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an affiliate of Geosyntec Consultants

HEALTH AND SAFETY PLAN

FORMER SPERRY REMINGTON SITE - NORTH PORTION
ELMIRA HIGH SCHOOL
CITY OF ELMIRA, CHEMUNG COUNTY, NY
NYSDEC PROJECT C808022

Prepared for
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 8
6274 East Avon-Lima Road
Avon, New York 14414-9519

Prepared by
Geosyntec Consultants, Inc. and Its Affiliate
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Columbia, Maryland 21044

Project Number MN0832I
Document Number MD20021

February 2020

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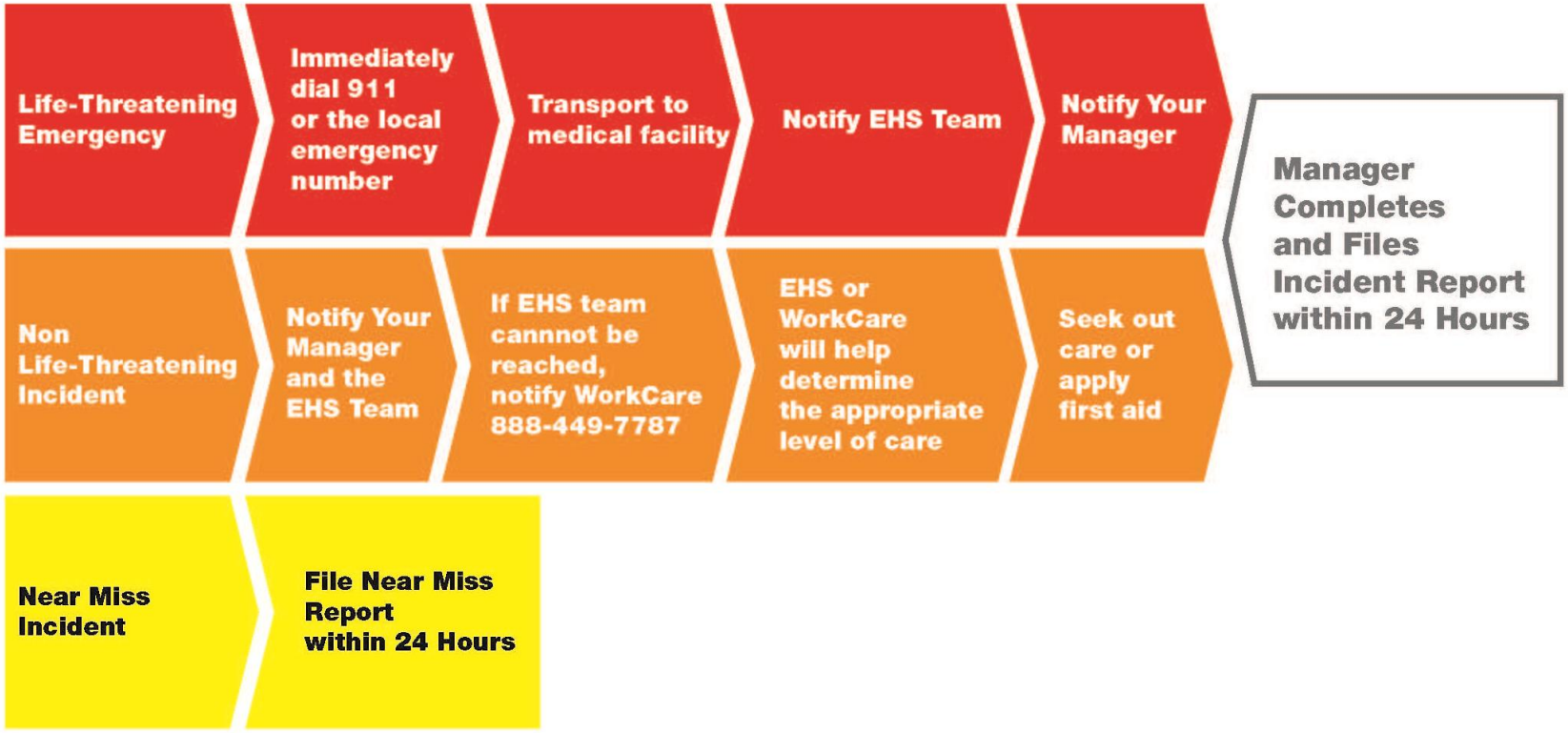
EHS Incident Response Procedures

CHOOSE THE RIGHT PATH



For more Information:
All work-related injuries, illnesses, and near-miss situations, to include vehicle accidents and general liability claims, must be documented and reported to the Environmental, Health & Safety (EHS) Team.

Dale Prokopchak
804-349-8067

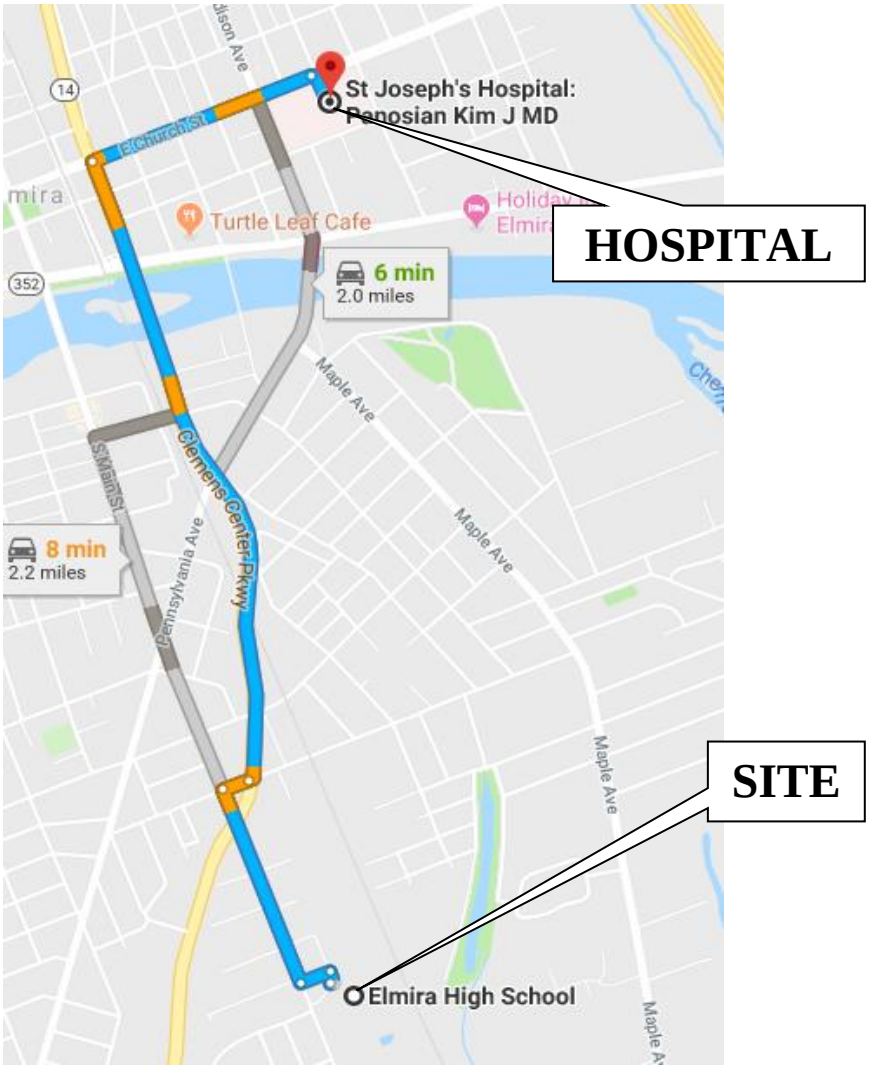
Ersin Yalcin
404-435-4722

Visit the EHS Team on the intranet:
http://home.geosyntec.com/Corp/EHS/

Geosyntec consultants

ROUTE TO HOSPITAL

St. Joesph's Hospital
555 East Market Street
Elmira, NY 14901
(607)-733-6541



Written Directions to Hospital from Site:

1. Depart S Main St toward W Miller St.
2. Turn right onto S Main St (250 ft)
3. Turn left onto Clemens Center Pkwy (1.2 mi)
4. Turn right onto E Church St (0.4 mi)
5. Arrive at **St. Joseph's Hospital**

ROUTE TO URGENT CARE FACILITY

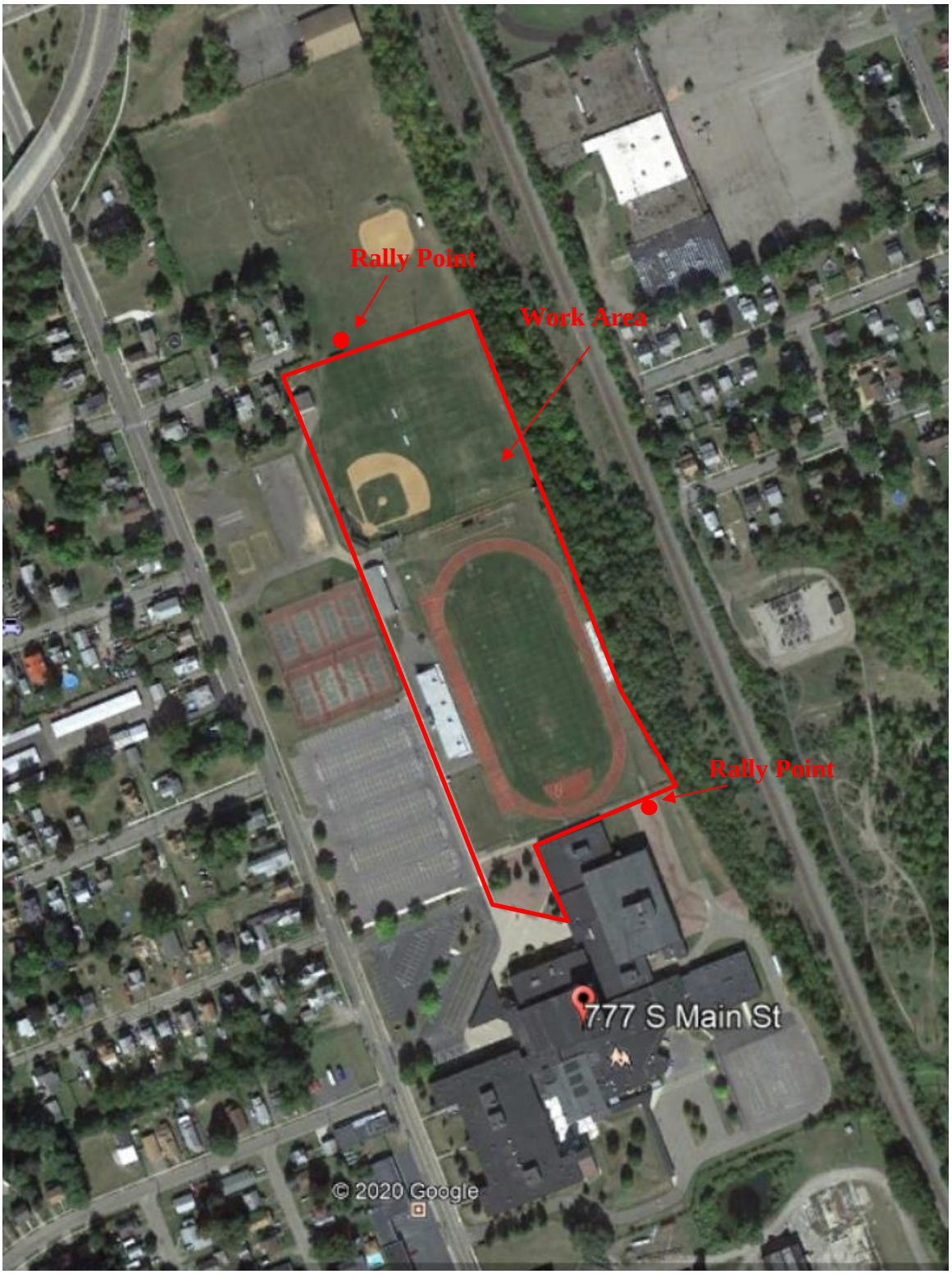
URGENT CARE FACILITY NAME

Elmira Urgent Care
607-732-1100
360 West Water Street
Elmira, New York

Written Directions to Urgent Care Facility from Site:

1. Depart S Main St toward Soper St (0.4 miles)
2. Turn right onto West Miller St. and then immediately turn left onto RT-14/Clemens Center Pkwy (1.0 miles)
3. Turn left onto Route -352E/E Water St. (0.4 miles)
4. Arrive at 360 W. Water St., Elmira, NY (Elmira Urgent Care)

SITE MAP



1. INTRODUCTION

This Health and Safety Plan (HASP) was prepared for Interim Remedial Measures (IRM) occurring at the Former Sperry Remington Site – North Portion, Site #c808022 (Site) in 2020. This HASP will address project-specific hazards known or suspected to be present associated with the existing conditions and work to be performed during IRM activities. This HASP was prepared to meet the requirements specified in Occupational Safety and Health (OSHA) Hazardous Waste Operations Emergency and Response (HAZWOPER) program, Geosyntec's Health and Safety (H&S) Procedure HS 301, and the H&S requirements of the client.

2. SIGNATURES

2.1 Preparers and Reviewers

This HASP must be maintained on site when field work is being performed. The Site Health and Safety Officer (SHSO) can change or amend this document, in agreement with the Health and Safety Coordinator (HSC) or Project Manager. Amendments (e.g., changes in personal protective equipment, addition of tasks, etc.) must be documented in Section 19 and in Appendix A. This HASP must be reviewed and amended on an annual basis for projects lasting more than one year.

Prepared by:	Matt Schallinger	M. Schallinger	2/14/2020
	SHSO		Date
Reviewed by:	Mark Bauer	Mark Bauer	2/14/2020
	HSC		Date
Approved by:	Aron Krasnopoler	Aron Krasnopoler	2/14/2020
	Project Manager		Date

This HASP has been given to the following H&S approved subcontractor(s).

Subcontractor: _____ Representative: _____ Date: _____

Subcontractor: _____ Representative: _____ Date: _____

Subcontractor: _____ Representative: _____ Date: _____

2.2 Geosyntec and Geosyntec Subcontractors or Employees

This HASP must be reviewed by personnel prior to site work. Workers not in attendance at the initial meeting must be trained by the SHSO on the information covered in the pre-entry briefing. After reading the HASP and attending a pre-entry briefing, Geosyntec employees and other parties covered under this HASP must sign the following acknowledgment statement.

"I have read, understand, and will perform my work in accordance with the information set forth in this HASP."

Signature	Printed Name	Date

3. EMERGENCY CONTACT INFORMATION

Contact	***Telephone Numbers***	
	Office	***Alternate (Type)***
Fire Department	911	
Police Department	911	
Site Emergency Response (if applicable)	Not Applicable	
Hospital - St. Joseph's Hospital	911	(607)-733-6541
Director of H&S– *Dale Prokopchak*	(804) 332-6376	(804) 349-8067 (Cell)
H&S Regional Manager – *Mark Malchik*	(978) 206-5777	(781) 392-5440 (Cell)
Project Manager – *Aron Krasnopoler*	(410) 910-7612	(202) 550-7724 (Cell)
Site Health & Safety Officer – *Matt Schallinger*	(612) 253-8209	(651) 356-5799 (Cell)
H&S Coordinator – *Mark Bauer*	(410) 910-7626	(315) 729-0644 (Cell)
Project Director - *Paul Brookner*	(612) 253-8203	(612) 599-7473(Cell)
Utility Emergencies	811	
Work Care	(888) 449-7877	(714) 978-7488
Facility Contact – *Joe Magolicca (Elmira City Schools)*	(607) 735-3980	
Client Contact – *Kevin Krueger (Unisys Corporation)*	(651) 687-2210	
Subcontractor -		
Subcontractor -		
Other -		

4. APPLICABILITY OF THIS HASP

This HASP was prepared in accordance with Geosyntec Consultants' H&S Procedures for use by Geosyntec project staff and subcontractors. Subcontractors, at a minimum, shall ensure that their employees, and those of its lower tier subcontractors, comply with these procedures and other health, safety and security provisions in the Subcontract. Compliance with this HASP shall represent the minimum requirements to be met by subcontractors, who shall be responsible for examining all requirements and determining whether additional or more stringent health, safety and security provisions are appropriate for their portion of the work and implementing them accordingly. Therefore, for firms executing all or any portion of the work, this document and its contents should not be used without a thorough peer review by their health and safety managers. Prior to commencing work, such firms are responsible for reviewing and supplementing the HASP to add appropriate procedures specific to their portion of the work.

5. SITE/TASK/HAZARD DESCRIPTION

5.1 Site Background

The following is a brief description of the site, including information as to the location, approximate size, previous usage, and current usage. A description of the tasks to be performed is also presented.

- Site Location: Former Sperry Remington Site North Portion
- Approximate Size of Site: 25 acres
- Previous Site Usage: Manufacturing – engines, drill tools, typewriters
- Current Site Usage: High School
- Description of Surrounding Property/Population:

North	Residential/Commercial	East	Rail Road Tracks; Residential/Commercial
South	Residential/Commercial	West	Residential/Commercial

- Summary of previous site investigations (if available/applicable):

Several phases of soil and groundwater investigation have been completed in the vicinity of the Site. Based on the current conceptual site model, contaminants of potential concern (COPCs) in soil include metals, polychlorinated biphenyls (PCBs), semi volatile organic compounds (SVOCs) which primarily consist of polycyclic aromatic hydrocarbons (PAHs), and volatile organic compounds (VOCs). COPCs in groundwater include lead, PCBs, SVOCs/PAHs, and VOCs.

5.2 Task Descriptions

Tasks for project include:

Task 1: Construction Oversight

Task 2: Confirmation Sampling

Task 3: Stockpile Sampling

Task 4:

Task Hazard Analyses (THAs) describing the tasks and potential hazards for each are presented in Appendix B.

5.3 Chemical Hazards

The classes of chemicals that are known or suspected to be present that may be encountered while performing site work include the following:

- Benzene, toluene, ethylbenzene, xylenes (BTEX)
- Chlorinated volatile organic compounds (VOCs)
- Semi-volatile organic compounds (SVOCs)
- Metals
- Total petroleum hydrocarbon (TPH)
- Polycyclic aromatic hydrocarbons (PAHs)
- Polychlorinated biphenyls (PCBs)
- Hazardous metals

Controls for these hazards are presented in the THAs included in Appendix B. A summary of these chemical hazards is presented in Appendix C.

5.4 Physical Hazards

The following physical hazards have been identified associated with the work to be performed and the site conditions.

- Cold Stress
- Drilling (including Indoor)
- Drum and Container Handling
- Dust and particulates
- Excavation to depths > 4 ft
- Eye Injury
- Hand/Foot Injury
- Heat Stress
- Heavy Equipment
- Knives / Blades
- Ladders
- Lifting Heavy Loads
- Loud Noise/Vibration
- Portable Power/Hand Tool
- Slips, Trips, and Falls
- Thoroughfares / Traffic
- Utility Protection

Controls for these hazards are presented in the THAs included in Appendix B.

5.5 Biological Hazards

The following biological hazards have been identified associated with the work to be performed and the site conditions.

- Allergic reaction to poisonous plants
- Biting/stinging insects
- Lyme disease
- Rats / vermin
- Snakes

Controls for these hazards are presented in the THAs included in Appendix B.

