



May 1, 2019

Ms. Andrea Robertson-Habeck
Indiana Brownfields Program
100 North Senate Avenue, Room 1275
Indianapolis, Indiana 46204

RE: Remediation Work Plan
Former Colonial Bakery Property
920 East 24th Street & 2408 – 2444 North Winthrop Avenue
Indianapolis, Marion County, Indiana
Brownfield Site ID No. 4000041
Revolving Loan Fund (RLF) Cooperative Agreement (CA) # BF-00E48101-B

Dear Ms. Robertson-Habeck:

Industrial Waste Management Consulting Group, LLC (IWM Consulting) is pleased to submit this Remediation Work Plan (RWP) for the Former Colonial Bakery Property (Site) to the Indiana Brownfields Program (IBP). **Figure 1** displays a topographic map illustrating the location of the Site. A map displaying the pertinent site features is included as **Figure 2 – Site Map**.

The proposed and approved field activities will consist of active remediation including the excavation and removal of up to 4,500 tons of environmentally impacted soil/fill from the top 2 feet, primarily underlying the existing asphalt parking area at the Site. The impacted soil will be disposed offsite at a landfill located within 30-miles of the Site. Confirmatory soil samples will be obtained during the remediation activities and IWM Consulting will generate a report documenting the remediation activities.

The Site background and the tasks to be completed as part of this RWP are described in more detail in the following sections. The RWP will be modified accordingly if it is determined that site conditions are different than originally assumed.

Site History Summary

Historical review indicates the Site use was residential from as early as 1915 up through the mid-1950s. Colonial Baking Company utilized the Site for warehouse storage, truck loading, and truck repair from the mid-1950s to at least the 1990s; however, trucking activities continued on the Site up until 2007. The building onsite was razed by 2008 and the Site has remained vacant since that time. The Site is composed of ten (10) separate parcels of land encompassing a total area approximately 1.33 acres in size. In general, the far northern portion of the Site was historically occupied by the former truck service garage and maintenance facility building. The remaining portions of the Site south of the building was used for parking and historical aerial photographs document heavy surface staining throughout the parking lot area south of the former building. Five (5) existing groundwater monitoring wells (KMW-1R, KMW-2, KMW-3R, KMW-4, and KMW-5) exist on the far northern portion of the Site and two (2) existing groundwater monitoring wells (IMW-26 and IMW-27) exist on the southern end of the Site.

Numerous subsurface investigations and/or remediation activities were completed at the Site between 2008 and 2013. Subsurface investigation and soil removal (approximately 1,200-tons) along with the removal of six (6) hydraulic lifts, one (1) oil/water separator, and four (4) USTs occurred in 2008 (*Soil Removal & Further Site Investigation Report* dated August 6, 2008 and prepared by Keramida). Additional subsurface investigation via soil borings and test trenches occurred in 2012 and 2013 (*Phase II ESA Report* dated December 2012 and *Further Site Investigation Report* dated May 13, 2013, both prepared by IWM Consulting) and further evaluated the surface and subsurface conditions of the Site. Remediation activities consisting of in-situ chemical injections occurred at the Site in 2017 to address groundwater contamination underneath the northern portion of the Site, which was determined to be originating from the Former Titan Industries property located east of the Site. Copies of the Keramida and IWM Consulting reports were historically submitted to the IBP and provide a more detailed description of the assessment and remediation activities.

Although significant remediation activities have already occurred at the Site, surface and near-surface soils (0-2 feet below ground surface [BGS]) adversely impacted with metals (arsenic, lead, and thallium) and/or polycyclic aromatic hydrocarbons (PAHs) are present throughout the Site. The contaminant concentrations have been documented to exceed the current Indiana Department of Environmental Management (IDEM) Remediation Closure Guide Residential Direct Contact Screening Levels (RCG RDCSLs). Slightly deeper sampling (maximum depth of 3.5 – 4 feet BGS) historically occurred at three (3) sampling locations (ISS-2, ISS-3, and ISS-7) and two (2) of the locations (ISS-3 and ISS-7) exhibited arsenic concentrations in excess of the RCG RDCSL. Additionally, soil boring and trenching activities completed in 2012 and 2013 suggest that fill material made up of sandy and gravelly mixtures is present beneath the Site's asphalt cover and extends to a depth of 2 – 3.5 feet BGS across the majority of the Site. Areas of darker fill and cinder-like materials are present around test trench areas ISS-7, ISS-8, and ISS-11. These darker areas exhibited much higher arsenic and lead XRF field-screen readings and analytical results than the surrounding fill material.

Based upon the historical information, IWM Consulting recommends that remediation activities include the removal of 4,500 tons of environmentally impacted soil from the upper 2 feet of the Site, primarily located beneath the asphalt parking area of the Site. A site map displaying the historical sampling locations and the proposed excavation limits is provided as **Figure 3**.

Remediation Goals

IWM Consulting understands that the goal of the project is to remediate the Site to levels that allow for future redevelopment. The anticipated redevelopment for the Site is multi-family residential, therefore the surface and near surface (0-2 feet BGS) soil should be remediated in a manner that will facilitate multi-family residential redevelopment and minimize the possibility of exposure through direct contact with the impacted soil. Consequently, all of the soil samples will be compared to the applicable IDEM RCG RDCSLs.



Proposed Active Remediation Activities

Based on current Site conditions and the field observations and analytical results obtained during the Phase II Site investigation activities completed in 2012 and 2013, surface and near-surface soils (0-2 feet BGS) have been adversely impacted with metals (arsenic, lead, and thallium) and/or PAHs are present throughout the Site above RCG RDSCLs. A more detailed description of the proposed remediation activities is provided in the following sections.

IWM Consulting will contract with GPRS to conduct utility identification activities prior to excavation. IWM Consulting will conduct the soil excavation activities and will prepare and submit a Remediation Completion Report following the completion of the soil excavation/remediation activities.

A copy of the Site-specific Health and Safety Plan (HASP) is included in **Appendix A**.

Proposed Soil Analytical Parameters

Based upon the historical data, IWM Consulting has prepared a Site-specific analytical suite. Total RCRA metals concentrations for arsenic and lead were historically detected in Site soils in excess of their respective RCG RDCSLs and Commercial/Industrial Soil Direct Contact Screening Levels (IDCSLs). In order to dispose of excavated soils from the Site at a permitted landfill as a non-hazardous solid waste, the landfill has confirmed that additional testing will be required to determine if the leachable arsenic and lead 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) and lead (5.0 mg/L) determine whether or not the soil is classified as a non-hazardous solid waste or a characteristically hazardous waste. Hazardous waste codes for arsenic and lead are D004 and D008, respectively. Consequently, the following analytical methods will be utilized during the course of this project:

Excavation Confirmation Soil Samples

- PAHs using SW-846 Method 8270 SIM;
- Select Metals using the appropriate SW-846 Method – arsenic, lead, and thallium;
- TCLP Lead and Arsenic using the appropriate SW-846 Method; and
- Percent moisture

The soil samples will be obtained in accordance with the Quality Assurance Project Plan (QAPP) dated April 29, 2019.

Utility Identification

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) in order to identify, mark, and map public utilities located on, or adjacent to, the Site.



Source Removal (Soil Excavation) Activities

Prior to initiation of the excavation activities, utility identification and waste characterization sampling activities will be performed. A maximum of five (5) waste characterization soil samples will be obtained throughout the proposed excavation area and submitted to the laboratory for TCLP arsenic and lead analysis in order to confirm that the impacted soils are characteristically non-hazardous. Each waste characterization soil sample will be obtained as a composite from the 0-2 feet BGS sampling interval.

Upon confirmation that the impacted soils are characteristically non-hazardous, the asphalt covering the southern portion of the Site will be removed, segregated, and transported offsite for disposal/recycling. The asphalt covered area encompasses approximately 43,000 square feet. Care will be taken during excavation activities to preserve the existing permanent monitoring wells located onsite. A silt fence for erosion control purposes will be installed to limit any potential sediment runoff. IWM Consulting will also obtain the necessary Storm Water Pollution Prevention Plan (SWPPP) permit prior to initiating the excavation activities.

Up to 4,500 tons of environmentally impacted soils and fill material underlying the asphalt to a depth of 2 feet BGS are anticipated to be excavated. This amount of material assumes that the entire asphalt covered area to the existing chain link fences will be excavated. The excavation may also extend slightly north of the asphalt parking lot. The soil will be excavated, transported, and disposed at a permitted landfill located within 30-miles of the Site. At this time, IWM Consulting assumes that the soil will be characteristically non-hazardous.

Confirmatory soil samples will be obtained at the conclusion of the excavation activities at a rate of approximately one (1) sample per every 1,000 square feet along the base of the excavation (approximately 44 samples). The confirmatory soil samples will be analyzed in accordance with the Site-specific analytical suite. As the excavation area will extend to the western, southern, and eastern property lines to a depth of 2 feet BGS, confirmation sidewall soil samples will not be obtained. The confirmation soil samples will be collected directly from the base of the excavation by personnel wearing dedicated, disposal nitrile gloves by hand or with a dedicated, disposable plastic scoop. For Quality Assurance/Quality Control (QA/QC) measures, one (1) duplicate and one (1) matrix spike/matrix spike duplicate soil sample will be obtained during sampling activities at a rate of one (1) per every twenty (20) confirmation soil samples. The QA/QC samples will be analyzed per the Site-specific analytical suite and as no volatile samples are being collected, trip blanks will not be utilized during sampling activities.

Following excavation and confirmation soil sampling activities, a geotextile fabric **may** be installed at the base of the excavation as a demarcation barrier between any newly imported backfill material and the native soils remaining below the excavation limits. **Representatives from the IBP and IWM Consulting will review the results prior to backfilling in order to determine if the demarcation barrier is warranted.** The excavation area will then be backfilled with general fill material (granular fill material such as pit run or certified clean soil) compacted to the extent possible with the excavation equipment.



The remediation activities are tentatively scheduled to start between June 17 - July 1, 2019, depending upon when the USEPA required public comment period has been met and appropriate responses to the comments have been made.

Reporting

IWM Consulting will also obtain approval from the IBP PM for this RWP, the site-specific Analysis of Brownfield Cleanup Alternatives (ABCA), and Community Relations Plan (CRP), prior to initiating the field work. At the conclusion of the field work, a Remediation Completion Report will be submitted to the IBP PM. The Remediation Completion Report will summarize the implemented remediation activities and confirmation soil analytical results and will include scaled maps, tabulated analytical results, and waste disposal manifests.

Proposed Timeline

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

Proposed Timeline Former Colonial Bakery Property Indianapolis, IN		
<i>Task</i>	<i>Estimated Timeline</i>	<i>Comments</i>
Submittal of QAPP/RWP/HASP/ABCA/CRP	May 1, 2019	Anticipate 30-45 days total for the IBP and USEPA to review and approve all Site documents and for IWM Consulting to address any comments received during the required public comment period
TCLP soil samples obtained	May 2019	Completion immediately upon approval of the RWP and QAPP; analysis completed on a 1-week TAT
Initiate soil excavation activities	June 17 - July 1, 2019	Estimate 15 days to complete soil excavation (weather dependent), start date dependent upon when all documents are approved and public comments have been addressed
Initiate demarcation barrier installation (if required) and backfilling activities	July 1 - July 15, 2019	Estimate 5 days to complete the backfilling activities, start date dependent upon when excavation activities are initiated
Submittal of Remediation Completion Report	September 20, 2019	Remediation Completion Report submitted within 45-days of receiving soil confirmation analytical results



IWM Consulting appreciates the opportunity to provide the Indiana Brownfields Program with this RWP. If you have any questions regarding this transmittal, please contact the undersigned at 317-347-1111.

