REMEDIATION WORK PLAN

Former Abe Sposeep & Sons, Inc. I
55 West Water Street
Wabash, Wabash County, Indiana
EPA RLF Cooperative Agreement #BF-00E48101-B
EPA ACRES ID:
Indiana Brownfield Site ID: 4161215

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1.0 INTRODUCTION

Industrial Waste Management Consulting Group, LLC (IWM Consulting), on behalf of the City of Wabash, prepared a Revolving Loan Fund (RLF) Subgrant Application and associated documentation. The RLF Subgrant was accepted by the Indiana Finance Authority (IFA) Indiana Brownfields Program (IBP). Phase II Site Investigations were completed at the Site in 2013 and 2017. The 2013 Site investigation was performed by Soil and Materials Engineers, Inc. (SME) as part of an United States (U.S.) Environmental Protection Agency (EPA) Community Wide Assessment Grant awarded to the Wabash Coalition. The 2017 Site investigation was performed by IWM Consulting as part of an IFA/IBP 128(a) Response Program Assessment Grant. This work is being funded through RLF Cooperative Agreement #BF-00E48101-B for IBP Site No. 4161215.

This site-specific Remediation Work Plan (RWP) will discuss in detail the proposed remediation activities for the Abe Sposeep & Sons, Inc. I Property (Site) located at 55 West Water Street, Wabash, Indiana. A Site Location Map is presented as **Figure 1**.

A Phase II Environmental Site Assessment (ESA), dated July 25, 2013, was prepared by SME. The 2013 field investigation activities included two (2) hand-auger borings from soil piles in the basement of the Site building, eleven (11) soil borings advanced to a depth of 16 feet below surface grade (bsg) using hydraulic-push techniques, and seven (7) temporary groundwater monitoring wells installed in seven (7) of the eleven (11) soil boring locations. Depending on the Recognized Environmental Condition (REC) identified in the Phase I ESA, soil and/or groundwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), poly-aromatic hydrocarbons (PAHs), poly-chlorinated biphenyl (PCBs), and metals (cadmium, chromium, lead, and mercury) as part of the Phase II ESA.

Based on the results of the 2013 Phase II ESA, a Site-specific Phase II ESA scope of work (SOW) was developed and IWM Consulting completed the Site Investigation activities in 2017. A brief summary of the 2017 investigation and subsequent results is provided in the following section of this document.

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

2.0 PROJECT BACKGROUND

2.1 Project Location

The site is located at 55 West Water Street, Wabash, Wabash County, Indiana. Geographically, the Site is located in Section 14, Township 27 North, Range 6 East in Wabash County as shown on the Wabash, Indiana 7.5-minute USGS topographic quadrangle map. More specifically, the center of the Site is located at approximately 40.794755º latitude and -85.821517º longitude. The property parcel number is 85-14-14-102-044.000-009. A Site Location Map is presented as **Figure 1**.

2.2 Physiographic Setting

The Site is rectangular shaped and consists of 0.65 acres and is located in the south-central portion of the Wabash, Indiana, central business district. The Site is located in an urban area of Wabash in a predominantly commercial setting that is serviced by city water and sewer services. Properties in the immediate site vicinity are occupied by automobile dealerships, automobile service facilities, an automobile body shop, an insurance agent, government offices, and retail stores. No surficial waters are present on the Site. The Site vicinity slopes to the south towards the westerly flowing Wabash River, which is located approximately 1,050 feet southeast of the Site. Previous Site investigations indicate that groundwater flow direction is to the south-southeast.

2.3 Site History

The Site is rectangular shaped and consists of 0.65 acres and is improved with a three-story commercial building with a basement on the north-central portion. The remaining areas of the Site consist of a fenced storage yard, with a concrete drive and truck scale located along the east side of the building. Historical review indicates the Site has been occupied since at least 1887. The basement, first floor, and second floor of the existing building were constructed in 1890, and Sanborn fire insurance maps show the third floor of the building was added between 1896 and 1901. The Site is currently unoccupied and has reportedly been unoccupied since 2003. The most recent Site occupant was Abe Sposeep & Sons, a scrap metal processing and recycling facility, which occupied the Site from 1934 to 2003.

IWM Consulting conducted Phase II Site investigation field activities between June 15, 2017 and June 26, 2017. A Site Layout Map depicting the 2017 soil and/or groundwater sampling locations is presented as **Figure 2.** During the course of the Phase II investigation, the following investigative activities were completed and subsequent results were obtained:

- A geophysical survey of the Site was attempted/completed by Ground Penetrating Radar Systems Inc. (GPRS), to try and identify buried underground storage tanks (USTs) and/or other buried objects that may pose an environmental risk to the Site. This was performed due to previous USTs removed from the Site in 1992.

- GPRS utilized an RD 7000/8000 Radio Frequency detector to actively trace metallic pipes identified on the west side of the Site building and on the south side of the Site. GPRS attempted to use a GSSI EMP-400 Electromagnetic Profiler to try and detect large metallic objects, such as buried USTs and product piping. However, due to the former use of the Site as a metal scrap yard, the ground surface was covered with foundry sculls, metal fencing, metallic slag, and a plethora of metallic objects, both partially buried and sitting on the ground surface. GPRS also attempted to use a 400 MHz ground penetrating radar (GPR) antenna to identify buried metallic objects identified using the previous geophysical instruments. However, no buried metallic objects were detected/identified using the RD 7000/8000 Radio Frequency detector or the GSSI EMP-400 Electromagnetic Profiler. The GPR was used on the west side of the Site building in the location of the previous UST basin; however, no buried objects were identified.

- The results of the geophysical survey were inconclusive and buried metallic objects may be unearthed during the Site remediation/excavation activities.

- Installation of sixteen (16) surface soil borings (S1-GP1 through S1-GP16) to a depth of 2.0-feet bsg. The borings were installed for the purpose of soil collection and to assess the current environmental condition related to historical Site operations. A total of sixteen (16) surface soil samples plus the appropriate quality assurance/quality control QA/QC samples, were submitted for laboratory analysis.

    - SVOCs and/or PAHs SIM analyses indicated detectable concentrations of benzo(a)anthracene, 1-methylnaphthalene, and/or 2-methylnaphthalene in excess of their respective RCG Residential Soil Migration to Groundwater Screening Levels (RCG Res MTGSLs). Benzo(a)pyrene was the only SVOC/PAH detected in excess of its RCG Residential Soil Exposure Direct Contact Screening Level (RDCSL) of 1.6 mg/kg in three (3) soil samples.

    - PCB concentrations in excess of their corresponding RCG Res MTGSLs, RCG RDCSLs, and/or Commercial/Industrial Soil Exposure Direct Contact Screening Levels (IDCSLs) were detected in fifteen (15) of the sixteen (16) surface soil samples. Two (2) surface soil samples had PCB Aroclor 1254 detected at concentrations above its RCG IDCSL. The same soil samples also had laboratory reporting limits for Aroclors 1248 and 1260 in excess of their corresponding RCG RDCSLs and IDCSLs.

    - Total RCRA 8 metals analysis consisted of analyzing arsenic, barium, cadmium, total chromium, lead, mercury, selenium, and silver. Hexavalent chromium (Cr (VI)) was also analyzed. None of the surface soil samples had exceedances of the RCG RDCSLs for barium, cadmium, total chromium, selenium, or silver.
    - Arsenic was detected at concentrations in excess of its RCG Res MTGSL of 5.9 mg/kg in each sample analyzed. Fourteen (14) of the sixteen (16) surface samples also exhibited arsenic concentrations exceeding its RCG RDCSL (9.5 mg/kg) with

seven (7) of those samples having concentrations exceeding its RCG IDCSL of 30 mg/kg.

- Lead concentrations exceeded its RCG RDCSL of 400 mg/kg in twelve (12) of the sixteen (16) surface soil samples analyzed, with seven (7) of those samples exceeding the lead RCG IDCSL of 800 mg/kg.

- Mercury was detected in all sixteen (16) surface soil samples, but below its RCG Res MTGSL in eight (8) sample locations. Mercury was detected in the remaining eight (8) samples at, or in excess of, its RCG RDCSL/IDCSL of 3.1 mg/kg.

- Total chromium concentrations were detected above laboratory reporting limits in all sixteen (16) surface soil samples with concentrations ranging between 17 mg/kg and 2,090 mg/kg. Cr (VI) was detected above the RCG Res MTGSL of 0.14 mg/kg in two (2) soil samples with a J flag value of 1.7 mg/kg. Cr (VI) concentrations in each of the remaining fourteen (14) soil samples were below the laboratory reporting limits; however, all of the laboratory reporting limits far exceed the RCG Res MTGSL (0.14 mg/kg) and the majority of the reporting limits also exceed the corresponding RCG RDCSL (4.2 mg/kg). According to representatives from Pace, the following is an explanation as to why the samples had to be diluted, thus increasing the corresponding reporting limits: *Pace's method for hexavalent chromium uses a spectrophotometer, which measures absorbance of light at a specific wavelength when light is passed through the sample. For soil, Pace performs a digestion to bring any hexavalent chromium into solution. Depending on the nature of the soil material, the digestate may vary in background color from pale yellow to dark brown. Filtration will not remove all background color. The darker the color of the digestate, the more Pace has to dilute in order to pass light through to obtain their absorbance measurement. This dilution raises the reporting limit*.