5.6 Weather Related Hazards

The site is located in a humid contentinal climate and has large seasonal temperature differences with an even distribution of precipitation throughout the year. The summers have been known to produce strong thunderstorms and can impede ongoing work activities at the site. The following conditions are considered hazardous while working at the site:

- Thunder
- Lightning
- Moderate to heavy rainfall

If thunder and/or lightning has been observed on the worksite then the 30-30 rule should be implemented. This procedure states that:

- If the time between the sight of lightning and clap of thunder is less than 30 seconds, shelter should be sought
- If lightning is not seen, take shelter upon first hearing thunder
- Stay in sheltered area for at least 30 minutes until after the last clap of thunder has been heard

Reasonable areas that provide adequate shelter on site are vehicles with the windows rolled up, onsite construction trailers, onsite conex boxes and the school building.

6. GENERAL SAFE WORK PRACTICES

The following general safe work practices must be adhered to while performing site work:

- Basic PPE shall be worn, including hard hats, safety glasses, hard-toed boots, and high-visibility vests. If conditions allow, the requirement for hard hats and hard-toed boots may be reduced with approval of the SHSO and Project Manager.
- Minimize contact with impacted materials. Do not place equipment on the ground. Do not sit or kneel on potentially contaminated surfaces.
- Smoking, eating, or drinking after entering the work zone and before personal decontamination is not allowed. Employees who are suspected of being under the influence of illegal drugs or alcohol will be removed from the site. Workers taking prescribed medication that may cause drowsiness shall not operate heavy equipment and are prohibited from performing tasks where Level C or B personal protective equipment is required.
- Practice good housekeeping.
- Use of contact lenses is not allowed under certain hazardous working conditions.
- The following conditions must be observed when operating a motor vehicle:
    - Wearing of seat belts is mandatory
    - The use of headlights is mandatory during periods of rain, fog, or other adverse weather or low-light conditions
    - A backup warning system or use of vehicle horn is mandatory when the vehicle is engaged in a backward motion
    - Posted traffic signs and directions from flagmen must be observed
    - Equipment and/or samples transported in vehicles must be secured from movement
    - The use of vehicles acquired by Geosyntec by non-Geosyntec personnel is prohibited
- In an unknown situation, always assume the worst reasonable conditions.
- Be observant of your immediate surroundings and the surroundings of others. It is a team effort to notice and warn of dangerous situations. Withdrawal from a hazardous situation to reassess procedures is the preferred course of action.
- Conflicting situations may arise concerning safety requirements and working conditions. These must be addressed and resolved rapidly by the SHSO and PM to relieve motivations or pressures to circumvent established safety policies.
- Unauthorized breaches of specified safety protocol are not allowed. Workers unwilling or unable to comply with established procedures will be asked to leave the work site.

7. EMERGENCY RESPONSE

This section discusses emergency response procedures and response equipment to be maintained on site. A table presenting a list of contacts and telephone numbers for the applicable local and off-site emergency responders is provided inside the front cover of this HASP (after figures).

7.1 Injury and Emergency Response Procedures

In the event of an **injury** to an employee, the instructions for injury response and reporting, located in the front of this HASP, must be implemented immediately. In the event that an **emergency** develops, the following procedures are to be implemented:

- The Site Health and Safety Officer (SHSO), or designated alternate, should be immediately notified via the on-site communication system. The SHSO assumes control of the emergency response.
- If applicable, the SHSO must immediately notify off-site emergency responders (e.g., fire department, hospital, police department, etc.) and must inform the response team of the nature and location of the emergency on site.
- If applicable, the SHSO may call for evacuation of the site. Site workers should move to their respective refuge stations using the evacuation routes provided on the Site Map.
- For small fires, flames should be extinguished using the appropriate type of fire extinguisher. Large fires should be handled by the local fire department.
- If a worker is injured, the procedures presented in "Instructions for Injury Response", located in the front of this HASP, must be implemented immediately.
- After an incident has stabilized, the procedures presented in "Instructions for Incident Reporting", located in the front of this HASP, must be followed.

7.2 Emergency Response Equipment

Emergency response equipment will be maintained in the work area as necessary for this project. Examples of emergency response equipment include first aid kits, and fire extinguishers (Type ABC).

8. KEY PERSONNEL AND HEALTH AND SAFETY RESPONSIBILITIES

Project personnel and their responsibilities in regard to health and safety concerns on this project are as follows:

Project Manager (PM): Aron Krasnopoler

- Approve this HASP and amendments, if any;
- Monitor the field logbooks for health and safety work practices employed;
- Coordinate with SHSO so that emergency response procedures are implemented;
- Check that corrective actions are implemented;
- Check and document that qualified personnel receive this plan and are aware of its provisions and potential hazards associated with site operations, and that they are instructed in safe work practices and familiar with emergency response procedures; and
- Provide for appropriate monitoring, personal protective equipment, and decontamination materials.

Site Health and Safety Officer (SHSO): Matt Schallinger/Ashwin Ranna

- Prepare and implement project HASP and amendments, if any, and report to the Project Manager for action if deviations from the anticipated conditions exist and authorize the cessation of work if necessary;
- Check that site personnel meet the training and medical requirements;
- Conduct pre-entry briefing and daily tailgate safety meetings;
- Check that monitoring equipment and personal protective equipment are operating correctly according to manufacturer's instructions and such equipment is utilized by on-site personnel. Calibrate or check calibration of monitoring equipment and record results;
- Check that decontamination procedures are being implemented;
- Implement site emergency response and follow-up procedures;
- Notify the HSC in the event an emergency occurs; and
- Perform and document weekly inspections, if necessary.

Health and Safety Coordinator: Mark Bauer

- Review and audit HASP and amendments;
- Notify Director of Health & Safety when an emergency occurs;
- Assist with the implementation of the corporate health and safety program; and
- Consult with staff on health and safety issues.

Site Workers

- Provide verification of required health and safety training and medical surveillance prior to arriving at the site;
- Notify supervisors of workplace accomodation requirements as the result of physical limitations or medical conditions;
- Attend pre-entry briefings and daily tailgate safety meetings;
- Immediately report accidents and/or unsafe conditions to the SHSO;
- Be familiar with and abide by the HASP; and
- Be ultimately responsible for his or her own safety.

9. WORKER TRAINING AND MEDICAL SURVEILLANCE

Personnel involved in field activities subject to OSHA HAZWOPER 29 CFR 1910.120 will be required to participate in both a health and safety training program that complies with criteria primarily set forth by the OSHA HAZWOPER in 29 CFR 1910.120(e) and a medical surveillance program covered under 29 CFR 1910.120(f), or equivalent regulations based on the jurisdiction in which the project is performed.

9.1 Pre-Assignment and Annual Refresher Training

Prior to arrival on site, the Geosyntec Project Manager will be responsible for monitoring that their staff meet the requirements of pre-assignment training (40/24 hours per Procedure HS 301). In addition, personnel must be able to document dates of attendance at an annual 8-hour refresher and three days of fieldwork under a qualified supervisor. Failure to provide this documentation will prohibit entry to the active work area(s) (i.e., Exclusion Zone).

9.2 Site Supervisor Training

Consistent with OSHA 29 CFR 1910.120 (e)(4), prior to arrival on site, individuals designated as site supervisors require an additional eight hours of specialized training.

9.3 Initial Site Safety Orientation and HASP Review

In addition to complying with 29 CFR 1910(e), site personnel will attend an initial safety orientation during which the HASP and applicable THAs will be reviewed prior to initiating field activities. This review will include the following:

- Understanding the lines of authority regarding health and safety and site personnel roles and responsibilities;
- Information of specific hazard agents related to the site and site operations will be discussed, such as health hazards of site chemicals and specific safety hazards of processes, tools, and equipment;
- Training in the proper use, maintenance, and decon protocol of PPE and Level(s) of Protection;
- Appropriate work practices and engineering controls to reduce/eliminate exposures to site hazards will be reviewed;
- Personnel will be informed of means for normal site and emergency communication(s);
- Air monitoring strategies will be discussed to include the frequency/types, action levels, sampling techniques, pre/post calibration techniques;
- Unique/site specific medical surveillance requirements that need to be considered based on site contaminants;
- Understanding site control measures, work zones, and proper decontamination procedures for personnel/tools/vehicles, etc. to reduce the potential for both on/off site contamination;
- Personnel will be trained to respond quickly and properly in the event of an emergency; and
- Personnel involved in specific hazardous activities, such as confined space entry, drum handling, sampling unknowns, etc. will receive specialized training in the appropriate techniques to employ prior to commencing these operations.

9.4 Baseline Medical Surveillance Exam

The baseline medical examination is used to identify physical capabilities and certain medical limitations that may have an impact on the candidate's ability to perform in the position and/or job activity for which he/she is being considered, as well as to establish certain baseline medical parameters. The initial test results can then be compared against future periodic or project-specific monitoring results.

9.5 Periodic/Annual/Biennial Medical Exam

The periodic medical examination is used to evaluate an employee's continued fitness for duty and to assess possible impact(s) occupational exposures may have had on their health status. The

periodic examination includes an update to the medical and work history, results of previous occupational exposure assessments, and a detailed medical exam tailored to the job description.

The Medical Director from WorkCare determines the frequency of the periodic medical exams based on regulatory requirements, the position/work activities of the employee, and the level of exposure to physical, chemical, and biological agents.

9.6 Exposure/Activity/Project-Specific Medical Testing

None planned.

9.7 Exit Exam

An exit medical examination is offered when an employee leaves the medical surveillance program, either because of termination of employment with Geosyntec or because of reassignment to a position not designated or identified to participate in the medical surveillance program. This optional exit examination may be used to assess potential changes in medical status that have occurred during the course of employees' previous work activities, and to establish a medical baseline at the time of departure.

9.8 Exit/Termination

An exit medical examination is offered when an employee leaves the medical surveillance program, either because of termination of employment with Geosyntec or because of reassignment to a position not designated or identified to participate in the medical surveillance program. This optional exit examination assesses potential adverse impacts from occupational exposures that may have contributed to the employee's health status.

10. MAPS AND SITE CONTROL

10.1 Routes to Hospital and Urgent Care Facility

A hospital and an urgent care facility near the site have been identified. Maps to the hospital and urgent care are included after the Table of Contents of this HASP. Both figures also include the facility name and phone number.

10.2 Site Map

A site map is located inside the cover of this HASP. The site map is intended to show the location of the work zone(s), to provide on-site orientation, and to delineate evacuation routes. Changes may be made to the site map by the SHSO based on changing site conditions. The site map should be accessible in the work area.

10.3 Buddy System

The buddy system is required when work is performed in hazardous areas. The buddy system includes maintaining regular contact with one or more onsite Geosyntec personnel, clients, and/or contractors to periodically check on the condition of site workers such that each employee in the work group is observed by (or in verbal contact with) at least one other employee in the work group. For field visits with only one employee onsite, the buddy system shall be implemented via periodic telephone contact with offsite Geosyntec personnel.The purpose of the buddy system is to provide rapid assistance to employees in the event of an emergency.

10.4 Controlled Work Zones

APPLIES TO TASK: ☒① ☒② ☒③ ☒④ ☐⑤ ☐⑥ ☐⑦ ☐⑧ ☐ Not Applicable

Three controlled work zones, including an Exclusion Zone, a Contaminant Reduction Zone (CRZ), and a Support Zone, are required for the task(s) indicated above. Geosyntec employees must not be allowed into the CRZ or Exclusion Zone or the Work Zone until they have received the proper personal protective equipment (PPE) and they have read, understand, and meet the requirements outlined in this HASP. The Exclusion Zone is defined as the area on site where contamination is suspected, and tasks are to be performed. The CRZ is defined as the area where equipment and workers are to be decontaminated as they leave the Exclusion Zone. The Support Zone is defined as the command area and may serve as a staging and storage area for supplies. The location and extent of the work zones may be modified as necessary as site investigation information becomes available. For sites that do not require the three controlled work zones, the area(s) where work is to be performed shall be called the Work Zone.

Visitors to the site may need to be continually escorted for safety purposes. Visitors under Geosyntec's direction need to check in with the SHSO upon visiting the site.

For the tasks identified above, the boundaries of the Exclusion Zone, CRZ, and Support Zone, or the Work Zone, shall be marked using appropriate methods, including but not limited to warning tape, signs, traffic cones, fencing, or other appropriate means.

10.5 Site Access

Certain sites require controlled access to the work area. Examples of access controls include sign in/sign out logs, checking in with guards, and donning identification badges. Geosyntec personnel will adhere to the site-specific access requirements and monitor that subcontractors and other Geosyntec visitors abide by site-specific access control requirements.

10.6 Inspections

☒ APPLICABLE ☐ NOT APPLICABLE

Based on the hazards identified for the project, periodic health and safety inspections may be performed. The Health & Safety Inspection Checklist records should be kept on file at the project site. The frequency for periodic inspections is:

☐ Weekly
☐ Monthly
☒ Other: As needed

11. TAILGATE MEETINGS

Tailgate meetings must be held daily prior to starting work to discuss important health and safety issues concerning tasks to be performed during that shift. Non-Geosyntec site workers should also communicate health and safety concerns associated with the tasks they will be performing. Topics discussed in the tailgate meetings must be documented.

12. STOP WORK AUTHORITY

In accordance with the Company's Procedure HS 203 - Stop Work Authority, Geosyntec personnel and subcontractor personnel have the authority and responsibility to issue a Stop Work Order if unsafe actions and/or conditions are identified. The Stop Work Authority (SWA) process involves a stop, notify, correct, and resume approach for resolving observed unsafe work actions or conditions. The person issuing the work stoppage will first notify workers engaged in or affected by the unsafe activity or condition and require that associated work be stopped. After this Stop Work Order is issued, the Geosyntec project manager and the supervisors for affected or concerned contractors will also be notified. The Geosyntec project manager will document the issuance of

the Stop Work Order on the form provided in Procedure HS 203. Work will not resume until the issues and concerns of the Stop Work Order have been adequately addressed.

13. AIR MONITORING

APPLIES TO TASK: ☒① ☒② ☐③ ☐④ ☐⑤ ☐⑥ ☐⑦ ☐⑧ ☐ Not Applicable

Air monitoring will be performed to evaluate airborne chemical and/or dust exposure levels within the breathing zone of site workers. Hazardous conditions may include concentrations that may cause acute or chronic illness, potential oxygen deficient environments, or potential explosive environments. Air monitoring may also be performed to evaluate the adequacy of engineering, administrative, and/or PPE controls. Air monitoring may be "real-time" (e.g., the instrument provides immediate results at the project), using multi-gas meters, photoionization detectors (PIDs), or colorimetric tubes. Personal monitoring may also be performed by collecting samples and forwarding to a laboratory for analysis and quantification.

The type(s) of air monitoring equipment required and associated action levels are outlined in Appendix D. Monitoring equipment must be calibrated based on the manufacturer's requirements. Calibration results and air monitoring measurements must be documented. Based on the results noted and site activities or scope of work changes, the frequency of air monitoring may be adjusted on site by the SHSO with the consent of the Project Manager and communication with the HSC.

14. PERSONAL PROTECTIVE EQUIPMENT

The levels of PPE required for each task are presented in Appendix E. Required equipment and types of protective clothing materials, as well as an indication of the initial level of protection to be utilized, are listed. The level of protection may be upgraded or downgraded by the SHSO according to controls requirements in Appendix E or according to action levels provided in Appendix D.

If respirators are worn, workers must abide by the company's Respiratory Protection Program in accordance with company's Respiratory Protection Program (EHS 112).

15. DECONTAMINATION

The SHSO and Project Manager will determine the type and level of decontamination procedures for both personnel and equipment based on evaluation of specific work activities in the controlled work zones. Medical treatment will take precedence over decontamination in the event of a life threatening and/or serious injury/illness. Personnel will perform decontamination in designated

and identified areas upon leaving "hot zones" where the potential exists for exposure to hazardous chemical, biological, or environmental conditions.

Decontamination of personnel in Level D (modified) will consist of proper containerization and disposal of coveralls, disposable boots, and gloves (if applicable).

Decontamination of personnel in Level C, if applicable, will consist, at a minimum, of:

- Removal and cleaning/disposal of boot covers, coveralls, and outer gloves;
- Removal, cleaning, and storage of respiratory protection;
- Washing of non-disposable PPE suspected of being contaminated using a soap solution followed by a water rinse; and
- Removal and disposal of inner gloves.

Hand tools and sampling equipment shall be decontaminated as needed by washing in decontamination basins with appropriate solutions, or, if possible, by dry decontamination. Wash solutions and PPE may require disposal at a licensed waste facility.

16. SPILL CONTAINMENT

The task(s) for this project may involve the handling of drums and/or containers that contain stored chemicals, hazardous materials, and/or wastes. The drums and/or containers may have been spilled/dislodged during site activities due to compromised construction of the drum/container, transportation accidents, improper packaging practices, and improper handling of hazardous materials during on/off loading. Containers shall be inspected and their integrity assured prior to being moved and/or handled. If the integrity of the container is in question, the container shall be over packed or its contents transferred. Operations shall be organized and coordinated to minimize movement of such containers. Where spills, leaks, or ruptures may potentially occur, a supply of sorbents shall be located in the immediate area. Additional preventative measures include:

- UN-approved 55-gallon drums, bins, and/or Baker tanks will be inspected for visible defects upon delivery to the site;
- UN-approved 55-gallon drums will also be inspected to ensure each drum includes a resealable lid with a small resealable sampling port near the top, or on the side of the drum and that the enclosure is not deformed and/or distorted;
- Drums will not be completely filled to allow for possible expansion of liquid and will be set on wooden pallets to facilitate transport by forklift;
- The storage area will be inspected to check for leaks weekly while the containers are being filled and immediately after a relocation to a temporary on-site storage area; and

- Flat areas will be selected for temporary storage away from high-traffic work areas/zones and storm/sewer drains.

In the event of an unplanned release or spill of unknown or hazardous substances, the site supervisor will designate personnel who will support the spill containment, control, and/or clean-up procedures. The team will request additional off-site emergency response assistance if necessary based on the type of spill, volume, potential toxicity, etc.

The spill area will be isolated and restricted to only authorized personnel designated to assist with the containment, control, or clean-up activity. Authorized personnel will be trained to contain and clean spills from typical materials and quantities used at the project location. Physical barriers will be set up to warn unauthorized personnel to stay clear and evacuate the affected area. The spill, leak, or incident will be assessed by the team and characterized to determine the appropriate course(s) of action(s) to consider:

- Small spills (i.e., maximum volume of 55 gallons of a liquid or 100 pounds of a solid) may be remediated using absorbent materials by designated personnel;
- Large spills (i.e., liquid volumes > 55 gallons or solid weighs > 100 pounds) and/or spills of highly toxic materials may require assistance by off-site hazardous materials (HAZMAT) teams;
- Attempts shall be made to identify and stop the source(s) of spillage immediately while donning proper PPE (based on action levels and the air monitoring program) and performing air monitoring;
- The site supervisor will direct spill-response operations and stay at the spill area until it has been cleaned, inspected, and cleared for re-entry; and
- The site supervisor will prepare a spill incident and clean-up report and will communicate findings to the Project and Branch Manager and EHS Department.

17. CONFINED SPACE ENTRY

☐ APPLICABLE ☒ NOT APPLICABLE

The task(s) for this project involve confined-space entry. Workers must abide by the company's Confined Space Entry Program (Procedure HS 118).