Sincerely,

IWM CONSULTING GROUP, LLC

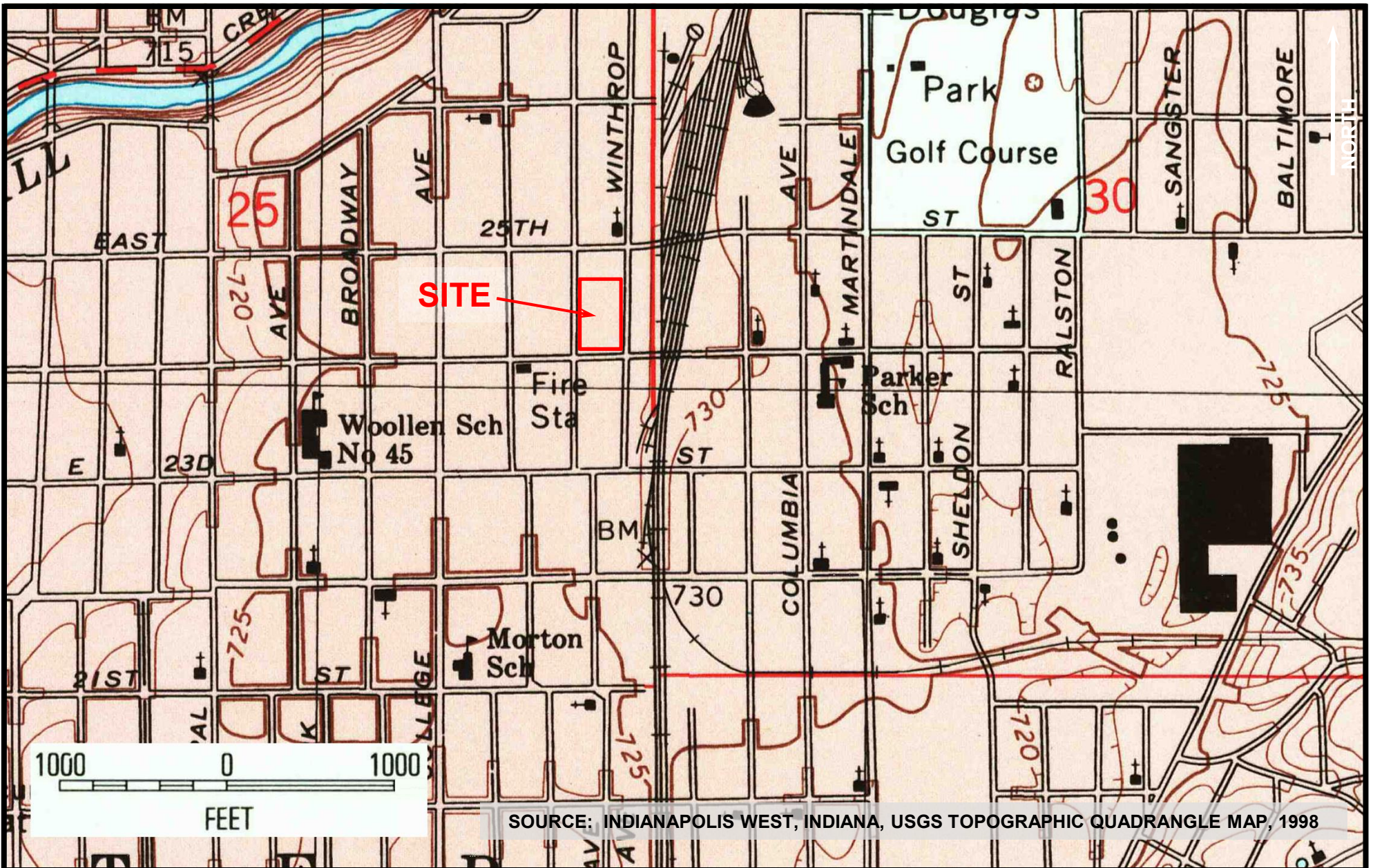


Christopher R. Newell, LPG #2397
Project Manager



Bradley E. Gentry, LPG #2165
Vice President/Brownfield Coordinator

FIGURES

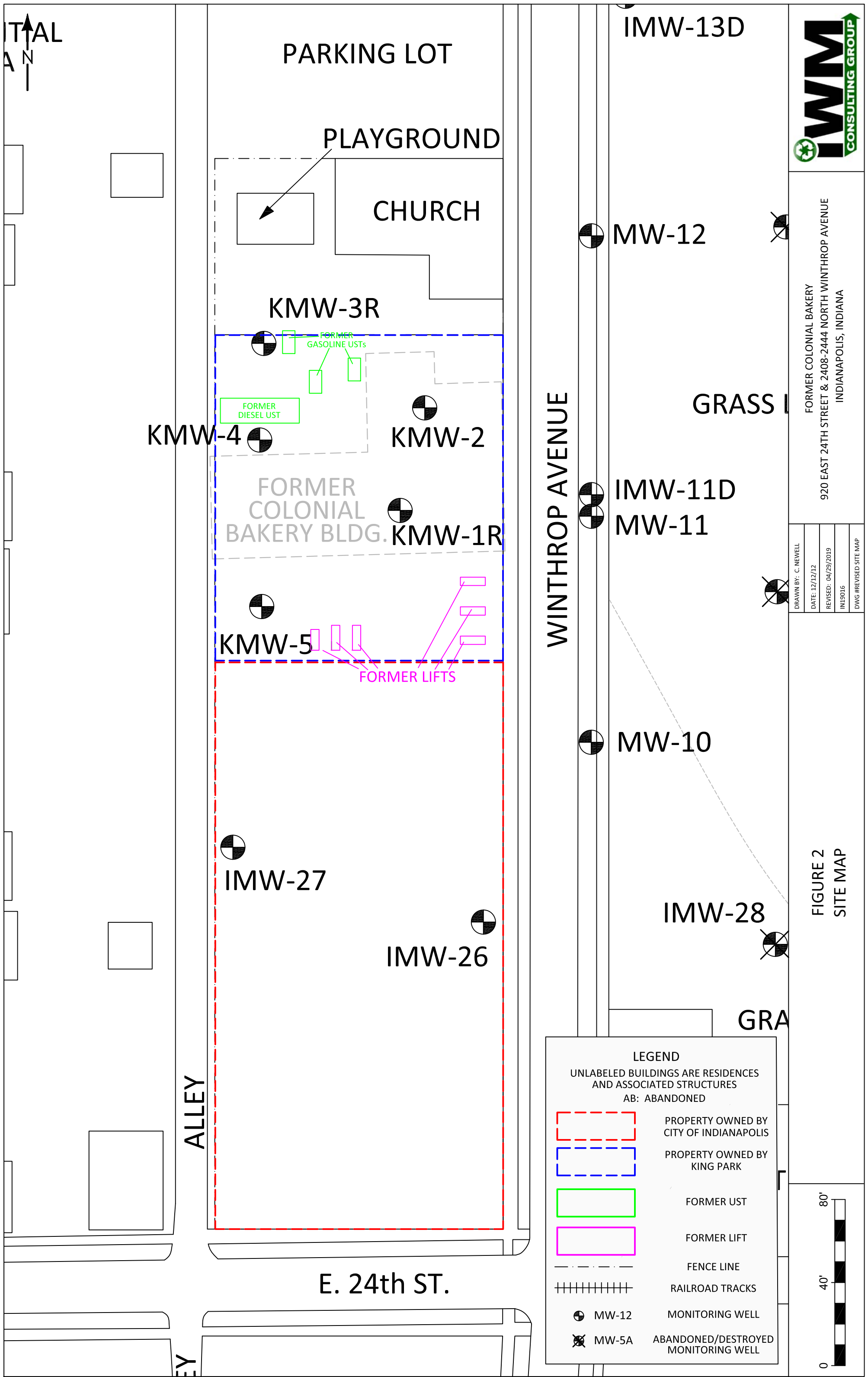
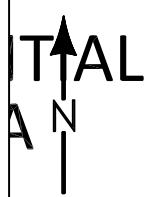


7428 Rockville Road
Indianapolis, IN 46214
(317) 347-1111
Fax: (317) 347-9326

TITLE **FIGURE 1 – Site Location Map
Former Colonial Bakery Property
920 E. 24th Street & 2408-2444 N. Winthrop Avenue
Indianapolis, Indiana**

CLIENT **INDIANA BROWNFIELDS PROGRAM
INDIANAPOLIS, INDIANA**

Project	Task	Size	Date
IN19016	01	A	04/29/2019




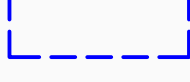


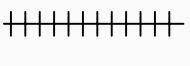



FORMER COLONIAL BAKERY
 920 EAST 24TH STREET & 2408-2444 NORTH WINTHROP AVENUE
 INDIANAPOLIS, INDIANA

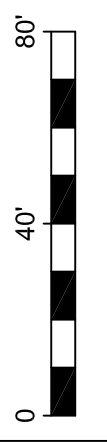
DRAWN BY: C. NEWELL
 DATE: 12/12/12
 REVISED: 04/29/2019
 IN19016
 DWG #REVISED SITE MAP

FIGURE 2
 SITE MAP

LEGEND

UNLABELED BUILDINGS ARE RESIDENCES AND ASSOCIATED STRUCTURES
 AB: ABANDONED

-  PROPERTY OWNED BY CITY OF INDIANAPOLIS
-  PROPERTY OWNED BY KING PARK
-  FORMER UST
-  FORMER LIFT
-  FENCE LINE
-  RAILROAD TRACKS
-  MW-12 MONITORING WELL
-  MW-5A ABANDONED/DESTROYED MONITORING WELL





PARKING LOT

PLAYGROUND

CHURCH

KMW-3R

FORMER GASOLINE USTs

FORMER DIESEL UST

KMW-4

KMW-2

FORMER COLONIAL BAKERY BLDG. KMW-1R

KMW-5

FORMER LIFTS

IMW-27

IMW-26

ALLEY

E. 24th ST.

IMW-13D

MW-12

WINTHROP AVENUE

GRASS

IMW-11D
MW-11

MW-10

IMW-28



FORMER COLONIAL BAKERY
920 EAST 24TH STREET & 2408-2444 NORTH WINTHROP AVENUE
INDIANAPOLIS, INDIANA

DRAWN BY: C. NEWELL
DATE: 12/12/12
REVISED: 04/29/2019
IN19016
DWG #REVISED SITE MAP

FIGURE 3
PROPOSED EXCAVATION AREA

LEGEND

UNLABELED BUILDINGS ARE RESIDENCES AND ASSOCIATED STRUCTURES
AB: ABANDONED

- PROPERTY OWNED BY CITY OF INDIANAPOLIS
- PROPERTY OWNED BY KING PARK
- FORMER UST
- FORMER LIFT
- FENCE LINE
- RAILROAD TRACKS
- MW-12 MONITORING WELL
- MW-5A ABANDONED/DESTROYED MONITORING WELL
- ISS-2 NEAR SURFACE SOIL SAMPLE
- PROPOSED EXCAVATION AREA (~2' DEPTH)



APPENDIX A
HEALTH AND SAFETY PLAN

IWM CONSULTING GROUP LLC
Health & Safety Plan

PREPARED FOR:

Indiana Finance Authority

(Customer Name)

Former Colonial Bakery Property

(Project location)

920 E. 24th Street and 2408-2444 N. Winthrop Ave., Indianapolis, IN

(Address)

IN19016

(Project number)

April 2019

Start Date

Ongoing

End Date

PREPARED BY:

Mandy Hall

Signature

Date

April 24, 2019

APPROVED BY:

Mandy Hall

- Office H&S Coordinator



4/24/2019

Print Name

Signature

Date

Bradley Gentry

- Project Manager



4/24/2019

Print Name

Signature

Date

ADDITIONAL APPROVALS

(if required)

Print Name

Title

Signature

Date

Print Name

Title

Signature

Date

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.