  Due to the elevated laboratory reporting limits, the Cr (VI) results could not be evaluated against the most stringent RCG Screening Levels. However, when comparing the sample specific laboratory method detection limits for Cr (VI), which ranged from 0.73 mg/kg to 7.8 mg/kg, and/or the total reported chromium concentrations (which includes all chromium species, not just Cr (VI)) for the same soil samples, all of the Cr (VI) concentrations should be less than the RCG IDCSL (63 mg/kg). This is further supported by the fact that only two (2) of the sixteen (16) soil samples exhibited J flag values for Cr (VI), confirming that Cr (VI) was not detected at concentrations above the corresponding method detection limits. Additionally, since Cr (VI) is a subset of the total chromium concentration, it would be safe to assume that the Cr (VI) concentrations are at the very least less than the total chromium concentrations reported for each soil sample.

- Installation of fourteen (14) subsurface soil borings (S1-GP17 through S1-GP30) to the bedrock surface at depths ranging from 15 to 18 feet bsg. However, soil samples collected for analysis ranged from the surface (0-2' bsg) to 12-14' bsg. The borings were installed

for the purpose of soil and groundwater collection and to assess the current environmental condition related to historical Site operations. A total of thirty (30) subsurface soil samples, plus the appropriate quality assurance/quality control QA/QC samples, were submitted for laboratory analysis.

- Per the agreed upon scope of work, SVOC, PAH SIM, and VOC analyses were performed on fourteen (14) subsurface soil samples and two (2) duplicate subsurface samples with no detections in excess of their respective RCG RDCSLs or IDCSLs.

- Per the agreed upon scope of work, PCBs were analyzed from seventeen (17) of the twenty-eight (28) subsurface soil samples. No subsurface PCB Aroclors were detected in excess of their respective RCG Res MTGSLs, RDCSLs, or IDCSLs.

- Per the agreed upon scope of work, total 8 RCRA metals and Cr (VI) were analyzed from twenty-eight (28) subsurface soil samples and two (2) duplicate samples. None of the subsurface soil samples had exceedances of the RCG RDCSLs or IDCSLs for barium, cadmium, total chromium, selenium, or silver.

- Arsenic concentrations in excess of its RCG Res MTGSL of 5.9 mg/kg, but below its RCG RDCSL of 9.5 mg/kg, were detected in twenty-seven (27) samples and two (2) of those samples had arsenic concentrations in excess of its RCG IDCSL of 30 mg/kg.

- Lead concentrations exceeded its RCG RDCSL of 400 mg/kg in four (4) of the thirty (30) soil samples analyzed, with three (3) of those samples exceeding the RCG IDCSL of 800 mg/kg. These subsurface soil samples were collected from depths ranging from 0-2’ bsg to 2-4’ bsg.

- Mercury was detected in three (3) subsurface soil samples at concentrations in excess of its RCG RDCSL/IDCSL of 3.1 mg/kg. One (1) soil sample was collected from 0-2’ bsg, one (1) from 2-4’ bsg, and one (1) sample from 6-8’ bsg.

- Total chromium concentrations were detected above laboratory reporting limits in all thirty (30) subsurface soil samples with concentrations ranging between 6.6 mg/kg and 3,620 mg/kg. Cr (VI) was not detected above the RCG Res MTGSL of 0.14 mg/kg or the RCG RDCSL of 4.2 mg/kg. However, all of the laboratory reporting limits are shown in excess of the RCG Res MTGSL with eight (8) of the reporting limits shown in excess of the RCG RDCSL of 4.2 mg/kg.

Due to the elevated laboratory reporting limits, the Cr (VI) results could not be evaluated against the most stringent RCG Screening Levels. However, when comparing the sample specific laboratory method detection limits for Cr (VI), which ranged from 0.72 mg/kg to 2.0 mg/kg, and/or the total reported chromium concentrations (which includes all chromium species, not just Cr (VI)) for the same soil samples, all of the Cr (VI) concentrations should be less than the RCG IDCSL (63 mg/kg). This is further supported by the fact that only two (2) of the soil samples exhibited J flag values for Cr (VI), confirming that Cr (VI) was not detected at concentrations above the corresponding method detection limits. Additionally, since Cr (VI) is a subset of the total chromium concentration, it would be safe to assume that the Cr (VI) concentrations are at the very least less than the total chromium concentrations reported for each soil sample.

- Groundwater encountered during subsurface boring installations was monitored by the installation of ten (10) temporary groundwater monitoring wells. Each well produced groundwater which was subsequently collected and submitted for laboratory analysis.

    - Nine (9) of the ten (10) temporary wells produced enough groundwater to collect samples for analysis of SVOCs, PAHs SIM, and VOCs. Benzo(a)anthracene and benzo(a)pyrene were each detected in groundwater sample S1-GP26-GW1 in excess of their respective RCG Res TAP GWSLs of 0.3 µg/L and 0.2 µg/L. Other than sample S1-GP26-GW1, no SVOCs, PAHs, or VOCs were detected in excess of their respective RCG Res TAP Groundwater Screening Levels (GWSLs).

    - PCB Aroclor 1248 was detected in three (3) groundwater samples in excess of its RCG Res TAP GWSL of 0.078 µg/L, including S1-GP17-GW1 which had a reported J flag value of 0.085 µg/L. PCB Aroclor 1254 was detected in excess of the RCG Res TAP GWSL of 0.078 g/L in S1-GP20-GW1 (0.12 µg/L) and in S1-GP21-GW1 (J flag value of 0.080 µg/L).

    - Each of the ten (10) wells had enough groundwater to collect samples for total RCRA 8 metals and Cr (VI) analyses. Selenium and mercury were each reported with J flag values, less than their respective RCG Res TAP GWSLs. Arsenic, cadmium, total chromium, and lead were each detected in S1-GP21-GW1 in excess of their respective RCG Res TAP GWSLs. Lead was also detected in excess of its RCG Res TAP GWSL of 15 µg/L in S1-GP20-GW1, S1-GP23-GW1, S1-GP26-GW1, and S1-GP28-GW1. Cr (VI) was detected in eight (8) of the ten (10) groundwater samples analyzed. Cr (VI) exceeded the RCG Res TAP GWSL of 0.35 µg/L in S1-GP20-GW1, S1-GP24-GW1, S1-GP26-GW1, S1-GP27-GW1, and S1-GP30-GW1.

    - As previously noted, all of the groundwater samples obtained during the course of this investigation were obtained from temporary monitoring wells and although the temporary sampling points were 2-inches in diameter and sampled using low-flow sampling techniques, it is possible that some of the analytical results obtained from the one-time groundwater samples are biased high due to turbidity.

- Groundwater was identified beneath the Site at a depth of approximately 11 feet bsg and limestone bedrock was encountered at a depth of approximately 16 feet bsg during the 2013 Phase II ESA performed by SME. In July 2013, SME determined the groundwater beneath the Site flows to the southeast.

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):

- 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 and/or residential. 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), which will include 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 QAPP for the Site. The QAPP previously prepared and submitted to the IFA IBP and EPA for the Phase II Site investigation work completed by IWM Consulting in 2017 will be updated to reflect the currently proposed SOW.

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 chemicals of concern (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 may also be required as part of this phase of the project, including attending meetings pertaining to Davis-Bacon Wage reporting requirements, development and implementation of a Community Relations Plan, and other pre-planning activities which may be required by the IBP as part of this remediation project. IWM Consulting will also update the online EPA ACRES system regarding the implemented remediation activities and 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 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 the Phase II ESAs completed in 2013 and 2017, the following analytical methods will be utilized for soil remediation confirmation samples and groundwater monitoring samples collected during the course of this project:

- PAHs using SW-846 Method 8270 SIM (soil and water);
- Total RCRA 8 Metals using the appropriate SW-846 Method (soil and water);
- Dissolved RCRA 8 Metals using the appropriate SW-846 Method (water only);
- Cr VI using SW-846 Method 7199 (soil only);
- Cr VI using SW-846 Method 218.6 (water only);
- PCBs using SW-846 Method 8082 (soil and water); and,
- Percent moisture (soil only).

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 soil investigation.

3.5 Soil Disposal Considerations

Total RCRA metals concentrations for arsenic, lead, and mercury were detected in Site soils in excess of their respective RCG RDCSLs and IDCSLs. In order to dispose of the Site soils at a local soil disposal facility as a non-hazardous solid waste, the landfill has confirmed that additional testing will be required to determine if the leachable arsenic, lead, and/or mercury renders the soils hazardous. Consequently, Toxicity Characteristic Leaching Procedure (TCLP) analyses is required to determine the leachability of those specific metals in soils. The toxicity limits for arsenic (5.0 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, lead, and mercury are D004, D008, and D009, respectively. The landfill did confirm that no additional PCB testing was required since all of the historical PCB sampling results were less than 50 mg/kg.

