil with up to 5% Blastox® soil additive to alter soil pH.
3) Excavate soil to a depths ranging from 1-foot to up to 8-feet below grade and transport off-site for disposal. Remove concrete scale structure and transport off-site.
4) Collect soil confirmation samples. Backfill excavated area with granular fill and top with No. 53 crushed stone over a geotextile demarcation barrier and compact.
5) Install ten (10) permanent groundwater monitoring wells and sample using low-flow technology on a quarterly basis for four (4) consecutive quarters.

The work activities will be completed on-site. Off-site work is not applicable for this project.

Appendix A contains a site map(s), which indicates the subject site location, facility layout, work zones, evacuation routes, and other pertinent information for this HASP.

B. Site Location Information

The subject Site is located on the north side of Fourth Street, between Harrison Street (west side) and Clinton Street (east side), and south of property formerly occupied by the YWCA of Fort Wayne, north of downtown Fort Wayne, Indiana. The 29-acre property consists of numerous parcels of land that is vacant with grass surfaces, concrete building pads, and the vacated terminus of N. Calhoun Street. Historically, the Site was utilized as a scrap metal recycling facility, foundry, and railroad repair yard with several turn-table structures and a roundhouse.

Site History

A review of Phase I Environmental Site Assessments (ESAs) completed in 2013 and 2017 identified the Site as a former scrap metal recycling facility, a former railroad service yard, and several other manufacturing facilities since at least 1902. Numerous reports detailing underground storage tank (UST) closures, soil sampling and analysis from test pit excavations and soil borings, and groundwater sampling and analysis from temporary and permanent groundwater monitoring wells was reviewed.

Previous Site investigations have included soil and/or groundwater analyses for volatile organic compounds (VOCs), poly-aromatic hydrocarbons (PAHs), poly-chlorinated biphenyl (PCBs), total 8 RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), chromium VI (Cr VI), and dissolved 8 RCRA metals (groundwater only). There are currently five (5) permanent groundwater monitoring wells located on the Site. A Site Plan prepared by IWM Consulting is included as **Figure 2** and identifies the approximate locations of areas of concern and permanent well locations on the Site.

Based on the results identified in previous Site investigation reports presented in the VFC, primarily the *Test Pit Soil Sampling and Analysis Report* (VFC Document No. 80628084) dated November 15, 2007, the *Further Site Investigation* (VFC Document No. 82581631) dated May 11, 2018, the *Soil Fill Pile and Sump Area Sampling and Analysis* (VFC Document No. 82580052) dated June 25, 2018, and the *Soil Fill Pile Chromium VI Sampling and Analysis* (VFC Document No. 82600374) dated August 10, 2018, IWM Consulting has identified areas of concern which are identified in the following section of this HASP.

Area of Concern

Based on the analytical results presented in several Phase II investigation reports completed for the Site by IWM Consulting, numerous areas on the Site (as identified on **Figure 1**) will be excavated to depths ranging from 1-foot below grade to up to 8-feet below grade. Some of the soils will be mixed with a pH additive (Blastox®) in order to reduce the soil pH, potentially rendering soils as non-hazardous. The soils will be transported off-site for disposal. Groundwater beneath the Site will be monitored for four (4) consecutive quarters using five (5) existing permanent, groundwater monitoring wells and up to ten (10) additional proposed groundwater wells.

Based upon the historical information obtained regarding the subject Site, the following potential contaminants of concern will be sampled and analyzed for confirmation sampling purposes following the soil removal activities and during the groundwater monitoring period:

- Volatile Organic Compounds (VOCs) using SW-846 Method 8260 (soil and water)
- Poly-Aromatic Hydrocarbons (PAHs) using SW-846 Method 8270 SIM (soil and water to meet low-level Remediation Closure Guide (RCG) Residential TAP Groundwater Screening Levels (Res TAP GWSLs))
- Total RCRA 8 Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) using the appropriate SW-846 Method (soil and groundwater)
- Hexavalent Chromium (Cr VI) using SW-846 Method 7199 (soil only)

- Hexavalent Chromium (Cr VI) using SW-846 Method 218.6 (water only to meet low-level RCG Res TAP GWSLs)
- PCBs using SW-846 Method 8082 (soil and groundwater)
- Percent moisture (soil only)

Neighborhood Description

The area surrounding the subject site can be characterized as a mixed residential/commercial setting.

North of site:	Vacant wooded area with former YWCA campus beyond
East of site:	Clinton Street with City Park and Science Central (learning center) beyond
South of site:	Fourth Street and the St. Mary's River
West of site:	N. Calhoun Street, residential, Harrison Street, commercial businesses

Topography and Site Access

The Site and surrounding area have gently sloping topography towards the St. Mary's River to the south of the Site. The primary access points to the Site are from the north side of Fourth Street and the east side of N. Calhoun Street. Site access is also available from the north terminus of N. Calhoun Street.

II. HAZARD EVALUATION

A. Physical Hazards (trenches, utilities, noise, heavy equipment, biological, etc.) Check appropriate categories (more than one may apply):

- ■ Auto and Plant Traffic
- ■ Slip and Fall
- ■ Overhead Utilities
- ■ Underground Utilities
- ■ Heavy Equipment
- □ Other: (Describe below)
- ■ Uneven Terrain
- □ Trenches
- ■ Noise
- ■ Excavation
- ■ Drilling Equipment

Appendix B contains copies a hazard evaluation for each task that summarizes work tasks, associated risks and hazards, and control measures.

B. Chemical Hazards

Based upon the previous Site analytical testing results, the most likely contaminants to be present on-site would be VOCs, PAHs, PCBs, and heavy metals which are listed below along with the primary hazards of each chemical. The primary hazard of each are identified below.

Tasks: Excavation, Soil and Groundwater Sampling, Well Installation, and Similar Tasks					
Potential Chemicals of Concern	**Possible Affected Media**	**Exposure Routes[1]**	**PELs[2] (ppm)**	**IDLHs[3] (ppm)**	**Simple Risk Analysis**
Common PAHs					
Benzo(a)anthracene	Soil, Groundwater	Inh, Ing, Con	0.2[4]	80[4]	Low
Benzo(a)pyrene	Soil, Groundwater	Inh, Ing, Con	0.2[4]	80[4]	Low
1-Methylnaphthalene	Soil, Groundwater	Inh, Ing, Con	NE	NE	Low
Naphthalene	Soil, Groundwater	Inh, Ing, Con	10	NE	Low
Common PCBs					
Aroclor-1242	Soil, Groundwater	Inh, Ing, Con	NE	NE	Low
Aroclor-1248	Soil, Groundwater	Inh, Ing, Con	NE	NE	Low
Aroclor-1254	Soil, Groundwater	Inh, Ing, Con	NE	NE	Low
Aroclor-1260	Soil, Groundwater	Inh, Ing, Con	NE	NE	Low
RCRA 8 Heavy Metals					
Arsenic	Soil, Groundwater	Inh, Ing, Con	5 µg/m^3	5 mg/m^3	Low
Cadmium	Soil, Groundwater	Inh, Ing, Con	0.005[4]	9[4]	Low
Chromium VI	Soil, Groundwater	Inh, Ing, Con	0.001[4]	250[4]	Low
Lead	Soil, Groundwater	Inh, Ing, Con	0.05[4]	100[4]	Low
Mercury	Soil, Groundwater	Inh, Ing, Con	0.1[4]	10[4]	Low
Remediation Chemicals					
Particulate Matter - Blastox	Soil, Air	Inh	15 mg/m^3	NE	Low
Calcium Silicate - Blastox	Soil, Air	Inh	15 mg/m^3	NE	Low
Magnesium Oxide - Blastox	Soil, Air	Inh	15 mg/m^3	NE	Low

NE denotes not established/not available.

1 Inhalation (Inh), ingestion (Ing), and dermal and/or eye contact (Con).
2 OSHA Permissible Exposure Limits (PELs) in ambient air per 8-hour work day per 40-hour week, unless otherwise noted. PELs obtained from MSDS and/or online sources. Recommended Exposure Limits (REL), or Threshold Limit Value (TLV) values used where noted.
3 NIOSH Immediately Dangerous to Life or Health Concentration (IDLH).
4 TWA in mg/m^3.

Common Symptoms of exposure include: Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; and/or liver injury.

First aid step following exposure include: irrigate and/or water flush immediately, soap wash immediately, seek medical attention immediately, move to fresh air and/or artificial respiration (as applicable).

Appendix C contains copies of Material Safety Data Sheets (MSDSs) and/or other public health statements for the expected Contaminants of Concern (COC).

C. Medical Monitoring

Has the entire crew received baseline physicals? □ YES ■ NO

If No, why not? Not required for specific job tasks.

List any special tests required and frequency: None required.

III. MANPOWER

A. IWM Personnel Requirements

Crew Personnel	Crew Size	Names
Project Manager	1	Mark Anderson
H&S Officer	1	Neal Johnson
Geologist/Engineer	1	Carolyn Pendrick, Mark Anderson, Hugh Smith
Field Technicians	1-3	IWM - Various
Other	NA	

B. Subcontractor Requirements

Subcontractor Information:

Name: SCS Environmental Contracting
Address: 7120 Venture Lane, Fort Wayne, Indiana 46818
Contact Info: Corey Fogle/Curt Luebbert (260-497-9006)

Scope of Work: Excavation, Off-Site Trucking, Geoprobe Drilling
Training Required: 40-Hour HAZWOPER; Annual 8-Hour Refreshers

Each subcontractor must provide documentation of training at a minimum.

Has the contractor been pre-qualified? ■ YES □ NO □ N/A

If the subcontractor is not pre-qualified, has a pre-qualification package and contract approval been submitted to the regional manager? □ Yes □ No ■ N/A

If NO, who has authorized the use of the subcontractor? Not Applicable

Has subcontractor received training? ■ Yes □ No □ N/A

Has training been documented? ■ Yes □ No □ N/A

If NO, why? Not Applicable

IV. EQUIPMENT

A. Check Equipment Needed Below. More than one may apply.

- □ Drill Rig
- ■ Excavators
- ■ Skid Loaders
- □ Vacuum Tanker
- □ Torches
- □ Jackhammer
- ■ Pumps
- ■ Other: (Describe below)
  Bulldozer
- ■ Geoprobe Rig
- ■ Dump Trucks
- □ Fork Trucks
- □ Man Lift
- ■ Chop Saws/Chain Saws
- ■ Compressor/Compressed Air

Is any special training required? 40-Hour OSHA

Is any task being performed for which an SOP is in place? ■ Yes □ No □ N/A

If YES, list SOP training below:

Task	Applicable?	Training Required?	Training Completed?
Locating Utilities	Yes	Yes	Yes
Trenching & Excavating	Yes	Yes	Yes
Confined Space Entry	No		
Labelling	No		
Pressure Washer Operation	Yes	Yes	Yes
Container Management	No		
Heavy Equipment Decontamination	No		
Scrap Metal Decontamination	No		
PCB Wipe Sampling	No		
Manifesting Procedures	No		

V. LEVELS OF PERSONAL PROTECTION

A. Special protective equipment for each level of protection is as follows:

Level A

- Fully-encapsulating chemical resistant suit
- Pressure demand atmosphere supplying respirator
- Inner chemical resistant gloves
- Radio communications
- Chemical resistant safety boots/shoes
- Disposable gloves and boot covers
- Cooling Unit[1]
- Coveralls[1]
- Hard hat[1]

Level B

- Chemical resistant, protective clothing
- Pressure demand atmosphere supplying respirator
- Inner and outer chemical resistant gloves
- Radio communications
- Chemical resistant safety boots/shoes
- Disposable and boot covers[1]
- Long cotton underwear[1]
- Coveralls[1]
- Hard hat, face shield[1]

Level C

- Chemical resistant, protective clothing
- Full face piece air purifying respirator
- Inner and outer chemical resistant gloves
- Chemical resistant safety boots/shoes
- Disposable gloves and boot covers[1]
- Escape mask[1]
- Long cotton underwear[1]
- Coveralls[1]
- Hard hat, Face shield[1]

Level D

- Inner and outer chemical resistant gloves
- Chemical resistant safety boots/shoes
- Safety glasses or goggles
- Hard hat
- Ear plugs[1]
- Escape mask[1]
- Coveralls[1]
- Face shield[1]

[1] Optional.

Safety boots are required on all sites, without respect to the work being performed. Hardhats are required during well installation, construction, drilling and when other overhead hazards are present. Earplugs are required during drilling, jackhammering, and during other such loud activities. In addition, safety glasses and safety vests are advised (and may be required) during gauging and/or sampling activities.