18. GLOBALLY-HARMONIZED SYSTEM FOR HAZARD COMMUNICATION

☒ APPLICABLE ☐ NOT APPLICABLE

The following procedures must be followed for chemicals brought onto the site by Geosyntec personnel or by subcontractors (i.e., decontamination solution, sampling preservatives, KB-1 solution, sodium permanganate, etc.) while performing the tasks of this project:

- Labels on primary chemical containers must not be defaced;
- Chemicals must be stored in appropriate storage containers;
- Secondary containers and storage cabinets must be correctly and clearly labeled;
- Chemicals incompatible with each other must not be stored together;
- Workers must receive training on the chemical hazards; and
- Safety Data Sheets (SDSs) must be added to Appendix F.

When chemicals are used on site, workers must abide by Geosyntec's GHS Hazard Communication Program (Procedure HS 115).

19. HASP AMENDMENTS

Over the course of this project, it is possible that the project-specific hazards and working conditions will change. This HASP may be reviewed and amended as necessary to effectively describe the changing working conditions and measures to mitigate the potential health and safety issues that may arise during the project. Amendments to the HASP should be briefly described in the following spaces provided. The full text of the amendments should be provided in Appendix A and/or additional THAs should be added to Appendix B.

AMENDMENT 1:

Date: _____ Project Manager: _____ HSC: _____
Brief description of amendment:
_____
_____
_____
_____
_____

AMENDMENT 2:

Date: _____ Project Manager: _____ HSC: _____
Brief description of amendment:

_____
_____
_____
_____
_____

AMENDMENT 3:

Date: _____ Project Manager: _____ HSC: _____
Brief description of amendment:

_____
_____
_____
_____
_____

Appendix A: HASP Amendments

Discuss details of amendments to this HASP here. Include amendment number, date, and details of amendments.

Appendix B: Task Hazard Analyses

TASKS	
①Construction Oversight	⑤
②Confirmation Sampling	⑥
③ Stockpile Sampling	⑦
④	⑧

THAs for these tasks are presented in the following pages.

APPENDIX B – Task Hazard Analyses

TASK HAZARD ANALYSIS (THA)

Geosyntec HS Procedures referenced herein are available on Geosyntec's H&S SharePoint site and should be consulted, as appropriate, per project-specific needs. This THA prepared per HS-106-Accident Prevention Program, HS-204-Task Hazard Analysis.

PART 1 – SITE SAFETY PLAN

A. PROJECT/TASK INFORMATION

TASK:	Confirmatory Sampling in an open excavation		
Project Name:	Former Sperry Remington Site – North Portion	**Project Number/Org:**	MN0832F/1751
Project Address:	777 Sourth Main Street, Elmira, New York		
Description of Task & Worksite:	Confirmatory sampling at base and along sidewalls of excavation.		

Geosyntec Personnel	Name	Office Phone	Cell Phone
Site Lead/HS Officer	Matt Schallinger	(612) 253-8209	(651) 356-5799
Project Manager	Aron Krasnopoler	(410) 910-7612	(202) 550-7724
Project Director	Paul Brookner	(612) 253-8203	(612) 599-7473
HS Coordinator	Mark Bauer	(410) 910-7626	(315) 729-0644
Regional HS Mngr.	Mark P. Malchik	978-206-5777	781-392-5440
Corp. HS Director	Dale Prokopchak	804-332-6376	804-349-8067
ECSD Contact	Mike Dunn	(607) 735-3980	(607) 426-2856
Client Contact(s):	Kevin Krueger	(651) 687-2210	
Subcontractor(s):	☒ Not Applicable ☐ Applicable, provide contact information below:		

B. SUMMARY OF WORK STEPS, HAZARDS, CONTROLS

Based on **PART 2, "HAZARD ANALYSIS,"** and on worksite/client/project factors.

Abstract of work steps/hazards/controls, with references to applicable Sections in Part 2 for greater detail:

WORK STEPS	HAZARDS	CONTROLS
Task 1: Entering and Exiting Excavation Area	• *Slip, trip, fall* • *Ladders* • *Heavy equipment* • *Potential chemical exposure* • *Heat stress* • *Eye injury* • *Noise* • *Excavation to depths > 4 ft* • *Hazardous Atmosphere*	• *Walk carefully on uneven terrain* • *Communicate to all field personnel when mechanical equipment is in operation (see EHS 119)* • *Wear required PPE* • *Use proper eye protection* • *Use proper hearing protection (see EHS 109)* • *Ladders (EHS-501)* • *Excavation (see EHS 402)* • *Heavy equipment (see EHS 504)* • *Fall Protection measure (ex. Warning line, barricade, fencing, etc.)* • *Shoring, Slopping, stepping, Bracing of walls, etc.* • *Obtain clearance from Site Competent Person* • *Screen Atmosphere with 5-gas meter (see EHS 111)*

Task 2: Sample Collection, Labeling and Packing	• *Slip, trip, fall* • *Mechanical equipment* • *Heat stress* • *Eye injury* • *Noise* • *Potential contaminant exposure: VOCs, PCBs, SVOCs* • *Back strain when transporting coolers full of collected samples packed with ice.* • *Excavation cave-in*	• *Walk carefully on uneven terrain* • *Communicate to all field personnel when mechanical equipment is in operation (see EHS 119)* • *Wear required PPE* • *Use proper eye protection* • *Use proper hearing protection (see EHS 109)* • *Excavation (see EHS 402)* • *Heavy equipment (see EHS 504)* • *Communicate when entering and exiting the excavation and be aware of any moving equipment.* • *Use proper lifting techniques. Get assistance when possible* • *Stay on grond level when collecting stockpile samples* • *Excavationmust be inspected by a competent person prior to entry. (HS 402)*
Task 3: Equipment Decontamination *Decontaminate equipment that will be reused (e.g. hand auger, trowel, et. al.)*	• *Slips, Trips, and Falls* • *Hand injuries during handling of equipment.* • *Potential contaminant exposure: VOCs, PCBs, SVOCs* • *Splash hazards*	• *Pay close attention to foot placement; slow deliberate movement.* • *Pay close attention to the sharp edge of steel hand trowel to avoid cutting or other injuries of hands.* • *Continue to wear level D PPE and minimize contact with water.*

C. H&S EQUIPMENT LIST

List HS equipment needed at the worksite to control/manage hazards identified in **PART 2, "HAZARD ANALYSIS."**

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**BASIC PPE AND SAFETY GEAR**	☒ Standard work clothes & footwear, appropriate for task ☒ Hard-toed boots/shoes ☒ Hardhat ☒ Safety glasses	☒ Work gloves appropriate for task ☒ Noise/hearing protection ☒ High-visibility/reflective vest ☒ First aid kit	
		☒ Basic PPE for limited protection from chemical contact & low-hazard dust inhalation – nitrile gloves, Tyvek suit, dust mask, boot covers.		
☒	**OTHER H&S EQUIPMENT/GEAR**	☒ Fire extinguisher ☒ Traffic control warning devices ☒ Insect control (repellant)	☒ Vehicle emergency kit (flares, lights, reflective device) ☒ Sun protection (sunscreen, canopy, other) ☐	
		☒ Other: Boot Covers		
☒	**ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT (PPE)**	Eye/face protection ☐ Goggles ☐ Face shield Chemical protective clothing ☒ Gloves, type:Nitrile ☒ Coveralls, type: Tyvek ☒ Outer boots, boot covers	Respiratory Protection ☐ Disposable n-95 face mask ☐ Half-face air-purifying respirator ☐ Full-face air-purifying respirator ☐ Respirator cartridge, type: ☐	☐ Personal flotation device ☐ Personal fall apparatus ☐ Fire retardant clothing ☐ Arc Flash Protection ☐ Electrical-Hazard-rated boots, gloves ☐
		☐ Other:		
☐	**SPECIAL HAZARD CONTROLS**	☐ Portable GFCI ☐	☐ Lockout/tagout equipment ☐	☐ Ventilation equipment (fan, blower) ☐
☒	**DECON, PPE DISPOSAL**	☒ Waste receptacle for disposable PPE	☒ Hand washing provisions	☒ Decon solution, misc. supplies
		☐ Additional information:		
☒	**AIR MONITORING EQUIPMENT**	List needed air monitoring equipment below. See Part 2, Sections M, N and O for chemical hazard evaluation, action levels.		
		Work area air monitoring to be provided by IRM contractor; personal dust monitor		

D. EMERGENCY RESPONSE

Based on **PART 2, "HAZARD ANALYSIS,"** and on worksite factors, client requirements.

SUMMARY of Recognized Emergency Risk Factors & Response Procedures *(fire/explosion, medical , chemicals/spills, security, site conditions/topography, prevailing weather, other concerns)*:

To Summon Police, Fire, Ambulance in an Emergency	☒ DIAL 911 ☐ use alternate procedure:
Nearest Emergency Medical Services	Hospital Name: St. Josephs Hospital
	Address: 555 E Market St. Elmira, NY 14901
	Phone #: (607) 733- 6541 or 911
For **Non-Emergency Urgent Care**:	Contact WorkCare, 24/7 at: 800-455-6155, menu option "3"
Or	Elmira Urgent Care Facility
	Address: 360 W. Water St. Elmira, NY 14901

	Phone #: 607-732-1100
	Hours: 9am- 6pm
Other Emergency Contacts, as needed *(such as security, spill responder, utility):*	
Job-site **Evacuation** Procedure, Rally Point, Place of refuge:	Calmly exit the Site from the place of work via perimeter road. A site map is available in the work plan. Rally point will be at the nearest EHS building
Means of alerting on-site personnel in case of emergency:	☒ Verbal ☒ Radio ☒ Cell Phone ☐ Other:
Special Equipment, as applicable (such as PPE, first aid, eyewash):	
IMPORTANT: After initial emergency response actions and incident stabilization, contact appropriate project personnel (see Part 1.A.).	

PART 2 – HAZARD ANALYSIS *Complete Section A. Then complete Sections B thru O, as applicable to your project. Provide comments in each section under "Explanatory Notes, Clarifications" to sufficiently describe site-specific hazards and safety measures.*

A. BASIC HAZARD PREPAREDNESS This section required for all Tasks.

Explanatory Notes, Clarifications: Obtain clearance for excavation entry and stockpile access from Site Competent person before collecting samples.

Basic Personal Protection

☒ **Overhead Hazards** - Wear hardhat or "bump cap" as appropriate for hazard.
☒ **Hand injury hazards** - Wear protective work gloves appropriate for the hazard and work tasks.
☒ **Eye injury hazards** - Wear safety glasses (with side shield or wrap around, either clear or shaded for sun protection).
☒ **Foot hazards, rough terrain** - Wear work boots/shoes with hard toes, ankle support, puncture resistance, traction, as appropriate for conditions.
☒ **Noise** – use hearing protection, (earplugs, earmuffs, or both) as appropriate for conditions, at a minimum where noise levels exceed 85dBA.
☐ **Chemical/biological agents, low hazard and/or "passive" exposure** - use appropriate PPE and precautions; describe above.
☒ **Chemical/biological agents, elevated hazard and/or "active use" exposure** – see Part 2, Section(s) M, N, O, as applicable.

Geosyntec Procedures: *HS-109-Hearing Conservation, HS-113-Personal Protective Equipment, HS-210-Walking and Working Surfaces*

General Safety Precautions

☒ **General premises** hazards - housekeeping, rough terrain, trip hazards, steep slope, remote location; describe specific hazards and controls above.
☒ **Weather/climate-related hazards** - heat cold protection, fluids, breaks, shade, sun screen, multiple layers, discontinue use of aerial lift/ladder in high wind, "30/30 rule" for lightning safety, protection from hail, seek place of refuge for extreme weather
☒ **Plant/Insect/Animal Hazards** - Precautions: poison ivy wash; insect repellant; check for ticks; hornet nest spray; animal precautions.
☒ **Traffic** – Implement measures to protect personnel (high visibility/reflective clothing, on-person lighting, traffic control measures).
☐ **Illumination hazards/night work** - Illuminate work areas and/or access routes, use reflective/hi-visibility clothing or on-person lighting, as appropriate.
☒ **Manual hand tools** - proper tool for the job, maintain in good condition, use vice/clamp to hold work piece, proper follow thru
☒ **Machinery hazards, passive exposure** – keep safe distance, heed warning signs, use appropriate PPE (such as eye/hearing protection), secure long hair, loose clothing, jewelry near moving parts. For active use of equipment machinery as part of the work, see Part 2, Section E "Powered Tools, Equipment, Machinery"
☒ **Lifting, manual material handling** – use proper lifting procedures, seek help for >50 lbs.

Geosyntec Procedures: *HS-127-Ticks, HS-124-Heat Stress, HS-125-Cold Stress, HS-210-Walking and Working Surfaces, HS-208-Housekeeping, HS-401-Back Injury Prevention, HS-502-Manual Hand Tool, HS 517 Traffic Safety*

Security

☐ **High crime, urban** – Use appropriate measures for personal security (such as buddy system, security service, work scheduling, other measures)
☐ **Working alone** - Establish "check in" procedure with supervisor/project manager.

Geosyntec Procedures: *HS-207-Working Alone*

Driving Hazards

☒ **Routine work travel** - Use routine safe/defensive driving practices (seat belts, safe speeds, eyes ahead, no tailgating, limit distractions, safe cell phone use, no texting, clear windows, account for weather/road conditions, adequate sleep, other measures as appropriate).
☒ **Unfamiliar location** - Plan travel route before driving (assemble maps, enter destination in GPS).
☒ **Long Distance or During Sleep Hours** – Minimize fatigue: rest breaks, light snacks (avoid heavy meals), stay hydrated, fresh air, no loud music, clean windshield.
☒ **Unfamiliar vehicle** – Become familiar with vehicle operational controls before operating vehicle.
☒ **Special hazards** - see Part2, Section B, "Special Driving/Traffic/Transportation Hazards"

Geosyntec Procedures: *HS-105-Driver and Vehicle Safety*

B. SPECIAL DRIVING/TRAFFIC/TRANSPORTATION HAZARDS ☒Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: The EHS Work Area is a high traffic area with haul trucks transporting soils to the TSCA Accumulation Areas and between the EHS Work Area and the material staging area (MSA). Excavation may be continuing in other parts of the excavation during sampling. Loads refers to transportation of sample coolers from sampling event.

☐	**SPECIAL DRIVING HAZARDS** Off-Road Driving or use of non-typical vehicle, ATV Hazards: Worker injury due to vehicle collision, rollover	☐ For off road driving, do not exceed capability of vehicle, beware of wet conditions, speed low, avoid unsafe orientation on slopes. ☐ Follow ATV specific procedures for training, safety equipment, operation, manufacturer's instructions. ☐ Special Skills Required for Vehicle type - For vehicles requiring special skills (such as windowless van, heavy work vehicle, utility vehicle, similar) ensure operator is provided training and/or has appropriate operator skills through experience. ***Geosyntec Procedure(s):*** *HS-510-All Terrain Vehicles*
☐	**TRANSPORTING MATERIALS, TOWING/HAULING LOADS** Hazards: Vehicle accident, occupant injury from shifting load, unsafe equipment.	☐ Ensure load is firmly secured (rope, straps, load configuration) to prevent shifting during travel. ☐ Slings, chains, strap, rope and related equipment used for towing, hauling, load-securing shall be appropriate for use, and used in a manner as to prevent an unsafe condition. ☐ For trailer use, verify signal/braking lights operational, rear-view mirrors effective, hitch/safety chains secure.
☒	**WORKSITE IN/NEAR VEHICLE THOROUGHFARE** Hazards: Worker injury from being struck by vehicle traveling in thoroughfare.	☒ Wear reflective vests where exposed to traffic hazards. ☐ Where possible, park vehicles as protective shield from oncoming traffic. ☒ Configure work area and support vehicles to minimize worker exposure to traffic hazards. ☒ Use DOT signal devices to re-route vehicles around work area, site entrances/exits. ☒ Use DOT-trained flaggers or police detail where appropriate or required. ***Geosyntec Procedure(s):*** *HS-517-Traffic Safety*
☐	**RAILROAD HAZARD** Hazard: Worker injury from being struck by train in R.R. right-of-way	☐ Coordinate with rail company and implement required safety and security measures. ☐ Site workers to receive safety training for railroad work. **Geosyntec Procedure(s):** HS-305-Rail Operations
☐	**WATER TRANSPORTATION**	☐ Follow HS 312 "Water Transportation Safety," and Section C, "Water/Boating Hazards." **Geosyntec Procedure(s):** HS-312-Water Transportation Safety
☐	**AIRPORT, AIRCRAFT** Worker injury when working on/near airport runway, or use of helicopter, light aircraft	☐ Coordinate safety requirements with Airport personnel and implement required safety measures. ☐ Site workers to receive safety training for railroad/airport work. ☐ Follow HS 310 "Helicopter Safety" and/or HS 311 "General Aviation (Small Aircraft) Safety." ***Geosyntec Procedure(s):*** *HS-310-Helicopter Safety, HS 311-General Aviation (Small Aircraft) Safety*
☒	**HEAVY EQUIPMENT TRAFFIC/VEHICLE HAZARDS AT CONSTRUCTION SITE**	☒ See Section G, "Construction, Heavy Equipment, Lift Equipment"

C. WATER/BOATING HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

D. FALL HAZARDS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: In order to collect the samples it will be necessary to ascend/descend into the open pit excavation via ladders/stairs or a ramp.