If the soils are determined to be hazardous based on TCLP analyses, the soils can be conditioned in order to change the leachability of the metals in the soil. The pH of the soil is altered by mixing a calcium silicate-based powder with a pH of between 11 and 12 or a magnesium/calcium, sulfur-based powder with a pH of between 10 and 12 in the soil at a ratio of approximately 3 to 5%, depending on the TCLP results. Soil samples from the mixed materials are re-analyzed for TCLP metals and those results are then used to determine if the soils are still considered hazardous. If the soil stabilization is successful, the soils can be disposed as a non-hazardous solid waste instead of a hazardous waste.

3.6 Site Remediation Activities

Based on current Site conditions, the layout of the Site and structures, and the analytical results obtained during the Phase II Site Investigation completed in 2017, the following information summarizes the proposed remediation activities.

- Prior to initiation of the Site activities, all on-site and off-site underground utilities will be located and marked as previously discussed.
- The vegetation that is overgrown on the Site will be removed and properly disposed.
- The debris (i.e., loose fencing, metal debris, concrete, wood) covering the surface at the Site will be removed and properly disposed/recycled.
- Representatives from R&C Fence will temporarily remove, store, and then reinstall the existing chain link fencing on the east side of the Site. This will facilitate the remediation activities and will enable the Site to be secured in the future when the Site is redeveloped.
- Ten (10) of the previous soil sampling locations (S-1-GP3-SS1 (0.5-1.5’), S-1-GP8-SS1 (1-2’), S-1-GP10-SS1 (1-2’), S-1-GP12-SS1 (0.5-1.5’), S-1-GP13-SS1 (0.5-1.5’), S-1-GP14-SS1 (0.0-2’), S-1-GP15-SS1 (0.5-1.5’), S-1-GP16-SS1 (1-2’), S-1-GP18-SS1 (0.0-2’), and S-1-GP29-SS1 (0.0-2’) with elevated concentrations of total arsenic, lead, and/or mercury 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. The TCLP sampling locations are depicted on **Figure 3**.

- Assuming that the initial TCLP sampling confirms that the soil is characteristically non-hazardous, up to 2,500 tons of soil between the surface and approximately 2-foot depth will be removed and transported to the Wabash Valley Landfill for disposal as a non-hazardous solid waste. Some soils from specific locations on the Site at depths up to 4-foot depth will also be removed for disposal
- If the TCLP sampling results confirm that some or all of the soil is characteristically hazardous due to leachability, then up to 2,500 tons of soil between the surface and approximately 2-foot depth 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, up to twenty-five (25) TCLP soil sample locations (anticipated maximum number assuming the landfill requires only 1 sample per 100 tons) 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 2,500 tons of soil between the surface and approximately 2-foot depth will be removed and transported to the Wabash Valley Landfill 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 offsite 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.
- The concrete footer wall and surface of the scale structure on the east side of the Site building will be removed and properly disposed. A maximum of (4) composite TCLP concrete chip samples will be obtained from the concrete and analyzed for TCLP metals (arsenic, lead, and mercury) using the appropriate SW-846 Method to ensure that the concrete is characteristically non-hazardous prior to removal and offsite disposal.
- Soil confirmation samples will be collected from each 20 lineal feet of excavation sidewall (up to 39 samples) and each 400 square feet of excavation bottom (up to 49 samples) for total RCRA metals, PAHs, PCBs, and percent moisture.
- Soil confirmation samples will be collected directly from the base and sidewall of the excavation 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 volatile organic compounds (VOCs) are being analyzed, no trip blank samples will be submitted for analysis as part of this investigation.
- Post excavation and sampling activities, a geotextile fabric will be installed at the base of the excavation and will serve as a demarcation barrier between the newly imported fill material and the native soil remaining beneath the limits of the excavation.
- The Site will be backfilled with #53 crushed limestone from West Plains Mining in Wabash, Indiana. The crushed stone will be installed in 12-inch lifts and compacted to 95% of a Modified Proctor with a vibratory roller. A nuclear density gauge will be used to check the crushed stone density.
- 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 Screening Levels for soil exposure, residential direct contact and migration to groundwater.
- 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.
- IWM Consulting anticipates on initiating the Site clearing and utility clearance activities as soon as authorization is received from the IBP.

3.7 Groundwater Monitoring Activities

IWM Consulting has evaluated the available analytical data obtained to date from the previous Site investigations, soil excavation confirmation sampling, and the previous subsurface sampling activities and has identified the locations of up to four (4) Site specific groundwater monitoring wells as depicted on **Figure 3**. IWM Consulting will consult with the IBP PM prior to the well installations in order to determine if these are the most appropriate permanent well locations. The wells will likely be installed within 10-feet of previously sampled soil borings/temporary wells and therefore, no soil samples will be collected for analysis as part of the permanent well installations.

There are currently no permanent groundwater monitoring wells located on the Site. IWM Consulting anticipates that the groundwater monitoring well installation activities will be initiated immediately following the excavation backfill activities. Quarterly groundwater monitoring will be initiated following the well installations and be performed for four (4) consecutive quarters:

- Install up to four (4), 2-inch diameter, schedule 40 flush-threaded PVC monitoring wells with up to ten (10) feet of pre-packed 0.01 slot PVC screen (MW-1 through MW-4) at the Site in order to monitor the groundwater conditions for up to four (4) consecutive calendar quarters. The monitoring wells will be installed and developed by an Indiana licensed well driller. The monitoring well borings will be advanced using 2-inch and 3.25-inch outside diameter dual-tube samplers which should eliminate soil cuttings. Solid core augers may be necessary to advance the wells into the fractured bedrock surface in order to obtain sufficient groundwater for sampling.
- The screens of the monitoring wells will intersect the first aquifer encountered and will be installed at a depth of approximately 20-feet below surface grade. 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 grout. The monitoring wells will be completed with a flush mounted protective cover and associated concrete pad. IWM Consulting will gain approval from the IFA IBP Project Manager prior to finalizing the monitoring well locations.
- Development and purge water (non-hazardous) generated during monitoring well installation and groundwater sampling activities will be containerized on-site for subsequent disposal at an approved facility within one (1) month of generation.
- The exact locations of the monitoring wells have not been determined at this point. However, it is likely that the monitoring well(s) will be installed within ten-feet of previously sampled soil boring locations. Consequently, IWM Consulting has assumed that the well borings will be blank drilled during the installation activities.
- Survey the four (4) permanent groundwater monitoring well elevations to the nearest one-hundredth (1/100) 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.
- The initial and three (3) subsequent groundwater sampling events will include the purging and sampling of the monitoring wells located on the Site. The groundwater samples will be analyzed for total and dissolved RCRA 8 metals using the appropriate SW-846 Method, low-level dissolved Cr VI using SW-846 Method 218.6, PAHs using SW-846 8270SIM, and PCBs using the appropriate SW-846 Method 8082. 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.
- 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 each quarterly groundwater sampling event and analyzed for the same parameters. Since

no volatile organics are being analyzed, no trip blank samples will be submitted for VOC analysis.

- The results of each quarterly sampling event will be summarized in a quarterly monitoring reports (QMR) summarizing the analytical results and field activities. The last report will request that the IBP PM assign the Site a NFA designation.
- IWM Consulting will contract with an Indiana licensed well driller to perform well abandonment activities for the wells installed during this investigation once the Site is assigned an NFA designation.

4.0 ANTICIPATED TIMELINE AND REPORTING

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

Proposed Soil Remediation Timeline Sposeep I Property, 55 Water Street Wabash, Wabash County, Indiana		
Task	***Estimated Timeline***	***Comments***
Preparation and Submittal of QAPP, ABCA, CRP, RWP/HASP	March 19, 2019	
Site clearing of vegetation and miscellaneous debris	Initiated week of April 22, 2019	Following approval of QAPP, ABCA, RWP/HASP
Collection and analysis of TCLP soil samples to determine metal leachability	Initiated week of April 22, 2019	Following approval of RWP. Assumes collection of ten (10) samples in one (1) day and 5 days for analysis
Soil mixing with Blastox® 215	Initiated week of April 22, 2019	Timeline depends on delivery of product
Re-collection and re-analysis of TCLP soil samples following soil mixing	Initiated week of April 22, 2019	Assumes collection of twenty (25) samples in one (1) day and 5 days for analysis
Excavation, transportation, and disposal of up to 2,500 tons of non-hazardous soil at Wabash Valley Landfill	Initiated week of April 22, 2019	
Soil confirmation sampling and analyses	Initiated week of April 22, 2019	Time includes sample collection and laboratory analysis time
Transportation and placement of up to 1,700 tons of granular fill and 800 tons of #53 crushed limestone	Initiated week of April 22, 2019	Includes compaction of granular fill, installation of geotextile fabric, and compaction of crushed limestone
Installation of four (4) groundwater monitoring wells	June 24, 2019	Four (4) permanent, 2-inch PVC wells to 20-foot depth, flush mount covers, surveyed to 1/100th foot elevation, installed following site backfill activities
Quarterly Groundwater Monitoring/Reporting	June 2019, September 2019, December 2019, March 2020	Wells (groundwater) will be sampled following installation and sampled quarterly for four (4) quarters. QMR reports submitted within 30-days of sampling.
Remediation Implementation/Completion Report	August 15, 2019	Soil report prepared and submitted within 20-days of receiving confirmation analytical results. Groundwater report submitted as part of the 4th QMR.