B. Check equipment needed below.

Complete the following form for each work task. Note: this page may be duplicated for separate work tasks.

1. Task Description: Excavation, Geoprobe soil and groundwater sampling, soil sampling

2. Level of Protecting Required: □ Level A □ Level B □ Level C ■ Level D

3. Respiratory Protection Required:

Air Purifying		Supplied Air	
□	Full/Half Mask (circle one if applicable)	□	SCBA
	Cartridge Type (e.g., magenta for asbestos)	□	Airline
□	Dust Mask	□	Escape Bottle
■	Respiratory Protection Not Required for This Task		

Breathing air certificate on file? □ Yes □ No ■ N/A
If No, breathing air tested? □ Yes □ No ■ N/A Explain: _____

4. Protective Clothing Required:

□	Tyvek	□	Hooded	□	Sewn Seam
□	Polytyvek	□	Hooded	□	Sealed Seam
□	Saranex/CPF	□	Hooded	□	Strapped Seam
□	Proshield (polypropylene)	□	Rain Gear (PVC)	□	Reflective Safety Vest[1]
□	Chemical Resistant Goggles	□	Face Shield	■	Safety Glasses[1]
□	Tyvek Booties	□	PVC Booties	□	Poly Booties
□	Latex (Nuke) Booties	□	Rubber Slush Booties	□	Leather Boots[1]
■	Steel Toed Footwear[1]	□	Silvershield Gloves	□	Viton Gloves
□	Butyl Rubber Gloves	□	PVC Gloves	□	Neoprene Gloves
■	Nitrile Gloves	□	Latex Gloves	□	Cotton Gloves
■	Leather Gloves (For Manual Handling of Equipment)			■	Ear Plugs/Ear Muffs[1]
■	Other (e.g., Outer Gloves):	Hardhat; however, hardhat is only required if working in the immediate vicinity of a drill rig (i.e. within 5 or 10 feet).			

[1] Item may be required by facility.

VI. CONTAMINATION REDUCTION AND DECONTAMINATION

A. Work Zones

Describe how work zone will be set up and maintained. In high traffic areas traffic cones and/or work vehicle will be used to delineate the work area. The work area for excavation, Geoprobe soil and groundwater sampling will be defined as the immediate area in the vicinity of the excavation/boring location.

B. Decontamination Procedures

Personnel and equipment leaving an identified Exclusion Zone (see section VI. A. above), shall be thoroughly decontaminated.

The standard Level "C" decontamination protocol shall be used with the following decontamination approach:

a. Wash equipment, gloves, and/or boot covers using decon wash and water rinse
b. Remove securing tape from wrists and ankles
c. Remove disposable Tyvek/or coverall (without boots)
d. Remove boot covers and/or outer gloves
e. Remove respirator face mask
f. Remove inner gloves

For Level "D" dress-down, follow steps a, d, and f (as applicable to the equipment used/worn).

Describe personnel/equipment decontamination procedures if the procedures described above are not used or do not apply. Disposable sampling equipment and/or gloves will be removed and disposed of in a plastic trash bag.

Describe equipment decontamination procedure. Non-disposable equipment will be cleaned with an Alconox wash, followed by a water rinse and/or followed by a DI water rinse (if applicable).

Describe how contaminated equipment is disposed. Disposable sampling equipment and/or gloves will be removed and disposed of in a plastic trash bag.

Describe storage of usable protective equipment. Stored in gear bags.

Describe laundering procedure for uniforms. Not Applicable.

Is a locker room facility provided? □ Yes ■ No

Will a decon trailer be on-site? □ Yes ■ No If NO, how will crew change clothing and shower? At home after shift.

Describe provisions for drinking water. Available locally or brought on-site in a cooler.

Describe provisions for restrooms. ____If not available on-site, will use local vendors.__

Note: Respirator cleaning and inspection procedures may be found in the Respiratory Protection Program.

VII. SAFETY EQUIPMENT

Check the safety equipment items that will be available for, or on, the project.

□ Safety Showers	□ Emergency Oxygen Mask	□ Portable Eyewash
■ First Aid Kit	■ Barriers/Cones	□ Fume Hood
□ Warning Signs	□ Air Horns	■ Barrier Tape
□ Lifeline/Harness	□ Decon Trailer	■ Decon Equipment
□ Extraction Devise	□ Portable Lighting	□ Ladders
□ Portable Ventilation Units	□ Air Horns	□ Ground/Bonding Cables

□ Spill Control Supplies (list):

■ Fire Extinguishers (types & sizes): 5 – 10 lb. ABC (In Vehicle)

□ Other (list):

VIII. COMMUNICATION SYSTEMS

Describe on-site communication systems. Telephone and verbal communications and hand signals.

IX. AMBIENT AIR MONITORING

The following equipment will be used on-site for air monitoring.

□ Radiation Meter	□ Combustible Gas	□ Oxygen Meter
□ Colorimetric Tubes	□ Photo-Ionization Detector	□ Flame-Ionization Detector
□ OVA/FID	□ H_2S Monitor	□ CO Monitor

□ Dust Monitor (type):

□ Personal Monitors (describe):

■ Ambient Air Monitoring Not Required for This Task

Frequency of air monitoring. □ Continuously □ Hourly □ Twice daily ■ N/A

Describe methodology and frequency of air monitoring. Not applicable

Calibration. Daily as per manufacturer

List of air permits required. Not applicable

Guidelines for Air Monitoring Hazards			
Monitoring Instrument	**Potential Hazards**	**Measurement Level**	**Action**
GCI[1] - % LEL[2] of Combustible Gases	Explosive atmosphere in immediate work area	< 10% LEL	Investigate with caution
		> 10% LEL	Explosion hazard, leave area immediately
GCI[1] - % Oxygen	Oxygen Concentration	< 19.5% [3]	Monitor while wearing SCBA [3]
		19.5% - 23.0%	Continue investigation with caution
		> 23.0%	Discontinue investigation monitoring, fire hazard potential, consult H&S Coordinator
Photo-ionization (Hnu)/ Flame-ionization (OVA) meter readings of breathing zone	Volatile Contaminants	Background to 100 ppm	Level D protection [4, 5]
		100 to 300 ppm over background	Level C protection [4, 5]
		300 to 500 ppm over background	Level B protection [4, 5]
		> 500 ppm over background	Evaluate exposure source, consult H&S Coordinator [4, 5]

[1] GCI denotes Combustible Gas Indicator.
[2] LEL denotes Lower Explosive Limit.

[3] Note: combustible gas readings are not valid in atmospheres with < 19.5% oxygen.
[4] Meter readings are not the sole criteria for selecting the level of protection. These are only generalized guidelines and are project specific.
[5] Action taken are based upon sustained and/or frequent readings.

Appendix D contains site specific monitoring results (if applicable).

X. HAZARDOUS WASTE OPERATION CONTINGENCY PLAN

Generator's/Site Name: City of Fort Wayne, Indiana/Former OmniSource Corporation

Location, description, and route to the site: Vacant 29-acre property in Fort Wayne, Indiana

Proceed east onto Production Road for 0.3mi. Turn right (south) onto Lima Road for 1.4 miles to merge right onto N. Clinton Street (US 27), continue south on N. Clinton Street for 1.2 miles to Fourth Street, turn right (west) onto Fourth Street to arrive at site on north side of road.

Site Contact/Phone: Lindsey Maksim, City of Fort Wayne (260) 427-2792

Client Project Manager: Ken Coad/IFA/IBP (317) 233-8409

A. Emergency Information

Police:	911	Alternate Number:	Not applicable
Fire:	911	Alternate Number:	Not applicable
Ambulance:	911	Alternate Number:	Not applicable

Hospital Name:	**St. Joseph Hospital**
Hospital Address:	**700 Broadway, Fort Wayne, Indiana 46802**
Hospital Phone:	**(260) 425-3000**

Route to Hospital: From the Former OmniSource site:

Head east on Fourth Street to intersection with N. Clinton Street
Turn right (south) onto N. Clinton Street for 0.6 miles to Main Street
Turn right (west) onto Main Street for 0.6 miles to Broadway Ave.
Turn left (south) onto Broadway, emergency room is at intersection

Appendix G depicts a map to the local hospital and/or local medical providers.

Office Resources: Key Personnel Phone Numbers		
Name	**Position**	**Phone**
IWM Fort Wayne Office		260-497-9620
IWM Indianapolis Office		317-347-1111
Mark Anderson	IWM Project Manager	Ext.: 224 Direct: 260-442-3017 Cell: 260-450-4030

Office Resources: Key Personnel Phone Numbers		
Name	**Position**	**Phone**
Neal Johnson	H&S Coordinator	Ext.: 223 Direct: 260-442-3016 Cell: 260-615-2801
Greg Scarpone	Operations Manager	Ext.: 125 Direct: 317-968-9258 Cell: 317-431-0051
Ken Coad	IFA/IBP Project Manager	317-233-8409
	EPA Project Manager	
IDEM Emergency Response	24 Hour Action Hotline	317-233-7745
Poison Information Center		(800) 962-1253

Has a copy of the contingency plan been received by the hospital? □ Yes ■ No ■ NA

If NO, explain. Not required for the proposed work activities.

Is receipt of the contingency plan by local authorities documented? □ Yes ■ No ■ NA

If NO, explain. Not required for the proposed work activities.

Has the hospital been notified of job site activities and chemical hazards? □ Yes ■ No ■ NA

If NO, explain. Not required for the proposed work activities.

B. Evacuation Route/Emergency Procedures

See attached map in **Appendix A.**

Describe evacuation alarm procedure. Verbal warning to all immediate personnel. Follow with phone call(s) to key personnel.

Evacuation route description. Away from area of danger. Evacuation route map in **Appendix A.**

Assembly Area description. Assemble on Dorais Chevrolet parking lot south of the site.

C. Safety Plan Amendments

Amendments to this HASP and Contingency Plan are maintained in **Appendix E.**

D. HASP and Contingency Plan Sign-Off

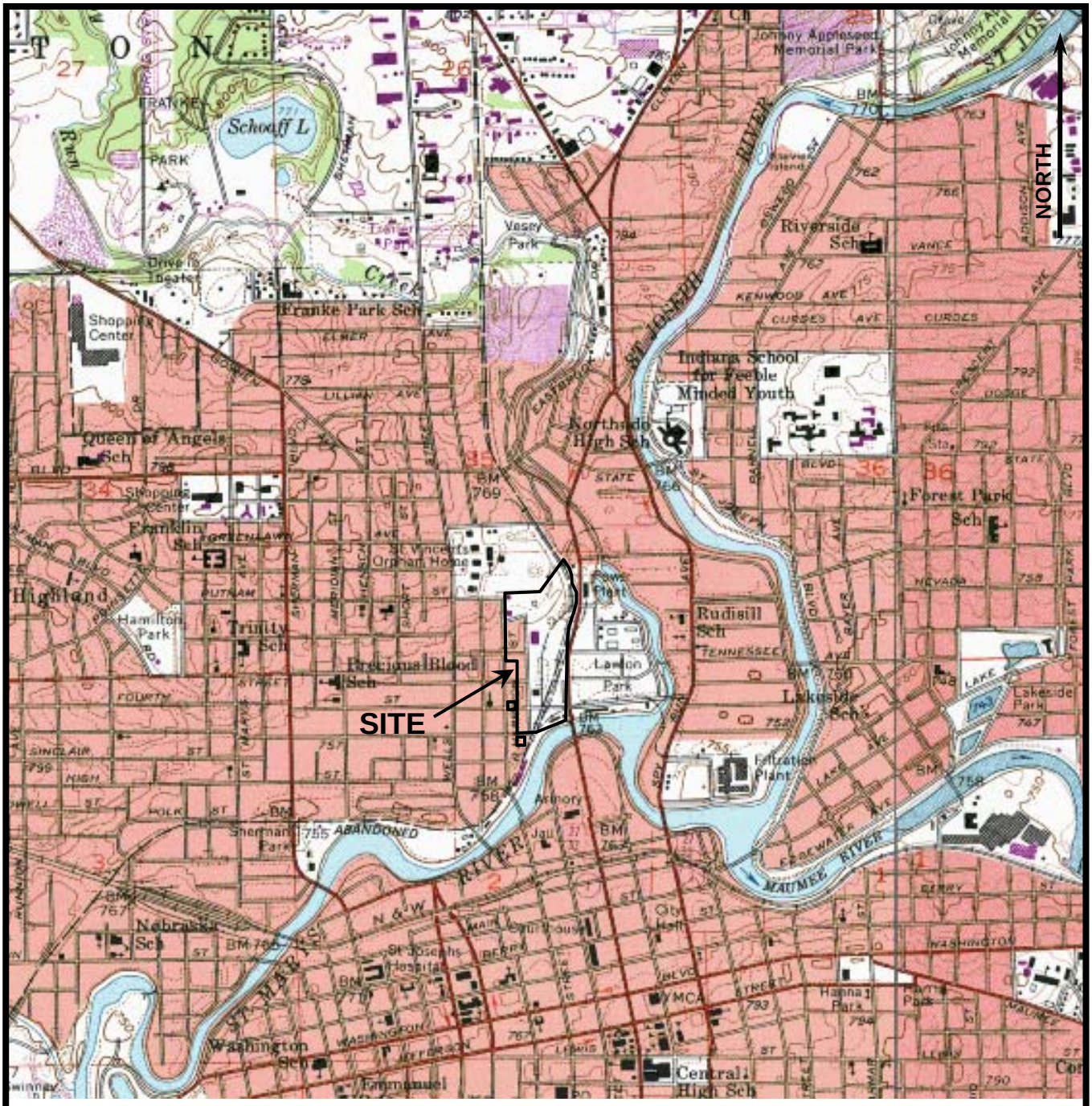
All site personnel (employees and their subcontractors) will review this HASP and Contingency Plan. This plan provides site personnel with an orientation to the job task including:

- Site Overview
- Emergency Response Procedures
- Potential Physical & Health Hazards of on-site hazardous materials
- PPE Requirements
- Site Security
  - Hazards of Confined Spaces
  - Site-specific environmental regulatory requirements

Appendix F contains a plan sign-off sheet.