B. Site Location Information

1. Site Description: Vacant lot bounded by Winthrop Ave. on the east side and an alleyway on the west side.

2. Site History: Former coal and lime storage/distribution yard until 1940s, former truck maintenance garage (Colonial Bakery) from 1940s onwards.

3. Area of Concern: Soil from the surface to 2 feet bgs which was impacted from historical usage of hydraulic lifts and USTs.

4. Neighborhood Description: Mixed commercial and residential. Residential is located west of the Site, beyond the alley. A church is located north of the Site, a vacant industrial lot is located east of the Site, beyond Winthrop Avenue.

5. Topography and Site Access: The Site is relatively flat. Site accessed is from the east off of Winthrop Avenue.

6. Additional Information: _____

II. Hazard Evaluation

A. Physical Hazards (trenches, utilities, noise, biological, etc.)

<input checked="" type="checkbox"/> Auto Traffic	<input type="checkbox"/> Fire	<input type="checkbox"/> Explosion	<input type="checkbox"/> Trenches
<input checked="" type="checkbox"/> Overhead Utilities	<input checked="" type="checkbox"/> Underground Utilities		<input checked="" type="checkbox"/> Noise
<input checked="" type="checkbox"/> Slip Trip Fall	<input checked="" type="checkbox"/> Uneven Terrain		<input type="checkbox"/> Biological

Other: Describe _____

Note: * Appendix B: Attach a "hazard evaluation" for each task as part of Appendix B. (Tasks, Associated Risks and Hazards, Control Measures)

B. Chemical Hazards

The following substances, are known or suspected to be on-site or are to be used on site. The primary hazard of each are identified below.

Chemical Name	PEL/TLV/REL*	IDLH**	Exposure Route	Symptoms	First Aid
Benzene	1 ppm	500 ppm	Inhalation, skin absorption, ingestion, skin or eye contact	Inh.: Eye, nose and respiratory irritation Abs.: Giddy, headache, nausea, staggered gait, fatigue, anorexia Con.: Lassitude, dermatitis, bone marrow depressant	Eye: A Skin: E Breath: C Swallow: D
Toluene	100 ppm 150 ppm STEL	500 ppm	Inhalation, skin absorption, ingestion, skin or eye contact	Inh.: Fatigue, weak, confused, euphoria Abs.: Dizziness, headache, dilated pupil Ing.: Lacrimation, nervousness, muscle fatigue, insomnia Con.: Paresthesia, dermatitis	Eye: A Skin: E Breath: C Swallow: D
Ethylbenzene	50 ppm 100 ppm STEL	700 ppm	Inhalation, ingestion	Inh: Irritated eyes and mucus membranes Ing: Headache, dermatitis, narcosis, coma	Eye: A Skin: E Breath: C Swallow: D
Xylene	100 ppm	900 ppm	Inhalation, skin absorption, ingestion, skin or eye contact	Inh.: Dizziness, excitement, drowsiness Abs.: Incoordination, staggering gait Ing.: Eyes, nose and throat irritation Con.: Corneal vacuolization, anorexia, nausea, Vomiting, abdominal pain, dermatitis	Eye: A Skin: E Breath: C Swallow: D
Methyl-tertiary butyl Ether	50 ppm		Inhalation, skin or eye contact	Inh: Possible anesthetic effects, CNS sedation Con: Mildly irritating to skin and eyes	Eye: A Skin: E Breath: C Swallow: D
1,1-Dichloroethane	100 ppm	3000 ppm	Inhalation, ingestion, skin, and/or eye contact	Irritation skin; central nervous system depression; liver, kidney, lung damage	Eye: A Skin: E Breath: C Swallow: D
1,1-Dichloroethene	None		Inhalation, ingestion, skin, and/or eye contact	Inh: Irritated eyes & mucus membranes Ing: Headache, dermatitis, narcosis, coma	Eye: A Skin: E Breath: C Swallow: D
Cis-1,2-Dichloroethene (acetylene dichloride)	200 ppm	1000 ppm	Inhalation, ingestion, skin, and/or eye contact	Irritation eyes, respiratory system; central nervous system depression	Eye: A Skin: E Breath: C Swallow: D
Trans-1,2-Dichloroethene (acetylene dichloride)	200 ppm	1000 ppm	Inhalation, ingestion, skin, and/or eye contact	Irritation eyes, respiratory system; central nervous system depression	Eye: A Skin: E Breath: C Swallow: D
Tetrachloroethene	100 ppm 200 ppm-C	150 ppm	Inhalation, ingestion, skin, and/or eye contact	Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]	Eye: A Skin: E Breath: C Swallow: D
1,1,1-Trichloroethane	350 ppm	700 ppm	Inhalation, ingestion, skin, and/or eye contact	Irritation eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage	Eye: A Skin: E Breath: C Swallow: D
1,1,2-Trichloroethane	10ppm	Ca 100 ppm	Inhalation, ingestion, skin, and/or eye contact	Irritation eyes, nose; central nervous system depression; liver, kidney damage; dermatitis; [potential occupational carcinogen]	Eye: A Skin: E Breath: C Swallow: D
Trichloroethene	100 ppm 200-C	1000 ppm	Inhalation, ingestion, skin, and/or eye contact	Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]	Eye: A Skin: E Breath: C Swallow: D

Chemical Name	PEL/TLV/ REL*	IDLH**	Exposure Route	Symptoms	First Aid
Vinyl Chloride	1 ppm		Inhalation, skin, and/or eye contact	Lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]	Eye: A Skin: E Breath: C Swallow: D
n-Hexane	500 ppm	1100 ppm	Inhalation, ingestion, skin and eye contact	Irritation eyes, nose; nausea, headache; peripheral neuropathy: numb extremities, muscle weakness; dermatitis; dizziness; chemical pneumonitis (aspiration liquid)	Eye: A Skin: E Breath: C Swallow: D
Naphthalene	10 ppm	250 ppm	inhalation, skin absorption, skin and/or eye contact	Irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage	Eye: A Skin: E Breath: C Swallow: D
Tert-butyl alcohol	100 ppm 150 ppm STEL	1,600 ppm	Inhalation	Inh: Drowsiness, irritated skin and eyes	Eye: A Skin: E Breath: C Swallow: D
Benzo(a)anthracene	0.2 mg/m ³ (PAHs)	Not Available	Inhalation, ingestion, skin or eye contact	Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; and/or liver injury	Eye: A Skin: E Breath: C Swallow: D
Benzo(a)pyrene	0.2 mg/m ³ (PAHs)	Not Available	Inhalation, ingestion, skin or eye contact	Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; and/or liver injury	Eye: A Skin: E Breath: C Swallow: D
Benzo(b)fluoranthene	0.2 mg/m ³ (PAHs)	Not Available	Inhalation, ingestion, skin or eye contact	Irritation eyes, eye redness and tearing; headache; nausea, fatigue; weakness; dizziness; skin irritation, defatting, and dermatitis	Eye: A Skin: E Breath: C Swallow: D
Dibenzo(a,h)anthracene	Not Available	Not Available	Inhalation, ingestion, skin or eye contact	Irritation eye; may cause moderate to severe eye injury; moderate respiratory irritation, dizziness, weakness, fatigue, nausea, headache, can cause unconsciousness, skin irritation, possible burns, irritating to mouth, throat, and stomach; can cause abdominal discomfort if ingested	Eye: A Skin: E Breath: C Swallow: D
Indeno(1,2,3-cd)pyrene	0.2 mg/m ³ (PAHs)	Not Available	Inhalation, ingestion, skin or eye contact	Irritation eye; respiratory irritation; dizziness; weakness; fatigue; nausea; headache; unconsciousness; skin irritation and systemic damage; irritating to mouth, throat, and stomach, vomiting; diarrhea	Eye: A Skin: E Breath: C Swallow: D
Arsenic	0.01 mg/m ³	5 mg/m ³	Inhalation, ingestion	Skin irritation; can cause damage to kidneys, lungs, nervous system, and mucous membranes	Eye: A Skin: E Breath: C Swallow: D
Lead	0.05mg/m ³	100 ppm	Inhalation skin absorption, skin or eye contact	Inh.: Lassitude, insomnia Ing.: Pallor, anorexia Con.: low-weight, malnutrition, constipation, abdominal pain, colic, anemia, gingival lead line, tremor, paralysis wrist	Eye: A Skin: E Breath: C Swallow: D
Thallium	0.1 mg/m ³	15 mg/m ³	Skin and eye contact	Nausea, diarrhea, abdominal pain, vomiting, ptosis, strabismus, peri neuritis, tremor, chest pain, convulsions, psychosis; liver, kidney damage	Eye: A Skin: E Breath: C Swallow: D

*Permissible Exposure Limit (OSHA), Recommended Exposure Limits (REL) Threshold Limit Value (ACGIH) for time-weighted average for an 8-hour workday or 40-day workweek.

** Immediately dangerous to life and health

FIRST AID: (A) Irrigate Immediately (B) Water Flush Immediately (C) Artificial Respiration
(D) Medical Attention Immediately (E) Soap Wash Immediately

Note: Attachment C contains copies of MSDS for expected contaminants, if available

C. Medical Monitoring

Entire crew received baseline physicals?

YES NO

If No, why not? _____

List any special tests required & frequency: None required

III. Manpower

A.	Crew Size	Number	Names
	Project Manager	1	Brad Gentry
	Hydrogeologist/Engineer	2	Chris Newell & Chris Parks
	H&S Officer	1	Mandy Hall
	Equipment Operator	3-5	Various
	Technician	1-2	Various
	Other		

B. Contractor

Pre-qualified YES NO
(If no, see letter "C" below)

SCS Environmental Contracting

(Name)

P.O. Box 8980

(Address)

Forty Wayne, IN 46898

(City/State)

Corey Fogle - (260) 497-9006

(Contact Name & Phone Number)

Scope of Work: Asphalt removal and excavation

Training Required: 40-Hour HAZWOPHER; Annual 8-Hour Refreshers

Each Subcontractor must provide documentation of training, physical results and fit test at a minimum.

Subcontractor received required training? YES NO

Documented? YES NO

If no, Why: _____

C. If subcontractor is not pre-qualified, has pre-qualification package and contract approval been submitted to regional contract manager? YES NO

D. If NO, who has authorized used of subcontractor? _____

B. Contractor

Pre-qualified YES NO
(If no, see letter "C" below)

(Name)

(Address)

(City/State)

(Contact Name & Phone Number)

Scope of Work: _____

Training Required: 40-Hour OSHA and 8-Hour Refreshers

Each Subcontractor must provide documentation of training, physical results and fit test at a minimum.