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.

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

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 Wabash Valley Landfill located approximately 2.5 miles from the Site;
3) Recycling of metal debris and fencing removed from the Site:
4) Installation of monitoring wells using pre-pack screens, eliminating IDW;
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,

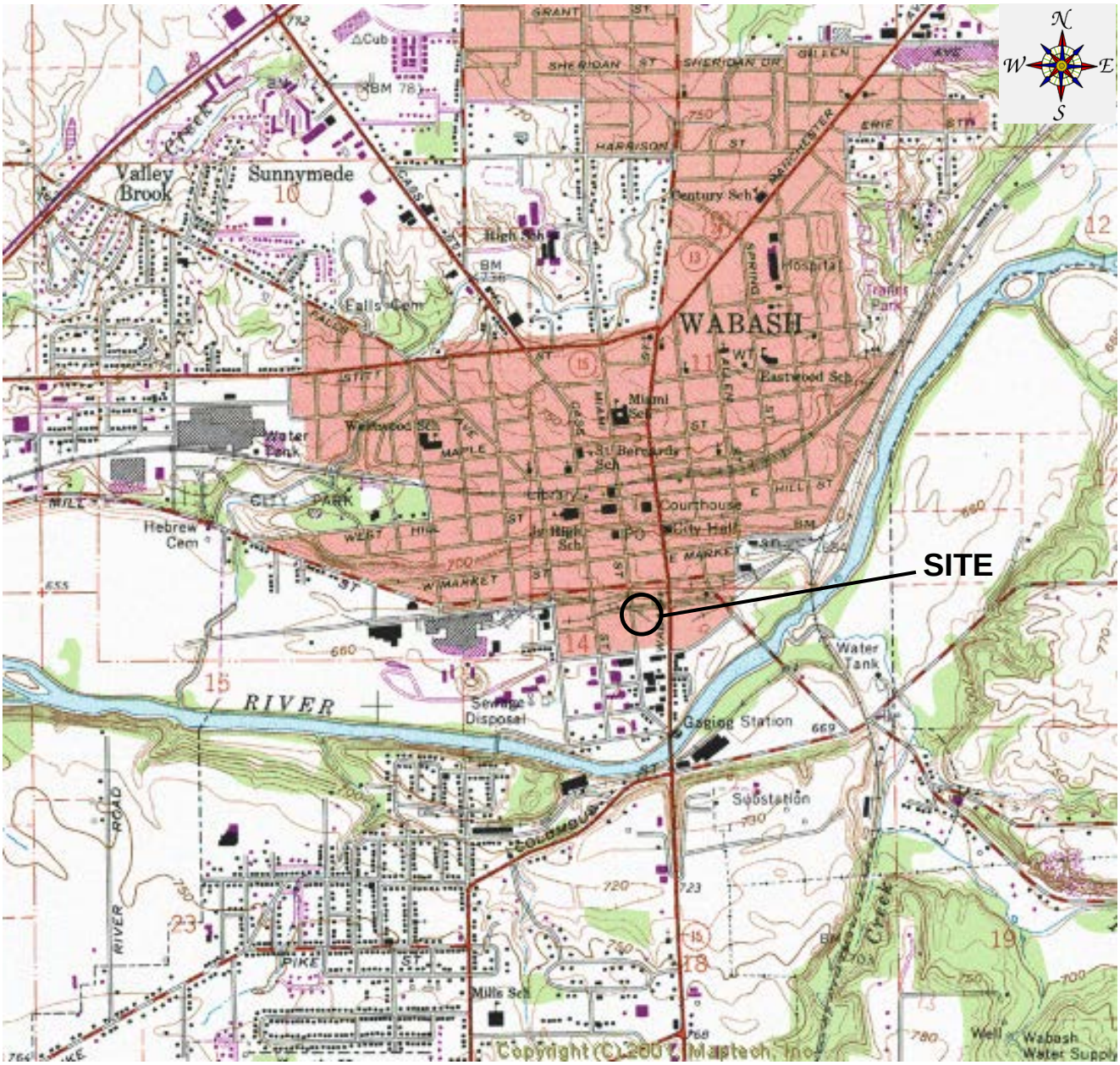
IWM CONSULTING GROUP, LLC

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

SOURCE: WABASH, INDIANA, USGS TOPOGRAPHIC QUADRANGLE MAP, 1963, REVISED 1981/1994

iWM CONSULTING GROUP

1015 Production Road, Fort Wayne, IN 46808
(260) 497-9620 Fax: (260) 471-7071

Project	Task	Size	Date
18-673	30	A	3/19/2019

TITLE **Figure 1 - Site Location Map**
Former Abe Sposeep & Sons, Inc. I
IBP Site No. 4161215
55 Water Street
Wabash, Wabash County, Indiana

CLIENT

Indiana Brownfields Program
Indianapolis, Indiana

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

TITLE:
SITE LAYOUT MAP WITH 2017 SAMPLING LOCATIONS
FORMER ABE SPOSEEP & SONS, INC. I
55 W WATER STREET, WABASH, INDIANA
BFD SITE No. 4161215 - EPA ACRES ID: 157661

CLIENT:
INDIANA BROWNFIELDS PROGRAM
INDIANAPOLIS, INDIANA

DRAWN BY: CGP	DATE: 3/14/2019	DRAWING NUMBER	
CHECKED BY: MRA	DATE: 3/14/2019	PROJECT NUMBER: 18-673	TASK: 30
APPROVED BY: MRA	DATE: 3/14/2019	SIZE: B	FIG. NO.: 2

DENNEY MOTOR

W. WATER STREET

ASPHALT

CONCRETE PAD/ SCALE

SITE BUILDING

VACANT

ASPHALT PARKING LOT

BAKER INSURANCE

VACANT

S. MIAMI STREET

SIDEWALK

CONCRETE

STORM WATER DRAIN

APPROXIMATE LOCATION OF DOWNED TREE TRUNK

APPROXIMATE LOCATION OF STEEL PIPES

APPROXIMATE LOCATION OF FORMER BUILDING FOUNDATION

VACANT

SIDEWALK

DORAIS CHEVROLET

LEGEND

- PROPERTY BOUNDARY
- FENCELINE
- POWER/LIGHT POLE
- APPROXIMATE LOCATION OF FORMER UST BASIN
- PROPOSED TCLP SAMPLING LOCATIONS
- PROPOSED WELL LOCATIONS

N

0 15' 30' 45'

SCALE: 1" = 30'

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

TITLE:
PROPOSED TCLP SAMPLING AND WELL LOCATIONS
FORMER ABE SPOSEEP & SONS, INC. I
55 W WATER STREET, WABASH, INDIANA
BFD SITE No. 4161215 - EPA ACRES ID: 157661

CLIENT:
INDIANA BROWNFIELDS PROGRAM
INDIANAPOLIS, INDIANA

DRAWN BY: CGP	DATE: 3/14/2019	DRAWING NUMBER	
CHECKED BY: MRA	DATE: 3/14/2019	PROJECT NUMBER: 18-673	TASK: 30
APPROVED BY: MRA	DATE: 3/14/2019	SIZE: B	FIG. NO.: 3

APPENDIX A

HEALTH AND SAFETY PLAN

SITE HEALTH AND SAFETY PLAN

PREPARED FOR:

Former Abe Sposeep & Sons, Inc. I
55 West Water Street
Wabash, Wabash County, Indiana

PREPARED BY:

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

Project No. 18-673-30

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

Approved By:

Neal Johnson	Office H&S Coordinator		
(Print Name)	(Title)	(Signature)	(Date)
Mark Anderson	Project Manager		
(Print Name)	(Title)	(Signature)	(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.

TABLE OF CONTENTS

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APPENDICES

I. TYPE OF PROJECT

Check appropriate categories (more than one may apply):

- □ Tank Decontamination
- □ Tank Excavation and Removal
- ■ Soil Excavation
- □ Filter Press Operation/Dewatering
- □ Drum Sampling & Management
- ■ Other
  Soil Mixing with Blastox®
- ■ Geophysical/GPR Survey/Utility Locating
- □ ORC Application
- ■ Drilling/Soil Sampling
- ■ Groundwater Gauging/Sampling
- ■ Well Abandonment
- □ 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 geophysical survey of the property for utility locations and possible buried structures. Remove perimeter fencing and clear debris from Site.
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 depth of 2-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 No. 53 crushed stone over a geotextile demarcation barrier and compact.
5) Install four (4) 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 south side of West Water Street and the east side of South Miami Street in Wabash, Indiana. The 0.6-acre property consists of one (1) parcel of land that is developed with a vacant, three-story w/ basement, 13,000 square foot building constructed in 1890, a concrete drive, and an unpaved storage yard. Historically, the Site was utilized as a recycling facility.