APPENDIX A

SITE MAP(S)



SCALE: 1 INCH = 2,000 FT; CONTOUR INTERVAL = 10 FT, DOTTED LINES REPRESENT 5 FT CONTOURS

SOURCE: FORT WAYNE WEST, INDIANA, USGS TOPOGRAPHIC QUADRANGLE MAP, 1963, REVISED 1981

iWM CONSULTING GROUP
1015 Production Road, Fort Wayne, IN 46808
(260) 497-9620 Fax: (260) 470-7071

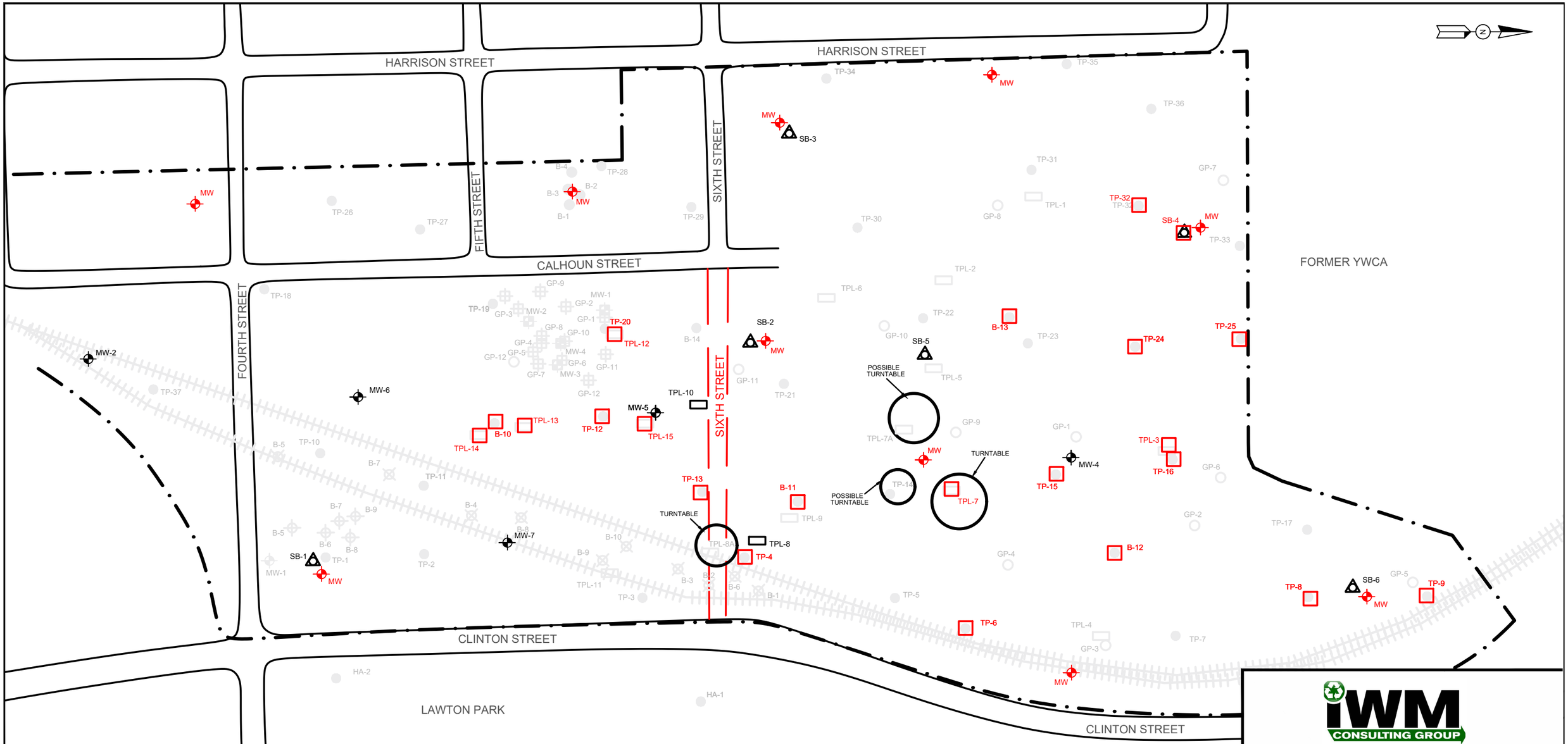
Project	Task	Size	Date
19-709	30	A	3/14/2019

TITLE

Site Location Map
North River Development
1610 North Calhoun Street
Fort Wayne, Indiana

CLIENT

INDIANA BROWNFIELDS PROGRAM
INDIANAPOLIS, INDIANA



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- SB-1 — SOIL BORING/TEMPORARY WELL LOCATION, APRIL 2018, IWM CONSULTING GROUP
- MW-2 — MW-MONITORING WELL LOCATION, OCTOBER 2007, AVANT GROUP
- TPL-11 — TEST PIT LOCATIONS, APRIL 2018, IWM CONSULTING GROUP
- TP-TEST PIT SOIL SAMPLING LOCATION, OCTOBER 2007, AVANT GROUP
- HA-HAND AUGER SOIL SAMPLING LOCATION, OCTOBER 2007, AVANT GROUP
- B-GEOPROBE SOIL SAMPLING LOCATION, OCTOBER 2007, AVANT GROUP
- SOIL SAMPLING LOCATION, AUGUST 2007, AVANT GROUP
- GP-GEOPROBE SOIL SAMPLING LOCATION, FEBRUARY 2000, ATC
- MW-MONITORING WELL LOCATION, JUNE 2000, TRIAD ENGINEERING
- SOIL BORING LOCATION:
  - GP-1 THROUGH GP-7, JUNE 2000, TRIAD ENGINEERING
  - GP-8 THROUGH GP-12, JULY 2002, AVANT GROUP
  - GP-13, OCTOBER 2002, AVANT GROUP
- SOIL SAMPLING LOCATION, AUGUST 1998, TRIAD ENGINEERING
- (5') — SAMPLE LOCATION DEPTH
- ALL ANALYTICAL RESULTS IN ug/L.
- ONLY ANALYTICAL RESULTS THAT EXCEED THE MARCH 2018 IDEM RCG RESIDENTIAL TAP GROUNDWATER SCREENING LEVELS (Res TAP GWSLs) ARE PRESENTED ON THE MAP.
- MW — PROPOSED MONITORING WELL LOCATION
- TP-4 — PROPOSED SOIL EXCAVATION AREA (20' x 20')

0 70' 140' 210'

APPROXIMATE SCALE: 1" = 140'

IWM CONSULTING GROUP

1015 Production Road, Fort Wayne, Indiana 46808
(260)497-9620 fax: (260)471-7071 www.iwmconsult.com

TITLE:
SITE PLAN, PROPOSED WELL LOCATION
AND SOIL EXCAVATION MAP
FORMER OMNISOURCE
1610 NORTH CALHOUN STREET
FORT WAYNE, ALLEN COUNTY, INDIANA

CLIENT:
INDIANA BROWNFIELDS PROGRAM
INDIANAPOLIS, INDIANA

DRAWN BY: CGP	DATE: 3/14/2019	DRAWING NUMBER	
CHECKED BY: MRA	DATE: 3/14/2019		
APPROVED BY: MRA	DATE: 3/14/2019		

PROJECT NUMBER	TASK	SIZE	FIG. NO.
19-709	30	B	2

APPENDIX B

HAZARD ASSESSMENT/ATTACHMENTS

HAZARD ASSESSMENT/ATTACHMENTS

Former OmniSource 1610 North Calhoun Street Fort Wayne, Allen County, Indiana		
Major Tasks/Activities	**Hazards**	**Precautionary Measures/ Controls**
Drilling/ Permanent Well Installation	See Attached JSA	See Attached JSA
Soil Sampling	See Attached JSA	See Attached JSA
Groundwater Gauging and Sampling	See Attached JSA	See Attached JSA
Excavation/Soil Mixing	See Attached JSA	See Attached JSA

Job Safety Analysis
Drilling / Well Installation

Principal Steps	Potential Hazards	Recommended Controls
Review H&S plan and put on PPE	Neighborhood and weather conditions, traffic	Prepare away from traffic. If weather is unsuitable for work then reschedule. Be aware of your surroundings.
Establish traffic controls	Auto traffic	Block Entrances
Make sure that utilities are marked and disconnected	Explosion, electrocution	If utilities are not marked, call in for immediate marking.
Perform Push Probe Soil Sampling	See Soil Sampling/Push Probe Sampling JSA	See Soil Sampling/Push Probe Sampling JSA: Follow Subsurface Disturbance Protocol
Perform Well Installation	Lifting Injuries, Hand Abrasions; Injuries From Equipment – Turning Augers; Loose clothing, lack of gloves, eye protection; equipment position; Falling trees, brush, slip trip fall, poison ivy.	Determine the perimeter with ground crew. Maintain eye protection, hand protection hard hat and steel toe boot requirements. All personnel must maintain proper clearance during drilling activities. Maintain proper clearance from swing radius. Operator and ground crew must be diligent of each other. Work slowly. Operator must face in the direction that the drill rig is moving. Ground personnel must stay out of the forward and reverse paths of the drill rig while moving. No one can approach the drill rig without acknowledgement from the operator. No one is to approach the drill rig while out of view of the operator.
Housekeeping	Auto traffic and drill rig, and pinch hazard for hands, debris, abrasions from debris, slip, trip and fall, back strain	Handle one container at a time. Wear safety glasses, steel toed boots, and gloves. Maintain traffic control and awareness. Work deliberately. Do not overexert yourself when lifting.
Installation of well tops and manholes.	Auto traffic and pinch hazard for hands and feet.	Maintain traffic control and awareness. Methodically seal off and lock well head. Place, lock and bolt down manhole covers.
Prepare field reports	Auto traffic and neighborhood conditions.	Complete paperwork in vehicle and away from traffic area. Maintain neighborhood awareness.
Staging Drums	Equipment injury, Back Injury, Foot injury, Hand Injury	

Equipment to be Used	**Inspection Requirements**	**Training Requirements**
Drill Rig/Push Probe Sampler	Check hydraulics for leaks. Check condition of tracks. Check controls for proper operation. Emergency Shut offs	
Lifting cables or straps	Make sure it has sufficient load rating to carry the object; Inspect for frays prior to use	

Job Safety Analysis
Trenching and Excavating

Principal Steps	Potential Hazards	Recommended Controls
Preparing to Trench and/or Excavate	Underground Utilities	Mark-out must be called for and performed prior to breaking ground
	Overhead Utilities	Work area must be assessed before moving heavy machinery, if overhead utilities present a hazard, operator will plan the work to avoid the lines
	Machine malfunction	Heavy machinery will be inspected before and after each use to prevent malfunction
Excavating and/or Trenching	Personal injury	Employees are to wear proper PPE at all times, including ANSI approved steel toe boots, hard hat, gloves, safety vest, and safety glasses. Operator must wear seat belt when operating heavy equipment. Operator must be trained and certified No employee may enter a trench greater than foot in depth without notifying the HSO, obtaining a confined space permit, and obeying the confined space permit
	Working with and near heavy machinery	Spotter required to stay in the operator's field of vision at all times when digging or moving soil (spotter wearing reflective safety vest) Universal hand signals are to be agreed upon by operator and spotter prior to work commencing Work area needs to be barricaded or employee needs to be stationed to keep all other employees, pedestrians, and vehicles out of the work area