Subcontractor received required training? YES NO

Documented? YES NO

If no, Why: _____

C. If subcontractor is not pre-qualified, has pre-qualification package and contract approval been submitted to regional contract manager? YES NO

D. If NO, who has authorized used of subcontractor? _____

IV. Equipment (describe type)

- Decon/Shower _____
- Manlift _____
- Skid Loader _____
- Generator _____
- Hydraulic Ram _____
- Excavator _____
- Pump(s) _____
- Chainsaws _____
- Drill Rig _____
- Other _____

- Fork Truck _____
- Crane _____
- Compressor _____
- Tamper _____
- Dump Truck _____
- Compactor _____
- Vacuum Tanker _____
- Cutting Dvs _____
- Torches _____
- Other _____

A. Is any special training required? 40 Hour OSHA

B. Any task being performed for which an SOP is in place? If yes, list SOP training.

	APPLICATION	TRAINING COMPLETED	TRAINING REQUIRED
1. Locating Utilities	Yes	Yes	Yes
2. Trenching and Excavating	Yes	Yes	Yes
3. Confined Space Entry	No		
4. Grounding & Bonding	No		
5. Line Breaking	No		
6. Lockout/Tagout/Tryout	No		
7. Labelling	No		
8. Pressure Washer Operations	No		
9. Container Management	No		
10. Heavy Equipment Decontamination	No		
11. Scrap Metal Decontamination	No		
12. PCB Wipe Sampling	No		
13. Manifesting Procedures	No		
14. Guzzler Vacuum Truck Operating	No		
15. Operation of Squeeze Filter Presses	No		
16. Project File Management	No		
17. Scaffolding	No		
18. Modutank Setup	No		

V.Levels of Protection:

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
 - cooling unit *
 - coveralls *
 - hard hat *
 - disposable gloves and boot covers

- Level B:• Pressure demand, atmosphere supplying respirator
- chemical resistant, protective clothing
 - inner and outer chemical resistant gloves
 - chemical resistant safety boots/shoes
 - hard hat *
 - radio communications
 - coveralls *
 - disposable boot covers *
 - face shield *
 - long cotton underwear *

- Level C:• Chemical resistant protective clothing
- face shield *
 - full face piece air purifying respirator
 - inner and outer chemical resistant gloves
 - escape mask *
 - chemical resistant safety boots/shoes
 - long cotton underwear *
 - coveralls *
 - hard hat *
 - disposable gloves and boot covers

- Level D:• Escape mask*
- Safety glasses or goggles
 - face shield*
 - inner and outer chemical resistant gloves
 - chemical resistant safety boots/shoes
 - hard hat
 - coveralls *
 - earplugs *

Safety glasses and safety boots are required on all sites, without respect to the work being performed. Hardhats are required during 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 vests are advised (& may be required) during gauging and/or sampling activities. * Optional

NO CHANGES TO THE SPECIFIED LEVELS OF PROTECTION SHALL BE MADE WITHOUT THE APPROVALS OF THE SAFETY COORDINATOR AND THE HYDROGEOLOGIST AT A MINIMUM

V. Worker Protection

Please complete a form for **each** work task

A. Task Description: **Asphalt removal and excavation**

Level A B C D

B. Respiratory Protection (check type which applies)

Air Purifying

Full Mask _____ Cartridge Type _____ Dust Mask _____

Supplied Air

SCBA _____ Airline _____ Escape Bottle _____ Other _____

Breathing Air Certificate on file _____ If no, breathing air tested _____

C. Protective Clothing

Hard Hat

Eye Protection

_____ Full face respirator Safety glasses

_____ Chemical resistant goggle _____ Face shield

_____ Other _____

Bodysuit

_____ Tyvek _____ Hooded _____ Sewn seam

_____ Polytyvek _____ Hooded _____ Sealed seam

_____ Saranex/CPF _____ Hooded _____ Strapped seam

_____ Rain gear (PVC) _____ Hooded _____

_____ Proshield (polypropylene) _____ Hooded _____

Other No bodysuit required, Level D PPE

Gloves (Indicate "O" for Outer, "I" for Inner)

Inner nitrile (4 mil) Leather for manual handling

_____ Outer nitrile (11 mil) _____ Cotton

_____ Butyl rubber _____ PVC

_____ Neoprene _____ Viton

_____ Neoprene (milled) _____ Silvershield

_____ Other _____

Boots

Leather - steel toed _____ PVC booties

_____ PVC - Steel Toed _____ Tyvek booties

_____ Neoprene - steel toed _____ Poly booties

_____ Rubber slush boots _____ Other _____

_____ Latex (Nuke) booties _____ Other _____

Hearing Protection

_____ Ear muffs Ear plugs

_____ Other _____

Note: This page may be duplicated for additional tasks

V. Worker Protection

Please complete a form for **each** work task

A. Task Description: **Soil sample collection**

Level A B C D

B. Respiratory Protection (check type which applies)

Air Purifying

Full Mask _____ Cartridge Type _____ Dust Mask _____

Supplied Air

SCBA _____ Airline _____ Escape Bottle _____ Other _____

Breathing Air Certificate on file _____ If no, breathing air tested _____

C. Protective Clothing

Hard Hat

Eye Protection

_____ Full face respirator Safety glasses

_____ Chemical resistant goggle _____ Face shield

_____ Other _____

Bodysuit

_____ Tyvek _____ Hooded _____ Sewn seam

_____ Polytyvek _____ Hooded _____ Sealed seam

_____ Saranex _____ Hooded _____ Strapped seam

_____ Rain gear (PVC)

_____ Proshield (polypropylene)

_____ Other Safety Vest, Level D PPE

Gloves (Indicate "O" for Outer, "I" for Inner)

Inner nitrile (4 mil) _____ Leather for material handling

_____ Outer nitril (11 mil) _____ Cotton

_____ Butyl rubber _____ PVC

_____ Neoprene _____ Viton

_____ Neoprene (milled) _____ Silvershield

_____ Other _____

Boots

Leather – steel toed _____ PVC booties

_____ PVC – Steel Toed _____ Tyvek booties

_____ Neoprene - steel toed _____ Poly booties

_____ Rubber slush boots _____ Other _____

_____ Latex (Nuke) booties _____ Other _____

Hearing Protection

_____ Ear muffs _____ Ear plugs

_____ Other _____

Note: This page may be duplicated for additional tasks

VI. Contamination Reduction and Decontamination

A. Describe how work zones will be set up and maintained*:

Traffic cones, caution tape, and/or vehicle will be used to delineate the work areas.

B. Decontamination Procedures:

Personnel and equipment leaving an identified Exclusion Zone, (indicate in Section VI.A.) shall be thoroughly decontaminated.

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

1. Wash gloves and/or boot covers using decon and water rinse.
2. Remove securing tape from wrists and ankles.
3. Remove disposable tyvek/or coveralls (without boots).
4. Remove boot covers and/or outer gloves.
5. Remove face mask respirator.
6. Remove inner gloves.

For Level "D," dress-down, follow steps 1,3,4,& 6, if protective equipment is worn.

Describe personnel decontamination procedures, if the procedures described above are not used: _____

Gloves will be removed and disposed of in plastic trash bags.

Describe equipment decontamination procedures:

Rinsed withalconox wash and water.

How is contaminated equipment disposed?

N/A

Describe storage of usable protective gear:

In gear bags

Describe laundering procedure for uniforms:

N/A

Locker room facility provided?

<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

Will a decon trailer be on site?

<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

If no, how will crew change clothing and shower?

At home

Describe provide for drinking water:

Available locally or brought on site in cooler.

Describe provision for restrooms:

If not available on site, will use local vendors.

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

VII. Safety Equipment

Check the items that will be stationed on the project site:

<input type="checkbox"/>	Safety Showers			<input type="checkbox"/>	Emergency	Oxygen w/mask
<input checked="" type="checkbox"/>	Portable eyewash			<input checked="" type="checkbox"/>	First Aid Station	
<input checked="" type="checkbox"/>	Barriers/Cones			<input type="checkbox"/>	Fume	Hood
<input type="checkbox"/>	Warning Signs			<input type="checkbox"/>	Grounding	Rods
<input type="checkbox"/>	Barrier Tape			<input type="checkbox"/>	Lifeline/harness	
<input type="checkbox"/>	Decon Trailer			<input type="checkbox"/>	Extraction	device
<input type="checkbox"/>	Lighting			<input type="checkbox"/>	Ladders	
<input type="checkbox"/>	Ventilation			<input type="checkbox"/>	Air	Horns
<input type="checkbox"/>	Ground/bonding cables					
<input checked="" type="checkbox"/>	Fire extinguishers (types & sizes)		5-10 lb ABC in vehicle			
<input type="checkbox"/>	Spill Control Supplies (describe)					
<input type="checkbox"/>	Other Safety Items:					

VIII. Communication Systems

Describe on-site communication systems: telephone and verbal communications & hand signals

IX. Monitoring Ambient Air Monitoring

The following equipment (check off appropriate ones and circle use) shall be used at intervals as specified:

<input type="checkbox"/>	Radiation Meter		Continuous/Hourly/2x Daily/Other	<input type="checkbox"/>
<input type="checkbox"/>	Combustible Gas/O ₂ Meter		Continuous/Hourly/2x Daily/Other	<input type="checkbox"/>
<input type="checkbox"/>	Colorimetric Tubes)		Continuous/Hourly/2x Daily/Other	<input type="checkbox"/>
<input type="checkbox"/>	Photo-ionization Detector (type)	<input type="checkbox"/>	Continuous/Hourly/2x Daily/Other	<input type="checkbox"/>
<input type="checkbox"/>	OVA/FID		Continuous/Hourly/2x Daily/Other	<input type="checkbox"/>
<input type="checkbox"/>	H ₂ S Monitor		Continuous/Hourly/2x Daily/Other	<input type="checkbox"/>
<input type="checkbox"/>	CO Monitor		Continuous/Hourly/2x Daily/Other	<input type="checkbox"/>
<input type="checkbox"/>	Dust Monitor (type)		Continuous/Hourly/2x Daily/Other	<input type="checkbox"/>
<input type="checkbox"/>	Personal Monitors (list)	<input type="checkbox"/>	Continuous/Hourly/2x Daily/Other	<input type="checkbox"/>
<input type="checkbox"/>	Other	<input type="checkbox"/>	Continuous/Hourly/2x Daily/Other	<input type="checkbox"/>
<input type="checkbox"/>	Other	<input type="checkbox"/>	Continuous/Hourly/2x Daily/Other	<input type="checkbox"/>
	Methodology/Frequency	<input type="checkbox"/>		
	Calibration	<u>Per manufacturer.</u>		

***Note: Appendix D contains results of real-time air monitoring surveys.**

Air Permits

List of Air Permits required: N/A

GUIDELINES FOR AIR MONITORING GASOLINE HAZARDS (1)

<u>Monitoring Instruments</u>	<u>Hazards</u>	<u>Measured Level</u>	<u>Action</u>
CGI-Combustible Gas Indicator (% Lower) Explosive Limit of combustible Gases	Explosive Atmosphere in immediate work area	< 10% LEL	Investigation with caution.
		> 10% LEL	Explosion hazard. Withdraw from area immediately.
GCI-Combustible Gas Indicator (Oxygen %)	Oxygen Concentration	< 19.5%	Monitor while wearing SCBA. Note: combustible gas readings are not valid in atmospheres with < 19.5% Oxygen Continue investigation with caution.
		19.5 - 23.0%	Discontinue investigation monitoring. Fire hazard potential. Consult H&S Coordinator.
		> 23.0%	
Photoionization (Hnu)/Flame ionization (OVA) Meters	Volatile Contaminants	Breathing Zone. Background to 100 ppm.	Level D Protection (2)
		100 to 300 ppm over background.	Level C Protection (2)
		300 to 500 ppm over background.	Level B Protection (2)
		Over 500 ppm over background.	Evaluate exposure source Consult H&S Coordinator

**Actions taken are based on sustained
or frequent readings.**

- (1) - Gasoline is used for this guideline based on its higher volatility.
- (2) - Meter readings are not the sole criteria for selecting the level of protection. These are only generalized guidelines.