Site History

A Phase I ESA, dated December 21, 2012, identified numerous *Recognized Environmental Conditions* (*RECs*). The primary *RECs* include the following: 1) three (3) historical underground storage tanks (USTs) for dispensing of gasoline and diesel fuel closed through removal on the west side of the Site in 1992, 2) the historical use of the Site as a recycling and metal processing facility, 3) the historical storage of drums of petroleum products and/or hazardous substances both inside and outside the building, 4) the reported presence of contamination identified in a proposal from SES Environmental, 5) potential unreported or undetected releases onto the property from sites of current and/or historical automobile services, automotive painting, bulk and/or underground petroleum storage and/or use, painting, dry cleaning operations, and 6) foundry operations located north, northeast, northwest, and south of the property. These RECs were identified as potential sources of possible poly-chlorinated biphenyls (PCBs), petroleum, heavy metals, and/or solvents on the property.

Two (2) Phase II Site investigations have been performed on the Site in July 2013 by Soil and Materials Engineers, Inc. (SME) and in June 2017 by IWM Consulting. The Phase II investigations which included surface and subsurface soil sampling and analysis, and groundwater sampling and analysis, identified elevated concentrations of total RCRA metals (arsenic, cadmium, total chromium, chromium VI, and lead), poly-chlorinated biphenyls, and poly-aromatic hydrocarbons (benzo(a)anthracene, benzo(a)pyrene, 1-methylnaphthalene, and naphthalene).

Area of Concern

Based on the analytical results presented in the Phase II Environmental Site Assessment Report prepared by IWM Consulting, dated August 16, 2017, the entire Site surface, outside the building footprint, is being removed for off-site disposal to a depth of up to 2-feet below surface grade (bsg). Groundwater beneath the Site will be monitored for four (4) consecutive quarters using four (4) permanent groundwater monitoring 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:

- 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 commercial/industrial setting.

North of site:	West Water Street with Commercial building beyond
East of site:	Commercial
South of site:	Commercial
West of site:	South Miami Street with Commercial building beyond

Topography and Site Access

The Site and surrounding area have gently sloping topography towards the Wabash River to the south of the Site. The primary access point to the Site is from the south side of West Water 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 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 or other heavy equipment (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 Wabash, Indiana/Former Abe Sposeep & Sons, Inc. I

Location, description, and route to the site: Vacant commercial lot in Wabash, IN

Proceed east onto Production Road for 0.3mi. Turn left onto Lima Road for 0.5 mi. Take ramp right onto I-69 South for 9 mi, towards US-24 W. Keep right onto exit 302 towards US-24 W/Huntington. Take US-24 (West) for 20.8 mi. Keep right on local roads for 98 yards towards US-24 W/Wabash. Turn right onto US-24 for 15.2 mi. Road name changes to US-24 Branch (IN-13) for 2.3 mi. Turn left (South) onto North Wabash Street (IN-13) for 0.7 mi. Turn right (West) onto W Water Street for 87 yards. Arrive at destination 55 W Water Street on the left.

Site Contact/Phone: Mayor Scott Long, Site Owner (260) 563-4171

Client Project Manager: Mitchell Smith/IFA/IBP (317) 234-8833

A. Emergency Information

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

Hospital Name:	**Parkview Wabash Hospital**
Hospital Address:	**710 N East St, Wabash, IN 46992**
Hospital Phone:	**(260) 563-3131**

Route to Hospital: From the Former Abe Sposeep & Sons, Inc. I site:

Head east on W Water St toward S Wabash St
Turn left (north) at the 1st cross street onto S Wabash St, proceed N 0.6 miles
Turn right (northeast) onto Manchester Ave, proceed NE 0.3 miles
Turn right (southeast) onto N E St., proceed ≈350 feet to Hospital

Destination will be on the right.

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
Mitchell Smith	IFA/IBP Project Manager	317-234-8833
	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

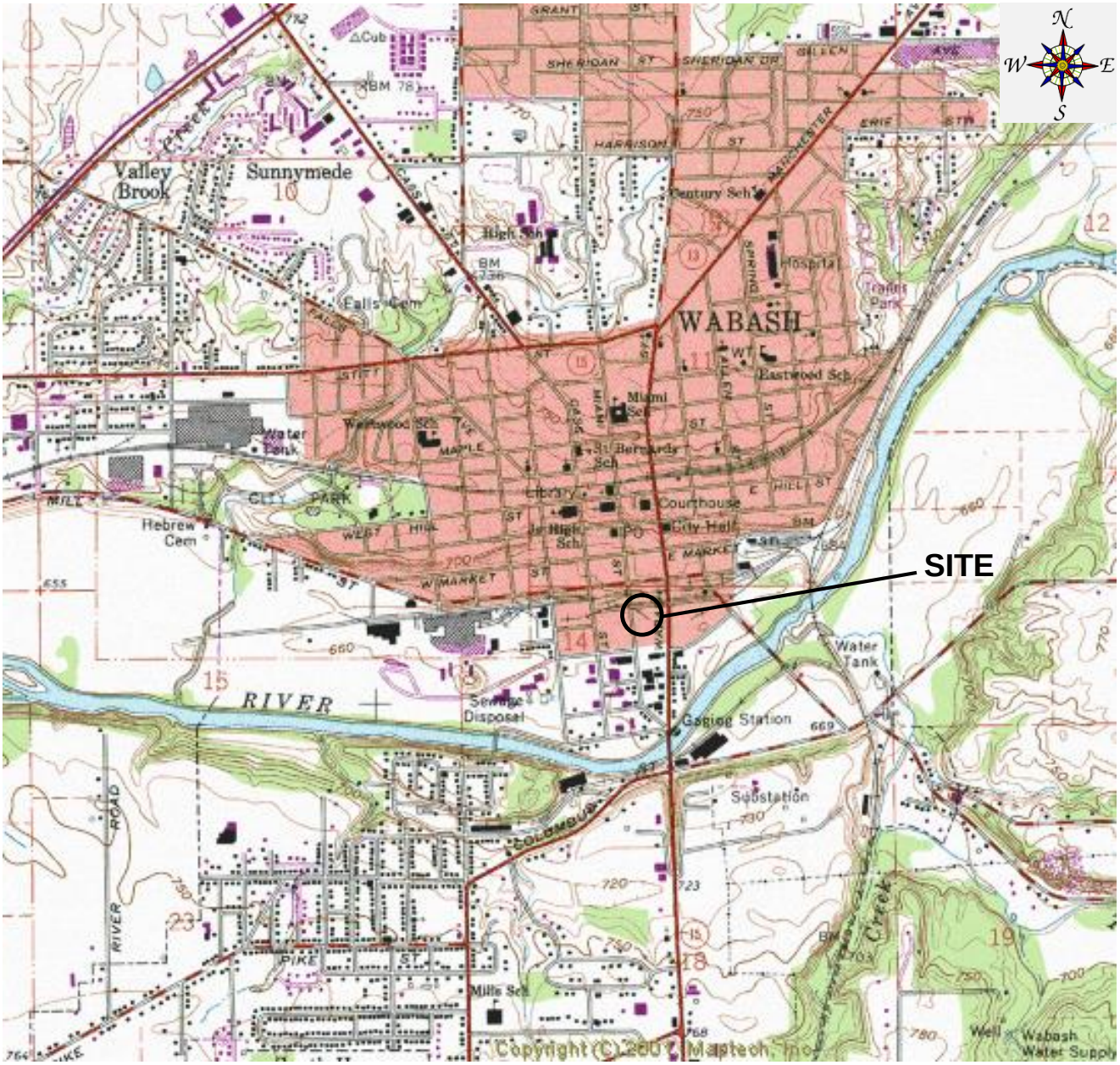
All site personnel (employees and their subcontractors) will review this HASP and Contingency Plan. This plan provides site personnel with an orientation to the job task including:

- 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

SOURCE: WABASH, INDIANA, USGS TOPOGRAPHIC QUADRANGLE MAP, 1963, REVISED 1981/1994

iWM CONSULTING GROUP

3640-C New Vision Drive, Fort Wayne, IN 46845
(260) 497-9620 Fax: (260) 471-7071

Project	Task	Size	Date
17-547	10	A	2/27/2017

TITLE **Figure 1 - Site Location Map**
Former Abe Sposeep & Sons, Inc. I
IBP Site No. 4161215
55 Water Street
Wabash, Wabash County, Indiana

CLIENT

Indiana Brownfields Program
Indianapolis, Indiana

DENNEY MOTOR

W. WATER STREET

ASPHALT

CONCRETE PAD/
SCALE

VACANT

SITE BUILDING

CONCRETE

BAKER INSURANCE

VACANT

S. MIAMI STREET

SIDEWALK

STORM WATER DRAIN

APPROXIMATE LOCATION OF
DOWNED TREE TRUNK

APPROXIMATE LOCATION OF STEEL PIPES

APPROXIMATE LOCATION OF FORMER
BUILDING FOUNDATION

SIDEWALK

DORAIS CHEVROLET

LEGEND

PROPERTY BOUNDARY

FENCELINE

POWER/LIGHT POLE

APPROXIMATE LOCATION
OF FORMER UST BASIN

N

0 15' 30' 45'