	Trench collapse	Keep all equipment and spoil piles at least 4 feet from the excavation Use planks for walking/working surfaces around the excavation to distribute the weight of equipment and employees No employee may enter a trench greater than foot in depth without notifying the HSO, obtaining a confined space permit, and obeying the confined space permit Before any work is performed in a trench (after proper CSE permit is obtained, see above), the soil must be analyzed by a competent person and the trench must be sloped or shored to OSHA specifications The Competent Person will make the determination if additional protective measures such as shoring or trench box will be required prior to start of work. Employees not working directly next to the trench should keep their work area away from the open hole
Equipment to be Used	**Inspection Requirements**	**Training Requirements**
Excavator	Prior to start of each day	Certification
Shoring/Trench box	Regularly throughout the day and after every change in weather	Engineer approval
Hand tools	Inspect all parts of tool prior to each use	

Job Safety Analysis
Groundwater Gauging & Sampling

Principal Steps	Potential Hazards	Recommended Controls
Groundwater Gauging	Auto Traffic	Follow Traffic Control SOP; wear Hi-Visibility safety vests; utilize buddy system; remain aware of surroundings.
	Dissolved hydrocarbons on the electronic water level indicator	Wear appropriate PPE. Utilize decon solutions to clean water level indicator of all hydrocarbons.
	Pinch (hand); debris (cuts/puncture); Biological	Use tools to open the well vault and clear wellhead area of debris liquids or biological hazards. Wear leather gloves while opening vault and clearing debris.
Groundwater Bailing	Exposure; Back Strain; Hand injury	Use even footing on firm ground. Avoid twisting body. Stand close to and over the well. Handle rope slowly, coil rope away from feet.
	Spill/Splash	Wear nitrile gloves and eye protection.
	Repetitive Stress	Ergonomics - adjust hand position to avoid repetitive motion. Take breaks.
	Bailer Lodged in Well	Do not use excessive force. Free bailer by dropping further into well and then pulling upwards.
	Slip, trip & fall; back strain	When transporting and disposing purge water, use proper lifting techniques and avoid twisting the body.
Groundwater Sampling	Breakage and acid	Work slowly and handle only one container at a time. Wear safety glasses and gloves. Inspect sample containers for cracks prior to handling and removing/installing the lid. Do not over tighten the sample container.
Equipment to be Used	**Inspection Requirements**	**Training Requirements**
Electronic Water Level Indicator	Inspect water level indicator to verify that there are no frayed wires or loose connections.	Not applicable

Job Safety Analysis

Soil Sampling

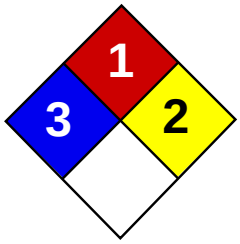
Principal Steps	Potential Hazards	Recommended Controls
Work Zone Set-Up	Traffic	Traffic control (barricades and/ or cones) Face flow of traffic and use appropriate cones, flags, and/or tape per client and/or Handex protocols. Block off designated sampling area.
	Overhead utilities	Look up before setting up equipment, spotter
	Sharp debris in sample	Wear thick gloves
Excavation	Overhead, underground utilities	Look up/hand clear holes
	Noise	Ear plugs or ear muffs
	Debris	Hard hat, safety glasses, steel toes
Sample collection	Chemical contact with skin	Nitrile gloves
Clean Up	Traffic, slip trip fall,	See above. Be aware of surroundings and use good housekeeping methods.
	Weather	Pay attention to predicted and current weather conditions
	Hot weather	Drink plenty of fluids (preferably water and/or sports drinks) wear light colored clothing, take rest breaks when necessary
	Cold weather	Wear plenty of clothing, take breaks when necessary
	Severe weather Thunderstorms	Take shelter, lower any raised equipment,
	Tornado	Move inside building or vehicle, take appropriate shelter in building or ditch
Equipment to be Used	**Inspection Requirements**	**Training Requirements**

APPENDIX C

MATERIAL SAFETY DATA SHEETS/ SAFETY DATA SHEETS

And/or

PUBLIC HEALTH STATEMENTS FOR COMPOUNDS OF INTEREST



Material Safety Data Sheet
Arsenic MSDS

Section 1: Chemical Product and Company Identification

Product Name: Arsenic

Catalog Codes: SLA1006

CAS#: 7440-38-2

RTECS: CG0525000

TSCA: TSCA 8(b) inventory: Arsenic

CI#: Not applicable.

Synonym:

Chemical Name: Arsenic

Chemical Formula: As

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Arsenic	7440-38-2	100

Toxicological Data on Ingredients: Arsenic: ORAL (LD50): Acute: 763 mg/kg [Rat]. 145 mg/kg [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant), of eye contact (irritant).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to kidneys, lungs, the nervous system, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Flammable in presence of open flames and sparks, of heat, of oxidizing materials.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:
Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits highly toxic fumes.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, moisture.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.01 from ACGIH (TLV) [United States] [1995] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Lustrous solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 74.92 g/mole

Color: Silvery.

pH (1% soln/water): Not applicable.

Boiling Point: Not available.

Melting Point: Sublimation temperature: 615°C (1139°F)

Critical Temperature: Not available.

Specific Gravity: 5.72 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Reactive with oxidizing agents, acids, moisture.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 145 mg/kg [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. Causes damage to the following organs: kidneys, lungs, the nervous system, mucous membranes.

Other Toxic Effects on Humans:
Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Arsenic UNNA: UN1558 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Arsenic California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Arsenic Pennsylvania RTK: Arsenic Massachusetts RTK: Arsenic TSCA 8(b) inventory: Arsenic

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R22- Harmful if swallowed. R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 1

Reactivity: 2

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 1

Reactivity: 2

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References:
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Liste des produits purs tératogènes, mutagènes, cancérogènes. Répertoire toxicologique de la Commission de la Santé et de la Sécurité du Travail du Québec. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Indutrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangeureuses au canada. Centre de conformité internatinal Ltée. 1986.

Other Special Considerations: Not available.

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Last Updated: 05/21/2013 12:00 PM

SAFETY DATA SHEET

Revision Date 19-Jan-2018 **Revision Number** 3

1. Identification

Product Name **1,2-Benzanthracene**

Cat No. : **AC105250000; AC105250010; AC105252500**

Synonyms Benzóa!anthracene; Tetraphene

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Carcinogenicity	Category 1B

Label Elements

Signal Word
Danger

Hazard Statements
May cause cancer

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood

Use personal protective equipment as required
Response
IF exposed or concerned: Get medical attention/advice
Storage
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Benz[a]anthracene	56-55-3	99

4. First-aid measures

Eye Contact Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Skin Contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Immediate medical attention is required.

Inhalation Remove from exposure, lie down. Move to fresh air. If not breathing, give artificial respiration. Immediate medical attention is required.

Ingestion Call a physician immediately. Clean mouth with water.

Most important symptoms and effects No information available.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water spray. Carbon dioxide (CO_2). Dry chemical. Chemical foam.

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature Not applicable
Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous Combustion Products
Carbon monoxide (CO) Carbon dioxide (CO_2)
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
0	1	0	N/A

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment.

Environmental Precautions Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

Methods for Containment and Clean Up Sweep up or vacuum up spillage and collect in suitable container for disposal.

7. Handling and storage

Handling Do not breathe dust. Do not get in eyes, on skin, or on clothing. Use only in area provided with appropriate exhaust ventilation.

Storage Keep in a dry, cool and well-ventilated place. Keep container tightly closed.

8. Exposure controls / personal protection

Exposure Guidelines This product does not contain any hazardous materials with occupational exposure limitsestablished by the region specific regulatory bodies.

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Powder Solid
Appearance	Beige
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	158 - 161 °C / 316.4 - 321.8 °F
Boiling Point/Range	437.6 °C / 819.7 °F
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	No information available

Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	Not applicable
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	C18 H12
Molecular Weight	228.29

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products.

Incompatible Materials Strong oxidizing agents

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization No information available.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product

Component Information

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Benz[a]anthracene	56-55-3	Group 2B	Reasonably Anticipated	A2	X	Not listed

Mutagenic Effects Ames test: positive.

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Benz[a]anthracene	Group III Chemical	Not applicable	Not applicable

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Benz[a]anthracene	Not listed	Not listed	EC50 = 0.26 mg/L 15 min	LC50: = 0.01 mg/L, 96h Static (Daphnia magna) EC50: = 0.0042 mg/L, 48h (Daphnia magna)

Persistence and Degradability May persist

Bioaccumulation/ Accumulation No information available.

Mobility . Is not likely mobile in the environment due its low water solubility.

Component	log Pow
Benz[a]anthracene	5.61

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Benz[a]anthracene - 56-55-3	U018	-

14. Transport information

DOT Not regulated

TDG Not regulated

IATA

- **UN-No** 3077
- **Proper Shipping Name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.*
- **Hazard Class** 9
- **Packing Group** III

IMDG/IMO

- **UN-No** 3077
- **Proper Shipping Name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
- **Hazard Class** 9
- **Packing Group** III

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Benz[a]anthracene	X	-	X	200-280-6	-		-	-	-	X	-

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance

R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Benz[a]anthracene	56-55-3	99	0.1

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Benz[a]anthracene	-	-	-	X

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Benz[a]anthracene	10 lb	-

California Proposition 65 This product contains the following proposition 65 chemicals

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Benz[a]anthracene	56-55-3	Carcinogen	0.033 µg/day	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Benz[a]anthracene	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Regulatory Affairs

Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Revision Date	19-Jan-2018
Print Date	19-Jan-2018
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Material Safety Data Sheet
Benzo[a]pyrene, 98%

ACC# 37175

Section 1 - Chemical Product and Company Identification

MSDS Name: Benzo[a]pyrene, 98%
Catalog Numbers: AC105600000, AC105600010, AC105601000, AC377200000, AC377200010, AC377201000 AC377201000
Synonyms: 3,4-Benzopyrene; 3,4-Benzpyrene; Benzo[def]chrysene.
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
50-32-8	Benzo[a]pyrene	>96	200-028-5

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: yellow to brown powder.
Danger! May cause harm to the unborn child. May impair fertility. May cause eye, skin, and respiratory tract irritation. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Cancer hazard. May cause allergic skin reaction. May cause heritable genetic damage.
Target Organs: Reproductive system, skin.

Potential Health Effects
Eye: May cause eye irritation.
Skin: May cause skin irritation. May be harmful if absorbed through the skin. May cause an allergic reaction in certain individuals.
Ingestion: May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated. May be harmful if swallowed.
Inhalation: May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated. May be harmful if inhaled.
Chronic: May cause cancer in humans. May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects.

Section 4 - First Aid Measures

Benzo[a]pyrene	0.2 mg/m3 TWA (as benzene soluble aerosol) (listed under Coal tar pitches).	0.1 mg/m3 TWA (cyclohexane-extractable fraction) (listed under Coal tar pitches).80 mg/m3 IDLH (listed under Coal tar pitches).	0.2 mg/m3 TWA (as benzene soluble fraction) (listed under Coal tar pitches).

OSHA Vacated PELs: Benzo[a]pyrene: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Powder
Appearance: yellow to brown
Odor: faint aromatic odor
pH: Not available.
Vapor Pressure: Not available.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 495 deg C @ 760 mm Hg
Freezing/Melting Point:175 - 179 deg C
Decomposition Temperature: Not available.
Solubility: 1.60x10-3 mg/l @25°C
Specific Gravity/Density: Not available.
Molecular Formula:C20H12
Molecular Weight:252.31

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Dust generation.
Incompatibilities with Other Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 50-32-8: DJ3675000
LD50/LC50:
Not available.

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

CAS# 50-32-8: 1 lb final RQ; 0.454 kg final RQ

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 50-32-8: immediate, delayed.