XII. Hazardous Waste Operation Contingency Plan

Generator's Name: Former Colonial Bakery Property

Location, description and route to site: 920 E. 24th Street and 2408-2444 N. Winthrop Ave. in Indianapolis, IN

Take Rockville Rd. east to Lynhurst Dr. Turn left and head north on Lynhurst to 16th St. Turn right and head east for 5 miles to Meridian St. Turn left and head north to 22nd St. Turn right and head east to College Ave. Turn left and head north to 24th St. Turn right and head east to Winthrop Ave. Turn left and head north to site.

Contact:

Phone No:

Client Project Manager: Andrea Robertson Habeck (IFA)

Police: 911 or alternate number () -

Fire: 911 or alternate number () -

Hospital Name: IU Health Methodist Hospital

Phone/Address/Route to: 1801 N. Senate Blvd. Indianapolis, IN 46202 (IU Health Methodist Hospital); (317) 962-2000

See attached map for route to hospital. Proceed south to 24th St.; turn right. Proceed to College Ave.; turn left. Turn Right on E. 22nd Street; go 0.9 miles and turn left on N. Capitol Ave. Turn right at 16th St. and arrive at hospital on right.

Contact:

Alternate Contact:

Ambulance: 911

Interplant Medical:

Key Personnel: Office Resources - Phone Numbers

IWM Office	317-347-1111
<u>Hydrogeologist / Engineer:</u> Chris Parks	Ext. 127; Cell 317-847-2600
<u>Project Manager:</u> Brad Gentry	Ext. 123; Cell 317-435-8877
<u>Operations Manager:</u> Greg Scarpone	Ext. 125; Cell 317-431-0051
<u>Office H&S Coordinator:</u> Mandy Hall	Ext. 136; Cell 317-441-7839
<u>Emergency Contact:</u> Medical and Health	
<u>State Environmental Agency:</u> Andrea Robertson (IFA PM)	317-234-0968
<u>Emergency Response 24 hour action hotline</u>	317-233-7745
Poison Information Center	(800) 962-1253

Emergency Information

Has a copy of contingency plan been received by hospital listed?

YES NO N/A

(Explain) _____

Not required for service station work

Is it documented? YES NO N/A

(Explain) _____

Not required for service station work

Has the hospital been notified of job site activities and chemical hazards? YES NO N/A

(Explain) _____

Not required for service station work

Emergency Medical Provider Route Map:

Attach a map with written directions to the hospital and local medical provider as part of Appendix E.

Evacuation Route/Emergency Equipment Station Map:

Attach a site-specific map indicating evacuation route, location, and description of emergency safety equipment as part of Appendix A.

Evacuation Alarm Description: Verbal warning to all personnel

Evacuation Route Description: Away from area of danger.

Assembly Area Description: Assemble at entrance to site.

APPENDIX A

SITE MAPS



2444 Winthrop Ave, Indianapolis, IN

Google earth

feet
meters

600

100

Google earth





PARKING LOT

PLAYGROUND

CHURCH

KMW-3R

FORMER GASOLINE USTs

FORMER DIESEL UST

KMW-4

KMW-2

FORMER COLONIAL BAKERY BLDG. KMW-1R

KMW-5

FORMER LIFTS

IMW-27

IMW-26

ALLEY

E. 24th ST.

IMW-13D

MW-12

WINTHROP AVENUE

GRASS

IMW-11D
MW-11

MW-10

IMW-28

LEGEND

UNLABELED BUILDINGS ARE RESIDENCES AND ASSOCIATED STRUCTURES
AB: ABANDONED

- PROPERTY OWNED BY CITY OF INDIANAPOLIS
- PROPERTY OWNED BY KING PARK
- FORMER UST
- FORMER LIFT
- FENCE LINE
- RAILROAD TRACKS
- MW-12 MONITORING WELL
- MW-5A ABANDONED/DESTROYED MONITORING WELL
- X

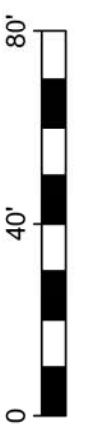
 ISS-2 NEAR SURFACE SOIL SAMPLE
- PROPOSED EXCAVATION AREA (~2' DEPTH)



FORMER COLONIAL BAKERY
920 EAST 24TH STREET & 2408-2444 NORTH WINTHROP AVENUE
INDIANAPOLIS, INDIANA

DRAWN BY: C. NEWELL
DATE: 12/12/12
REVISED: 02/05/2013
IN12018
DWG #REVISED SITE MAP

PROPOSED EXCAVATION AREA





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	<p>Employees are to wear proper PPE at all times, including ANSI approved steel toe boots, hard hat, gloves, safety vest, and safety glasses.</p> <p>Operator must wear seat belt when operating heavy equipment. Operator must be trained and certified</p> <p>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</p>
	Working with and near heavy machinery	<p>Spotter required to stay in the operator's field of vision at all times when digging or moving soil (spotter wearing reflective safety vest)</p> <p>Universal hand signals are to be agreed upon by operator and spotter prior to work commencing</p> <p>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</p>



Job Safety Analysis
Trenching and Excavating

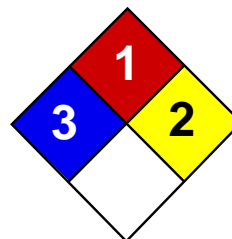
	Trench collapse	<p>Keep all equipment and spoil piles at least 4 feet from the excavation</p> <p>Use planks for walking/working surfaces around the excavation to distribute the weight of equipment and employees</p> <p>No employee may enter a trench greater than foot in depth without notifying the HSO, obtaining a confined space permit, and obeying the confined space permit</p> <p>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</p> <p>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</p>
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 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



Health	3
Fire	1
Reactivity	2
Personal Protection	E

Material Safety Data Sheet Arsenic MSDS

Section 1: Chemical Product and Company Identification

Product Name: Arsenic

Catalog Codes: SLA1006

CAS#: 7440-38-2

RTECS: CG0525000

TSCA: TSCA 8(b) inventory: Arsenic

CI#: Not applicable.

Synonym:

Chemical Name: Arsenic

Chemical Formula: As

Contact Information:

Sciencelab.com, Inc.

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

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

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

Section 2: Composition and Information on Ingredients

Composition:

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

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

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant), of eye contact (irritant).

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. **MUTAGENIC EFFECTS:** Not available.

TERATOGENIC EFFECTS: Not available. **DEVELOPMENTAL TOXICITY:** Not available. The substance is toxic to kidneys, lungs, the nervous system, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

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

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

Serious Skin Contact: Not available.

Inhalation:

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

Serious Inhalation:

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

Ingestion:

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

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

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

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

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

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:

Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits highly toxic fumes.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

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

Large Spill:

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

Section 7: Handling and Storage

Precautions:

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

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

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

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

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

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

Personal Protection in Case of a Large Spill:

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

Exposure Limits:

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

Section 9: Physical and Chemical Properties

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

Odor: Not available.

Taste: Not available.

Molecular Weight: 74.92 g/mole

Color: Silvery.

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

Boiling Point: Not available.

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

Critical Temperature: Not available.

Specific Gravity: 5.72 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

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

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

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

Chronic Effects on Humans:

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

Other Toxic Effects on Humans:

Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

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

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

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

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Arsenic UNNA: UN1558 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:

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

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

Other Classifications:**WHMIS (Canada):**

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

DSCL (EEC):

R22- Harmful if swallowed. R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 1

Reactivity: 2

Personal Protection: E

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

Health: 3

Flammability: 1

Reactivity: 2

Specific hazard:

Protective Equipment:

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

Section 16: Other Information**References:**

-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Liste des produits purs tératogènes, mutagènes, cancérogènes. Répertoire toxicologique de la Commission de la Santé et de la Sécurité du Travail du Québec. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Industrial 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 dangereuses au Canada. Centre de conformité international Ltée. 1986.

Other Special Considerations: Not available.

Created: 10/09/2005 04:16 PM

Last Updated: 06/09/2012 12:00 PM

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 ScienceLab.com 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 ScienceLab.com has been advised of the possibility of such damages.



Chemical Sampling Information / Benz(a)Anthracene

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 fluorescence
detection limit: excitation: 254nm emissions: 370nm

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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

1. IDENTIFICATION

Catalog Number / Product Name: 31271 / Benzo(a)pyrene Standard
Company: Restek Corporation
Address: 110 Benner Circle
Bellefonte, Pa. 16823
Phone#: 814-353-1300
Fax#: 814-353-1309
Emergency#: 800-424-9300 (CHEMTREC)
703-527-3887 (Outside the US)
Email: www.restek.com
Revision Number: 10
Intended use: For Laboratory use only

2. HAZARD(S) IDENTIFICATION**Emergency Overview:****GHS Hazard Symbols:**

GHS Classification: Skin Sensitisation Category 1
Germ Cell Mutagenicity Category 1B
Carcinogenicity Category 1B
Flammable Liquid Category 2
Serious Eye Damage/Eye Irritation Category 2
Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 3

GHS Signal Word: Danger

GHS Hazard: Highly flammable liquid and vapour.
May cause an allergic skin reaction.
Causes serious eye irritation.
May cause drowsiness or dizziness.
May cause genetic defects.
May cause cancer.

GHS Precautions:

Safety Precautions: Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilation and lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Wash hands and skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.

First Aid Measures: IF ON SKIN: Wash with plenty of soap and water.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.
 IF exposed or concerned: Get medical advice/attention.
 Call a POISON CENTER or doctor/physician if you feel unwell.
 Specific treatment see section 4.
 If skin irritation or rash occurs: Get medical advice/attention.
 If eye irritation persists: Get medical advice/attention.
 Wash contaminated clothing before reuse.
 In case of fire: Use extinguishing media in section 5 for extinction.

Storage: Store in a well-ventilated place. Keep container tightly closed.
 Store in a well-ventilated place. Keep cool.
 Store locked up.

Disposal: Dispose of contents/container according to section 13 of the SDS.

Single Exposure Target Organs: Specific target organ toxicity - Single exposure - STOT SE 3: H336 May cause drowsiness or dizziness.

Repeated Exposure Target Organs: No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Acetone	67-64-1	200-662-2	99.9
benzo (a) pyrene	50-32-8	200-028-5	0.1

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eyes: Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media: Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water spray or fog may also be effective for extinguishing if swept across the base of the fire. Water can also be used to absorb heat and keep exposed material from being damaged by fire. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Fire and/or Explosion Hazards: Vapors may be ignited by heat, sparks, flames or other sources of ignition at or above the low flash point giving rise to a Class B fire. Vapors are heavier than air and may travel to a source of ignition and flash back

Fire Fighting Methods and Protection: Do not enter fire area without proper protection including self-contained toxic breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface. Use water spray/fog for cooling. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Exposure to the spilled material may be irritating or harmful. Follow personal protective equipment recommendations found in Section 8 of

this SDS. Additional precautions may be necessary based on special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred. Also consider the expertise of employees in the area responding to the spill.

Methods for Clean-up:

Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions: Harmful or irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment

Storage Technical Measures and Conditions: Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Acetone	67-64-1	2500 ppm IDLH (10% LEL)	750 ppm STEL; 1782 mg/m3 STEL	500 ppm TWA; 1188 mg/m3 TWA	1000 ppm TWA; 2400 mg/m3 TWA
benzo (a) pyrene	50-32-8	Not established	None Known	Not established	0.2 mg/m3 TWA (listed under Coal tar pitch volatiles)

Personal Protection:

Engineering Measures: Local exhaust ventilation is recommended when generating excessive levels of vapours from handling or thermal processing.

Respiratory Protection: No respiratory protection required under normal conditions of use. Provide general room exhaust ventilation if symptoms of overexposure occur as explained Section 3. A respirator is not normally required.