☐	**WORKING AT HEIGHTS (GENERAL)** Hazards: Falls, overhead hazards, impalement hazard (such as from falling onto unprotected rebar and similar) **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	*General fall protection requirement thresholds: required @ ≥4' (industry), ≥6' (construction), ≥10' (scaffolds)* ☐ Ensure guardrails present ☐ Use personal fall apparatus (PFA) ☐ Use tether or positioning device ☐ Restrict access to hazard (barriers, tape, sign) ☐ Ensure covers in place over holes ☐ Use designated "watch person" ☐ Use fall protection net ☐ Restrict access beneath work to protect other site personnel from overhead hazards ☐ Ensure safe access to elevated work location (ladder, stair,) ☐ Install caps on protruding rebar ***Geosyntec Procedure(s):*** *HS-120-Fall Protection, HS-210-Walking and Working Surfaces*
☒	**LADDERS / STAIRS** ☒ Extension/straight ladders ☐ Step ladders ☒ Fixed ladders ☒ Stairs Hazards: Falls, overhead hazards **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	☒ Follow safe work practices: • Use ladders according to safe practices and manufacturer's instructions. • Maintain 3 points of contact at all times on ladder; keep center of gravity within side rails. • Do not use metal (conductive) ladder near electrical hazard. • Extension/straight ladders shall be properly footed, secured, angled, extend above upper work surface. • Stepladders are set on level ground or properly shimmed, spreaders locked; do not climb/stand on top step, top cap, or rear non-climbing side; use step ladder of sufficient length for work. • Equip stairs with stair-rails where more than 4 steps, and for stairway height 4' or more. ***Geosyntec Procedure(s):*** *HS-501-Ladders*

☐	**SCAFFOLD** ☐ Supported scaffold ☐ Suspended scaffold ☐ Free-standing/mobile scaffold Hazards: Falls, overhead hazards. **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	☐ Follow safe work practices: • Identify/coordinate operations with subcontractor's competent person. • Supported scaffold level, stable, proper attachments, tiebacks, planking, • Suspended scaffolds anchored properly. • Guardrails or personal fall apparatus required above 10 feet. • Proper means of accessing scaffold (proper ladders, stair tower). • Total height of free-standing scaffold not to exceed four times the minimum base dimension. • Do not exceed load limits; store/stage materials in quantities sufficient for immediate use. ***Geosyntec Procedure(s):*** *HS-507-Scaffolds*
☐	**AERIAL LIFT** Hazards: Falls, overhead hazards, struck-by, run-over, caught between (pinch points), tip over, fluid leaks. **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	☐ Follow safe work practices: • Operators to be sufficiently trained, experienced and qualified. • Equipment is inspected after mobilization and is in good condition. • Harness & lanyard worn whenever operating the lift (possible exception for scissor lifts). • Overhead and surface obstructions to be reviewed with operators prior to use. ***Geosyntec Procedure(s):*** *HS-509-Aerial Lifts*
E. POWERED TOOLS, EQUIPMENT, MACHINERY	☐ Applicable	☒ Not Applicable, Not Anticipated
F. DRILLING	☐ Applicable	☒ Not Applicable, Not Anticipated
G. CONSTRUCTION, HEAVY EQUIPMENT, LIFT EQUIPMENT	☒ Applicable	☐ Not Applicable, Not Anticipated
EXPLANATORY NOTES, CLARIFICATIONS: Potentially sampling in the prescence of heavy construction equipment. Make eye contact with operators before sampling.		
☒	**HEAVY EQUIPMENT** Hazards: Struck-by, run-over, caught between (pinch points), roll over, fluid leaks, overhead hazards **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	☒ Follow general safe work practices for heavy equipment: • Trained/qualified persons operate all heavy equipment. • Do not get into a potential crush situation below or between equipment, or in an excavation. • No passengers on moving/operating equipment except where passenger seat/restraint is present. • Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. • Leaks or defective safety equipment should be repaired before use. • Operators required to use seatbelts. • Eye contact with operator and use of hand signals prior to approaching near equipment. • High visibility vests for all personnel in construction vehicle work area, on-site roadways and travel lanes. • Maximum safe slope for each vehicle will be followed. • Personnel to stay clear of, or restrict access to, swing radius and travel path of equipment. • Spill equipment available for fuel and hydraulic fluid leaks. • Equipment locked, secured, brakes set, buckets/forks lowered, when not in use. • Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. • Mark temporary roadways clearly, provide berms/stop logs where needed. ***Geosyntec Procedure(s):*** *HS-504-Heavy Equipment, HS-132-Competent Persons*
☐	**CRANES** Hazards: - electrocution by overhead utility lines - injury in swing radius - injury from falling load - Crane tipping over due to overbalancing, high winds, unstable ground, unsafe slope, bad placement of outriggers - injury from mechanical hazards **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	☐ In addition to general safety practices for heavy equipment (above), as applicable: • Only qualified persons operate cranes (certificate required). • Critical Lift Plan & Checklist prepared/executed (HS 506) prior to mobilization. • Equipment to be inspected prior to mobilization and daily by crane operator. • Crane operator will remain at the controls at all times during operation. • Crane operation must be performed under the direction of an appointed signal person at all times. • Communication between crane operator and signal person will be maintained through standard hand signals or voice communication equipment. • Keep area beneath suspended loads clear of personnel. • Rigging procedures – see Mechanical Lifting, Rigging, below. ***Geosyntec Procedure(s):*** *HS-506-Cranes, HS-132-Competent Persons*
☐	**MECHANICAL LIFTING, RIGGING** Applies to lifting by crane, truck-mounted boom rig (e.g. drill rig), mechanical/electrical hoist, similar equipment. Hazards: falling loads, personnel under suspended loads.	☐ In addition to general safety practices for heavy equipment (above), as applicable: • Coordinate lifting operations with competent person. • Do not exceed loading limits of lifting equipment; perform work in accordance with equipment load chart. • Slings, chains, rope, wire rope and related equipment used for lifting shall be maintained in good condition, and used in a manner as to protect from damage. • Rigging, wire rope and hoisting equipment will be inspected and maintained on a weekly basis. • Hooks will be equipped with safety latches. ***Geosyntec Procedure(s):*** *HS-506-Cranes*
☐	**FORKLIFT**	☐ In addition to general safety practices for heavy equipment (above), as applicable: • Qualified operator, per established forklift training (certificate is required).

	Hazards: Struck-by, run-over, overhead hazards, caught between (pinch points), roll over, fluid leaks. **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	• Equipment inspected daily and documented on Forklift Preoperational Inspection Checklist. • Do not exceed lifting load limits. • Forklift shall not be moved/driven with empty forks in raised position. • When not in use, forks lowered, brake set, controls in neutral, key removed. ***Geosyntec Procedure(s):*** *HS-505-Safe Operation of Forklifts, HS-132-Competent Persons*
☐	**AERIAL LIFTS**	☐ See Section D, "Fall Hazards" *Geosyntec Procedure(s): HS-509-Aerial Lifts*
☒	**TRENCHING/EXCAVATION** Hazards: Cave-in, hazardous atmosphere, structures & foundations, falls into excavations **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	☒ Safe work practices when personnel will enter trenches/excavations: • Activities under supervision/oversight of competent person, daily inspection. • Excavated materials placed at least 2' from trench sidewall. • Prevent water accumulation in trench. • Sloping & shoring for excavations ≥20' must be approved by a professional engineer. • Sloping/shoring/trench box for excavations ≥5' when persons enter trench/excavation. • Sloping/shoring/trench box for shallow (<5') excavations with cave-in hazard . • Workers in trenches to be within 25 feet of ladder or sloped entryway. • Excavations to be protected by perimeter fencing (not barricade tape), if potential for personnel to fall into. • If potential for atmospheric hazard, see Section J "Confined Space Entry, Hazardous Enclosed Spaces" ***Geosyntec Procedure(s):*** *HS-402-Excavation and Trenching, HS-132-Competent Persons*
☐	**DEMOLITION**	☐ Develop/implement demolition safety plan. ***Geosyntec Procedure(s):*** *HS-132-Competent Persons*
☐	**BLASTING**	☐ Develop/implement blasting safety plan. ***Geosyntec Procedure(s):*** *HS-307-Blasting and Use of Explosives, HS-132-Competent Persons*
☒	**PUBLIC AT RISK, SITE SECURITY**	☒ During site operations protect public (overhead protection, barriers, warning signs). ☒ During off hours, protect public with barriers, warning signs/lights; lock/secure hazardous materials.

H. ELECTICAL HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: It is anticipated that the confirmatory samples will be collected post excavation completion and that the contractor will have disabled or removed all active utilities at time of sampling.

I. UTILITY RELATED HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: It is anticipated that the confirmatory samples will be collected post excavation completion and that the contractor will have disabled or removed all active utilities at time of sampling.

☐	**OVERHEAD, ABOVE-GROUND UTILITIES**	☐ Maintain proper clearance, employ other appropriate precautions for the conditions. ***Geosyntec Procedure(s):*** *HS-304-Overhead Electrical Lines*
☐	**UNDERGROUND UTILITIES**	☐ Confirm appropriate underground utility clearance procedures have been completed prior to ground penetrations, and employ other utility clearance/locator practices, as appropriate for conditions. ☐ Hand digging within 3' of utility locations.

J. CONFINED SPACE ENTRY, HAZARDOUS ENCLOSED SPACES ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: Excavation is anticipated to be open pit with stepped walls and shoring.

K. STORAGE OF BULK MATERIALS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**STORAGE OF MATERIALS** (for Chem. Storage, See Part 2 Section M)	☐ Store materials in stable manner (stacked, racked, blocked, interlocked, tied, wrapped, or otherwise secured) to prevent tipping, sliding, rolling, falling or collapse. ☐ Do not exceed load limits of racks, platform, scaffold; ensure racks are stable, robust, secure. ☐ Ensure stored materials do not block aisles, passageways.

L. INFECTIOUS / ALLERGENIC BIOHAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	☐ Wastewater, sewer ☐ Bird Guano ☐ Bloodborne pathogens ☐ Mold, fungi ☐ Valley Fever	☐ Low hazard - use basic hygiene practices, protective gloves, provide for hand washing. ☐ More severe hazard - add protective clothing, respirator/dust mask, decon, as appropriate. ☐ For human pathogens use "Universal Precautions" per Bloodborne Pathogen Program. ***Geosyntec Procedure(s):*** *HS-133-Bloodborne Pathogens*

M. PROJECT USE OF COMMERCIAL CHEMICAL PRODUCTS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Decontamination Fluids, Sample Preservatives

☐	**PRODUCTS REGULATED BY HAZARD COMMUNICATION STANDARD**	☐ Safety Data Sheets available, either on site or readily available within same work shift, containers labelled properly, workers trained/oriented on hazards ☐ For subcontractor use of chemical products, coordinate/discuss during safety meetings.
☐	**COMPRESSED GAS (flammable or nonflammable)**	☐ Secure cylinders upright, caps on when not in use, handle with care, prevent damage. ☐ Propane cylinders not in use must be stored outdoors in cage or similar secure enclosure. ☐ Ensure acetylene cylinders NOT secured to steel arc welding bench. ☐ Store/use in a manner to prevent asphyxiation hazard. ☐ Segregate oxygen and fuel gases by distance (20') or barrier. ☐ Control ignition sources. ☐ "No smoking" signage at cylinder storage area for flammable gases. ☐ Use/store in a manner to control inhalation exposure hazards, PPE, air monitoring.
☐	**FLAMMABLE/COMBUSTIBLE LIQUIDS**	☐ Proper storage (flam. storage cabinets, other storage precautions). ☐ Use proper fuel safety can (metal fuel can preferred). ☐ Control ignition sources. ☐ Grounding and bonding where appropriate.
☒	**ACIDS, CAUSTICS, OTHER CORROSIVES**	☒ Handle with care, use appropriate eye/face/skin protection. ☒ Eyewash, deluge shower, drench hose, hand washing (with water), as appropriate .
☐	**TOXIC**	☐ For toxic substances, use/store in a manner to control exposure hazards (inhalation, ingestion, skin contact, skin absorption); use PPE as appropriate, conduct air monitoring as appropriate.
☐	**EMISSIONS FROM FUEL COMBUSTION** ☐ Gasoline ☐ Diesel ☐ Propane/Natural Gas	☐ Position outdoor personnel upwind of exhaust source. ☐ Use blowers, fans to provide fresh air to work area and dissipate atmospheric hazards. ☐ Use respiratory protection for high levels of smoke, exhaust particulates, soot. ☐ Conduct air monitoring as appropriate (see Section O, "Air Monitoring").
☐	**OTHER HAZARDS**	☐ Describe other hazardous substances and safety measures under "Explanatory Notes, Clarifications," above.
☐	**CHEMICAL STORAGE** Check this when jobsite requirements include special provisions for chemical storage.	☐ Chemical storage cabinet, cage, storage room, or similar. ☐ Ensure incompatible chemicals are segregated. ☐ Provide secondary containment. ☐ Locate special safety equipment near chemical storage

Geosyntec Procedures: *HS-115-Hazard Communication, HS-111-Air Monitoring, HS-112-Respiratory Protection, HS-113-Personal Protective Equipment, HS-114-Safety Training Programs, Others as applicable*

N. SITE CONTAMINANTS, CHEMICAL WASTES ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: Site contaminants mainly include PCBs an metals. PPE will be worn at all times when sampling or excavation is in progress. Decontamination procedures will be implemented to reduce offsite mirgration of contaminants.

CHECK ALL THAT APPLY. Provide explanatory notes above.

☒ Soil/groundwater contaminants (historical release)	☐ Oxygen deficiency	☐ Asbestos
☐ Recent release, known high concentrations	☒ Chlorinated volatile organic compounds (VOCs)	☐ Lead paint
☐ Former chemical disposal site, landfill	☒ BTEX, petroleum derived VOCs	☐ Pesticides, herbicides, fungicides
☐ Urban fill, residual contaminants	☐ Fuel oils, petroleum, waste oil, lubricants	☐ Sensitizers
☐ Containerized waste (drums, process equipment)	☒ Metals, metal compounds, metal dusts	☐ Radioactive contaminants
☐ Buried drums (known or potential)	☐ Elemental mercury	☐ Other:
☐ Large containers, potential for spills	☒ Polyaromatic hydrocarbons (PAHs)	
☐ Emissions from active industrial processes	☒ Polychlorinated biphenyls (PCBs)	
☐ Emissions from welding/cutting/hot work	☐ Potential for flammable vapors	
☒ Carbon monoxide (vehicle/equipment exhaust)	☐ Potential for flammable gas (methane)	
☐ Contaminated building surfaces	☐ Corrosive, acids/caustics, strong irritants	
☐ Unexploded ordnance	☐ Sulfides, hydrogen sulfide (H_2S)	
☐ Explosive dust	☐ Cyanides, hydrogen cyanide (HCN)	

☒ **FOR SITE REGULATED AS "UNCONTROLLED HAZ. WASTE SITE," e.g. REGULATED BY HAZWOPER (OSHA 29 CFR 1910.120)**

- Implement site control plan via Exclusion Zone(s), Contaminant Reduction Zone(s) and Support Zone (aka EZ, CRZ, SZ)
- Workers to be aware of and trained on hazards per OSHA Hazard Communication Standard.
- Include site map/figure depicting work locations and other relevant site-specific information.
- Site workers in EZ or CRZ to have OSHA 40-hour training, current 8-hour refresher, 3 days supervised field experience.
- Site workers in EZ or CRZ to participate in Medical Monitoring program, as applicable.
- "Peripheral" site workers, engaged on-site, with no hazardous exposure: 24 hr. training required.
- Site supervisor(s) required to have 8-hr. Supervisor training.
- Implement site-specific procedures for worker protection via engineering controls, work practices, personal protective equipment (PPE), air monitoring, decontamination procedures, spill containment, emergency preparedness and response.

	Geosyntec Procedures: *HS-301-HAZWOPER, HS-108-Medical Monitoring Surveillance, HS-111-Air Monitoring, HS-112-Respiratory Protection, HS-113-Personal Protective Equipment, HS-114-Safety Training Programs, HS-115-Hazard Communication, HS-405-Drum Sampling, Others as applicable*	
☐	**FOR SITE WITH CHEMICAL CONTAMINANTS OR WASTE BUT NOT REGULATED BY HAZWOPER** • Workers to be knowledgeable/aware of chemical hazards thru safety training/orientation and availability of hazard information • Implement controls to minimize worker exposure through engineering controls, work practices, PPE, as appropriate. • Conduct air monitoring/sampling to monitor/evaluate worker exposure, as applicable. ***Geosyntec Procedures:*** *HS-111-Air Monitoring, HS-112-Respiratory Protection, HS-113-Personal Protective Equipment, HS-114-Safety Training Programs, HS-115-Hazard Communication, Others as applicable*	
☒	**OFF-SITE MIGRATION OF CONTAMINANTS**	☒ Implement controls to minimize hazard migration (dust suppression, covers, foam, etc.) ☒ Community/perimeter air monitoring to be conducted per perimeter air monitoring plan.
☐	**SPILL CONTAINMENT, CONTAINERS**	☐ Describe above any site-specific procedures for spill containment, container handling, as applicable. ***Geosyntec Procedures****: HS-406-Unknown Hazardous Waste Drum Handling*

O. AIR MONITORING ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Perimeter air monitoring will be conducted in accordance with the Dust Control/Monitoring Plan. Do not enter area if visible dust is observed. Request additional dust control measures. Atmosphere in the excavation will be screened for LEL, CO, VOC's, H2S, O2 prior to sample collection. Upgrade to Level C or B* is not anticipated. Consult with SHSO and PM if VOCs remain above action levels.

☒	**AIR-TESTING PARAMETERS**	☒ VOCs, GASES ☒ PID, Lamp energy: 10.6 eV ☐ FID ☒ Carbon monoxide ☒ Hydrogen sulfide ☒ Oxygen (O_2)	☒ Flammable gas (LEL) ☒ Particulate (dust) ☐ Calibration kit for each parameter ☐ Other:

☒	**ACTION LEVELS FOR O2/LEL**	☒ Oxygen	≤19.5% - ventilate to raise O_2 to acceptable levels, or use Level B. ≥23.0% - ventilate to lower O_2 to acceptable levels, or use Level B and control fire hazards & ignition sources.
		☒ LEL	Confirm at least 12% oxygen is present to ensure accuracy of LEL readings. At <10% LEL - Continue working, continue to monitor LEL levels At ≥10% LEL- Immediately withdraw from area. Resume work ONLY after LEL readings reduced to <10%.

☒	**ACTION LEVELS FOR TOXICS** (sustained breathing zone concentrations)	**Parameters**	**Level D, Modified D***	**Use levels C or B*, as indicated below, OR take action to reduce breathing zone level to concentration acceptable for Level D*.**
		☒ VOCs	< 50 ppm	__ ppm to __ ppm: Level C (air purifying respirator) > __ ppm: Level B (air-supplied respirator)
		☒ Carbon Monoxide	< 35 ppm	≥35 ppm - Level B (air-supplied respirator)
		☒ Hydrogen Sulfide	< 10 ppm	≥10 ppm - Level B (air-supplied respirator)
		☒ Total Dust	< 1 mg/m^3	> 10 mg/m^3 - Level C (air-purifying respirator)
		☐		

*** Levels of Protection:**
Level D (standard work clothes, basic personal protective wear, no chemical protective clothing, no respiratory protection)
Modified Level D (chemical protective clothing in addition to standard work clothes, no respiratory protection)
Level C (air purifying respirator or dust mask, in addition to chemical protective clothing)
Level B or A (air supplied respirator, chemical protective suit; fully-encapsulating suit for Level A)

Geosyntec Procedures: *HS-111-Air Monitoring*

P. RADIATION HAZARDS (Other than Sunlight) ☐ Applicable ☒ Not Applicable, Not Anticipated

PART 3 – APPROVALS, ACKNOWLEDGEMENTS

A. THA PREPARATION, REVIEW/APPROVAL SIGNATURES - THA typically prepared by project staff, reviewed/approved by Project Manager, Supervisor, qualified/knowledgeable designee, with support of HS personnel as deemed appropriate for the work and associated hazards.			
	Printed Name	*Signature*	*Date*
THA PREPARED BY: (minimum one person)	Karl Wuolo-Journey		05/21/9
THA REVIEWED/ APPROVED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*
	Aron Krasnopoler, P.E.		5/22/19
	Mark Bauer, P.G.		5/31/2019

>>> Please See Section B, “Field Crew Acknowledgements,” on Following Page <<<

B. FIELD CREW ACKNOWLEDGEMENTS

GEOSYNTEC FIELD CREW

Please sign below to acknowledge you reviewed and understand this THA, participated in project safety briefing and had an opportunity to ask questions about the information herein.

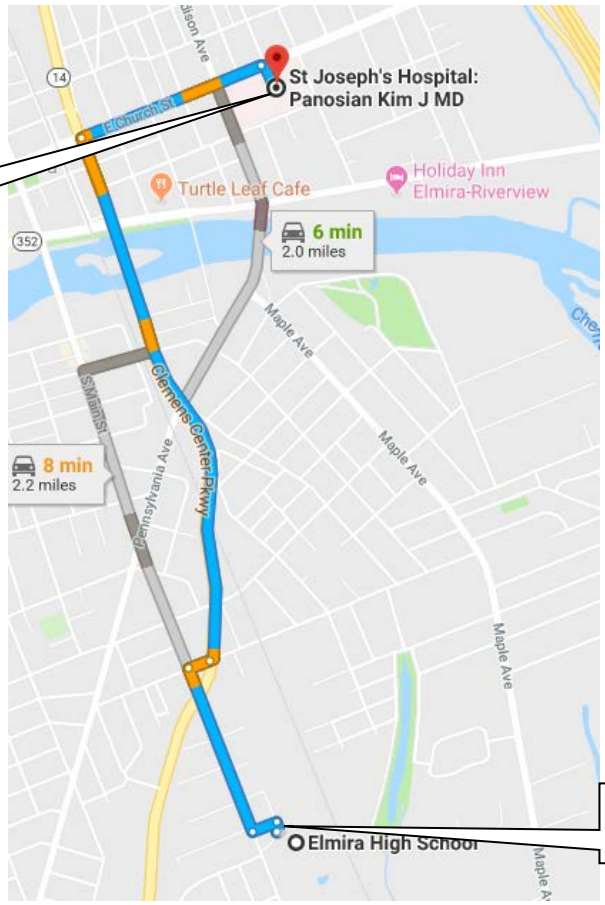
Print Name:	Signature:	Employee No.	Date:

SUBCONTRACTOR'S FIELD CREW

Please sign below to acknowledge that this THA was made available to you, and you had an opportunity to ask questions about the information herein.