Section 313

This material contains Benzo[a]pyrene (CAS# 50-32-8, >96%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR

Clean Air Act:

This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.
CAS# 50-32-8 is listed as a Priority Pollutant under the Clean Water Act.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 50-32-8 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:

WARNING: This product contains Benzo[a]pyrene, a chemical known to the state of California to cause cancer.
California No Significant Risk Level: CAS# 50-32-8: 0.06 æg/day NSRL

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

T N

Risk Phrases:

R 43 May cause sensitization by skin contact.
R 45 May cause cancer.
R 46 May cause heritable genetic damage.
R 60 May impair fertility.
R 61 May cause harm to the unborn child.
R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 53 Avoid exposure - obtain special instructions before use.
S 60 This material and its container must be disposed of as hazardou

Blastox® Safety Data Sheet (SDS)

SECTION 1: PRODUCT AND COMPANY INFORMATION

Manufacturer	TDJ Group, Inc., 18-6 E. Dundee Road, Barrington IL 60010
Telephone	847-639-1113 FAX: (847) 639-0499 WEBSITE: www.blastox.com - EMAIL: tdj@blastox.com
Product Name(s)	Blastox®
Recommended Uses / Restrictions	Heavy metal stabilizer / Industrial or commercial use only
Emergency Contact / Number	Chemtrec: 800-424-9300; TDJ Group: 847-639-1113

SECTION 2: HAZARD IDENTIFICATION

Hazards

Eye damage/irritation	Category 2B – Causes eye irritation
Skin corrosion/irritation	Category 2 – Causes skin irritation
Specific Target Organ Toxicity (single occurrence)	Category 3 – May cause respiratory irritation

Signal Word WARNING

Precautionary Statements: Wash hands and exposed areas thoroughly after handling. Wear protective gloves. Wear eye and face protection. Avoid breathing dust. Use only outdoors or in a well-ventilated area. **If in eyes:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. **If eye irritation persists:** Get medical advice or attention. **If on skin:** Wash with plenty of water. **If skin irritation occurs:** Get medical advice or attention. Take off contaminated clothing and wash before reuse. **If inhaled:** Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. Store in a well-ventilated place. Keep container tightly closed. Dispose of contents or container in accordance with applicable regulations.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS#	Component%
Calcium silicates and aluminates	See note	>80
Magnesium oxide	1309-48-4	<5
Non-hazardous ingredients	Proprietary Mixture	Balance to 100%

Note: Contains CAS 12168-85-3, 10034-77-2, 12042-78-3, and 12068-35-8

SECTION 4: FIRST AID MEASURES

Most Important Symptoms / Effects: Eye contact with powder or solution can cause irritation or mechanical abrasion. Skin irritation can occur from contact with the product. Inhalation may cause coughing or mild irritation.

Skin Contact: Wash exposed areas promptly with water and mild soap. Remove contaminated clothing immediately and launder before reuse. Seek medical advice or attention if irritation occurs.

Eye Contact: Immediately flush eyes with water for at least 15 minutes. Remove contact lenses if easy to do. Seek medical attention if any symptoms persist.

Inhalation: Move to fresh air. Keep at rest and in a position comfortable for breathing. If you feel unwell, seek medical advice.

Ingestion: Do not induce vomiting. Wash out mouth with water. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Seek immediate medical advice or attention.

Indication of Immediate Medical Attention and Special Treatment, If Necessary: Persistent eye or skin irritation, difficulty in breathing.

Blastox® Safety Data Sheet (SDS)

SECTION 5: FIREFIGHTING MEASURES

Suitable and Unsuitable Extinguishing Media: Product does not burn. Use fire-fighting techniques appropriate to the surrounding fire.
Specific Hazards Arising from the Chemical: None known.
Special Protective Equipment and Precautions for Fire-Fighters: Use equipment and procedures appropriate to the surrounding fire.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: Isolate release area and keep unnecessary or untrained people away. See Section 8 for personal protection gear.
Environmental Precautions: Contain spill if it can be done with minimal risk. Prevent from entering drains, sewers or waterways. Material is not regulated by DOT or EPA.
Methods for Cleaning Up: Avoid actions such as use of compressed air or vigorous dry sweeping that may cause dusting. Place material into container for later use, recycle or disposal.

SECTION 7: HANDLING AND STORAGE

Handling: Plant processes should be designed to minimize or control airborne dusts. All bags and containers should be properly labeled. Keep bags unopened until use. Keep containers tightly sealed when not in use. Use only with adequate ventilation. Wash hands at end of shift or before eating or using restroom. Wear gloves, goggles and appropriate clothing to avoid repeated or prolonged contact. Use good hygiene practices when handling product, including changing and laundering work clothes after use.
Storage: Keep containers in a dry, cool, well-ventilated area. Keep containers tightly closed.

SECTION 8: EXPOSURE CONTROL AND PERSONAL PROTECTION

Exposure Limits

Component Name	ACGIH TLV-TWA	OSHA PEL-TWA
Particulate material	10 mg/m^3	15 mg/m^3
Calcium silicate	10 mg/m^3	15 mg/m^3 (total) 5 mg/m^3 (respirable)
Magnesium oxide	10 mg/m^3	15 mg/m^3

Engineering Controls: Use appropriate ventilation to maintain airborne concentration limits below exposure limits. Have eye wash stations and safety showers readily available.
Eye and Face Protection: Wear safety glasses or goggles to prevent dust from getting in eyes.
Skin Protection: Wear water-proof gloves to prevent contact. Additional body garments should be used based upon the task being performed.
Respiratory Protection: Use a properly fitted NIOSH respirator in areas where the exposure is unknown or above the OSHA PEL or ACGIH TLV.
General Hygiene: Follow accepted work practices for handling an alkaline material. Do not eat, drink or smoke in areas where this chemical is used or stored. Wash thoroughly with soap and water after task or shift, when using the restroom or before eating.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance/Physical State	Gray solid (powder)	**Flash Point**	Not Applicable
Specific Gravity (Water=1)	3.15	**Upper Flammability Limits**	Not Applicable
Evaporation Point	Not Applicable	**Lower Flammability Limits**	Not Applicable
pH (in water)	~12	**Auto-ignition Temperature**	Not Applicable
Solubility in Water	Slight (0.1 – 1%)	**Decomposition Temperature**	Not Determined
Odor	No distinct odor	**Vapor Pressure**	Not Applicable
Odor Threshold	Not Determined	**Vapor Density (Air-=1)**	Not Applicable
Melting/Freezing Point	>1000 °C	**Partition Coefficient (n-octanol/water)**	Not Applicable
Boiling Range	Not Applicable	**Viscosity** (cSt , 40 °C)	Not Applicable
Initial Boiling Point	Not Applicable	**Critical Temperature**	Not Determined
Note: Physical and chemical properties are provided for safety, health and environmental considerations and do not fully represent product specifications. Those should be requested separately.			

Blastox® Safety Data Sheet (SDS)

SECTION 10: STABILITY AND REACTIVITY

Reactivity: None
Chemical Stability: Stable when properly stored dry. Contact with water can produce calcium hydroxide.
Possibility of Hazardous Reactions: Will not occur under recommended conditions
Conditions to Avoid: Keep dry.
Incompatible Materials: Acids, ammonia salts or aluminum
Hazardous Decomposition Products: None

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Effects: Aqueous solution can cause serious eye damage due to high alkalinity. Aqueous solution can cause severe skin irritation or burns due to high pH in water. Ingestion may cause burns or irritation to the linings of the mouth, throat, and gastrointestinal tract. Inhalation may be irritating or corrosive to the respiratory tract due to product's alkaline nature.
Target Organ Effects: Lungs and respiratory system: short-term or immediate effects of dust inhalation are expected to be coughing and mild respiratory irritation.
Pre-existing Conditions Aggravated by Exposure: Respiratory or skin disorders
Chronic Effects: Acute symptoms may be aggravated
Carcinogenicity: Contains no components known by IARC, NTP or OSHA to be carcinogenic. Blastox has been analyzed and does not contain detectible amounts (<0.2%) of crystalline quartz which is known to be carcinogenic.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not Determined
Mobility: Not Determined
Degradability: Not Determined
Bioaccumulation: Not Determined

SECTION 13: DISPOSAL CONSIDERATION

Product is not regulated by EPA or DOT. Dispose in compliance with all applicable federal, state and local regulations.

SECTION 14: TRANSPORT INFORMATION

Proper Shipping Name: Not Regulated

SECTION 15: REGULATORY INFORMATION

TSCA Status: All components are listed in the TSCA inventory
SARA 311/312 Reporting Categories: Acute hazard
SARA 313 Reportable Ingredients: No ingredients listed

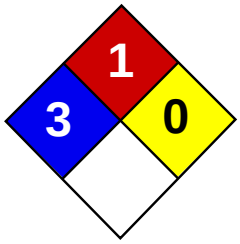
SECTION 16: OTHER INFORMATION

Department Issuing SDS Health and Safety

Disclaimer
While the information provided in this safety data sheet is believed to provide a useful summary of the hazards of Blastox as it is commonly used, the sheet cannot, and does not, anticipate and provide all of the information that might be needed in every situation. In particular, the data furnished in this sheet does not address hazards that may be posed by other materials mixed with Blastox products. Users therefore, should review other applicable safety data sheets before working with Blastox.

The TDJ Group, Inc. makes no warranty, expressed or implied, concerning the product or the merchantability or fitness thereof for any purpose or concerning the accuracy of any information provided by TDJ Group, Inc., except that the product shall conform to contracted specifications. The information provided herein was believed by TDJ Group, Inc. to be accurate at the time of preparation or prepared from sources believed to be reliable. But it is the responsibility of the user to investigate and understand other pertinent sources of information. To comply with all laws and procedures applicable to the safe handling and use for the product, and to determine the suitability of the product for its intended use.

SDS Blastox 10.15



Health	3
Fire	1
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Cadmium MSDS

Section 1: Chemical Product and Company Identification

Product Name: Cadmium

Catalog Codes: SLC3484, SLC5272, SLC2482

CAS#: 7440-43-9

RTECS: EU9800000

TSCA: TSCA 8(b) inventory: Cadmium

CI#: Not applicable.

Synonym:

Chemical Name: Cadmium

Chemical Formula: Cd

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Cadmium	7440-43-9	100

Toxicological Data on Ingredients: Cadmium: ORAL (LD50): Acute: 2330 mg/kg [Rat.]. 890 mg/kg [Mouse]. DUST (LC50): Acute: 50 ppm 4 hour(s) [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant). Severe over-exposure can result in death.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A2 (Suspected for human.) by ACGIH, 2 (Reasonably anticipated.) by NTP. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to kidneys, lungs, liver. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact: No known effect on eye contact, rinse with water for a few minutes.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact: Not available.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: 570°C (1058°F)

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances:
Non-flammable in presence of open flames and sparks, of heat, of oxidizing materials, of reducing materials, of combustible materials, of moisture.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:
Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits toxic fumes.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage:
Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Highly toxic or infectious materials should be stored in a separate locked safety storage cabinet or room.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.01 (ppm) Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Lustrous solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 112.4 g/mole

Color: Silvery.

pH (1% soln/water): Not applicable.

Boiling Point: 765°C (1409°F)

Melting Point: 320.9°C (609.6°F)

Critical Temperature: Not available.

Specific Gravity: 8.64 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water, hot water, methanol, diethyl ether, n-octanol.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Not considered to be corrosive for metals and glass.

Special Remarks on Reactivity: Reacts violently with potassium.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 890 mg/kg [Mouse]. Acute toxicity of the dust (LC50): 229.9 mg/m3 4 hour(s) [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A2 (Suspected for human.) by ACGIH, 2 (Reasonably anticipated.) by NTP. The substance is toxic to kidneys, lungs, liver.

Other Toxic Effects on Humans:
Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, sensitizer).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: An allergen. 0047 Animal: embryotoxic, passes through the placental barrier.

Special Remarks on other Toxic Effects on Humans: May cause allergic reactions, exzema and/or dehydration of the skin.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification:

Identification:

Special Provisions for Transport:

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Cadmium California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Cadmium Pennsylvania RTK: Cadmium Massachusetts RTK: Cadmium TSCA 8(b) inventory: Cadmium SARA 313 toxic chemical notification and release reporting: Cadmium CERCLA: Hazardous substances.: Cadmium

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R26- Very toxic by inhalation. R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References:
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Liste des produits purs tératogènes, mutagènes, cancérogènes. Répertoire toxicologique de la Commission de la Santé et de la Sécurité du Travail du Québec. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Indutrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangeureuses au canada. Centre de conformité internatinal Ltée. 1986.

Other Special Considerations: Not available.