Eye Protection: Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.

Skin Protection: Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work

Medical Conditions Aggravated By Exposure: Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color: Depends upon product selection

Odor: Strong

Physical State: No data available

pH: Not applicable

Vapor Pressure: No data available

Vapor Density: 2.0 (air = 1)

Boiling Point (°C): 56.05 °C at 1013.25 hPa

Melting Point (°C): -95.4 °C Melting Point

Flash Point (°F): 39

Flammability: Highly Flammable

Upper Flammable/Explosive Limit, % in air: No data available

Lower Flammable/Explosive Limit, % in air: No data available

Autoignition Temperature (°C): 465 deg C

Decomposition Temperature (°C): No data available

Specific Gravity: 0.7845 g/cm3 at 25 °C

Evaporation Rate: No data available

Odor Threshold: ND

Solubility: Complete; 100%

Partition Coefficient: n-octanol in water: No data available

VOC % by weight: 0

Molecular Weight: 58.08

10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions.
Conditions to Avoid: None known.
Materials to Avoid / Chemical Incompatibility: Strong oxidizing agents Strong acids
Hazardous Decomposition Products: Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, Skin Contact, Eye Contact, Ingestion
Target Organs Potentially Affected By Exposure: Eyes, Central nervous system stimulation, Respiratory Tract, Skin
Chemical Interactions That Change Toxicity: None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation: Can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.
Skin Contact: Can cause minor skin irritation, defatting, and dermatitis.
Eye Contact: Can cause minor irritation, tearing and reddening.
Ingestion Irritation: May be harmful if swallowed.
Ingestion Toxicity: Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity: Contains a probable or known human carcinogen.
Reproductive and Developmental Toxicity: No data available to indicate product or any components present at greater than 0.1% may cause birth defects.
Inhalation: Upon prolonged and/or repeated exposure, can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.
Skin Contact: Upon prolonged or repeated contact, can cause minor skin irritation, defatting, and dermatitis.

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Acetone	67-64-1	Dermal LD50 Rabbit >15700 mg/kg; Inhalation LC50 Rat 50100 mg/m ³ 8 h; Oral LD50 Rat 5800 mg/kg

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
Benzo[a]pyrene	50-32-8	Present

ACGIH:

Chemical Name	CAS No.	
Benzo[a]pyrene	50-32-8	A2 - Suspected Human Carcinogen
Acetone	67-64-1	A4 - Not Classifiable as a Human Carcinogen

NIOSH:

Chemical Name	CAS No.
No data available	

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 100F [2012]; Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983] (overall evaluation upgraded from 2B to 1 based on mechanistic and other relevant data)	50-32-8	Group 1

12. ECOLOGICAL INFORMATION

Overview:	This material is not expected to be harmful to the ecology.
Mobility:	No data
Persistence:	No data
Bioaccumulation:	No data
Degradability:	No data
Ecological Toxicity Data:	No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product:	Spent or discarded material is a hazardous waste. Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.
Disposal Methods:	Dispose of by incineration following Federal, State, Local, or Provincial regulations.
Waste Disposal of Packaging:	Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:	
DOT Proper Shipping Name:	Acetone
UN Number:	UN1090
Hazard Class:	3
Packing Group:	II

International:	
IATA Proper Shipping Name:	Acetone
UN Number:	UN1090
Hazard Class:	3
Packing Group:	II

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:					
Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Acetone	67-64-1	X	-	-	X
benzo (a) pyrene	50-32-8	X	X	-	X

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Benzo[a]pyrene	50-32-8	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Acetone	67-64-1	X	X	X	X
benzo (a) pyrene	50-32-8	X	X	X	X

16. OTHER INFORMATION

Prior Version Date:	12/08/16
Other Information:	Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.
References:	No data available
Disclaimer:	Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an

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Safety Data Sheet

Revision Date: 08/13/18

www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name: 31272 / Benzo(b)fluoranthene Standard
Company: Restek Corporation
Address: 110 Benner Circle
Bellefonte, Pa. 16823
Phone#: 814-353-1300
Fax#: 814-353-1309
Emergency#: 800-424-9300 (CHEMTREC)
703-527-3887 (Outside the US)
Email: www.restek.com
Revision Number: 10
Intended use: For Laboratory use only

2. HAZARD(S) IDENTIFICATION

Emergency Overview:

GHS Hazard
Symbols:



GHS Classification: Carcinogenicity Category 1B
Flammable Liquid Category 2
Serious Eye Damage/Eye Irritation Category 2
Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 3

GHS Signal Word: Danger

GHS Hazard: Highly flammable liquid and vapour.
Causes serious eye irritation.
May cause drowsiness or dizziness.
May cause cancer.

GHS Precautions:

Safety Precautions: Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilation and lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Wash hands and skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.

First Aid Measures: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
Call a POISON CENTER or doctor/physician if you feel unwell.
If eye irritation persists: Get medical advice/attention.
In case of fire: Use extinguishing media in section 5 for extinction.

Storage: Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal: Dispose of contents/container according to section 13 of the SDS.

Single Exposure Target Organs: Specific target organ toxicity - Single exposure - STOT SE 3: H336 May cause drowsiness or dizziness.

Repeated Exposure Target Organs: No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Acetone	67-64-1	200-662-2	99.9
benzo (b) fluoranthene	205-99-2	205-911-9	0.1

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eyes: Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media: Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water spray or fog may also be effective for extinguishing if swept across the base of the fire. Water can also be used to absorb heat and keep exposed material from being damaged by fire. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Fire and/or Explosion Hazards: Vapors may be ignited by heat, sparks, flames or other sources of ignition at or above the low flash point giving rise to a Class B fire. Vapors are heavier than air and may travel to a source of ignition and flash back

Fire Fighting Methods and Protection: Do not enter fire area without proper protection including self-contained toxic breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface. Use water spray/fog for cooling. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Exposure to the spilled material may be irritating or harmful. Follow personal protective equipment recommendations found in Section 8 of this SDS. Additional precautions may be necessary based on special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred. Also consider the expertise of employees in the area responding to the spill.

Methods for Clean-up: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal

evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions:	Harmful or irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment
Storage Technical Measures and Conditions:	Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Acetone	67-64-1	2500 ppm IDLH (10% LEL)	750 ppm STEL; 1782 mg/m3 STEL	500 ppm TWA; 1188 mg/m3 TWA	1000 ppm TWA; 2400 mg/m3 TWA
benzo (b) fluoranthene	205-99-2	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures:	Local exhaust ventilation is recommended when generating excessive levels of vapours from handling or thermal processing.
Respiratory Protection:	No respiratory protection required under normal conditions of use. Provide general room exhaust ventilation if symptoms of overexposure occur as explained Section 3. A respirator is not normally required.
Eye Protection:	Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.
Skin Protection:	Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work
Medical Conditions Aggravated By Exposure:	Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	Depends upon product selection
Odor:	Strong
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	2.0 (air = 1)
Boiling Point (°C):	56.05 °C at 1013.25 hPa
Melting Point (°C):	-95.4 °C Melting Point
Flash Point (°F):	39
Flammability:	Highly Flammable
Upper Flammable/Explosive Limit, % in air:	No data available
Lower Flammable/Explosive Limit, % in air:	No data available
Autoignition Temperature (°C):	465 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	0.7845 g/cm3 at 25 °C
Evaporation Rate:	No data available
Odor Threshold:	ND
Solubility:	Complete; 100%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	0
Molecular Weight:	58.08

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.
Materials to Avoid / Chemical Incompatibility:	Strong oxidizing agents Strong acids
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation, Skin Contact, Eye Contact, Ingestion
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Target Organs Potentially Affected By Exposure: Eyes, Central nervous system stimulation,
Respiratory Tract, Skin

Chemical Interactions That Change Toxicity: None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation: Can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.

Skin Contact: Can cause minor skin irritation, defatting, and dermatitis.

Eye Contact: Can cause minor irritation, tearing and reddening.

Ingestion Irritation: May be harmful if swallowed.

Ingestion Toxicity: Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity: Contains a probable or known human carcinogen.

Reproductive and Developmental Toxicity: No data available to indicate product or any components present at greater than 0.1% may cause birth defects.

Inhalation: Upon prolonged and/or repeated exposure, can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.

Skin Contact: Upon prolonged or repeated contact, can cause minor skin irritation, defatting, and dermatitis.

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Acetone	67-64-1	Dermal LD50 Rabbit >15700 mg/kg; Inhalation LC50 Rat 50100 mg/m ³ 8 h; Oral LD50 Rat 5800 mg/kg

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
Benzo(b)fluoranthene	205-99-2	Present

ACGIH:

Chemical Name	CAS No.	
Benzo[b]fluoranthene	205-99-2	A2 - Suspected Human Carcinogen
Acetone	67-64-1	A4 - Not Classifiable as a Human Carcinogen

NIOSH:

Chemical Name	CAS No.
No data available	

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983]	205-99-2	Group 2B

12. ECOLOGICAL INFORMATION

Overview:	This material is not expected to be harmful to the ecology.
Mobility:	No data
Persistence:	No data
Bioaccumulation:	No data
Degradability:	No data
Ecological Toxicity Data:	No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product:	Spent or discarded material is a hazardous waste. Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.
--	--

Disposal Methods: Dispose of by incineration following Federal, State, Local, or Provincial regulations.

Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:
DOT Proper Shipping Name: Acetone
UN Number: UN1090
Hazard Class: 3
Packing Group: II

International:
IATA Proper Shipping Name: Acetone
UN Number: UN1090
Hazard Class: 3
Packing Group: II

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States: Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Acetone	67-64-1	X	-	-	X
benzo (b) fluoranthene	205-99-2	X	X	-	-

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Benzo[b]fluoranthene	205-99-2	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Acetone	67-64-1	X	X	X	X
benzo (b) fluoranthene	205-99-2	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 12/08/16

Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.

References: No data available

Disclaimer: Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.



Safety Data Sheet

Revision Date: 06/20/18

www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name: 31276 / Dibenzo(a,h)anthracene Standard
Company: Restek Corporation
Address: 110 Benner Circle
Bellefonte, Pa. 16823
Phone#: 814-353-1300
Fax#: 814-353-1309
Emergency#: 800-424-9300 (CHEMTREC)
703-527-3887 (Outside the US)
Email: www.restek.com
Revision Number: 8
Intended use: For Laboratory use only

2. HAZARD(S) IDENTIFICATION

Emergency Overview:



GHS Hazard Symbols:

GHS Classification: Carcinogenicity Category 2

GHS Signal Word: Warning

GHS Hazard: Suspected of causing cancer.

GHS Precautions:

Safety Precautions: Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves/protective clothing/eye protection/face protection.

First Aid Measures: IF exposed or concerned: Get medical advice/attention.

Storage: Store locked up.

Disposal: Dispose of contents/container according to section 13 of the SDS.