SCALE: 1" = 30'

iWM CONSULTING GROUP

3640-C New Vision Drive, Fort Wayne, Indiana 46845
(260)497-9620 fax: (260)471-7071 www.iwmconsult.com

TITLE:

SITE PLAN
FORMER ABE SPOSEEP & SONS, INC. I - BFD SITE No. 4161215
55 W WATER STREET
WABASH, INDIANA

CLIENT:

INDIANA BROWNFIELDS PROGRAM
INDIANAPOLIS, INDIANA

DRAWN BY: LAC	DATE: 2/21/2017	DRAWING NUMBER			
CHECKED BY: MRA	DATE: 2/21/2017	PROJECT NUMBER	TASK	SIZE	FIG. NO.
APPROVED BY: MRA	DATE: 2/21/2017	17-547	10	B	2

APPENDIX B

HAZARD ASSESSMENT/ATTACHMENTS

HAZARD ASSESSMENT/ATTACHMENTS

Former Abe Sposeep & Sons, Inc. I 55 W Water Street Wabash, Wabash 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

UNITED STATES DEPARTMENT OF LABOR

Occupational Safety & Health Administration We Can Help

Benz(a)Anthracene

General Description

Synonyms: Cobalt metal dust; Cobalt metal fume
OSHA IMIS Code Number: 0350
Chemical Abstracts Service (CAS) Registry Number: 56-55-3
NIOSH Registry of Toxic Effects of Chemical Substances (RTECS) Identification Number: CV9275000

Exposure Limits

OSHA Permissible Exposure Limit (PEL):
- **General Industry:** See Coal Tar Pitch Volatiles (Benzene Soluble Fraction)

American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV): Appendix A2 (Suspected Carcinogen)

Health Factors

Carcinogenic Classification:
- **National Toxicology Program:** Suspect Human Carcinogen
- **International Agency for Research on Cancer (IARC):** Group 2A, probably carcinogenic to humans (PDF)

Monitoring Methods used by OSHA

Primary Laboratory Sampling/Analytical Method (SLC1):

Sampling Media

Pre-cleaned Glass Fiber Filter (37 mm)
maximum volume: 960 Liters
maximum flow rate: 2.0 L/min
current analytical method: High Performance Liquid Chromatography; HPLC/UV/FLU
method reference: 2 (OSHA In-House File)
method classification: Partially Validated
note: OSHA personnel can obtain pre-cleaned filters, vials, and Teflon-lined caps from SLTC. Immediately after sampling, transfer filter to glass scintillation vial and seal with Teflon-lined cap. Protect from light.

Bulk Method:

Notes

Limit the amount of bulk submitted to one gram or one mL

Conditions:

Column: C18 mobile phase: 85:15 Acetonitrile: Water detector wavelength: 254nm flouresence detection limit: excitation: 254nm emissions: 370nm

U.S. Department of Labor | Occupational Safety & Health Administration | 200 Constitution Ave., NW, Washington, DC 20210
Telephone: 800-321-OSHA (6742) | TTY
www.OSHA.gov

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

Worldwide Helpline :+1.415.685.4395
For further enquiries :info@clearsynth.com
For an online quote : click here

- MATERIAL SAFETY DATA SHEET -

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MSDS Name : BENZO(B)FLUORANTHENE

Company Identification : Clearsynth Labs Pvt. Ltd.
413 Laxmi Mall, New Link Road, Andheri (W),
Mumbai-400 053, INDIA

For information call : ++91-22-26355700
For emergencies call : ++91-22-26355699
For further enquiries : info@clearsynth.com

SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS

CAS#	Chemical Name	%	EINECS#	Haz Symbols	RISK PHRASES
205-99-2	BENZO(B)FLUORANTHENE	>95%	-	-	-

Hazard Symbols: XN
Risk Phrases: 22

SECTION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
Harmful if swallowed.

Potential Health Effects
The toxicological properties of this material have not been investigated. Use appropriate procedures to prevent opportunities for direct contact with the skin or eyes and to prevent inhalation. Compound is Non-hazardous,Non-Toxic/Non-Flammable.

SECTION 4 - FIRST AID MEASURES

Eyes:
Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids.
Skin:
Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Ingestion:
Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.
Inhalation:
Remove from exposure and move to fresh air immediately.
Notes to Physician:

SECTION 5 - FIRE FIGHTING MEASURES

General Information:
As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or

combustion.
Extinguishing Media:
In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks:
Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal.

SECTION 7 - HANDLING and STORAGE

Handling:
Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation.
Storage:
Store in a well closed container.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering Controls:
Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels.
Personal Protective Equipment
Eyes:
Wear safety glasses and chemical goggles if splashing is possible.
Skin:
Wear appropriate protective gloves and clothing to prevent skin exposure.
Clothing:
Wear appropriate protective clothing to minimize contact with skin.
Respirators:
Wear a NIOSH/MSHA or European Standard EN 149 approved full-facepiece airline respirator in the positive pressure mode with emergency escape provisions.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State:
Molecular Formula:
C20H12
Molecular Weight:

SECTION 10 - STABILITY AND REACTIVITY

Chemical Stability:
Stable under normal temperatures and pressures.
Conditions to Avoid:
Incompatible materials, strong oxidants.
Incompatibilities with Other Materials:
Strong oxidizing agents, strong bases.
Hazardous Decomposition Products:
Nitrogen oxides, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide, nitrogen.
Hazardous Polymerization: Has not been reported.

SECTION 11 - TOXICOLOGICAL INFORMATION

RTECS#:

CAS#: LD50/LC50:
CAS#:Draize test, rabbit, eye: 100 mg/24H Moderate; Oral,
mouse: LD50 = 300 mg/kg; Oral, rabbit: LD50 = 3200 mg/kg; Oral, rat:
LD50 = 980 mg/kg.
Carcinogenicity:
Salicylamide -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
See actual entry in RTECS for complete information.

SECTION 12 - ECOLOGICAL INFORMATION

SECTION 13 - DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with federal, state, and local regulations.

SECTION 14 - TRANSPORT INFORMATION

IATA No information available.
IMO No information available.
ID/ADR No information available.

SECTION 15 - REGULATORY INFORMATION

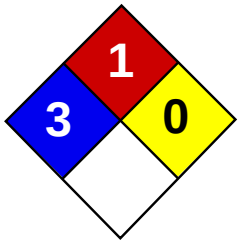
European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: XN
Risk Phrases:
R 22 Harmful if swallowed.
Safety Phrases:
WGK (Water Danger/Protection)

CAS# United Kingdom Occupational Exposure Limits
United Kingdom Maximum Exposure Limits

Canada
CAS# is listed on Canada's DSL List.
CAS#is not listed on Canada's Ingredient Disclosure List.
Exposure Limits
US FEDERAL
TSCA
CAS# is listed on the TSCA inventory.

SECTION 16 - ADDITIONAL INFORMATION

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.



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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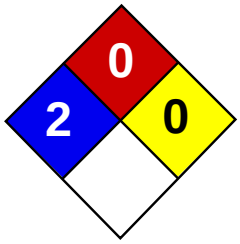

Material Safety Data Sheet
Chloroform MSDS

Section 1: Chemical Product and Company Identification

Product Name: Chloroform

Catalog Codes: SLC1888, SLC5044

CAS#: 67-66-3

RTECS: FS9100000

TSCA: TSCA 8(b) inventory: Chloroform

CI#: Not available.

Synonym: Trichloromethane; Methane, trichlor-

Chemical Name: Chloroform

Chemical Formula: CHCl3

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
Chloroform	67-66-3	100

Toxicological Data on Ingredients: Chloroform: ORAL (LD50): Acute: 695 mg/kg [Rat]. 36 mg/kg [Mouse]. 820 mg/kg [Guinea pig]. DERMAL (LD50): Acute: >20000 mg/kg [Rabbit]. VAPOR (LC50): Acute: 47702 mg/m 4 hours [Rat].

Section 3: Hazards Identification

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

Potential Chronic Health Effects: CARCINOGENIC EFFECTS: Classified + (Proven.) by NIOSH. Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. Classified 2 (Some evidence.) by NTP. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, liver, heart. 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. Cold water may be used. WARM water MUST be used. 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 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.

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 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: Not available.

Special Remarks on Explosion Hazards: May explode if it comes in contact with aluminum powder, lithium, perchlorate, pentoxide, bis(dimethylamino)dimethylstannane, potassium, potassium-sodium alloy, sodium (or sodium hydroxide or sodium methoxide), and methanol

Section 6: Accidental Release Measures

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

Large Spill: Absorb with an inert material and put the spilled material in an appropriate waste 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: Do not ingest. Do not breathe gas/fumes/ vapor/spray. 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 metals, alkalis.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Sensitive to light. Store in light-resistant containers.