Print Name:	Signature:	Company Name:	Date:

ROUTE TO HOSPITAL



St. Joseph's Hospital
555 E Market St
Elmira, NY 14901
(607)-733-6541

Written Directions to Hospital from Site:

1. Depart S Main St toward W Miller St.
2. Turn right onto S Main St (250 ft)
3. Turn left onto Clemens Center Pkwy (1.2 mi)
4. Turn right onto E Church St (0.4 mi)
5. Arrive at **St. Joseph's Hospital**

TASK HAZARD ANALYSIS (THA)

Geosyntec HS Procedures referenced herein are available on Geosyntec's H&S SharePoint site and should be consulted, as appropriate, per project-specific needs. This THA prepared per HS-106-Accident Prevention Program, HS-204-Task Hazard Analysis.

PART 1 – SITE SAFETY PLAN

A. PROJECT/TASK INFORMATION

TASK:	Construction Oversight		
Project Name:	Former Sperry Remington Site – North Portion	**Project Number/Org:**	MN0832F/1751
Project Address:	777 South Main Street, Elmira, New York		
Description of Task & Worksite:	Observation and documentation to assure construction activities are in accordance with the IRM work plan, Construction Drawings and Specifications		

Geosyntec Personnel	**Name**	**Office Phone**	**Cell Phone**
Site Lead/HS Officer	Matt Schallinger	(612) 253-8209	(651) 356-5799
Project Manager	Aron Krasnopoler	(410) 910-7612	(202) 550-7724
Project Director	Paul Brookner	(612) 253-8203	(612) 599-7473
HS Coordinator	Mark Bauer	(410) 381-4333	(315) 729-0644
Regional HS Mngr.	Mark P. Malchik	978-206-5777	781-392-5440
Corp. HS Director	Dale Prokopchak	804-332-6376	804-349-8067
ECSD Contact	Mike Dunn	607-735-3980	607- 426-2586
Client Contact(s):	Kevin Krueger	(651) 687-2210	
Subcontractor(s): Recon	☒ Not Applicable ☐ Applicable, provide contact information below:		

B. SUMMARY OF WORK STEPS, HAZARDS, CONTROLS: Based on **PART 2, "HAZARD ANALYSIS,"** and on worksite/client/project factors.

Abstract of work steps/hazards/controls, with references to applicable Sections in Part 2 for greater detail:

Observe progress of construction activities to ensure adherence to work plan and HASP. Document progress with photographs and field notes.

WORK STEPS	HAZARDS	CONTROLS
1) Observation and Documentation of Site Preparation Activities	• Slip, trip, fall • Electrocution • Mechanical equipment • Potential chemical exposure • Heat stress • Eye injury • Noise	• Walk carefully on uneven terrain • Communicate to all field personnel when mechanical equipment is in operation (see EHS 119) • Ensure utilities are energized (HS 121) • Wear required PPE • Use proper eye protection • Use proper hearing protection (see EHS 109) • Excavation (see EHS 402) • Heavy equipment (see EHS 504)
2) Observation and Documentation of Underground Utilities Decommissioning and Installation Activities: a. Trenching/Excavation b. Installation c. Testing	• Slip, trip, fall • Mechanical equipment • Heat stress • Eye injury • Noise • Electrocution	• Walk carefully on uneven terrain and be mindful of hoses and extension cords • Wear required PPE • Use proper eye protection • Use proper hearing protection (see EHS 109) • Excavation (see EHS 402) • Heavy equipment (see EHS 504) • Ensure utilities are energized (HS 121)
3) Observation and Documentation of Excavation and Backfill a. Trenching/excavation b. Field Measurement and surveying c. Backfill	• Slip, trip, fall • Mechanical equipment • Heat stress • Dust Exposure • Eye injury • Noise	• Walk carefully on uneven terrain • Wear required PPE • Use proper eye protection • Use water to keep dust from forming • Use proper hearing protection (see EHS 109) • Excavation (see EHS 402) • Heavy equipment (see EHS 504)

4) Final Inspection and Site Demobilization	• Slip, trip, fall • Heat stress • Eye injury	• Walk carefully on uneven terrain and be mindful of hoses and extension cords • Wear required PPE • Use proper eye protection

C. H&S EQUIPMENT LIST: List HS equipment needed at the worksite to control/manage hazards identified in PART 2, "HAZARD ANALYSIS."

EXPLANATORY NOTES, CLARIFICATIONS: The contractor will be in charge of setting up and operating excavation construction equipment.

☒	**BASIC PPE AND SAFETY GEAR**	☒ Standard work clothes & footwear, appropriate for task ☒ Hard-toed boots/shoes ☒ Hardhat ☒ Safety glasses	☒ Work gloves appropriate for task ☒ Noise/hearing protection ☒ High-visibility/reflective vest ☒ First aid kit	
		☒ Basic PPE for limited protection from low-hazard chemical contact – nitrile gloves.		
☒	**OTHER H&S EQUIPMENT/GEAR**	☒ Fire extinguisher ☒ Traffic control warning devices ☒ Insect control (repellant)	☒ Vehicle emergency kit (flares, lights, reflective device) ☒ Sun protection (sunscreen, canopy, other) ☐	
		☐ Other:		
☐	**ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT (PPE)**	Eye/face protection ☐ Goggles ☐ Face shield Chemical protective clothing ☐ Gloves, type: ☐ Coveralls, type: ☐ Outer boots, boot covers	Respiratory Protection ☐ Disposable n-95 face mask ☐ Half-face air-purifying respirator ☐ Full-face air-purifying respirator ☐ Respirator cartridge, type: ☐	☐ Personal flotation device ☐ Personal fall apparatus ☐ Fire retardant clothing ☐ Arc Flash Protection ☐ Electrical-Hazard-rated boots, gloves ☐
		☐ Other:		
☐	**SPECIAL HAZARD CONTROLS**	☐ Portable GFCI ☐	☐ Lockout/tagout equipment ☐	☐ Ventilation equipment (fan, blower) ☐
☐	**DECON, PPE DISPOSAL**	☐ Waste receptacle for disposable PPE	☐ Hand washing provisions	☐ Decon solution, misc. supplies
		☐ Additional information:		
☐	**AIR MONITORING EQUIPMENT**	List needed air monitoring equipment below. See Part 2, Sections M, N and O for chemical hazard evaluation, action levels.		
		Work area air monitoring to be provided by IRM contractor		

D. EMERGENCY RESPONSE: Based on PART 2, "HAZARD ANALYSIS," and on worksite factors, client requirements.

SUMMARY of Recognized Emergency Risk Factors & Response Procedures *(fire/explosion, medica , chemicals/spills, security, site conditions/topography, prevailing weather, other concerns)*:

To Summon Police, Fire, Ambulance in an Emergency	☒ DIAL 911 ☐ use alternate procedure:
Nearest Emergency Medical Services	Hospital Name: St. Joseph's Hospital
	Address: 555 E Market St. Elmira, NY 14901
	Phone #: (607) 733- 6541 or 911
For **Non-Emergency Urgent Care**:	Contact WorkCare, 24/7 at: 800-455-6155, menu option "3"
Or	Elmira Urgent Care Facility
	Address: 360 W. Water St. Elmira, NY 14901
	Phone #: 607-732-1100
	Hours: 9am- 6pm
Other Emergency Contacts, as needed *(such as security, spill responder, utility):*	
Job-site **Evacuation** Procedure, Rally Point, Place of refuge:	Calmly exit the Site from the place of work via perimeter road. A site map is available in the work plan. Rally point will be at the nearest EHS building. Rally point if working in the MSA is on the northeast corner outside of the MSA perimeter.
Means of alerting on-site personnel in case of emergency:	☒ Verbal ☒ Radio ☒ Cell Phone ☐ Other:
Special Equipment, as applicable (such as PPE, first aid, eyewash):	

IMPORTANT: After initial emergency response actions and incident stabilization, contact appropriate project personnel (see Part 1.A.).

PART 2 – HAZARD ANALYSIS *Complete Section A. Then complete Sections B thru O, as applicable to your project. Provide comments in each section under "Explanatory Notes, Clarifications" to sufficiently describe site-specific hazards and safety measures.*

A. BASIC HAZARD PREPAREDNESS This section required for all Tasks.

Explanatory Notes, Clarifications:

Basic Personal Protection

☒ **Overhead Hazards** - Wear hardhat or "bump cap" as appropriate for hazard.

☒ **Hand injury hazards** - Wear protective work gloves appropriate for the hazard and work tasks.
☒ **Eye injury hazards** - Wear safety glasses (with side shield or wrap around, either clear or shaded for sun protection).
☒ **Foot hazards, rough terrain** - Wear work boots/shoes with hard toes, ankle support, puncture resistance, traction, as appropriate for conditions.
☒ **Noise** – use hearing protection, (earplugs, earmuffs, or both) as appropriate for conditions, at a minimum where noise levels exceed 85dBA.
☒ **Chemical/biological agents, low hazard and/or "passive" exposure** - use appropriate PPE and precautions; describe above.
☐ **Chemical/biological agents, elevated hazard and/or "active use" exposure** – see Part 2, Section(s) M, N, O, as applicable.

Geosyntec Procedures: *HS-109-Hearing Conservation, HS-113-Personal Protective Equipment, HS-210-Walking and Working Surfaces*

General Safety Precautions

☒ **General premises** hazards - housekeeping, rough terrain, trip hazards, steep slope, remote location; describe specific hazards and controls above.
☒ **Weather/climate-related hazards** - heat cold protection, fluids, breaks, shade, sun screen, multiple layers, discontinue use of aerial lift/ladder in high wind, "30/30 rule" for lightning safety, protection from hail, seek place of refuge for extreme weather
☒ **Plant/Insect/Animal Hazards** - Precautions: poison ivy wash; insect repellant; check for ticks; hornet nest spray; animal precautions.
☒ **Traffic** – Implement measures to protect personnel (high visibility/reflective clothing, on-person lighting, traffic control measures).
☐ **Illumination hazards/night work** - Illuminate work areas and/or access routes, use reflective/hi-visibility clothing or on-person lighting, as appropriate.
☐ **Manual hand tools** - proper tool for the job, maintain in good condition, use vice/clamp to hold work piece, proper follow thru
☒ **Machinery hazards, passive exposure** – keep safe distance, heed warning signs, use appropriate PPE (such as eye/hearing protection), secure long hair, loose clothing, jewelry near moving parts. For active use of equipment machinery as part of the work, see Part 2, Section E "Powered Tools, Equipment, Machinery"
☒ **Lifting, manual material handling** – use proper lifting procedures, seek help for >50 lbs.

Geosyntec Procedures: *HS-127-Ticks, HS-124-Heat Stress, HS-125-Cold Stress, HS-210-Walking and Working Surfaces, HS-208-Housekeeping, HS-401-Back Injury Prevention, HS-502-Manual Hand Tool, HS 517 Traffic Safety*

Security

☐ **High crime, urban** – Use appropriate measures for personal security (such as buddy system, security service, work scheduling, other measures)
☐ **Working alone** - Establish "check in" procedure with supervisor/project manager.

Geosyntec Procedures: *HS-207-Working Alone*

Driving Hazards

☒ **Routine work travel** - Use routine safe/defensive driving practices (seat belts, safe speeds, eyes ahead, no tailgating, limit distractions, safe cell phone use, no texting, clear windows, account for weather/road conditions, adequate sleep, other measures as appropriate).
☒ **Unfamiliar location** - Plan travel route before driving (assemble maps, enter destination in GPS).
☒ **Long Distance or During Sleep Hours** – Minimize fatigue: rest breaks, light snacks (avoid heavy meals), stay hydrated, fresh air, no loud music, clean windshield.
☒ **Unfamiliar vehicle** – Become familiar with vehicle operational controls before operating vehicle.
☒ **Special hazards** - see Part2, Section B, "Special Driving/Traffic/Transportation Hazards"

Geosyntec Procedures: *HS-105-Driver and Vehicle Safety*

B. SPECIAL DRIVING/TRAFFIC/TRANSPORTATION HAZARDS ☒Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: Truck traffic for on-site transportation of soils for stockpiling or backfilling and off-site transportation for disposal

☐	**SPECIAL DRIVING HAZARDS** Off-Road Driving or use of non-typical vehicle, ATV Hazards: Worker injury due to vehicle collision, rollover	☐ For off road driving, do not exceed capability of vehicle, beware of wet conditions, speed low, avoid unsafe orientation on slopes. ☐ Follow ATV specific procedures for training, safety equipment, operation, manufacturer's instructions. ☐ Special Skills Required for Vehicle type - For vehicles requiring special skills (such as windowless van, heavy work vehicle, utility vehicle, similar) ensure operator is provided training and/or has appropriate operator skills through experience. ***Geosyntec Procedure(s):*** *HS-510-All Terrain Vehicles*
☐	**TRANSPORTING MATERIALS, TOWING/HAULING LOADS** Hazards: Vehicle accident, occupant injury from shifting load, unsafe equipment.	☐ Ensure load is firmly secured (rope, straps, load configuration) to prevent shifting during travel. ☐ Slings, chains, strap, rope and related equipment used for towing, hauling, load-securing shall be appropriate for use, and used in a manner as to prevent an unsafe condition. ☐ For trailer use, verify signal/braking lights operational, rear-view mirrors effective, hitch/safety chains secure.
☒	**WORKSITE IN/NEAR VEHICLE THOROUGHFARE** Hazards: Worker injury from being struck by vehicle traveling in thoroughfare.	☒ Wear reflective vests where exposed to traffic hazards. ☒ Where possible, park vehicles as protective shield from oncoming traffic. ☒ Configure work area and support vehicles to minimize worker exposure to traffic hazards. ☒ Use DOT signal devices to re-route vehicles around work area, site entrances/exits. ☒ Use DOT-trained flaggers or police detail where appropriate or required. ***Geosyntec Procedure(s):*** *HS-517-Traffic Safety*
☐	**RAILROAD HAZARD** Hazard: Worker injury from being struck by train in R.R. right-of-way	☐ Coordinate with rail company and implement required safety and security measures. ☐ Site workers to receive safety training for railroad work. **Geosyntec Procedure(s):** HS-305-Rail Operations
☐	**WATER TRANSPORTATION**	☐ Follow HS 312 "Water Transportation Safety," and Section C, "Water/Boating Hazards." **Geosyntec Procedure(s):** HS-312-Water Transportation Safety

☐	**AIRPORT, AIRCRAFT** Worker injury when working on/near airport runway, or use of helicopter, light aircraft	☐ Coordinate safety requirements with Airport personnel and implement required safety measures. ☐ Site workers to receive safety training for railroad/airport work. ☐ Follow HS 310 "Helicopter Safety" and/or HS 311 "General Aviation (Small Aircraft) Safety." ***Geosyntec Procedure(s):*** *HS-310-Helicopter Safety, HS 311-General Aviation (Small Aircraft) Safety*
☒	**HEAVY EQUIPMENT TRAFFIC/VEHICLE HAZARDS AT CONSTRUCTION SITE**	☒ See Section G, "Construction, Heavy Equipment, Lift Equipment"

C. WATER/BOATING HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

D. FALL HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

E. POWERED TOOLS, EQUIPMENT, MACHINERY ☐ Applicable ☒ Not Applicable, Not Anticipated

F. DRILLING ☐ Applicable ☒ Not Applicable, Not Anticipated

G. CONSTRUCTION, HEAVY EQUIPMENT, LIFT EQUIPMENT ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: Construction equipment will be used to excavate and transport soil across the Site. Construction equipment always has the right of way. Be aware of potential blind spots.

☒	**HEAVY EQUIPMENT** Hazards: Struck-by, run-over, caught between (pinch points), roll over, fluid leaks, overhead hazards **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	☒ Follow general safe work practices for heavy equipment: • Trained/qualified persons operate all heavy equipment. • Do not get into a potential crush situation below or between equipment, or in an excavation. • No passengers on moving/operating equipment except where passenger seat/restraint is present. • Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. • Leaks or defective safety equipment should be repaired before use. • Operators required to use seatbelts. • Eye contact with operator and use of hand signals prior to approaching near equipment. • High visibility vests for all personnel in construction vehicle work area, on-site roadways and travel lanes. • Maximum safe slope for each vehicle will be followed. • Personnel to stay clear of, or restrict access to, swing radius and travel path of equipment. • Spill equipment available for fuel and hydraulic fluid leaks. • Equipment locked, secured, brakes set, buckets/forks lowered, when not in use. • Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. • Mark temporary roadways clearly, provide berms/stop logs where needed. ***Geosyntec Procedure(s):*** *HS-504-Heavy Equipment, HS-132-Competent Persons*
☒	**CRANES** Hazards: - electrocution by overhead utility lines - injury in swing radius - injury from falling load - Crane tipping over due to overbalancing, high winds, unstable ground, unsafe slope, bad placement of outriggers - injury from mechanical hazards **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	☒ In addition to general safety practices for heavy equipment (above), as applicable: • Only qualified persons operate cranes (certificate required). • Critical Lift Plan & Checklist prepared/executed (HS 506) prior to mobilization. • Equipment to be inspected prior to mobilization and daily by crane operator. • Crane operator will remain at the controls at all times during operation. • Crane operation must be performed under the direction of an appointed signal person at all times. • Communication between crane operator and signal person will be maintained through standard hand signals or voice communication equipment. • Keep area beneath suspended loads clear of personnel. • Rigging procedures – see Mechanical Lifting, Rigging, below. ***Geosyntec Procedure(s):*** *HS-506-Cranes, HS-132-Competent Persons*
☒	**MECHANICAL LIFTING, RIGGING** Applies to lifting by crane, truck-mounted boom rig (e.g. drill rig), mechanical/electrical hoist, similar equipment. Hazards: falling loads, personnel under suspended loads.	☒ In addition to general safety practices for heavy equipment (above), as applicable: • Coordinate lifting operations with competent person. • Do not exceed loading limits of lifting equipment; perform work in accordance with equipment load chart. • Slings, chains, rope, wire rope and related equipment used for lifting shall be maintained in good condition, and used in a manner as to protect from damage. • Rigging, wire rope and hoisting equipment will be inspected and maintained on a weekly basis. • Hooks will be equipped with safety latches. ***Geosyntec Procedure(s):*** *HS-506-Cranes*
☐	**FORKLIFT** Hazards: Struck-by, run-over, overhead hazards, caught between (pinch points), roll over, fluid leaks. **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	☐ In addition to general safety practices for heavy equipment (above), as applicable: • Qualified operator, per established forklift training (certificate is required). • Equipment inspected daily and documented on Forklift Preoperational Inspection Checklist. • Do not exceed lifting load limits. • Forklift shall not be moved/driven with empty forks in raised position. • When not in use, forks lowered, brake set, controls in neutral, key removed. ***Geosyntec Procedure(s):*** *HS-505-Safe Operation of Forklifts, HS-132-Competent Persons*

☐	**AERIAL LIFTS**	☐ See Section D, "Fall Hazards" *Geosyntec Procedure(s): HS-509-Aerial Lifts*
☒	**TRENCHING/EXCAVATION** Hazards: Cave-in, hazardous atmosphere, structures & foundations, falls into excavations **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	☒ Safe work practices when personnel will enter trenches/excavations: • Activities under supervision/oversight of competent person, daily inspection. • Excavated materials placed at least 2' from trench sidewall. • Prevent water accumulation in trench. • Sloping & shoring for excavations ≥20' must be approved by a professional engineer. • Sloping/shoring/trench box for excavations ≥5' when persons enter trench/excavation. • Sloping/shoring/trench box for shallow (<5') excavations with cave-in hazard. • Workers in trenches to be within 25 feet of ladder or sloped entryway. • Excavations to be protected by perimeter fencing (not barricade tape), if potential for personnel to fall into. • If potential for atmospheric hazard, see Section J "Confined Space Entry, Hazardous Enclosed Spaces" ***Geosyntec Procedure(s):*** *HS-402-Excavation and Trenching, HS-132-Competent Persons*
☐	**DEMOLITION**	☐ Develop/implement demolition safety plan. ***Geosyntec Procedure(s):*** *HS-132-Competent Persons*
☐	**BLASTING**	☐ Develop/implement blasting safety plan. ***Geosyntec Procedure(s):*** *HS-307-Blasting and Use of Explosives, HS-132-Competent Persons*
☒	**PUBLIC AT RISK, SITE SECURITY**	☒ During site operations protect public (overhead protection, barriers, warning signs). ☒ During off hours, protect public with barriers, warning signs/lights; lock/secure hazardous materials.