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Last Updated: 05/21/2013 12:00 PM

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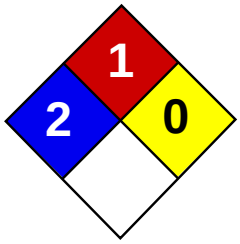

Health	2
Fire	1
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Chromium MSDS

Section 1: Chemical Product and Company Identification

Product Name: Chromium

Catalog Codes: SLC4711, SLC3709

CAS#: 7440-47-3

RTECS: GB4200000

TSCA: TSCA 8(b) inventory: Chromium

CI#: Not applicable.

Synonym: Chromium metal; Chrome; Chromium Metal Chips 2" and finer

Chemical Name: Chromium

Chemical Formula: Cr

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Chromium	7440-47-3	100

Toxicological Data on Ingredients: Chromium LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation. Slightly hazardous in case of ingestion.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, lungs, liver, upper respiratory tract. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: 580°C (1076°F)

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances:
Slightly flammable to flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:
Moderate fire hazard when it is in the form of a dust (powder) and burns rapidly when heated in flame. Chromium is attacked vigorously by fused potassium chlorate producing vivid incandescence. Pyrophoric chromium unites with nitric oxide with incandescence. Incandescent reaction with nitrogen oxide or sulfur dioxide.

Special Remarks on Explosion Hazards:
Powdered Chromium metal +fused ammonium nitrate may react violently or explosively. Powdered Chromium will explode spontaneously in air.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids, alkalis.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.5 (mg/m3) from ACGIH (TLV) [United States] TWA: 1 (mg/m3) from OSHA (PEL) [United States] TWA: 0.5 (mg/m3) from NIOSH [United States] TWA: 0.5 (mg/m3) [United Kingdom (UK)] TWA: 0.5 (mg/m3) [Canada]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Metal solid.)

Odor: Odorless.

Taste: Not available.

Molecular Weight: 52 g/mole

Color: Silver-white to Grey.

pH (1% soln/water): Not applicable.

Boiling Point: 2642°C (4787.6°F)

Melting Point: 1900°C (3452°F) +/- !0 deg. C

Critical Temperature: Not available.

Specific Gravity: 7.14 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility:
Insoluble in cold water, hot water. Soluble in acids (except Nitric), and strong alkalies.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat, incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, acids, alkalis.

Corrosivity: Not available.

Special Remarks on Reactivity:
Incompatible with molten Lithium at 180 deg. C, hydrogen peroxide, hydrochloric acid, sulfuric acid, most caustic alkalies and alkali carbonates, potassium chlorate, sulfur dioxide, nitrogen oxide, bromine pentafluoride. It may react violently or ignite with bromine pentafluoride. Chromium is rapidly attacked by fused sodium hydroxide + potassium nitrate. Potentially hazardous incompatibility with strong oxidizers.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: kidneys, lungs, liver, upper respiratory tract.

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of ingestion.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
May cause cancer based on animal data. There is no evidence that exposure to trivalent chromium causes cancer in man.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: May cause skin irritation. Eyes: May cause mechanical eye irritation. Inhalation: May cause irritation of the respiratory tract and mucous membranes of the respiratory tract. Ingestion: May cause gastrointestinal tract irritation with nausea, vomiting, diarrhea. Chronic Potential Health Effects: Inhalation: The effects of chronic exposure include irritation , sneezing, reddness of the throat, bronchospasm, asthma, cough, polyps, chronic inflammation, emphysema, chronic bronchitis, pharyngitis, bronchopneumonia, pneumoconoisis. Effects on the nose from chronic chromium exposure include irritation, ulceration, and perforation of the nasal septum. Inflammation and ulceration of the larynx may also occur. Ingestion or Inhalation: Chronic exposure may cause liver and kidney damage.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Chromium Illinois toxic substances disclosure to employee act: Chromium Illinois chemical safety act: Chromium New York release reporting list: Chromium Rhode Island RTK hazardous substances: Chromium Pennsylvania RTK: Chromium Minnesota: Chromium Michigan critical material: Chromium Massachusetts RTK: Chromium Massachusetts spill list: Chromium New Jersey: Chromium New Jersey spill list: Chromium Louisiana spill reporting: Chromium California Director's List of Hazardous Substances: Chromium TSCA 8(b) inventory: Chromium SARA 313 toxic chemical notification and release reporting: Chromium CERCLA: Hazardous substances.: Chromium: 5000 lbs. (2268 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC):
R40- Limited evidence of carcinogenic effect S36/37/39- Wear suitable protective clothing, gloves and eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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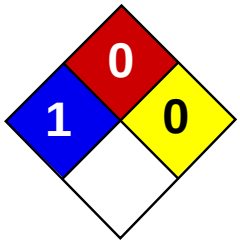

Health	1
Fire	0
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Lead MSDS

Section 1: Chemical Product and Company Identification

Product Name: Lead

Catalog Codes: SLL1291, SLL1669, SLL1081, SLL1459, SLL1834

CAS#: 7439-92-1

RTECS: OF7525000

TSCA: TSCA 8(b) inventory: Lead

CI#: Not available.

Synonym: Lead Metal, granular; Lead Metal, foil; Lead Metal, sheet; Lead Metal, shot

Chemical Name: Lead

Chemical Formula: Pb

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Lead	7439-92-1	100

Toxicological Data on Ingredients: Lead LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects: Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (permeator). CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Non-flammable in presence of open flames and sparks, of shocks, of heat.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: When heated to decomposition it emits highly toxic fumes of lead.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.05 (mg/m3) from ACGIH (TLV) [United States] TWA: 0.05 (mg/m3) from OSHA (PEL) [United States] TWA: 0.03 (mg/m3) from NIOSH [United States] TWA: 0.05 (mg/m3) [Canada]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Metal solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 207.21 g/mole

Color: Bluish-white. Silvery. Gray

pH (1% soln/water): Not applicable.

Boiling Point: 1740°C (3164°F)

Melting Point: 327.43°C (621.4°F)

Critical Temperature: Not available.

Specific Gravity: 11.3 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, excess heat

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Can react vigorously with oxidizing materials. Incompatible with sodium carbide, chlorine trifluoride, trioxane + hydrogen peroxide, ammonium nitrate, sodium azide, disodium acetylide, sodium acetylide, hot concentrated nitric acid, hot concentrated hydrochloric acid, hot concentrated sulfuric acid, zirconium.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. May cause damage to the following organs: blood, kidneys, central nervous system (CNS).

Other Toxic Effects on Humans: Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans:
Acute Potential: Skin: Lead metal granules or dust: May cause skin irritation by mechanical action. Lead metal foil, shot or sheets: Not likely to cause skin irritation Eyes: Lead metal granules or dust: Can irritate eyes by mechanical action. Lead metal foil, shot or sheets: No hazard. Will not cause eye irritation. Inhalation: In an industrial setting, exposure to lead mainly occurs from inhalation of dust or fumes. Lead dust or fumes: Can irritate the upper respiratory tract (nose, throat) as well as the bronchi and lungsby mechanical action. Lead dust can be absorbed through the respiratory system. However, inhaled lead does not accumulate in the lungs. All of an inhaled dose is eventually abssorbed or transferred to the gastrointestinal tract. Inhalation effects of exposure to fumes or dust of inorganic lead may not develop quickly. Symptoms may include metallic taste, chest pain, decreased physical fitness, fatigue, sleep disturbance, headache, irritability, reduces memory, mood and personality changes, aching bones and muscles, constipation, abdominal pains, decreasing appetite. Inhalation of large amounts may lead to ataxia, deliriuim, convulsions/seizures, coma, and death. Lead metal foil, shot, or sheets: Not an inhalation hazard unless metal is heated. If metal is heated, fumes will be released. Inhalation of these fumes may cause "fume metal fever", which is characterized by flu-like symptoms. Symptoms may include metallic taste, fever, nausea, vomiting, chills, cough, weakness, chest pain, generalized muscle pain/aches, and increased white blood cell count. Ingestion: Lead metal granules or dust: The symptoms of lead poisoning include abdominal pain or cramps (lead cholic), spasms, nausea, vomiting, headache, muscle weakness, hallucinations, distorted perceptions, "lead line" on the gums, metallic taste, loss of appetite, insomnia, dizziness and other symptoms similar to that of inhalation. Acute poisoning may result in high lead levels in the blood and urine, shock, coma and death in extreme cases. Lead metal foil, shot or sheets: Not an ingestion hazard for usual industrial handling.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (female) which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Lead California prop. 65 (no significant risk level): Lead: 0.0005 mg/day (value) California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Lead Connecticut hazardous material survey.: Lead Illinois toxic substances disclosure to employee act: Lead Illinois chemical safety act: Lead New York release reporting list: Lead Rhode Island RTK hazardous substances: Lead Pennsylvania RTK: Lead

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R20/22- Harmful by inhalation and if swallowed. R33- Danger of cumulative effects. R61- May cause harm to the unborn child. R62- Possible risk of impaired fertility. S36/37- Wear suitable protective clothing and gloves. S44- If you feel unwell, seek medical advice (show the label when possible). S53- Avoid exposure - obtain special instructions before use.

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 0

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:21 PM

Last Updated: 05/21/2013 12:00 PM

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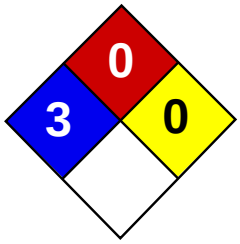

Material Safety Data Sheet
Mercury MSDS

Section 1: Chemical Product and Company Identification

Product Name: Mercury

Catalog Codes: SLM3505, SLM1363

CAS#: 7439-97-6

RTECS: OV4550000

TSCA: TSCA 8(b) inventory: Mercury

CI#: Not applicable.

Synonym: Quick Silver; Colloidal Mercury; Metallic Mercury; Liquid Silver; Hydragyrum

Chemical Name: Mercury

Chemical Formula: Hg

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Mercury	7439-97-6	100

Toxicological Data on Ingredients: Mercury LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (corrosive, permeator). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
Hazardous in case of skin contact (permeator). CARCINOGENIC EFFECTS: Classified A5 (Not suspected for human.) by ACGIH. 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, liver, brain, peripheral nervous system, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation.

Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:
When thrown into mercury vapor, boron phosphodiiodide ignites at once. Flame forms with chlorine jet over mercury surface at 200 deg to 300 deg C. Mercury undergoes hazardous reactions in the presence of heat and sparks or ignition.

Special Remarks on Explosion Hazards:
A violent exothermic reaction or possible explosion occurs when mercury comes in contact with lithium and rubidium. CHLORINE DIOXIDE & LIQUID HG, WHEN MIXED, EXPLODE VIOLENTLY. Mercury and Ammonia can produce an

explosive compound. A mixture of the dry carbonyl and oxygen will explode on vigorous shaking with mercury. Methyl azide in the presence of mercury was shown to be potentially explosive.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, metals.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 25°C (77°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.025 from ACGIH (TLV) [United States] SKIN TWA: 0.05 CEIL: 0.1 (mg/m3) from OSHA (PEL) [United States] Inhalation TWA: 0.025 (mg/m3) [United Kingdom (UK)] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Heavy liquid)

Odor: Odorless.

Taste: Not available.

Molecular Weight: 200.59 g/mole

Color: Silver-white

pH (1% soln/water): Not available.

Boiling Point: 356.73°C (674.1°F)

Melting Point: -38.87°C (-38°F)

Critical Temperature: 1462°C (2663.6°F)

Specific Gravity: 13.55 (Water = 1)

Vapor Pressure: Not available.

Vapor Density: 6.93 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, metals.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Ground mixtures of sodium carbide and mercury, aluminum, lead, or iron can react vigorously. A violent exothermic reaction or possible explosion occurs when mercury comes in contact with lithium and rubidium. Incompatible with boron diiodophosphide; ethylene oxide; metal oxides, metals(aluminum, potassium, lithium, sodium, rubidium); methyl azide; methylsilane, oxygen; oxidants(bromine, peroxyformic acid, chlorine dioxide, nitric acid, tetracarbonynickel, nitromethane, silver perchlorate, chlorates, sulfuric acid, nitrates,); tetracarbonylnickel, oxygen, acetylinic compounds, ammonia, ethylene oxide, methylsiliane, calcium,

Special Remarks on Corrosivity:
The high mobility and tendency to dispersion exhibited by mercury, and the ease with which it forms alloys (amalga) with many laboratory and electrical contact metals, can cause severe corrosion problems in laboratories. Special precautions: Mercury can attack copper and copper alloy materials.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A5 (Not suspected for human.) by ACGIH. 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, liver, brain, peripheral nervous system, central nervous system (CNS).