Single Exposure Target Organs: No data available

Repeated Exposure Target Organs: No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Dichloromethane	75-09-2	200-838-9	99.9
dibenz (a,h) anthracene	53-70-3	200-181-8	0.1

4. FIRST-AID MEASURES

Inhalation:	Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately
Eyes:	Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention and monitor the eye daily as advised by your physician. Serious harm (damage) may result if treatment is delayed. Continue to flush eyes while awaiting medical attention
Skin Contact:	Wash with soap and water. Remove contaminated clothing, launder immediately, and discard contaminated leather goods. Get medical attention immediately.
Ingestion:	Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS. Never give anything by mouth to an unconscious person

5. FIRE- FIGHTING MEASURES

Extinguishing Media:	Use alcohol resistant foam, carbon dioxide, or dry chemical when fighting fires. Water or foam may cause frothing if liquid is burning but it still may be a useful extinguishing agent if carefully applied to the surface of the fire. Do Not direct a stream of water into the hot burning liquid. Use methods suitable to fight surrounding fire.
Fire and/or Explosion Hazards:	No data.
Fire Fighting Methods and Protection:	Use methods for the surrounding fire.
Hazardous Combustion Products:	Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment:	Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.
Methods for Clean-up:	Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions:	Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. As with all chemicals, good industrial hygiene practices should be followed when handling this material.
Storage Technical Measures and Conditions:	Store in a cool dry place. Isolate from incompatible materials. Keep container closed when not in use

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:					
Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Dichloromethane	75-09-2	2300 ppm IDLH	None Known	50 ppm TWA	25 ppm TWA; 125 ppm STEL (15 min. TWA)
dibenz (a,h) anthracene	53-70-3	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures:

Local exhaust ventilation or other engineering controls are normally required when handling or using this product to avoid overexposure.

Respiratory Protection:

Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to

Eye Protection:	eliminate symptoms. Wear chemically resistant safety glasses with side shields when handling this product. Wear additional eye protection such as chemical splash goggles and/or face shield when the possibility exists for eye contact with splashing or spraying liquid, or airborne material. Do not wear contact lenses. Have an eye wash station available.
Skin Protection:	Avoid skin contact by wearing chemically resistant gloves, an apron and other protective equipment depending upon conditions of use. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work.
Medical Conditions Aggravated By Exposure:	Eye disease Skin disease including eczema and sensitization Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	Colorless
Odor:	Strong
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	2.93 (air = 1)
Boiling Point (°C):	524 °C Boiling Point
Melting Point (°C):	-96.7 °C
Flash Point (°F):	No data available
Upper Flammable/Explosive Limit, % in air:	No data available
Lower Flammable/Explosive Limit, % in air:	No data available
Autoignition Temperature (°C):	556 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	1.3254 - 1.3258 g/cm ³ at 20 °C
Evaporation Rate:	No data available
Odor Threshold:	ND
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	0
Molecular Weight:	No data available

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known. Contamination High temperatures
Materials to Avoid / Chemical Incompatibility:	Strong oxidizing agents Caustics (bases)
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation Absorption Ingestion Skin contact Eye contact
Target Organs Potentially Affected By Exposure:	Skin, Cardiovascular System, Eyes, Liver
Chemical Interactions That Change Toxicity:	None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation:	Can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.
Inhalation Toxicity:	Harmful! Can cause systemic damage (see "Target Organs") Inhalation may cause severe central nervous system depression (including unconsciousness).
Skin Contact:	Contact causes severe skin irritation and possible burns.
Skin Absorption:	Harmful if absorbed through the skin. May cause severe irritation and systemic damage.
Eye Contact:	Contact with the eyes may cause moderate to severe eye injury. Eye contact may result in tearing and reddening, but not likely to permanently injure eye tissue. Temporary vision impairment (cloudy or blurred vision) is possible.
Ingestion Irritation:	Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.
Ingestion Toxicity:	Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity:	Contains a probable or known human carcinogen.
Reproductive and Developmental Toxicity:	No data available to indicate product or any components

Inhalation: present at greater than 0.1% may cause birth defects. Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache. Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs")

Skin Absorption: Upon prolonged or repeated exposure, harmful if absorbed through the skin. May cause severe irritation and systemic damage

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Methane, dichloro-	75-09-2	Inhalation LC50 Rat 53 mg/L 6 h

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
Dibenz[a,h]anthracene	53-70-3	Present
Methylene chloride	75-09-2	25 ppm TWA (8 hr.); 125 ppm STEL (15 min.); 12.5 ppm Action Level (see 29 CFR 1910.1051); effective date for respiratory protection for certain employers to achieve the 8-hour TWA PEL is August 31, 1998; the start up date to install engineering controls is December 10, 1998.; (OSHA - 29 CFR 1910 Specifically Regulate

ACGIH:

Chemical Name	CAS No.	
Dichloromethane	75-09-2	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

NIOSH:

Chemical Name	CAS No.	
Methylene chloride	75-09-2	potential occupational carcinogen

NTP:

Chemical Name	CAS No.	
No data available		

IARC:

Chemical Name	CAS No.	Group No.
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983] (overall evaluation upgraded from 2B to 2A with supporting evidence from other relevant data)	53-70-3	Group 2A
Monograph 110 [in preparation]; Monograph 71 [1999]	75-09-2	Group 2A

12. ECOLOGICAL INFORMATION

Overview:	Moderate ecological hazard. This product may be dangerous to plants and/or wildlife. Keep out of waterways.
Mobility:	No data
Persistence:	No data
Bioaccumulation:	No data
Degradability:	No data
Ecological Toxicity Data:	No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product:	Spent or discarded material is a hazardous waste. Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.
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Disposal Methods: Incinerate spent or discarded material a permitted hazardous waste facility.
Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:
DOT Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

International:
IATA Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Dichloromethane	75-09-2	X	X	-	X
dibenz (a,h) anthracene	53-70-3	X	X	-	X

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Dibenz[a,h]anthracene	53-70-3	Prop 65 Cancer
Dichloromethane	75-09-2	Prop 65 Cancer
Dichloromethane (Methylene chloride)		

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Dichloromethane	75-09-2	X	X	X	X
dibenz (a,h) anthracene	53-70-3	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 01/06/17
Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.
References: No data available
Disclaimer: Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.



Safety Data Sheet

Revision Date: 03/22/18

www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name: 31279 / Indeno(1,2,3-c,d)pyrene Standard
Company: Restek Corporation
Address: 110 Benner Circle
Bellefonte, Pa. 16823
Phone#: 814-353-1300
Fax#: 814-353-1309
Emergency#: 800-424-9300 (CHEMTREC)
703-527-3887 (Outside the US)
Email: www.restek.com
Revision Number: 10
Intended use: For Laboratory use only

2. HAZARD(S) IDENTIFICATION

Emergency Overview:



GHS Hazard Symbols:

GHS Classification: Carcinogenicity Category 2

GHS Signal Word: Warning

GHS Hazard: Suspected of causing cancer.

GHS Precautions:

Safety Precautions: Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves/protective clothing/eye protection/face protection.

First Aid Measures: IF exposed or concerned: Get medical advice/attention.

Storage: Store locked up.

Disposal: Dispose of contents/container according to section 13 of the SDS.

Single Exposure Target Organs: No data available

Repeated Exposure Target Organs: No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Dichloromethane	75-09-2	200-838-9	99.9
indeno (1,2,3-c,d) pyrene	193-39-5	205-893-2	0.1

4. FIRST-AID MEASURES

Inhalation:	Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately
Eyes:	Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention and monitor the eye daily as advised by your physician. Serious harm (damage) may result if treatment is delayed. Continue to flush eyes while awaiting medical attention
Skin Contact:	Wash with soap and water. Remove contaminated clothing, launder immediately, and discard contaminated leather goods. Get medical attention immediately.
Ingestion:	Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS. Never give anything by mouth to an unconscious person

5. FIRE- FIGHTING MEASURES

Extinguishing Media:	Use alcohol resistant foam, carbon dioxide, or dry chemical when fighting fires. Water or foam may cause frothing if liquid is burning but it still may be a useful extinguishing agent if carefully applied to the surface of the fire. Do Not direct a stream of water into the hot burning liquid. Use methods suitable to fight surrounding fire.
Fire and/or Explosion Hazards:	No data.
Fire Fighting Methods and Protection:	Use methods for the surrounding fire.
Hazardous Combustion Products:	Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment:	Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.
Methods for Clean-up:	Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions:	Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. As with all chemicals, good industrial hygiene practices should be followed when handling this material.
Storage Technical Measures and Conditions:	Store in a cool dry place. Isolate from incompatible materials. Keep container closed when not in use

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:					
Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Dichloromethane	75-09-2	2300 ppm IDLH	None Known	50 ppm TWA	25 ppm TWA; 125 ppm STEL (15 min. TWA)
indeno (1,2,3-c,d) pyrene	193-39-5	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures:

Local exhaust ventilation or other engineering controls are normally required when handling or using this product to avoid overexposure.

Respiratory Protection:

Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to

Eye Protection:	eliminate symptoms. Wear chemically resistant safety glasses with side shields when handling this product. Wear additional eye protection such as chemical splash goggles and/or face shield when the possibility exists for eye contact with splashing or spraying liquid, or airborne material. Do not wear contact lenses. Have an eye wash station available.
Skin Protection:	Avoid skin contact by wearing chemically resistant gloves, an apron and other protective equipment depending upon conditions of use. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work.
Medical Conditions Aggravated By Exposure:	Eye disease Skin disease including eczema and sensitization Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	Colorless
Odor:	Strong
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	2.93 (air = 1)
Boiling Point (°C):	530 °C
Melting Point (°C):	-96.7 °C
Flash Point (°F):	No data available
Upper Flammable/Explosive Limit, % in air:	No data available
Lower Flammable/Explosive Limit, % in air:	No data available
Autoignition Temperature (°C):	556 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	1.3254 - 1.3258 g/cm ³ at 20 °C
Evaporation Rate:	No data available
Odor Threshold:	ND
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	0
Molecular Weight:	No data available

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known. Contamination High temperatures
Materials to Avoid / Chemical Incompatibility:	Strong oxidizing agents Caustics (bases)
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation Absorption Ingestion Skin contact Eye contact
Target Organs Potentially Affected By Exposure:	Skin, Cardiovascular System, Eyes, Liver
Chemical Interactions That Change Toxicity:	None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation:	Can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.
Inhalation Toxicity:	Harmful! Can cause systemic damage (see "Target Organs") Inhalation may cause severe central nervous system depression (including unconsciousness).
Skin Contact:	Contact causes severe skin irritation and possible burns.
Skin Absorption:	Harmful if absorbed through the skin. May cause severe irritation and systemic damage.
Eye Contact:	Contact with the eyes may cause moderate to severe eye injury. Eye contact may result in tearing and reddening, but not likely to permanently injure eye tissue. Temporary vision impairment (cloudy or blurred vision) is possible.
Ingestion Irritation:	Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.
Ingestion Toxicity:	Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity:	Contains a probable or known human carcinogen.
Reproductive and Developmental Toxicity:	No data available to indicate product or any components

Inhalation: present at greater than 0.1% may cause birth defects. Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache. Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs")

Skin Absorption: Upon prolonged or repeated exposure, harmful if absorbed through the skin. May cause severe irritation and systemic damage

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Methane, dichloro-	75-09-2	Inhalation LC50 Rat 53 mg/L 6 h

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
Indeno[1,2,3-cd]pyrene	193-39-5	Present
Methylene chloride	75-09-2	25 ppm TWA (8 hr.); 125 ppm STEL (15 min.); 12.5 ppm Action Level (see 29 CFR 1910.1051); effective date for respiratory protection for certain employers to achieve the 8-hour TWA PEL is August 31, 1998; the start up date to install engineering controls is December 10, 1998.; (OSHA - 29 CFR 1910 Specifically Regulate

ACGIH:

Chemical Name	CAS No.	
Dichloromethane	75-09-2	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

NIOSH:

Chemical Name	CAS No.	
Methylene chloride	75-09-2	potential occupational carcinogen

NTP:

Chemical Name	CAS No.	
No data available		

IARC:

Chemical Name	CAS No.	Group No.
Monograph 110 [in preparation]; Monograph 71 [1999]	75-09-2	Group 2A
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983]	193-39-5	Group 2B

12. ECOLOGICAL INFORMATION

Overview:	Moderate ecological hazard. This product may be dangerous to plants and/or wildlife. Keep out of waterways.
Mobility:	No data
Persistence:	No data
Bioaccumulation:	No data
Degradability:	No data
Ecological Toxicity Data:	No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product:	Spent or discarded material is a hazardous waste. Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.
Disposal Methods:	Incinerate spent or discarded material a permitted hazardous waste facility.
Waste Disposal of Packaging:	Comply with all Local, State, Federal, and Provincial

14. TRANSPORTATION INFORMATION

United States:
DOT Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

International:
IATA Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Dichloromethane	75-09-2	X	X	-	X
indeno (1,2,3-c,d) pyrene	193-39-5	X	X	-	X

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Indeno[1,2,3-cd]pyrene	193-39-5	Prop 65 Cancer
Dichloromethane Dichloromethane (Methylene chloride)	75-09-2	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Dichloromethane	75-09-2	X	X	X	X
indeno (1,2,3-c,d) pyrene	193-39-5	X	X	X	X

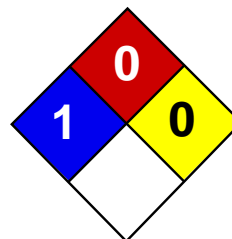
16. OTHER INFORMATION

Prior Version Date: 08/03/16

Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.