H. ELECTICAL HAZARDS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: Electrical lines should be located and properly Marked out before ground breaking activities begin. Deenergize the lines if necessary.

J. CONFINED SPACE ENTRY, HAZARDOUS ENCLOSED SPACES ☐ Applicable ☒ Not Applicable, Not Anticipated

K. STORAGE OF BULK MATERIALS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: For stacking of stockpiled materials

☒	**STORAGE OF MATERIALS** **(for Chem. Storage, See Part 2 Section M)**	☒ Store materials in stable manner (stacked, racked, blocked, interlocked, tied, wrapped, or otherwise secured) to prevent tipping, sliding, rolling, falling or collapse. ☒ Do not exceed load limits of racks, platform, scaffold; ensure racks are stable, robust, secure. ☒ Ensure stored materials do not block aisles, passageways.

L. INFECTIOUS / ALLERGENIC BIOHAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

M. PROJECT USE OF COMMERCIAL CHEMICAL PRODUCTS ☐ Applicable ☒ Not Applicable, Not Anticipated

N. SITE CONTAMINANTS, CHEMICAL WASTES ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

Site contains chemicals of potential concern. Apply level D PPE and use boot covers when walking in open excavations. Use PID to screen soils for VOC's.

CHECK ALL THAT APPLY. Provide explanatory notes above.

☒ Soil/groundwater contaminants (historical release)	☐ Oxygen deficiency	☐ Asbestos
☐ Recent release, known high concentrations	☒ Chlorinated volatile organic compounds (VOCs)	☐ Lead paint
☐ Former chemical disposal site, landfill	☒ BTEX, petroleum derived VOCs	☒ Pesticides, herbicides, fungicides
☐ Urban fill, residual contaminants	☐ Fuel oils, petroleum, waste oil, lubricants	☐ Sensitizers
☐ Containerized waste (drums, process equipment)	☒ Metals, metal compounds, metal dusts	☐ Radioactive contaminants
☐ Buried drums (known or potential)	☐ Elemental mercury	☐ Other:
☐ Large containers, potential for spills	☒ Polyaromatic hydrocarbons (PAHs)	
☐ Emissions from active industrial processes	☒ Polychlorinated biphenyls (PCBs)	
☐ Emissions from welding/cutting/hot work	☐ Potential for flammable vapors	
☒ Carbon monoxide (vehicle/equipment exhaust)	☐ Potential for flammable gas (methane)	
☐ Contaminated building surfaces	☐ Corrosive, acids/caustics, strong irritants	
☐ Unexploded ordnance	☐ Sulfides, hydrogen sulfide (H_2S)	
☐ Explosive dust	☐ Cyanides, hydrogen cyanide (HCN)	

☒	**FOR SITE REGULATED AS "UNCONTROLLED HAZ. WASTE SITE," e.g. REGULATED BY HAZWOPER (OSHA 29 CFR 1910.120)** • Implement site control plan via Exclusion Zone(s), Contaminant Reduction Zone(s) and Support Zone (aka EZ, CRZ, SZ) • Workers to be aware of and trained on hazards per OSHA Hazard Communication Standard. • Include site map/figure depicting work locations and other relevant site-specific information. • Site workers in EZ or CRZ to have OSHA 40-hour training, current 8-hour refresher, 3 days supervised field experience.

	• Site workers in EZ or CRZ to participate in Medical Monitoring program, as applicable. • "Peripheral" site workers, engaged on-site, with no hazardous exposure: 24 hr. training required. • Site supervisor(s) required to have 8-hr. Supervisor training. • Implement site-specific procedures for worker protection via engineering controls, work practices, personal protective equipment (PPE), air monitoring, decontamination procedures, spill containment, emergency preparedness and response. ***Geosyntec Procedures:*** *HS-301-HAZWOPER, HS-108-Medical Monitoring Surveillance, HS-111-Air Monitoring, HS-112-Respiratory Protection, HS-113-Personal Protective Equipment, HS-114-Safety Training Programs, HS-115-Hazard Communication, HS-405-Drum Sampling, Others as applicable*
☐	**FOR SITE WITH CHEMICAL CONTAMINANTS OR WASTE BUT NOT REGULATED BY HAZWOPER** • Workers to be knowledgeable/aware of chemical hazards thru safety training/orientation and availability of hazard information • Implement controls to minimize worker exposure through engineering controls, work practices, PPE, as appropriate. • Conduct air monitoring/sampling to monitor/evaluate worker exposure, as applicable. ***Geosyntec Procedures:*** *HS-111-Air Monitoring, HS-112-Respiratory Protection, HS-113-Personal Protective Equipment, HS-114-Safety Training Programs, HS-115-Hazard Communication, Others as applicable*
☐	**OFF-SITE MIGRATION OF CONTAMINANTS** ☐ Implement controls to minimize hazard migration (dust suppression, covers, foam, etc.) ☐ Community/perimeter air monitoring to be conducted per perimeter air monitoring plan.
☐	**SPILL CONTAINMENT, CONTAINERS** ☐ Describe above any site-specific procedures for spill containment, container handling, as applicable. ***Geosyntec Procedures****: HS-406-Unknown Hazardous Waste Drum Handling*

O. AIR MONITORING ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: Community air monitoring of work zone perimeter includes real-time monitoring for dust and time averaged sampling for PCBs. See Dust Control/Monitoring Plan

☒	**AIR-TESTING PARAMETERS**	☒ VOCs, GASES ☒ PID, Lamp energy: 10.6 eV ☐ FID ☒ Carbon monoxide ☒ Hydrogen sulfide ☒ Oxygen (O_2)	☒ Flammable gas (LEL) ☒ Particulate (dust) ☐ Calibration kit for each parameter ☒ Other: PCBs

☐	**ACTION LEVELS FOR O2/LEL**	☐ Oxygen	≤19.5% - ventilate to raise O_2 to acceptable levels, or use Level B. ≥23.0% - ventilate to lower O_2 to acceptable levels, or use Level B and control fire hazards & ignition sources.
		☐ LEL	Confirm at least 12% oxygen is present to ensure accuracy of LEL readings. At <10% LEL - Continue working, continue to monitor LEL levels At ≥10% LEL- Immediately withdraw from area. Resume work ONLY after LEL readings reduced to <10%.

☐	**ACTION LEVELS FOR TOXICS** (sustained breathing zone concentrations)	**Parameters**	**Level D, Modified D***	**Use levels C or B*, as indicated below, OR take action to reduce breathing zone level to concentration acceptable for Level D*.**
		☐ VOCs	< ___ ppm	___ ppm to ___ ppm: Level C (air purifying respirator) > ___ ppm: Level B (air-supplied respirator)
		☐ Carbon Monoxide	< 35 ppm	≥35 ppm - Level B (air-supplied respirator)
		☐ Hydrogen Sulfide	< 10 ppm	≥10 ppm - Level B (air-supplied respirator)
		☒ Total Dust	< 1 mg/m^3	> 10 mg/m^3 - Level C (air-purifying respirator)
		☐		
		☐		

*** Levels of Protection:**
Level D (standard work clothes, basic personal protective wear, no chemical protective clothing, no respiratory protection)
Modified Level D (chemical protective clothing in addition to standard work clothes, no respiratory protection)
Level C (air purifying respirator or dust mask, in addition to chemical protective clothing)
Level B or A (air supplied respirator, chemical protective suit; fully-encapsulating suit for Level A)

Geosyntec Procedures: *HS-111-Air Monitoring*

P. RADIATION HAZARDS (Other than Sunlight) ☐ Applicable ☒ Not Applicable, Not Anticipated

PART 3 – APPROVALS, ACKNOWLEDGEMENTS

A. THA PREPARATION, REVIEW/APPROVAL SIGNATURES - THA typically prepared by project staff, reviewed/approved by Project Manager, Supervisor, qualified/knowledgeable designee, with support of HS personnel as deemed appropriate for the work and associated hazards.			
	Printed Name	*Signature*	*Date*
THA PREPARED BY: (minimum one person)	Matt Schallinger		6/11/2018
THA REVIEWED/ APPROVED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*
	Aron Krasnopoler, P.E.		12/2/2018
	Mark Bauer, P.G.		5/31/2019

>>> Please See Section B, "Field Crew Acknowledgements," on Following Page <<<

B. FIELD CREW ACKNOWLEDGEMENTS

GEOSYNTEC FIELD CREW

Please sign below to acknowledge you reviewed and understand this THA, participated in project safety briefing and had an opportunity to ask questions about the information herein.

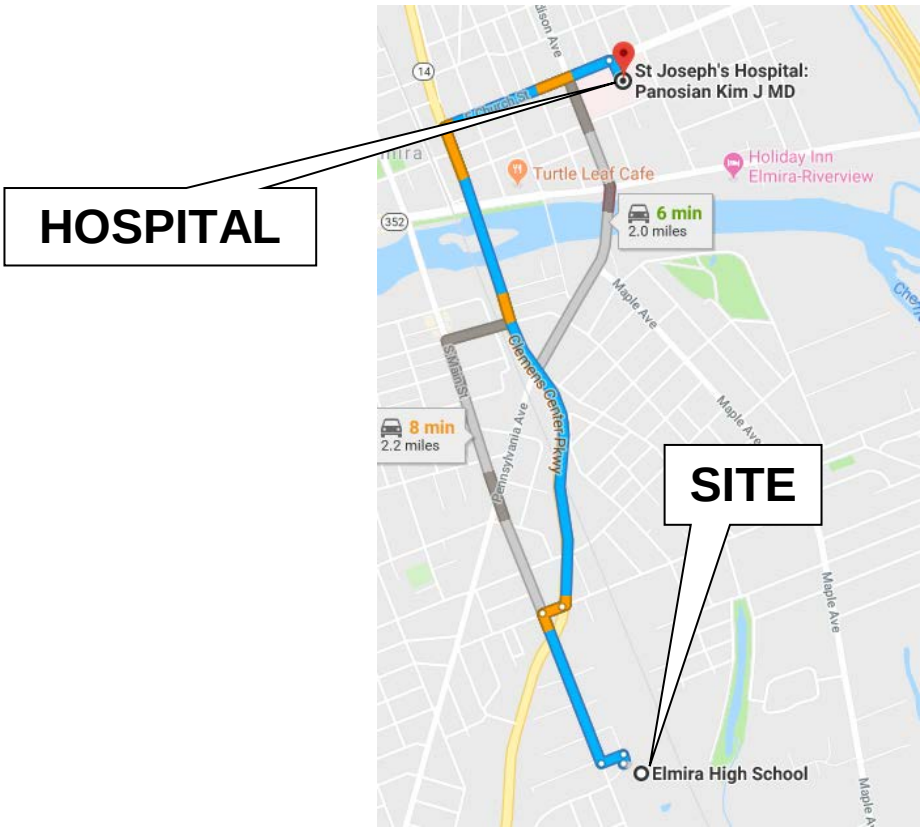
Print Name:	Signature:	Employee No.	Date:

SUBCONTRACTOR'S FIELD CREW

Please sign below to acknowledge that this THA was made available to you, and you had an opportunity to ask questions about the information herein.

Print Name:	Signature:	Company Name:	Date:

ROUTE TO HOSPITAL



St. Joseph's Hospital
555 E Market St.
Elmira, NY 14901
(607)-733-6541

Written Directions to Hospital from Site:

1. Depart S Main St toward W Miller St.
2. Turn right onto S Main St (250 ft)
3. Turn left onto Clemens Center Pkwy (1.2 mi)
4. Turn right onto E Church St (0.4 mi)
5. Arrive at **St. Joseph's Hospital**

Geosyntec HS Procedures referenced herein are available on Geosyntec's H&S SharePoint site and should be consulted, as appropriate, per project-specific needs. This THA prepared per HS-106-Accident Prevention Program, HS-204-Task Hazard Analysis.

PART 1 – SITE SAFETY PLAN

A. PROJECT/TASK INFORMATION

TASK:	Stockpile Sampling		
Project Name:	Former Sperry Remington Site – North Portion	**Project Number/Org:**	MN0832F/1751
Project Address:	777 Sourth Main Street, Elmira, New York		
Description of Task & Worksite:	Stockpile sampling for potential reuse or waste characterizaiion.		

Geosyntec Personnel	Name	Office Phone	Cell Phone
Site Lead/HS Officer	Matt Schallinger	(612) 253-8209	(651) 356-5799
Project Manager	Aron Krasnopoler	(410) 910-7612	(202) 550-7724
Project Director	Paul Brookner	(612) 253-8203	(612) 599-7473
HS Coordinator	Mark Bauer	(410) 910-7626	(315) 729-0644
Regional HS Mngr.	Mark P. Malchik	978-206-5777	781-392-5440
Corp. HS Director	Dale Prokopchak	804-332-6376	804-349-8067
ECSD Contact	Mike Dunn	(607) 735-3980	(607) 426-2856
Client Contact(s):	Kevin Krueger	(651) 687-2210	
Subcontractor(s):	☒ Not Applicable ☐ Applicable, provide contact information below:		

B. SUMMARY OF WORK STEPS, HAZARDS, CONTROLS

Based on **PART 2, "HAZARD ANALYSIS,"** and on worksite/client/project factors.

Abstract of work steps/hazards/controls, with references to applicable Sections in Part 2 for greater detail:

WORK STEPS	HAZARDS	CONTROLS
Task 1: Entering and Exiting the Stockpiling Area (MSA)	• *Slip, trip, fall* • *Heavy equipment* • *Potential chemical exposure* • *Heat stress* • *Eye injury* • *Noise*	• *Walk carefully on uneven terrain* • *Pay close attention to foot placement; slow deliberate movement* • *Communicate to all field personnel when mechanical equipment is in operation (see EHS 119)* • *Wear required PPE* • *Use proper hearing protection (see EHS 109)* • *Use proper eye protection* • *Communicate when entering and exiting the excavation and be aware of any moving equipment.* • *Heavy equipment (see EHS 504)* • *Fall Protection measure (ex. Warning line, barricade, fencing, etc.)* • *Sloping of Stockpile*

Task 2: Sample Collection, Labeling and Packing	• *Slip, trip, fall* • *Mechanical equipment* • *Heat stress* • *Eye injury* • *Noise* • *Potential contaminant exposure: VOCs, PCBs, SVOCs* • *Back strain when transporting coolers full of collected samples packed with ice.*	• *Walk carefully on uneven terrain* • *Pay close attention to foot placement; slow deliberate movement* • *Communicate to all field personnel when mechanical equipment is in operation (see EHS 119)* • *Wear required PPE* • *Use proper eye protection* • *Use proper hearing protection (see EHS 109)* • *Excavation (see EHS 402)* • *Heavy equipment (see EHS 504)* • *Communicate when entering and exiting the excavation and be aware of any moving equipment.* • *Use proper lifting techniques. Get assistance when possible* • *Stay on ground level when collecting stockpile samples* • *Use wagons for cooler transport.*
Task 3: Equipment Decontamination *Decontaminate equipment that will be reused (e.g. hand auger, trowel, et. al.)*	• *Hand injuries during handling of equipment.* • *Potential contaminant exposure: VOCs, PCBs, SVOCs* • *Splash hazards*	• *Pay close attention to the sharp edge of steel hand trowel to avoid cutting or other injuries of hands.* • *Continue to wear level D PPE and minimize contact with water.*

C. H&S EQUIPMENT LIST List HS equipment needed at the worksite to control/manage hazards identified in **PART 2, "HAZARD ANALYSIS."**

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**BASIC PPE AND SAFETY GEAR**	☒ Standard work clothes & footwear, appropriate for task ☒ Hard-toed boots/shoes ☒ Hardhat ☒ Safety glasses	☒ Work gloves appropriate for task ☒ Noise/hearing protection ☒ High-visibility/reflective vest ☒ First aid kit	
		☒ Basic PPE for limited protection from chemical contact & low-hazard dust inhalation – nitrile gloves, Tyvek suit, dust mask, boot covers.		
☒	**OTHER H&S EQUIPMENT/GEAR**	☒ Fire extinguisher ☒ Traffic control warning devices ☒ Insect control (repellant)	☒ Vehicle emergency kit (flares, lights, reflective device) ☒ Sun protection (sunscreen, canopy, other) ☐	
		☒ Other: Boot Covers		
☒	**ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT (PPE)**	Eye/face protection ☐ Goggles ☐ Face shield Chemical protective clothing ☒ Gloves, type:Nitrile ☒ Coveralls, type: Tyvek ☒ Outer boots, boot covers	Respiratory Protection ☐ Disposable n-95 face mask ☐ Half-face air-purifying respirator ☐ Full-face air-purifying respirator ☐ Respirator cartridge, type: ☐	☐ Personal flotation device ☐ Personal fall apparatus ☐ Fire retardant clothing ☐ Arc Flash Protection ☐ Electrical-Hazard-rated boots, gloves ☐
		☐ Other:		
☐	**SPECIAL HAZARD CONTROLS**	☐ Portable GFCI ☐	☐ Lockout/tagout equipment ☐	☐ Ventilation equipment (fan, blower) ☐
☒	**DECON, PPE DISPOSAL**	☒ Waste receptacle for disposable PPE	☒ Hand washing provisions	☒ Decon solution, misc. supplies
		☐ Additional information:		
☒	**AIR MONITORING EQUIPMENT**	List needed air monitoring equipment below. See Part 2, Sections M, N and O for chemical hazard evaluation, action levels.		
		Work area air monitoring to be provided by IRM contractor; personal dust monitor		

D. EMERGENCY RESPONSE Based on **PART 2, "HAZARD ANALYSIS,"** and on worksite factors, client requirements.

SUMMARY of Recognized Emergency Risk Factors & Response Procedures *(fire/explosion, medical , chemicals/spills, security, site conditions/topography, prevailing weather, other concerns)*:

To Summon Police, Fire, Ambulance in an Emergency	☒ DIAL 911 ☐ use alternate procedure:
Nearest Emergency Medical Services	Hospital Name: St. Josephs Hospital
	Address: 555 E Market St. Elmira, NY 14901
	Phone #: (607) 733- 6541 or 911
For **Non-Emergency Urgent Care**:	Contact WorkCare, 24/7 at: 800-455-6155, menu option "3"
Or	Elmira Urgent Care Facility
	Address: 360 W. Water St. Elmira, NY 14901
	Phone #: 607-732-1100

	Hours: 9am- 6pm
Other Emergency Contacts, as needed *(such as security, spill responder, utility):*	
Job-site **Evacuation** Procedure, Rally Point, Place of refuge:	Calmly exit the Site from the place of work via perimeter road. A site map is available in the work plan. Rally point will be at the nearest EHS or STCC building
Means of alerting on-site personnel in case of emergency:	☒ Verbal ☒ Radio ☒ Cell Phone ☐ Other:
Special Equipment, as applicable (such as PPE, first aid, eyewash):	
IMPORTANT: After initial emergency response actions and incident stabilization, contact appropriate project personnel (see Part 1.A.).	