Other Toxic Effects on Humans:
Very hazardous in case of skin contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (corrosive, permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:

May affect genetic material. May cause cancer based on animal data. Passes through the placental barrier in animal. May cause adverse reproductive effects(paternal effects- spermatogenesis; effects on fertility - fetotoxicity, post-implantation mortality), and birth defects.

Special Remarks on other Toxic Effects on Humans:

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Mercury UNNA: 2809 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Mercury California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Mercury Connecticut hazardous material survey.: Mercury Illinois toxic substances disclosure to employee act: Mercury Illinois chemical safety act: Mercury New York acutely hazardous substances: Mercury Rhode Island RTK hazardous substances: Mercury Pennsylvania RTK: Mercury Minnesota: Mercury Massachusetts RTK: Mercury New Jersey: Mercury New Jersey spill list: Mercury Louisiana spill reporting: Mercury California Director's List of Hazardous Substances.: Mercury TSCA 8(b) inventory: Mercury SARA 313 toxic chemical notification and release reporting: Mercury CERCLA: Hazardous substances.: Mercury: 1 lbs. (0.4536 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):
R23- Toxic by inhalation. R33- Danger of cumulative effects. R38- Irritating to skin. R41- Risk of serious damage to eyes. R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S2- Keep out of the

reach of children. S7- Keep container tightly closed. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S39- Wear eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S46- If swallowed, seek medical advice immediately and show this container or label. S60- This material and its container must be disposed of as hazardous waste. S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 0

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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SAFETY DATA SHEET

Creation Date 24-Nov-2010 **Revision Date** 10-Feb-2015 **Revision Number** 1

1. Identification

Product Name **1-Methylnaphthalene**

Cat No. : **AC127160000; AC127160025; AC127160050; AC127161000; AC127165000**

Synonyms Alpha-methylnaphthalene; 1-Methylnaphthalene

Recommended Use Laboratory chemicals.

Uses advised against No Information available

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Entity / Business Name
Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 4
Acute oral toxicity	Category 4

Label Elements

Signal Word
Warning

Hazard Statements
Combustible liquid
Harmful if swallowed

Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling

Do not eat, drink or smoke when using this product
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Wear protective gloves/protective clothing/eye protection/face protection

Ingestion
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth

Fire
In case of fire: Use CO2, dry chemical, or foam for extinction

Storage
Store in a well-ventilated place. Keep cool

Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Toxic to aquatic life with long lasting effects

3. Composition / information on ingredients

Component	CAS-No	Weight %
1-Methylnaphthalene	90-12-0	97

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.

Skin Contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Obtain medical attention.

Inhalation Remove from exposure, lie down. Move to fresh air. Obtain medical attention.

Ingestion Clean mouth with water. Get medical attention.

Most important symptoms/effects Breathing difficulties. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water spray. Carbon dioxide (CO_2). Dry chemical. alcohol-resistant foam.

Unsuitable Extinguishing Media No information available

Flash Point 82 °C / 179.6 °F
Method - No information available

Autoignition Temperature 525 °C / 977 °F

Explosion Limits
Upper 6.50%
Lower .70%
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Combustible material. Flammable.

Hazardous Combustion Products
Carbon monoxide (CO) Carbon dioxide (CO_2)

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full

protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	1	0	N/A

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment.

Environmental Precautions See Section 12 for additional ecological information. Avoid release to the environment. Collect spillage.

Methods for Containment and Clean Up Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Avoid contact with skin and eyes. Do not breathe dust. Do not breathe vapors or spray mist. Avoid contact with clothing.

Storage Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Keep away from heat and sources of ignition.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
1-Methylnaphthalene	TWA: 0.5 ppm Skin		

Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
1-Methylnaphthalene			TWA: 0.5 ppm Skin

Legend

ACGIH *- American Conference of Governmental Industrial Hygienists*

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Wear a NIOSH/MSHA or European Standard EN 149 approved full-facepiece airline respirator in the positive pressure mode with emergency escape provisions.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Light yellow
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-22 °C / -7.6 °F
Boiling Point/Range	240 - 243 °C / 464 - 469.4 °F

Flash Point	82 °C / 179.6 °F
Evaporation Rate	No information available
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	6.50%
Lower	.70%
Vapor Pressure	No information available
Vapor Density	No information available
Relative Density	1.020
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	525 °C / 977 °F
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	C11 H10
Molecular Weight	142.2

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products.

Incompatible Materials Strong oxidizing agents

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization No information available.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
1-Methylnaphthalene	1840 mg/kg (Rat)	Not listed	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
1-Methylnaphthalene	90-12-0	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.

12. Ecological information

Ecotoxicity

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
1-Methylnaphthalene	Not listed	Pimephales promelas: LC50=9mg/L 48h	Not listed	LC50=1.2-1.4 mg/L 48h

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

Component	log Pow
1-Methylnaphthalene	3.87

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

- **UN-No** UN3082
- **Hazard Class** 9
- **Packing Group** III

TDG

- **UN-No** UN3082
- **Hazard Class** 9
- **Packing Group** III

IATA

- **UN-No** 3082
- **Proper Shipping Name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.*
- **Hazard Class** 9
- **Packing Group** III

IMDG/IMO

- **UN-No** 3082
- **Proper Shipping Name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
- **Hazard Class** 9
- **Packing Group** III

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
1-Methylnaphthalene	X	X	-	201-966-8	-		X	X	X	X	-

Legend:
X - Listed

E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313 Not applicable

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act Not applicable

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA
Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
1-Methylnaphthalene	X	X	X	-	-

U.S. Department of Transportation

Reportable Quantity (RQ):	N
DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class B3 Combustible liquid
D1B Toxic materials

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 24-Nov-2010
Revision Date 10-Feb-2015
Print Date 10-Feb-2015
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Disclaimer

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of SDS

PETROKEM -- NAPHTHALENE (AROMATIC HYDROCARBON) - INSECTICIDE,NAPHTHA
MATERIAL SAFETY DATA SHEET
NSN: 6840005976111
Manufacturer's CAGE: 0ADH1
Part No. Indicator: A
Part Number/Trade Name: NAPHTHALENE (AROMATIC HYDROCARBON)

General Information

Item Name: INSECTICIDE,NAPHTHA
Company's Name: PETROKEM CORP
Company's Street: 101 OLIVER ST
Company's P. O. Box: 2155
Company's City: PATERSON
Company's State: NJ
Company's Country: US
Company's Zip Code: 07509
Company's Emerg Ph #: 201-742-6468
Company's Info Ph #: 201-742-6468/714-864-2310
Distributor/Vendor # 1: CHEMICAL COMMODITIES AGENCY, INC.
Distributor/Vendor # 1 Cage: 60777
Record No. For Safety Entry: 002
Tot Safety Entries This Stk#: 003
Status: SE
Date MSDS Prepared: 15MAR96
Safety Data Review Date: 12DEC96
Supply Item Manager: CX
MSDS Preparer's Name: C. A. EISENHARD
MSDS Serial Number: BKLJW
Spec Type, Grade, Class: CL A
Hazard Characteristic Code: F7
Unit Of Issue: LB
Unit Of Issue Container Qty: 1
Type Of Container: BOX
Net Unit Weight: 1.0 LB

Ingredients/Identity Information

Proprietary: NO
Ingredient: NAPHTHALENE (SARA III)
Ingredient Sequence Number: 01
Percent: UNKNOWN
NIOSH (RTECS) Number: QJ0525000
CAS Number: 91-20-3
OSHA PEL: 10 PPM/15 STEL
ACGIH TLV: 10 PPM/15 STEL; 9192
Other Recommended Limit: NONE SPECIFIED

Physical/Chemical Characteristics

Appearance And Odor: WHITE SOLID, MOTH BALL ODOR
Boiling Point: 424F,218C
Melting Point: 176F,80C
Vapor Pressure (MM Hg/70 F): 0.082
Vapor Density (Air=1): 4.42
Specific Gravity: 1.145
Decomposition Temperature: UNKNOWN
Evaporation Rate And Ref: 1 (ETHER=1)
Solubility In Water: NEGLIGIBLE (0.003%)
Corrosion Rate (IPY): UNKNOWN

Fire and Explosion Hazard Data

==========
Flash Point: 190F,88C
Flash Point Method: CC
Lower Explosive Limit: 0.9
Upper Explosive Limit: 5.9
Extinguishing Media: CARBON DIOXIDE, DRY CHEMICAL, FOAM AND WATER.
Special Fire Fighting Proc: SMOKE AND VAPORS FROM NAPHTHALENE FIRES SHOULD BE AVOIDED. USE SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACE- PIECE.
Unusual Fire And Expl Hazrds: REACTION BETWEEN WATER AND MOLTEN NAPHTHALENE ABOVE 230F (110C) IS VIOLENT; AVOID USE OF WATER ON HOT MOLTEN NAPHTHALENE.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): AVOID CLOSED ROOM.
Materials To Avoid: AVOID CONTACT BETWEEN WATER AND HOT NAPHTHALENE.
Hazardous Decomp Products: NONE SPECIFIED BY MANUFACTURER.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT APPLICABLE

Health Hazard Data

LD50-LC50 Mixture: LD50 (ORAL RAT) IS UNKNOWN
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: CONTACT MAY CAUSE SKIN OR EYE IRRITATION.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT CARCINOGENIC. LOWEST PUBLISHED LETHAL HUMAN ORAL DOSE-50 MG/KG (NIOSH).
Signs/Symptoms Of Overexp: INHALATION MAY CAUSE HEADACHE, NAUSEA AND PERSPIRATION. INGESTION MAY CAUSE CRAMPS, NAUSEA, VOMITING AND DIARRHEA.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: REMOVE CONTAMINATED CLOTHING AT ONCE. FLUSH SKIN & EYES WITH COPIOUS QUANTITIES OF WATER. SEE A PHYSICIAN IMMEDIATELY FOR BURNS, EYES, INHALATION SYSTEMS & INGESTION.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: SOLIDIFIED NAPHTHALENE CAN BE PICKED UP WITH BROOM AND NON-SPARKING SHOVEL. WORKERS SHOULD WEAR DUST RESPIRATOR. MOLTEN NAPHTHALENE MAY BE ALLOWED TO SOLIDIFY BEFORE BEING CLEANED UP.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: WASTE NAPHTHALENE MAY BE INCINERATED OR BURIED AS APPLICABLE CODES AND REGULATIONS PERMIT. WORKERS SHOULD WEAR ORGANIC VAPOR/ DUST RESPIRATOR FOR LIQUID/SOLID HANDLING AND SELF-CONTAINED AIR SUPPLY AROUND BURNING NAPHTHALENE.
Precautions-Handling/Storing: MOLTEN NAPHTHALENE TANKS SHOULD BE ADEQUATELY VENTED; INERT GAS BLANKETING IS RECOMMENDED FOR STORAGE TANKS.
Other Precautions: NONE.

Control Measures

Respiratory Protection: NONE SPECIFIED BY MANUFACTURER.
Ventilation: LOCAL EXHAUST: EXHAUST FANS NEEDED FOR USE IN CLOSED AREAS. MECHANICAL (GENERAL) EXHAUST VENT TANKS OF MOLTEN NAPHTHALEN
Protective Gloves: RUBBER OR OTHER CHEMICAL HAND GLOVES.
Eye Protection: SAFETY GOGGLES.
Other Protective Equipment: FACE SHIELD WHEN HANDLING LIQUID, FRESH AIR MASK FOR FIRES; LOCATE SAFETY SHOWER AND WASH IN AREA.

Work Hygienic Practices: OBSERVE GOOD PERSONAL HYGIENE PRACTICES AND RECOMMENDED PROCEDURES. WASH THOROUGHLY AFTER HANDLING.
Suppl. Safety & Health Data: NONE.