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

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: 10 (ppm) [Australia] Inhalation TWA: 2 (ppm) from OSHA (PEL) [United States] Inhalation STEL: 9.78 (mg/m3) from NIOSH Inhalation STEL: 2 (ppm) from NIOSH Inhalation TWA: 9.78 (mg/m3) from OSHA (PEL) [United States] Inhalation TWA: 10 (ppm) from ACGIH (TLV) [United States] [1999] Inhalation TWA: 2 (ppm) [United Kingdom (UK)] Inhalation TWA: 9.9 (mg/m3) [United Kingdom (UK)] InhalationConsult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Pleasant. Sweetish. Etheric. Non-irritating

Taste: Burning. Sweet.

Molecular Weight: 119.38 g/mole

Color: Colorless. Clear

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

Boiling Point: 61°C (141.8°F)

Melting Point: -63.5°C (-82.3°F)

Critical Temperature: 263.33°C (506°F)

Specific Gravity: 1.484 (Water = 1)

Vapor Pressure: 21.1 kPa (@ 20°C)

Vapor Density: 4.36 (Air = 1)

Volatility: Not available.

Odor Threshold: 85 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2

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, Light

Incompatibility with various substances: Reactive with metals, alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Light Sensitive. Incompatible with triisopropyl phosphine, acetone, disilane, fluorine, strong bases and reactive metals (aluminum, magnesium in powdered form), light.

Special Remarks on Corrosivity: It will attack some forms of plastics, rubber, and coatings.

Polymerization: Will not occur.

Section 11: Toxicological Information

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

Toxicity to Animals: WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 36 mg/kg [Mouse]. Acute dermal toxicity (LD50): >20000 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 47702 mg/m 4 hours [Rat]. 3

Chronic Effects on Humans: CARCINOGENIC EFFECTS: Classified + (Proven.) by NIOSH. Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. Classified 2 (Some evidence.) by NTP. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. May cause damage to the following organs: kidneys, liver, heart.

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

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: May affect genetic material (possible mutangen) and cause adverse reproductive effects(embryotoxicity and fetotoxicity) Suspected carcinogen (tumorigenic) and teratogen based on animal data. Human: passes the placental barrier, detected in maternal milk.

Special Remarks on other Toxic Effects on Humans: Acute Potential Health Effects: Skin: Causes skin irritation and may cause chemical burns. Eye: Causes eye irritation, burning pain and reversible injury to corneal epithelium. Inhalation: Causes irritation of the respiratory system (mucous membranes). May affect behavior/Nervous system (CNS depressant, fatigue, dizziness, nervousness, giddiness, euphoria, loss of coordination and judgement, weakness, hallucinations, muscle contraction/spasticity, general anesthetic, spastic paralysis, headache), anorexia (neurological and gastrointestinal symtoms resembling chronic alcoholism), and possibly coma and death. May affect the liver, kidneys and gastrointestinal tract (nausea, vomiting). Ingestion: Causes gastrointestinal tract irritation (nausea, vomiting). May affect the liver, urinary system (kidneys), respiration, behavior/nervous system (symptoms similar to inhalation),and heart. Chronic Potential Health Effects: Inhalation: Prolonged or repeated inhalation may affect the liver (hepatitis, jaundice, hepatocellular necrosis), metabolism (weight loss), respiration (fibrosis, pneumoconoisis), behavior/central nervous system (symptoms similar to acute inhalation), blood, musculoskeletal system, and kidneys. Ingestion: Prolonged or repeated ingestion may affect the liver, kidneys, metabolism (weight loss), endocrine system (spleen), blood (changes in cell count).

Section 12: Ecological Information

Ecotoxicity: Ecotoxicity in water (LC50): 43.8 mg/l 96 hours [Trout].

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 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 6.1: Poisonous material.

Identification: : Chloroform UNNA: UN1888 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: Chloroform California prop. 65 (no significant risk level): Chloroform: 0.02 mg/day (value) 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: Chloroform New York release reporting list: Chloroform Rhode Island RTK hazardous substances: Chloroform Pennsylvania RTK: Chloroform Massachusetts RTK: Chloroform New Jersey: Chloroform California Director's List of Hazardous Subtances (8 CCR 339): Chloroform Tennessee: Chloroform TSCA 8(b) inventory: Chloroform TSCA 8(d) H and S data reporting: Chloroform: effective: 6/1/87; sunset: 6/1/97 SARA 302/304/311/312 extremely hazardous substances: Chloroform SARA 313 toxic chemical notification and release reporting: Chloroform CERCLA: Hazardous substances.: Chloroform: 10 lbs. (4.536 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).

DSCL (EEC): R20/22- Harmful by inhalation and if swallowed. R38- Irritating to skin. R40- Possible risks of irreversible effects. S36/37- Wear suitable protective clothing and gloves.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 0

Reactivity: 0

Personal Protection: h

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

Health: 2

Flammability: 0

Reactivity: 0

Specific hazard:

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

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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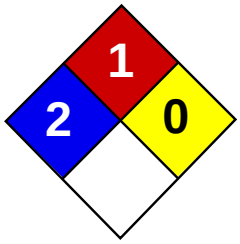

Health	2
Fire	1
Reactivity	0
Personal Protection	E

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.

Created: 10/10/2005 08:16 PM

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

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Material Safety Data Sheet
Dibenz[a,h]anthracene, 99% (UV-Vis)

ACC# 66416

Section 1 - Chemical Product and Company Identification

MSDS Name: Dibenz[a,h]anthracene, 99% (UV-Vis)
Catalog Numbers: AC406430000, AC406430010, AC406432500
Synonyms: 1,2:5,6-Dibenz(a)anthracene.
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
53-70-3	Dibenz[a,h]anthracene	99	200-181-8

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: off-white solid.
Caution! May cause eye and skin irritation. May cause respiratory tract irritation. Cancer suspect agent.
Target Organs: None known.

Potential Health Effects
Eye: May cause eye irritation.
Skin: May cause skin irritation.
Ingestion: May cause irritation of the digestive tract.
Inhalation: May cause respiratory tract irritation.
Chronic: May cause cancer in humans.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Remove contaminated clothing and shoes.
Ingestion: Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and

drink 2-4 cupfuls of milk or water.
Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
Extinguishing Media: Use agent most appropriate to extinguish fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.
Flash Point: Not applicable.
Autoignition Temperature: Not applicable.
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 1; Flammability: 1; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.
Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Dibenz[a,h]anthracene	none listed	none listed	none listed

OSHA Vacated PELs: Dibenz[a,h]anthracene: 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: Solid
Appearance: off-white
Odor: Not available.
pH: Not available.
Vapor Pressure: Not available.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: Not available.
Freezing/Melting Point:265 deg C
Decomposition Temperature: Not available.
Solubility: Not available.
Specific Gravity/Density: Not available.
Molecular Formula:C22H14
Molecular Weight:278.34

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Incompatible materials, dust generation, excess heat, strong oxidants.
Incompatibilities with Other Materials: Oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide, carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported

Section 11 - Toxicological Information

RTECS#:
CAS# 53-70-3: HN2625000
LD50/LC50:
Not available.

Carcinogenicity:
CAS# 53-70-3:

- **ACGIH:** Not listed.
- **California:** carcinogen, initial date 1/1/88
- **NTP:** Suspect carcinogen
- **IARC:** Group 2A carcinogen

Epidemiology: No information available.
Teratogenicity: No information found
Reproductive Effects: No information found
Mutagenicity: No information found
Neurotoxicity: No information found
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. LC50 Neanthes arenaceodentata = >1 ppm/96 hour in a static bioassay /Other conditions of bioassay not specified.
Environmental: Terrestrial: Expected to be immobile in soil. Aquatic: Expected to adsorb to suspended solids and sediment in water. Atmospheric: Expected to exist solely in the particulate phase in the ambient atmosphere. Expected to biodegrade and bioconcentrate.
Physical: No information available.
Other: For more information, see "HANDBOOK OF ENVIRONMENTAL FATE AND EXPOSURE DATA."

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series:
CAS# 53-70-3: waste number U063.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	DOT regulated - small quantity provisions apply (see 49CFR173.4)	DYE SOLID TOXIC NOS (DIBENZ(A,H)
Hazard Class:		6.1
UN Number:		UN3143
Packing Group:		II
Additional Info:		ANTHRACENE)

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 53-70-3 is listed on the TSCA inventory.
Health & Safety Reporting List
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# 53-70-3: 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.

Section 313

This material contains Dibenz[a,h]anthracene (CAS# 53-70-3, 99%),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# 53-70-3 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# 53-70-3 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 Dibenz[a,h]anthracene, a chemical known to the state of California to cause cancer.
California No Significant Risk Level: CAS# 53-70-3: 0.2 æg/day NSRL

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

T N

Risk Phrases:

R 45 May cause cancer.
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 s waste.
S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

WGK (Water Danger/Protection)

CAS# 53-70-3: No information available.

Canada - DSL/NDSL

CAS# 53-70-3 is listed on Canada's NDSL List.