References: No data available

Disclaimer: Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.



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 lungs by 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 absorbed 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, delirium, 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 colic), spasms, nausea, vomiting, headache, muscle weakness, hallucinations, distorted perceptions, "lead line" on the gums, metallic taste, loss of appetite, insomnia, dizziness and other symptoms similar to that of inhalation. Acute poisoning may result in high lead levels in the blood and urine, shock, coma and death in extreme cases. Lead metal foil, shot or sheets: Not an ingestion hazard for usual industrial handling.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

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

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations**Waste Disposal:**

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

Section 14: Transport Information

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

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information**Federal and State Regulations:**

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

Other Regulations:

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

Other Classifications:

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

DSCL (EEC):

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

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 0

Reactivity: 0

Personal Protection: E

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

Health: 1

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:

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

Section 16: Other Information

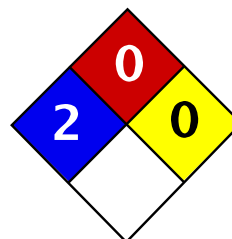
References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:21 PM

Last Updated: 06/09/2012 12:00 PM

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Health	3
Fire	0
Reactivity	0
Personal Protection	

Material Safety Data Sheet

Thallium AA Standard MSDS

Section 1: Chemical Product and Company Identification

Product Name: Thallium AA Standard

Catalog Codes: SLT3676

CAS#: Mixture.

RTECS: Not applicable.

TSCA: TSCA 8(b) inventory: Thallium; Nitric acid, 70%; Water

CI#: Not applicable.

Synonym:

Chemical Name: Not applicable.

Chemical Formula: Not applicable.

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
Thallium	7440-28-0	0.1
Water	7732-18-5	98.5
Nitric acid, fuming	7697-37-2	1.4

Toxicological Data on Ingredients: Thallium LD50: Not available. LC50: Not available. Nitric acid, fuming: VAPOR (LC50): Acute: 67 ppm 4 hour(s) [Rat].

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 (corrosive, irritant, permeator), of eye contact (irritant), of ingestion, of

inhalation.

Non-sensitizer for skin.

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

The substance is toxic to blood, kidneys, lungs, the nervous system, liver, mucous membranes.

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 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:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:

If the chemical got onto the clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the victim under a deluge shower. If the chemical got on the victim's exposed skin, such as the hands : Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cold water may be used. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact:

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

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: 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.

Slightly explosive to explosive in presence of reducing materials, of combustible materials, of organic materials.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures**Small Spill:**

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

Large Spill:

Corrosive 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. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. 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/ vapour/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

Storage: Corrosive materials should be stored in a separate safety storage cabinet or room.

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:

Thallium

TWA: 0.1 (mg/m³) from ACGIH

Nitric acid, fuming

TWA: 2 CEIL: 4 (ppm)

TWA: 5 CEIL: 10 (mg/m³)

Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Not available.

Taste: Not available.

Molecular Weight: Not applicable.

Color: Not available.

pH (1% soln/water): Acidic.

Boiling Point: The lowest known value is 82.6°C (180.7°F) (Nitric acid, fuming). Weighted average: 99.76°C (211.6°F)

Melting Point: May start to solidify at -41.6°C (-42.9°F) based on data for: Nitric acid, fuming.

Critical Temperature: Not available.

Specific Gravity: Weighted average: 1 (Water = 1)

Vapor Pressure:

The highest known value is 45 mm of Hg (@ 20°C) (Nitric acid, fuming). Weighted average: 17.92 mm of Hg (@ 20°C)

Vapor Density: The highest known value is 0.62 (Air = 1) (Water).

Volatility: Not available.

Odor Threshold: The highest known value is 0.29 ppm (Nitric acid, fuming)

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility: Easily soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Slightly reactive to reactive with reducing agents, combustible materials, organic materials, metals, acids, alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

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

Toxicity to Animals:

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.
Acute toxicity of the vapor (LC50): 4786 ppm 4 hour(s) (Rat) (Calculated value for the mixture).

Chronic Effects on Humans: The substance is toxic to blood, kidneys, lungs, the nervous system, liver, mucous membranes.

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: Not available.

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

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 8: Corrosive liquid.

Identification: : Nitric Acid Solution (Nitric acid, fuming) : UN2031 PG: II

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:

Pennsylvania RTK: Thallium; Nitric acid, 70%

Massachusetts RTK: Thallium; Nitric acid, 70%

TSCA 8(b) inventory: Thallium; Nitric acid, 70%; Water

SARA 302/304/311/312 extremely hazardous substances: Nitric acid, 70%

SARA 313 toxic chemical notification and release reporting: Thallium; Nitric acid, 70%

CERCLA: Hazardous substances.: Thallium; Nitric acid, 70%;

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

Other Classifications:

WHMIS (Canada):

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

CLASS E: Corrosive liquid.

DSCL (EEC):

R23- Toxic by inhalation.

R35- Causes severe burns.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 0

Personal Protection:

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

Health: 2

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.

Created: 10/10/2005 12:03 AM

Last Updated: 10/10/2005 12:03 AM

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APPENDIX E

SAFETY PLAN AMENDMENTS

SAFETY PLAN AMENDMENTS

Site Name: _____

Start Date: _____

End Date: _____

Scope of Work/Change/Amendment/Update/Modification Made to the Plan:

Reason for Amendment:

Hazard Evaluation:

Level of Protection:

Air Monitoring:

Person Requesting Amendment:

(Name)

(Title)

(Date)

(Signature)

Approval:

(Name)

(H&S Director)

(Date)

(Signature)

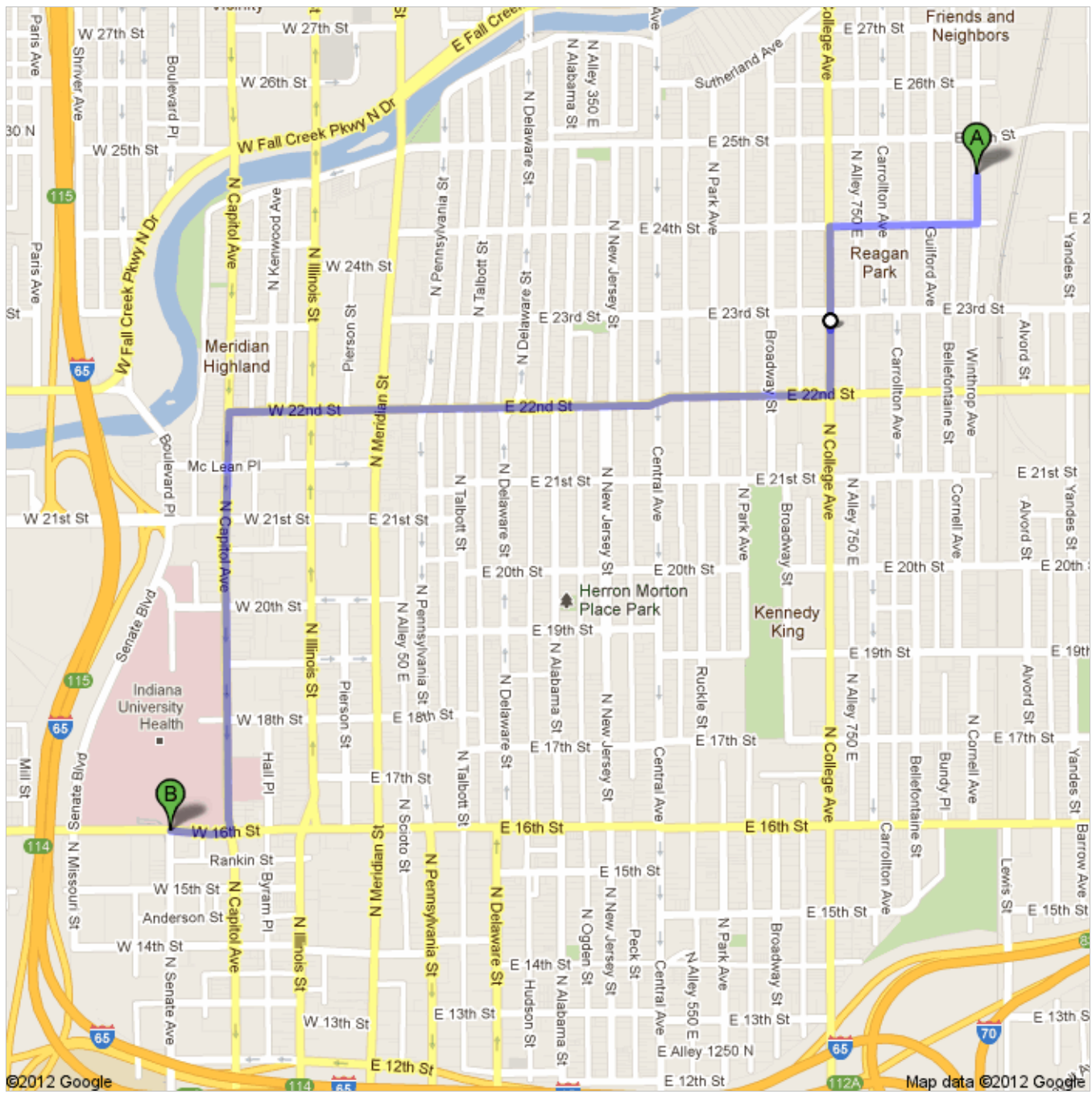
APPENDIX F


HOSPITAL AND LOCAL MEDICAL PROVIDER MAPS




Directions to IU Health Methodist Hospital

1801 N Senate Blvd, Indianapolis, IN 46202 - (317) 962-2000
2.1 mi – about 7 mins



 2444 Winthrop Ave, Indianapolis, IN 46205

-
- | | |
|---|---------------------------|
| 1. Head south on Winthrop Ave toward E 24th St | go 374 ft
total 374 ft |
|  2. Take the 1st right onto E 24th St
About 1 min | go 0.2 mi
total 0.3 mi |
|  3. Turn left onto N College Ave
About 1 min | go 0.2 mi
total 0.5 mi |
|  4. Take the 2nd right onto E 22nd St
About 3 mins | go 0.9 mi
total 1.4 mi |
|  5. Turn left onto N Capitol Ave
About 2 mins | go 0.6 mi
total 2.0 mi |
|  6. Turn right onto W 16th St | go 472 ft
total 2.1 mi |

 **IU Health Methodist Hospital**
1801 N Senate Blvd, Indianapolis, IN 46202 - (317) 962-2000

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Map data ©2012 Google

Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.