Transportation Data

Trans Data Review Date: 96347
DOT PSN Code: JZV
DOT Proper Shipping Name: NAPHTHALENE, CRUDE OR NAPHTHALENE, REFINED
DOT Class: 4.1
DOT ID Number: UN1334
DOT Pack Group: III
DOT Label: FLAMMABLE SOLID
IMO PSN Code: KIT
IMO Proper Shipping Name: NAPHTHALENE,CRUDE OR REFINED
IMO Regulations Page Number: 4158
IMO UN Number: 1334
IMO UN Class: 4.1
IMO Subsidiary Risk Label: -
IATA PSN Code: ROD
IATA UN ID Number: 1334
IATA Proper Shipping Name: NAPHTHALENE, CRUDE
IATA UN Class: 4.1
IATA Label: FLAMMABLE SOLID
AFI PSN Code: ROD
AFI Prop. Shipping Name: NAPHTHALENE, CRUDE OR REFINED
AFI Class: 4.1
AFI ID Number: UN1334
AFI Pack Group: III
AFI Special Prov: A1
AFI Basic Pac Ref: A8.4

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 12DEC96
Label Status: X *
Common Name: NAPHTHALENE (AROMATIC HYDROCARBON)
Chronic Hazard: YES
Signal Word: WARNING!
Label Name: PETROKEM CORP
Label Street: 101 OLIVER ST
Label P.O. Box: 2155
Label City: PATERSON
Label State: NJ
Label Zip Code: 07509
Label Country: US
Label Emergency Number: 201-742-6468

MATERIAL SAFETY DATA SHEET
ERA A Waters Company

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER: ERA
ADDRESS: 16341 Table Mountain Parkway
Golden, CO, 80403 U.S.A.

BUSINESS PHONE: 303-431-8454
FAX: 303-421-0159 **EMAIL:** info@eraqc.com
CHEMICAL EMERGENCY PHONE: 352-535-5053 (INFOTRAC)

Product Name(s): **PCBs in Soil, PriorityPollutnT™, PCBs in Soil**

Catalog / Part Number(s): **490, 491, 492, 493, 494, 495, 496, 497, 498, 624, 624AL1-4, 726, 186004307, 186004308, 186004309, 186004310, 186004311, 186004312, 186004313, 186004314, 186004321**

MSDS Creation Date: November 22, 2005
Revision Date: July 19, 2012

MSDS Reference Number: 490-498

SECTION 2: HAZARDS IDENTIFICATION

Not hazardous according to Directive 199/45/EC. Use only as directed an in accordance with good laboratory practices.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

				EXPOSURE LIMITS		EU LABEL
CHEMICAL INGREDIENT NAME	CAS NUMBER	EC NUMBER	% BY WT.	OSHA	ACGIH	HAZARD LABEL
No Hazardous Ingredients	NA	NA	NA	NA	NA	NA

Notes: Each product is 20-50 grams of an internal standard containing a mixture of organic chemicals & PCB arochlors with levels <0.05 % dried in inert clean topsoil/sand. The soil may contain silica, crystalline – quartz. The sample is solid, loose dirt and does not contain liquid. Considered Non-Hazardous under OSHA 1910.1200 (HazCom) as product contains no known or potential carcinogens in excess of 0.1% of the composition nor any other hazardous chemical in excess of 1% of the composition.
Material Use: Analytical reagent or certified reference material used in laboratories. Uses also include research and development.

SECTION 4: FIRST-AID MEASURES

Inhalation: Remove to fresh air.
Skin Contact: Flush with water.
Eye Contact: Immediately flush with water for a minimum of 15 minutes.
Ingestion: Get medical attention.
After following first aid measures, seek medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

Flammable Properties: Not flammable.
Extinguishing Media: Dry chemical, carbon dioxide or appropriate foam.
Unique Aspects Contributing To a Fire: None.
Special Fire Fighting Procedures: None.
Note: As in any fire, wear self-contained breathing apparatus, and full protective gear.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Sweep up dirt and avoid creating dust. Place wastes into closed containers for proper disposal.

SECTION 7: HANDLING AND STORAGE

Keep container tightly closed. Store is a cool dry place. Handle in accordance with good laboratory practices. This product is intended for use only by people trained in the safety and handling of chemicals and laboratory preparations.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Handle in accordance with good laboratory practices.
Respiratory Protection: Not normally needed. May use HEPA or nuisance dust mask to reduce inhalation of dust.
Eye Protection: Safety glasses with side shields.
Skin Protection: Neoprene or other chemical resistant gloves. Disposable nitrile gloves are acceptable for light intermittent exposure.
Engineering Controls: Work in a fume hood or use general or other local exhaust ventilation to meet Exposure Limits.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

DATA FOR MIX/MATRIX:

Appearance:	**brown soil or blond sand**	**Specific Gravity:**	**NA**	**Melting Point:**	**NA**
Physical State:	**Solid**	**Flash Point:**	**NA**	**Vapor Pressure:**	**NA**
Odor:	**NA**	**Explosion Limits:**	**NA**	**Vapor Density (air=1):**	**NA**
pH:	**NA**	**Boiling Point:**	**NA**	**Solubility in Water:**	**NA**

SECTION 10: STABILITY AND REACTIVITY

Hazardous Polymerization Will Not Occur __X__ May Occur____ Stability: Stable __X__ Unstable ____
Hazardous Decomposition/Combustion Products: NA
Conditions and Materials to Avoid: NA

SECTION 11: TOXICOLOGICAL INFORMATION

Primary Route(s) of Exposure Under Normal Use: NA

Target Organ(s): NA

Acute Effects: NA

Chronic Effects: NA

Other Information: Chemical Ingredient(s) not classified as carcinogen(s) by OSHA, IARC, NTP, ACGIH, or California.

SECTION 12: ECOLOGICAL INFORMATION

No information available on this preparation or mixture. By complying with sections 6 & 7 there will be no release into the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

To determine proper disposal, consult applicable federal, state and local environmental control regulations.

SECTION 14: TRANSPORT INFORMATION

Shipment Name/Type: Non-hazardous for transport.
UN Number: NA Shipping/Hazardous Class: NA Packing Group: NA
Shipping regulations are based on combinations of criteria such as quantity, class and packaging according to DOT, IATA and (49) CFR.

SECTION 15: REGULATORY INFORMATION

EU Symbol of Danger: NA
EU Risk Phrases: NA

U.S. TSCA: NA
Canada: This product has been classified according to the hazard criteria of the CPR and this MSDS contains all the information required by the CPR.

SECTION 16: OTHER INFORMATION

United States EPA Regulatory Information:		**NFPA Rating:**	**Health: NA**	**Flammability: NA**	**Reactivity: NA**	
SARA 313:	**NA**					
CERCLA RQ:	**NA**	**HMIS Rating:**	**Health: NA**	**Flammability: NA**	**Physical Hazard:**	**NA**

NOTE: NA = Data not available, not established, determined or not pertinent.

APPENDIX D

SITE SPECIFIC MONITORING RESULTS

SITE SPECIFIC MONITORING RESULTS

Former OmniSource 1610 North Calhoun Street Fort Wayne, Allen County, Indiana			
Instruments	**Date/Time**	**Reading**	**Location**
Not required for proposed work Activities			

APPENDIX E

SAFETY PLAN AMENDMENTS

SAFETY PLAN AMENDMENTS

Site Name:	Former OmniSource	**Date of Plan Amendment:**	
Scope of Work Change/Amendment/Update/Modification Made to the Plan:			
Reason for Change:			
Hazard Evaluation:			
Level of Protection:			
Air Monitoring:			
Person Requesting Change:			
Person Approving Change:			
Title:			
Printed Name:			
Signature & Date:			
Date Approved:			

SAFETY PLAN AMENDMENTS

Site Name:	Former OmniSource	**Date of Plan Amendment:**	
Scope of Work Change/Amendment/Update/Modification Made to the Plan:			
Reason for Change:			
Hazard Evaluation:			
Level of Protection:			
Air Monitoring:			
Person Requesting Change:			
Person Approving Change:			
Title:			
Printed Name:			
Signature & Date:			
Date Approved:			

SAFETY PLAN AMENDMENTS

Site Name:	Former OmniSource	**Date of Plan Amendment:**	
Scope of Work Change/Amendment/Update/Modification Made to the Plan:			
Reason for Change:			
Hazard Evaluation:			
Level of Protection:			
Air Monitoring:			
Person Requesting Change:			
Person Approving Change:			
Title:			
Printed Name:			
Signature & Date:			
Date Approved:			

APPENDIX F

HEALTH AND SAFETY PLAN SIGN-OFF LOG

HEALTH AND SAFETY PLAN SIGN-OFF LOG

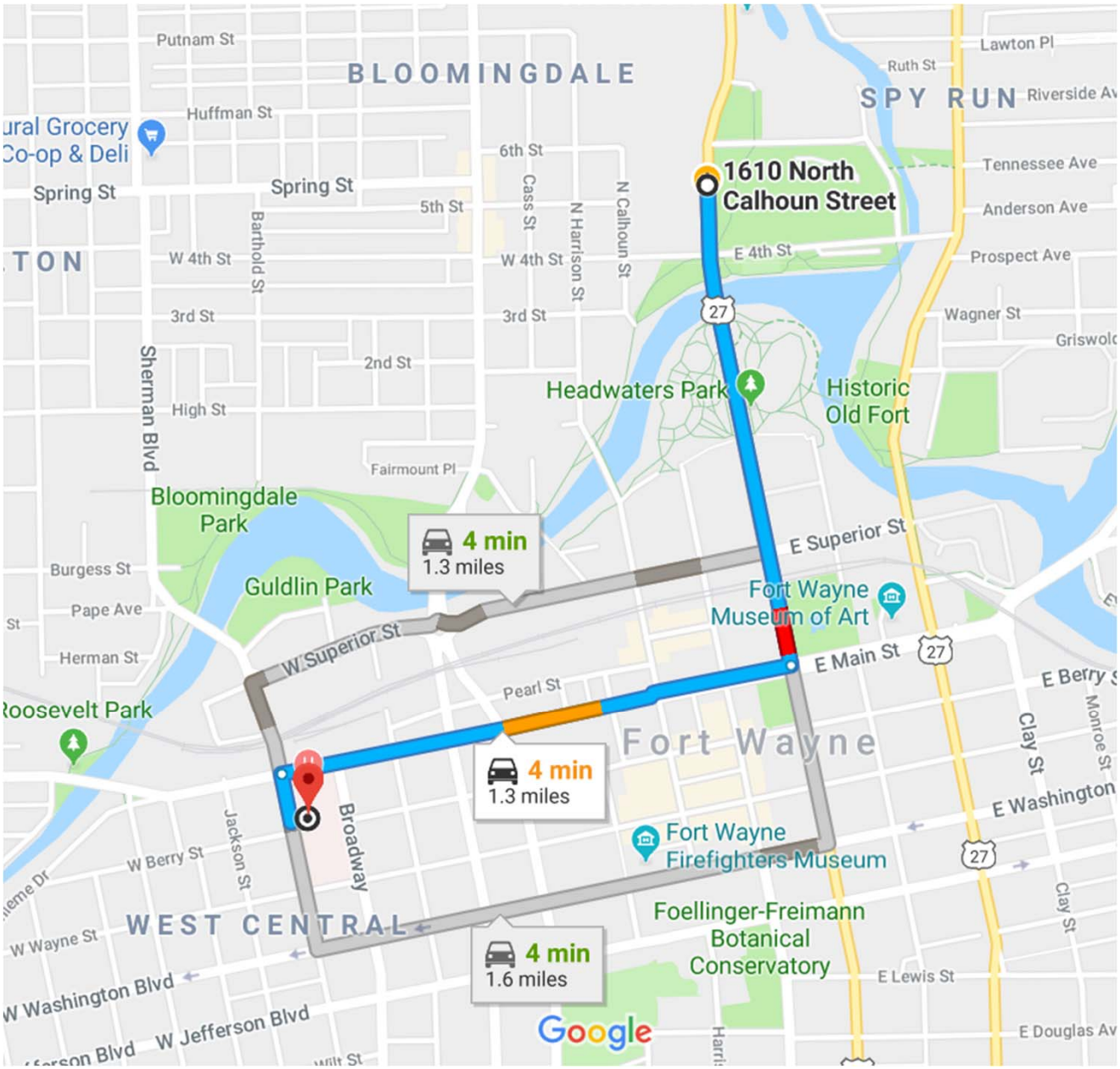
I have read this Site Health and Safety Plan and understand it. I agree, to the best of my ability, to conduct activities as specified, giving health and safety concerns the highest priority.

PRINTED NAME	SIGNATURE	COMPANY NAME	DATE

APPENDIX G

HOSPITAL AND/OR LOCAL MEDICAL PROVIDER MAPS

Hospital Information:
St. Joseph Hospital
700 Broadway Street
Fort Wayne, Indiana 46802
(260) 425-3000



1015 Production Road, Fort Wayne, IN 46808
(260) 497-9620 Fax: (260) 470-7071

Project	Task	Size	Date
19-709	30	A	3/15/2019

Title:
Map to Hospital
Former OmniSource Facility
1610 North Calhoun Street
Fort Wayne, Allen County, Indiana

CLIENT
Indiana Brownfields Program
Indianapolis, Indiana