Canada - WHMIS

This product has a WHMIS classification of D2A.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 53-70-3 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 6/24/1999
Revision #5 Date: 11/20/2008

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Indeno[1,2,3-cd]pyrene (cas 193-39-5) MSDS

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifiers

Product name : Indeno[1,2,3-cd]pyrene

CAS-No. : 193-39-5

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Carcinogenicity (Category 2)

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Limited evidence of a carcinogenic effect.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram

Signal word Warning

Hazard statement(s)

H351 Suspected of causing cancer.

Precautionary statement(s)

P281 Use personal protective equipment as required.

Supplemental Hazard Statements none

According to European Directive 67/548/EEC as amended.

Hazard symbol(s)

R-phrase(s)

R40 Limited evidence of a carcinogenic effect.

S-phrase(s)

S36/37 Wear suitable protective clothing and gloves.

2.3 Other hazards - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula : C22H12C22H12

Molecular Weight : 276,33 g/mol

Component		Concentration
Indeno[1,2,3-cd]pyrene		
CAS-No.	193-39-5	-
EC-No.	205-893-2	

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

4.3 Indication of immediate medical attention and special treatment needed

no data available

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Carbon oxides

5.3 Precautions for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information

no data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed.Normal measures for preventive fire protection.

7.2 Conditions for safe storage, including any incompatibilities

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

7.3 Specific end uses

no data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

8.2 Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Body Protection

impervious clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odour	no data available
c)	Odour Threshold	no data available
d)	pH	no data available
e)	Melting/freezing point	163,6 °C
f)	Initial boiling point and boiling range	536,0 °C
g)	Flash point	no data available
h)	Evaporation rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	no data available
k)	Vapour pressure	no data available
l)	Vapour density	no data available
m)	Relative density	no data available
n)	Water solubility	no data available
o)	Partition coefficient: n-octanol/water	no data available
p)	Autoignition temperature	no data available
q)	Decomposition temperature	no data available
r)	Viscosity	no data available
s)	Explosive properties	no data available
t)	Oxidizing properties	no data available

9.2 Other safety information

no data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

no data available

10.2 Chemical stability

no data available

10.3 Possibility of hazardous reactions

no data available

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Strong oxidizing agents

10.6 Hazardous decomposition products

Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

no data available

Skin corrosion/irritation

no data available

Serious eye damage/eye irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

Limited evidence of carcinogenicity in animal studies

IARC:	2B - Group 2B: Possibly carcinogenic to humans (Indeno[1,2,3-cd]pyrene)

Reproductive toxicity

no data available

Specific target organ toxicity - single exposure

no data available

Specific target organ toxicity - repeated exposure

no data available

Aspiration hazard

no data available

Potential health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Additional Information

RTECS: Not available

12. ECOLOGICAL INFORMATION

12.1 Toxicity

no data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Results of PBT and vPvB assessment

no data available

12.6 Other adverse effects

no data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

14.1 UN-Number

ADR/RID: - IMDG: - IATA: -

14.2 UN proper shipping name

ADR/RID:	Not dangerous goods
IMDG:	Not dangerous goods
IATA:	Not dangerous goods

14.3 Transport hazard class(es)

ADR/RID: - IMDG: - IATA: -

14.4 Packaging group

ADR/RID: - IMDG: - IATA: -

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for users

no data available

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

no data available

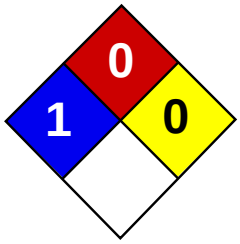
15.2 Chemical Safety Assessment

no data available

16. OTHER INFORMATION

Further information

See reverse side of invoice or packing slip for additional terms and conditions of sale.



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.

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

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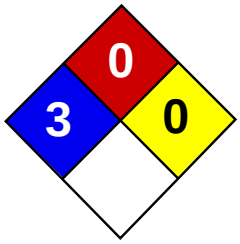

Material Safety Data Sheet
Mercury MSDS

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

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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 Abe Sposeep & Sons, Inc. I 55 W Water Street Wabash, Wabash County, Indiana			
Instruments	**Date/Time**	**Reading**	**Location**
Not required for proposed work Activities			

APPENDIX E

SAFETY PLAN AMENDMENTS

SAFETY PLAN AMENDMENTS

Site Name:	Former Abe Sposeep & Sons, Inc. I	**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 Abe Sposeep & Sons, Inc. I	**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 Abe Sposeep & Sons, Inc. I	**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

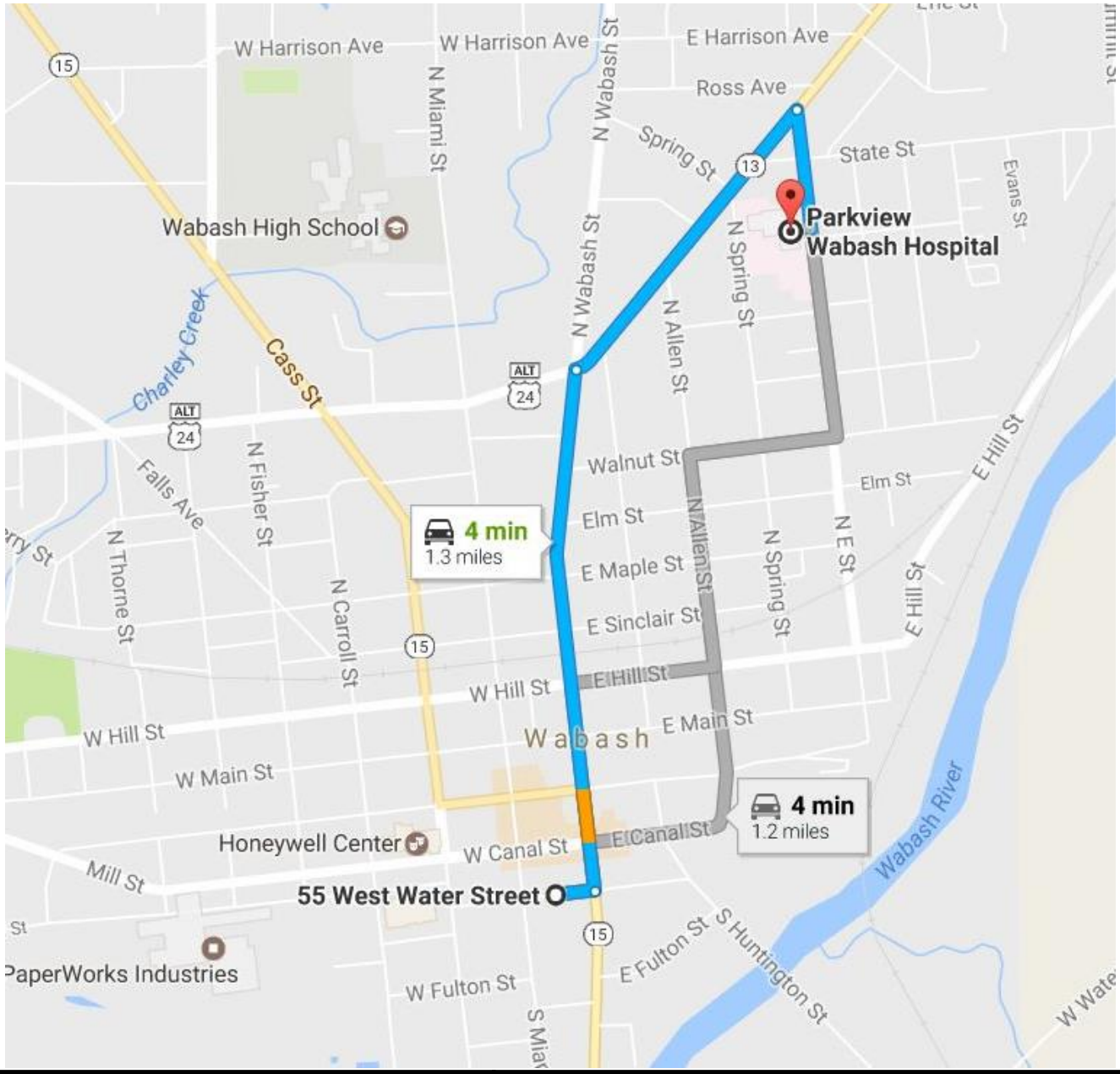
I have read this Site Health and Safety Plan and understand it. I agree, to the best of my ability, to conduct activities as specified, giving health and safety concerns the highest priority.

PRINTED NAME	SIGNATURE	COMPANY NAME	DATE

APPENDIX G

HOSPITAL AND/OR LOCAL MEDICAL PROVIDER MAPS

Hospital Information:
Parkview Wabash Hospital
710 North East Street
Wabash, Indiana 46992
(260) 563-3131



iWM CONSULTING GROUP
3640-C New Vision Drive, Fort Wayne, IN 46845
(260) 497-9620 Fax: (260) 470-7071

Title:
Map to Hospital
Former Abe Sposeep & Sons, Inc. I
55 Water Street
Wabash, Wabash County, Indiana

CLIENT
Indiana Brownfields Program
Indianapolis, Indiana

Project	Task	Size	Date
17-547	10	A	2/27/2017