PART 2 – HAZARD ANALYSIS *Complete Section A. Then complete Sections B thru O, as applicable to your project. Provide comments in each section under "Explanatory Notes, Clarifications" to sufficiently describe site-specific hazards and safety measures.*

A. BASIC HAZARD PREPAREDNESS This section required for all Tasks.

Explanatory Notes, Clarifications: Obtain clearance for stockpile access from Superintendent before collecting samples.

Basic Personal Protection

☒ **Overhead Hazards** - Wear hardhat or "bump cap" as appropriate for hazard.
☒ **Hand injury hazards** - Wear protective work gloves appropriate for the hazard and work tasks.
☒ **Eye injury hazards** - Wear safety glasses (with side shield or wrap around, either clear or shaded for sun protection).
☒ **Foot hazards, rough terrain** - Wear work boots/shoes with hard toes, ankle support, puncture resistance, traction, as appropriate for conditions.
☒ **Noise** – use hearing protection, (earplugs, earmuffs, or both) as appropriate for conditions, at a minimum where noise levels exceed 85dBA.
☐ **Chemical/biological agents, low hazard and/or "passive" exposure** - use appropriate PPE and precautions; describe above.
☒ **Chemical/biological agents, elevated hazard and/or "active use" exposure** – see Part 2, Section(s) M, N, O, as applicable.

Geosyntec Procedures: *HS-109-Hearing Conservation, HS-113-Personal Protective Equipment, HS-210-Walking and Working Surfaces*

General Safety Precautions

☒ **General premises** hazards - housekeeping, rough terrain, trip hazards, steep slope, remote location; describe specific hazards and controls above.
☒ **Weather/climate-related hazards** - heat cold protection, fluids, breaks, shade, sun screen, multiple layers, discontinue use of aerial lift/ladder in high wind, "30/30 rule" for lightning safety, protection from hail, seek place of refuge for extreme weather
☒ **Plant/Insect/Animal Hazards** - Precautions: poison ivy wash; insect repellant; check for ticks; hornet nest spray; animal precautions.
☒ **Traffic** – Implement measures to protect personnel (high visibility/reflective clothing, on-person lighting, traffic control measures).
☐ **Illumination hazards/night work** - Illuminate work areas and/or access routes, use reflective/hi-visibility clothing or on-person lighting, as appropriate.
☒ **Manual hand tools** - proper tool for the job, maintain in good condition, use vice/clamp to hold work piece, proper follow thru
☒ **Machinery hazards, passive exposure** – keep safe distance, heed warning signs, use appropriate PPE (such as eye/hearing protection), secure long hair, loose clothing, jewelry near moving parts. For active use of equipment machinery as part of the work, see Part 2, Section E "Powered Tools, Equipment, Machinery"
☒ **Lifting, manual material handling** – use proper lifting procedures, seek help for >50 lbs.

Geosyntec Procedures: *HS-127-Ticks, HS-124-Heat Stress, HS-125-Cold Stress, HS-210-Walking and Working Surfaces, HS-208-Housekeeping, HS-401-Back Injury Prevention, HS-502-Manual Hand Tool, HS 517 Traffic Safety*

Security

☐ **High crime, urban** – Use appropriate measures for personal security (such as buddy system, security service, work scheduling, other measures)
☐ **Working alone** - Establish "check in" procedure with supervisor/project manager.

Geosyntec Procedures: *HS-207-Working Alone*

Driving Hazards

☒ **Routine work travel** - Use routine safe/defensive driving practices (seat belts, safe speeds, eyes ahead, no tailgating, limit distractions, safe cell phone use, no texting, clear windows, account for weather/road conditions, adequate sleep, other measures as appropriate).
☒ **Unfamiliar location** - Plan travel route before driving (assemble maps, enter destination in GPS).
☒ **Long Distance or During Sleep Hours** – Minimize fatigue: rest breaks, light snacks (avoid heavy meals), stay hydrated, fresh air, no loud music, clean windshield.
☒ **Unfamiliar vehicle** – Become familiar with vehicle operational controls before operating vehicle.
☒ **Special hazards** - see Part2, Section B, "Special Driving/Traffic/Transportation Hazards"

Geosyntec Procedures: *HS-105-Driver and Vehicle Safety*

B. SPECIAL DRIVING/TRAFFIC/TRANSPORTATION HAZARDS ☒Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: The MSA is a high traffic area with haul trucks transporting soils between the EHS Work Area and the MSA. Loads refers to transportation of sample coolers from sampling event.

☐	**SPECIAL DRIVING HAZARDS** Off-Road Driving or use of non-typical vehicle, ATV Hazards: Worker injury due to vehicle collision, rollover	☐ For off road driving, do not exceed capability of vehicle, beware of wet conditions, speed low, avoid unsafe orientation on slopes. ☐ Follow ATV specific procedures for training, safety equipment, operation, manufacturer's instructions. ☐ Special Skills Required for Vehicle type - For vehicles requiring special skills (such as windowless van, heavy work vehicle, utility vehicle, similar) ensure operator is provided training and/or has appropriate operator skills through experience. ***Geosyntec Procedure(s):*** *HS-510-All Terrain Vehicles*
☐	**TRANSPORTING MATERIALS, TOWING/HAULING LOADS** Hazards: Vehicle accident, occupant injury from shifting load, unsafe equipment.	☐ Ensure load is firmly secured (rope, straps, load configuration) to prevent shifting during travel. ☐ Slings, chains, strap, rope and related equipment used for towing, hauling, load-securing shall be appropriate for use, and used in a manner as to prevent an unsafe condition. ☐ For trailer use, verify signal/braking lights operational, rear-view mirrors effective, hitch/safety chains secure.
☒	**WORKSITE IN/NEAR VEHICLE THOROUGHFARE** Hazards: Worker injury from being struck by vehicle traveling in thoroughfare.	☒ Wear reflective vests where exposed to traffic hazards. ☐ Where possible, park vehicles as protective shield from oncoming traffic. ☒ Configure work area and support vehicles to minimize worker exposure to traffic hazards. ☒ Use DOT signal devices to re-route vehicles around work area, site entrances/exits. ☒ Use DOT-trained flaggers or police detail where appropriate or required. ***Geosyntec Procedure(s):*** *HS-517-Traffic Safety*
☐	**RAILROAD HAZARD** Hazard: Worker injury from being struck by train in R.R. right-of-way	☐ Coordinate with rail company and implement required safety and security measures. ☐ Site workers to receive safety training for railroad work. **Geosyntec Procedure(s):** HS-305-Rail Operations
☐	**WATER TRANSPORTATION**	☐ Follow HS 312 "Water Transportation Safety," and Section C, "Water/Boating Hazards." **Geosyntec Procedure(s):** HS-312-Water Transportation Safety
☐	**AIRPORT, AIRCRAFT** Worker injury when working on/near airport runway, or use of helicopter, light aircraft	☐ Coordinate safety requirements with Airport personnel and implement required safety measures. ☐ Site workers to receive safety training for railroad/airport work. ☐ Follow HS 310 "Helicopter Safety" and/or HS 311 "General Aviation (Small Aircraft) Safety." ***Geosyntec Procedure(s):*** *HS-310-Helicopter Safety, HS 311-General Aviation (Small Aircraft) Safety*
☒	**HEAVY EQUIPMENT TRAFFIC/VEHICLE HAZARDS AT CONSTRUCTION SITE**	☒ See Section G, "Construction, Heavy Equipment, Lift Equipment"

C. WATER/BOATING HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

D. FALL HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

E. POWERED TOOLS, EQUIPMENT, MACHINERY ☐ Applicable ☒ Not Applicable, Not Anticipated

F. DRILLING ☐ Applicable ☒ Not Applicable, Not Anticipated

G. CONSTRUCTION, HEAVY EQUIPMENT, LIFT EQUIPMENT ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: Potentially sampling in the prescence of heavy construction equipment. Make eye contact with operators before sampling.

☒	**HEAVY EQUIPMENT** Hazards: Struck-by, run-over, caught between (pinch points), roll over, fluid leaks, overhead hazards **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	☒ Follow general safe work practices for heavy equipment: • Trained/qualified persons operate all heavy equipment. • Do not get into a potential crush situation below or between equipment, or in an excavation. • No passengers on moving/operating equipment except where passenger seat/restraint is present. • Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. • Leaks or defective safety equipment should be repaired before use. • Operators required to use seatbelts. • Eye contact with operator and use of hand signals prior to approaching near equipment. • High visibility vests for all personnel in construction vehicle work area, on-site roadways and travel lanes. • Maximum safe slope for each vehicle will be followed. • Personnel to stay clear of, or restrict access to, swing radius and travel path of equipment. • Spill equipment available for fuel and hydraulic fluid leaks. • Equipment locked, secured, brakes set, buckets/forks lowered, when not in use. • Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. • Mark temporary roadways clearly, provide berms/stop logs where needed. ***Geosyntec Procedure(s):*** *HS-504-Heavy Equipment, HS-132-Competent Persons*
☐	**CRANES** Hazards: - electrocution by overhead utility lines - injury in swing radius - injury from falling load	☐ In addition to general safety practices for heavy equipment (above), as applicable: • Only qualified persons operate cranes (certificate required). • Critical Lift Plan & Checklist prepared/executed (HS 506) prior to mobilization. • Equipment to be inspected prior to mobilization and daily by crane operator. • Crane operator will remain at the controls at all times during operation. • Crane operation must be performed under the direction of an appointed signal person at all times.

	- Crane tipping over due to overbalancing, high winds, unstable ground, unsafe slope, bad placement of outriggers - injury from mechanical hazards **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	• Communication between crane operator and signal person will be maintained through standard hand signals or voice communication equipment. • Keep area beneath suspended loads clear of personnel. • Rigging procedures – see Mechanical Lifting, Rigging, below. ***Geosyntec Procedure(s):*** *HS-506-Cranes, HS-132-Competent Persons*
☐	**MECHANICAL LIFTING, RIGGING** Applies to lifting by crane, truck-mounted boom rig (e.g. drill rig), mechanical/electrical hoist, similar equipment. Hazards: falling loads, personnel under suspended loads.	☐ In addition to general safety practices for heavy equipment (above), as applicable: • Coordinate lifting operations with competent person. • Do not exceed loading limits of lifting equipment; perform work in accordance with equipment load chart. • Slings, chains, rope, wire rope and related equipment used for lifting shall be maintained in good condition, and used in a manner as to protect from damage. • Rigging, wire rope and hoisting equipment will be inspected and maintained on a weekly basis. • Hooks will be equipped with safety latches. ***Geosyntec Procedure(s):*** *HS-506-Cranes*
☐	**FORKLIFT** Hazards: Struck-by, run-over, overhead hazards, caught between (pinch points), roll over, fluid leaks. **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	☐ In addition to general safety practices for heavy equipment (above), as applicable: • Qualified operator, per established forklift training (certificate is required). • Equipment inspected daily and documented on Forklift Preoperational Inspection Checklist. • Do not exceed lifting load limits. • Forklift shall not be moved/driven with empty forks in raised position. • When not in use, forks lowered, brake set, controls in neutral, key removed. ***Geosyntec Procedure(s):*** *HS-505-Safe Operation of Forklifts, HS-132-Competent Persons*
☐	**AERIAL LIFTS**	☐ See Section D, "Fall Hazards" *Geosyntec Procedure(s): HS-509-Aerial Lifts*
☒	**TRENCHING/EXCAVATION** Hazards: Cave-in, hazardous atmosphere, structures & foundations, falls into excavations **IMPORTANT!** Follow safe work practices per Section I, "Utility Related Hazards"	☒ Safe work practices when personnel will enter trenches/excavations: • Activities under supervision/oversight of competent person, daily inspection. • Excavated materials placed at least 2' from trench sidewall. • Prevent water accumulation in trench. • Sloping & shoring for excavations ≥20' must be approved by a professional engineer. • Sloping/shoring/trench box for excavations ≥5' when persons enter trench/excavation. • Sloping/shoring/trench box for shallow (<5') excavations with cave-in hazard . • Workers in trenches to be within 25 feet of ladder or sloped entryway. • Excavations to be protected by perimeter fencing (not barricade tape), if potential for personnel to fall into. • If potential for atmospheric hazard, see Section J "Confined Space Entry, Hazardous Enclosed Spaces" ***Geosyntec Procedure(s):*** *HS-402-Excavation and Trenching, HS-132-Competent Persons*
☐	**DEMOLITION**	☐ Develop/implement demolition safety plan. ***Geosyntec Procedure(s):*** *HS-132-Competent Persons*
☐	**BLASTING**	☐ Develop/implement blasting safety plan. ***Geosyntec Procedure(s):*** *HS-307-Blasting and Use of Explosives, HS-132-Competent Persons*
☐	**PUBLIC AT RISK, SITE SECURITY**	☒ During site operations protect public (overhead protection, barriers, warning signs). ☒ During off hours, protect public with barriers, warning signs/lights; lock/secure hazardous materials.

H. ELECTICAL HAZARDS	☐ Applicable	☒ Not Applicable, Not Anticipated
I. UTILITY RELATED HAZARDS	☐ Applicable	☒ Not Applicable, Not Anticipated
J. CONFINED SPACE ENTRY, HAZARDOUS ENCLOSED SPACES	☐ Applicable	☒ Not Applicable, Not Anticipated
K. STORAGE OF BULK MATERIALS	☐ Applicable	☒ Not Applicable, Not Anticipated
L. INFECTIOUS / ALLERGENIC BIOHAZARDS	☐ Applicable	☒ Not Applicable, Not Anticipated
M. PROJECT USE OF COMMERCIAL CHEMICAL PRODUCTS	☒ Applicable	☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Decontamination Fluids, Sample Preservatives

☐	**PRODUCTS REGULATED BY HAZARD COMMUNICATION STANDARD**	☐ Safety Data Sheets available, either on site or readily available within same work shift, containers labelled properly, workers trained/oriented on hazards ☐ For subcontractor use of chemical products, coordinate/discuss during safety meetings.
☐	**COMPRESSED GAS (flammable or nonflammable)**	☐ Secure cylinders upright, caps on when not in use, handle with care, prevent damage. ☐ Propane cylinders not in use must be stored outdoors in cage or similar secure enclosure. ☐ Ensure acetylene cylinders NOT secured to steel arc welding bench. ☐ Store/use in a manner to prevent asphyxiation hazard. ☐ Segregate oxygen and fuel gases by distance (20') or barrier. ☐ Control ignition sources.

		☐ "No smoking" signage at cylinder storage area for flammable gases. ☐ Use/store in a manner to control inhalation exposure hazards, PPE, air monitoring.
☐	**FLAMMABLE/COMBUSTIBLE LIQUIDS**	☐ Proper storage (flam. storage cabinets, other storage precautions). ☐ Use proper fuel safety can (metal fuel can preferred). ☐ Control ignition sources. ☐ Grounding and bonding where appropriate.
☒	**ACIDS, CAUSTICS, OTHER CORROSIVES**	☒ Handle with care, use appropriate eye/face/skin protection. ☒ Eyewash, deluge shower, drench hose, hand washing (with water), as appropriate .
☐	**TOXIC**	☐ For toxic substances, use/store in a manner to control exposure hazards (inhalation, ingestion, skin contact, skin absorption); use PPE as appropriate, conduct air monitoring as appropriate.
☐	**EMISSIONS FROM FUEL COMBUSTION** ☐ Gasoline ☐ Diesel ☐ Propane/Natural Gas	☐ Position outdoor personnel upwind of exhaust source. ☐ Use blowers, fans to provide fresh air to work area and dissipate atmospheric hazards. ☐ Use respiratory protection for high levels of smoke, exhaust particulates, soot. ☐ Conduct air monitoring as appropriate (see Section O, "Air Monitoring").
☐	**OTHER HAZARDS**	☐ Describe other hazardous substances and safety measures under "Explanatory Notes, Clarifications," above.
☐	**CHEMICAL STORAGE** Check this when jobsite requirements include special provisions for chemical storage.	☐ Chemical storage cabinet, cage, storage room, or similar. ☐ Ensure incompatible chemicals are segregated. ☐ Provide secondary containment. ☐ Locate special safety equipment near chemical storage

Geosyntec Procedures: *HS-115-Hazard Communication, HS-111-Air Monitoring, HS-112-Respiratory Protection, HS-113-Personal Protective Equipment, HS-114-Safety Training Programs, Others as applicable*

N. SITE CONTAMINANTS, CHEMICAL WASTES ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: Site contains chemicals of potential concern. Apply level D PPE and use boot covers when walking in open excavations. Use PID to screen soils for VOC's.

CHECK ALL THAT APPLY. Provide explanatory notes above.

☒ Soil/groundwater contaminants (historical release)	☐ Oxygen deficiency	☐ Asbestos
☐ Recent release, known high concentrations	☒ Chlorinated volatile organic compounds (VOCs)	☐ Lead paint
☐ Former chemical disposal site, landfill	☒ BTEX, petroleum derived VOCs	☐ Pesticides, herbicides, fungicides
☐ Urban fill, residual contaminants	☐ Fuel oils, petroleum, waste oil, lubricants	☐ Sensitizers
☐ Containerized waste (drums, process equipment)	☒ Metals, metal compounds, metal dusts	☐ Radioactive contaminants
☐ Buried drums (known or potential)	☐ Elemental mercury	☐ Other:
☐ Large containers, potential for spills	☒ Polyaromatic hydrocarbons (PAHs)	
☐ Emissions from active industrial processes	☒ Polychlorinated biphenyls (PCBs)	
☐ Emissions from welding/cutting/hot work	☐ Potential for flammable vapors	
☒ Carbon monoxide (vehicle/equipment exhaust)	☐ Potential for flammable gas (methane)	
☐ Contaminated building surfaces	☐ Corrosive, acids/caustics, strong irritants	
☐ Unexploded ordnance	☐ Sulfides, hydrogen sulfide (H_2S)	
☐ Explosive dust	☐ Cyanides, hydrogen cyanide (HCN)	

☒ **FOR SITE REGULATED AS "UNCONTROLLED HAZ. WASTE SITE," e.g. REGULATED BY HAZWOPER (OSHA 29 CFR 1910.120)**

- Implement site control plan via Exclusion Zone(s), Contaminant Reduction Zone(s) and Support Zone (aka EZ, CRZ, SZ)
- Workers to be aware of and trained on hazards per OSHA Hazard Communication Standard.
- Include site map/figure depicting work locations and other relevant site-specific information.
- Site workers in EZ or CRZ to have OSHA 40-hour training, current 8-hour refresher, 3 days supervised field experience.
- Site workers in EZ or CRZ to participate in Medical Monitoring program, as applicable.
- "Peripheral" site workers, engaged on-site, with no hazardous exposure: 24 hr. training required.
- Site supervisor(s) required to have 8-hr. Supervisor training.
- Implement site-specific procedures for worker protection via engineering controls, work practices, personal protective equipment (PPE), air monitoring, decontamination procedures, spill containment, emergency preparedness and response.

Geosyntec Procedures: *HS-301-HAZWOPER, HS-108-Medical Monitoring Surveillance, HS-111-Air Monitoring, HS-112-Respiratory Protection, HS-113-Personal Protective Equipment, HS-114-Safety Training Programs, HS-115-Hazard Communication, HS-405-Drum Sampling, Others as applicable*

☐ **FOR SITE WITH CHEMICAL CONTAMINANTS OR WASTE BUT NOT REGULATED BY HAZWOPER**

- Workers to be knowledgeable/aware of chemical hazards thru safety training/orientation and availability of hazard information
- Implement controls to minimize worker exposure through engineering controls, work practices, PPE, as appropriate.
- Conduct air monitoring/sampling to monitor/evaluate worker exposure, as applicable.

Geosyntec Procedures: *HS-111-Air Monitoring, HS-112-Respiratory Protection, HS-113-Personal Protective Equipment, HS-114-Safety Training Programs, HS-115-Hazard Communication, Others as applicable*

☐	**OFF-SITE MIGRATION OF CONTAMINANTS**	☐ Implement controls to minimize hazard migration (dust suppression, covers, foam, etc.) ☐ Community/perimeter air monitoring to be conducted per perimeter air monitoring plan.
☐	**SPILL CONTAINMENT, CONTAINERS**	☐ Describe above any site-specific procedures for spill containment, container handling, as applicable. ***Geosyntec Procedures**: HS-406-Unknown Hazardous Waste Drum Handling*

O. AIR MONITORING ☒ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: Perimeter air monitoring will be conducted in accordance with
See the Dust Control/Monitoring Plan. Do not enter area if visible dust is observed. Request additional dust control measures.

☒	**AIR-TESTING PARAMETERS**	☒ VOCs, GASES ☒ PID, Lamp energy: 10.6 eV ☐ FID ☒ Carbon monoxide ☒ Hydrogen sulfide ☒ Oxygen (O_2)		☒ Flammable gas (LEL) ☒ Particulate (dust) ☐ Calibration kit for each parameter ☐ Other:
☐	**ACTION LEVELS FOR O2/LEL**	☐ Oxygen	≤19.5% - ventilate to raise O_2 to acceptable levels, or use Level B. ≥23.0% - ventilate to lower O_2 to acceptable levels, or use Level B and control fire hazards & ignition sources.	
		☐ LEL	Confirm at least 12% oxygen is present to ensure accuracy of LEL readings. At <10% LEL - Continue working, continue to monitor LEL levels At ≥10% LEL- Immediately withdraw from area. Resume work ONLY after LEL readings reduced to <10%.	

		Parameters	**Level D, Modified D***	**Use levels C or B*, as indicated below, OR take action to reduce breathing zone level to concentration acceptable for Level D*.**
☒	**ACTION LEVELS FOR TOXICS** (sustained breathing zone concentrations)	☐ VOCs	< __ ppm	__ ppm to __ ppm: Level C (air purifying respirator) > __ ppm: Level B (air-supplied respirator)
		☐ Carbon Monoxide	< 35 ppm	≥35 ppm - Level B (air-supplied respirator)
		☐ Hydrogen Sulfide	< 10 ppm	≥10 ppm - Level B (air-supplied respirator)
		☒ Total Dust	< 1 mg/m^3	> 10 mg/m^3 - Level C (air-purifying respirator)
		☐		

*** Levels of Protection:**
Level D (standard work clothes, basic personal protective wear, no chemical protective clothing, no respiratory protection)
Modified Level D (chemical protective clothing in addition to standard work clothes, no respiratory protection)
Level C (air purifying respirator or dust mask, in addition to chemical protective clothing)
Level B or A (air supplied respirator, chemical protective suit; fully-encapsulating suit for Level A)

***Geosyntec Procedures:** HS-111-Air Monitoring*

P. RADIATION HAZARDS (Other than Sunlight) ☐ Applicable ☒ Not Applicable, Not Anticipated

PART 3 – APPROVALS, ACKNOWLEDGEMENTS

A. THA PREPARATION, REVIEW/APPROVAL SIGNATURES - THA typically prepared by project staff, reviewed/approved by Project Manager, Supervisor, qualified/knowledgeable designee, with support of HS personnel as deemed appropriate for the work and associated hazards.			
	Printed Name	*Signature*	*Date*
THA PREPARED BY: (minimum one person)	Karl Wuolo-Journey		05/21/9
THA REVIEWED/ APPROVED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*
	Aron Krasnopoler, P.E.		12/03/2018
	Mark Bauer, P.G.		5/31/2019

>>> Please See Section B, “Field Crew Acknowledgements,” on Following Page <<<

B. FIELD CREW ACKNOWLEDGEMENTS

GEOSYNTEC FIELD CREW

Please sign below to acknowledge you reviewed and understand this THA, participated in project safety briefing and had an opportunity to ask questions about the information herein.

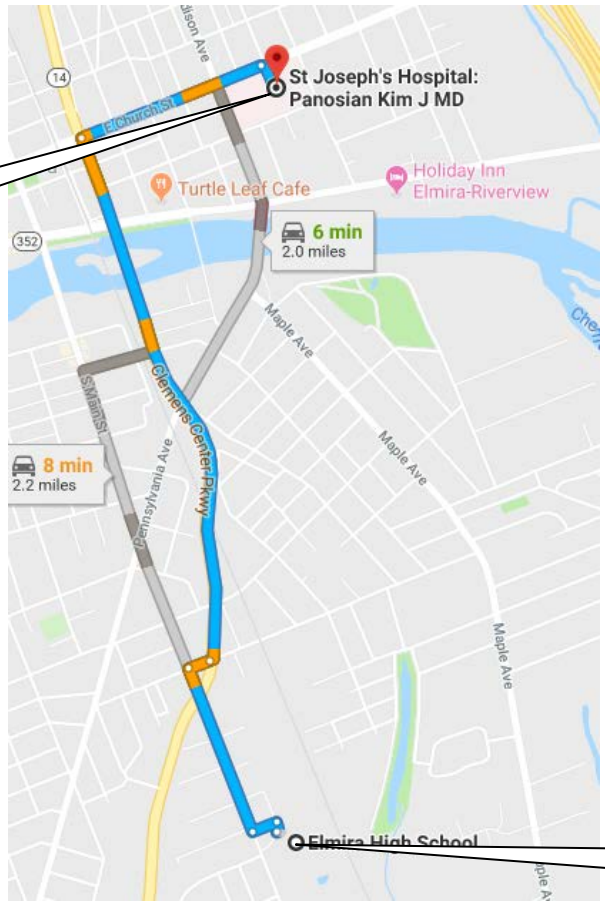
Print Name:	Signature:	Employee No.	Date:

SUBCONTRACTOR'S FIELD CREW

Please sign below to acknowledge that this THA was made available to you, and you had an opportunity to ask questions about the information herein.

Print Name:	Signature:	Company Name:	Date:

ROUTE TO HOSPITAL



St. Joseph's Hospital
555 E Market St
Elmira, NY 14901
(607)-733-6541

Written Directions to Hospital from Site:

1. Depart S Main St toward W Miller St.
2. Turn right onto S Main St (250 ft)
3. Turn left onto Clemens Center Pkwy (1.2 mi)
4. Turn right onto E Church St (0.4 mi)
5. Arrive at **St. Joseph's Hospital**

Appendix C: Summary of Chemical Hazards

Petroleum Hydrocarbons

Petroleum hydrocarbons likely at the site include tar and/or fuel-related materials in soils and sediments. Gasoline, diesel, oil, and heavier hydrocarbons, such as grease, may be present. Volatile components of gasoline include benzene, toluene, ethylbenzene, and xylenes (BTEX).

The primary exposure routes for petroleum hydrocarbons during site activities are inhalation, dermal contact, and ingestion of contaminated soil, sediment, dust, or water. Lighter petroleum hydrocarbons such as gasoline and benzene readily volatilize and are primarily an inhalation concern, whereas the primary route of exposure to heavier petroleum hydrocarbons such as aromatic hydrocarbons, oil, and grease is dermal contact. The target organs primarily affected by prolonged exposure to petroleum hydrocarbons are the respiratory system, central nervous system, kidneys, liver, and skin. Prolonged dermal contact with petroleum hydrocarbons can cause irritation or dermatitis. The BTEX compounds are known or suspected human carcinogens.

Petroleum hydrocarbons such as gasoline are also flammable and can be a physical hazard when present in high concentrations. Combustion of petroleum hydrocarbons can produce carbon dioxide, carbon monoxide, aldehydes, fumes, smoke (particulate matter) and other products of incomplete combustion. Intentional and inadvertent combustion of petroleum hydrocarbons is not expected during sampling activities; however, personnel will evacuate the area should a fire occur. The table below summarizes BTEX exposure limits.

Chemical Name	PEL[1]	TLV[2]
Benzene	1	0.5
Toluene	200	50
Ethylbenzene	100	100
Xylene	100	100

[1] OSHA Permissible Exposure Limit (in parts per million)
[2] ACGIH Threshold Limit Value (in parts per million)

Polycyclic Aromatic Hydrocarbons (PAHs)

PAHs are produced during combustion events due to inadequate oxidation of fuel. PAHs in the pure state are yellowish crystalline solids. They are found in coal tar and in products of incomplete combustion. These chemicals have varying degrees of potency for causing cancer, with benzo(a)pyrene being among the most potent. The PAHs are evaluated collectively as COAL TAR PITCH VOLATILES. Coal tar pitch volatiles may cause photo-sensitization and a rash where sunlight strikes the skin. Exposure may also cause cancer of lungs, skin, bladder or kidneys. Benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, and indeno(1,2,3,c,d)pyrene have been identified as carcinogenic.

This information on PAH compounds is presented for site contaminant awareness. While the potential for site personnel sustaining significant inhalation exposures to volatilized PAH compounds during the site activities of this project is minimal, there is the potential for inhalation of PAH-contaminated dust, and handling of contaminated soils presents skin exposure hazards. Use of dust suppression techniques (as appropriate) and the proper use of the PPE will adequately protect personnel. Some significant PAH compounds include:

- Anthracene
- Benzo(a)pyrene Benzo(a)anthracene
- Chrysene Benzo(b)fluoranthene
- Fluoranthene Benzo(k)fluoranthene
- Fluorene Benzo(g,h,i)perylene
- Indeno(1,2,3,c,d)pyrene Benzo(d,e,f)phenanthrene
- Phenanthrene

OSHA PEL for coal tar pitch volatiles is 0.2 mg/m3 and NIOSH REL is 0.1 mg/m^3 , TLV 0.2 mg/m3 is for 8-hour time weighted average (TWA).

PCBs

PCBs are carcinogenic chlorinated hydrocarbons. Potential exposure routes are through inhalation, skin absorption, ingestion and skin or eye contact and may irritate eyes, cause acne, cause liver damage or have reproductive effects. Carcinogenic effects such as tumors and leukemia have been observed in animals. The OSHA permissible exposure limit (PEL) for 8-hour time-weighted average (TWA) is 1 mg/m^3 (skin). The NIOSH PEL is 0.001 mg/m^3.

RCRA Metals

These metals include arsenic, barium, cadmium, chrome, mercury, selenium, and silver. Heavy metals are known to cause neurologic effects (lead, mercury), kidney damage (cadmium), and respiratory damage (arsenic, cadmium). Oral and respiratory exposures should be minimized. The table below summarizes exposure limits.

Chemical Name	PEL[1]	TLV[2]
Arsenic	0.01	0.01
Lead	0.05	0.05
Mercury	0.01	0.25

[1] OSHA Permissible Exposure Limit (PEL) in parts per million
[2] ACGIH Threshold Limit Value (TLV) in parts per million

Chlorinated Solvents/Volatile Organic Compounds (VOCs)

Chlorinated VOCs are widely used as solvents in industrial operations such as degreasing, manufacturing, cleaning and dry cleaning, and are also present in household products and automotive fluids. They readily form vapors which can accumulate in indoor air spaces (i.e., via migration through the subsurface) and react with ozone to form sub-micron sized particles with the potential to cause adverse respiratory health effects. Free product releases (via surface or subsurface discharges or inadequate disposal) can migrate downward to significant depths and through fine-grained deposits to groundwater and can persist as wide-scale sources of vapor plumes for long periods of time.

Several chlorinated hydrocarbons have been identified in soil, indoor air vapor, and groundwater at the site including perchloroethylene (PCE), trichloroethylene (TCE), and 1,2-dichloroethane (DCA). The likely routes of exposure to chlorinated solvents include inhalation, ingestion and direct contact with the skin or eye. The toxicity of chlorinated solvents varies; many affect the CNS and some are identified as carcinogens. PCE can affect the CNS and cause irritation of the skin, eyes, and upper respiratory tract. TCE can depress the CNS, affect kidneys, liver, and lungs and can cause rapid and irregular heartbeat. Toxic effects are increased when combined with alcohol, caffeine, and other drugs. DCA can cause CNS depression and damage to the liver, kidneys, heart, and digestive system. Eye contact with DCA can cause irritation and serious injury if not removed promptly. DCA and TCE are flammable liquids; the LEL of both solvents are approximately 6% and their flash points are less than 100°F. PCE is not considered flammable. These chlorinated solvents are only slightly soluble in water.

Exposure levels will be maintained below OSHA PEL or NIOSH REL as shown in the table below.

Chemical Name	PEL[1]	REL[2]
1,2 DCA	50	1
TCE	100	Ca
PCE	100	Ca

[1] OSHA Permissible Exposure Limit (PEL) in parts per million
[2] ACGIH Threshold Limit Value (TLV) in parts per million
Ca - Carcinogenic

Appendix D: Air Monitoring

Applies to Task: ☒ ① ☒ ② ☐ ③ ☐ ④ ☐ ⑤ ☐ ⑥ ☐ ⑦ ☐ ⑧

☒ *Photoionization Detector (PID)*

Brand/Model No.: MiniRAE 3000 eV:10.6

Monitoring Frequency: Breathing Space

Breathing Zone Reading (ppm)	Action
0 ppm to 50 ppm	Level D PPE
_____ to _____	Level C PPE
Greater than __ Sustained at 50 ppmv	Stop work. Evacuate the area. If upon return, levels still exceed the action level, stop work and implement engineering controls.

Note: _____

☒ *Oxygen (O_2) Meter*

Brand/Model No.: MultiRae

Monitoring Frequency: Breathing Space

Reading (%)	Action
Less than 19.5	Stop work. Evacuate the area.
19.5 to 23.5	Continue to work with caution.
Greater than 23.5	Stop work. Evacuate the area.

Note: _____

☒ *Explosimeter*

Brand/Model No.: MultiRae

Monitoring Frequency: Working Area

Source (% LEL)

Reading	Action
1 to 10	Continue with caution.
Greater than 10	Stop work. Evacuate the area. If upon return, if concentration still exceeds 10% LEL, ventilate until concentration is back to <10% LEL.

Note: _____

☐ *Flame Ionization Detector (FID)*

Brand/Model No.: _____

Monitoring Frequency: _____

Breathing Zone Reading (ppm)	Action
_____ to _____	Level D PPE
_____ to _____	Level C PPE
Greater than __ _____	Stop work. Evacuate the area. If upon return, levels still exceed ____, stop work and implement engineering controls.

Note: _____

☒ *Other Carbon Monoxide*

Brand/Model No.: MultiRae

Monitoring Frequency: Breathing Space

Breathing Zone Reading (ppm)	Action
0 ppm to 35 ppm	Level D PPE
_____ to _____	Level C PPE
Greater than 35 ppm	Stop work. Evacuate the area. If upon return, levels still exceed 35 ppm, stop work and implement engineering controls.

Note: _____

☒ *Other Hydrogen Sulfide*

Brand/Model No.: MultiRae

Monitoring Frequency: Breathing Space

Breathing Zone Reading	Action
0 ppm to 15 ppm	Level D PPE
_____ to _____	Level C PPE
Greater than 15 ppm	Stop work. Evacuate the area. If upon return, levels still exceed 15 ppm _____, stop work and implement engineering controls.

Note: _____

Appendix E: Personal Protective Equipment

	Task ①	Task ②	Task ③	Task ④	Task ⑤	Task ⑥	Task ⑦	Task ⑧
Potential PPE Level per Task:	☒ D ☐ C	☐ D ☐ C	☐ D ☐ C	☐ D ☐ C	☐ D ☐ C	☐ D ☐ C	☐ D ☐ C	☐ D ☐ C

Modified Level D		***Level C***	
Equipment	***Material/Type***	***Equipment***	***Material/Type***
☒ Safety glasses		☐ Full-face air-purifying respirator	Cartridge Type:
☒ Hard-toed boots		☐ Half-mask air-purifying respirator	Cartridge Type:
☐ Protective clothing		☐ Safety glasses	
☒ Hard hat*		☐ Hard-toed boots	
☒ Hearing protection*		☐ Protective clothing	
☒ High-visibility vest*		☐ Hard hat	
☐ Outer boots*		☐ Hearing protection*	
☐ Outer gloves*		☐ High-visibility vest*	
☐ Other:		☐ Outer boots*	
		☐ Outer gloves*	
		☐ Inner gloves*	
		☐ Other:	

* PPE items may be downgraded (only with concurrence of SHSO and PM)

	Task ①	Task ②	Task ③	Task ④	Task ⑤	Task ⑥	Task ⑦	Task ⑧
Potential PPE Level per Task:	☐ D ☐ C	☒ D ☐ C	☒ D ☐ C	☐ D ☐ C	☐ D ☐ C	☐ D ☐ C	☐ D ☐ C	☐ D ☐ C

Modified Level D		***Level C***	
Equipment	***Material/Type***	***Equipment***	***Material/Type***
☒ Safety glasses		☐ Full-face air-purifying respirator	Cartridge Type:
☒ Hard-toed boots		☐ Half-mask air-purifying respirator	Cartridge Type:
☒ Protective clothing	Tyvek	☐ Safety glasses	
☒ Hard hat*		☐ Hard-toed boots	
☒ Hearing protection*		☐ Protective clothing	
☒ High-visibility vest*		☐ Hard hat	
☒ Outer boots*		☐ Hearing protection*	
☒ Outer gloves*	Nitrile, Leather	☐ High-visibility vest*	
☐ Other:		☐ Outer boots*	
		☐ Outer gloves*	
		☐ Inner gloves*	
		☐ Other:	

* PPE items may be downgraded (only with concurrence of SHSO and PM)

Appendix F: Safety Data Sheets

Included in this HASP	Chemical
☐	Acetone
☒	Alconox
☐	Ammonia
☐	Bentonite
☐	Diesel Fuel Oil No. 2-D
☐	Gasoline
☐	Helium
☐	Hexane
☒	Hydrochloric Acid
☐	Hydrogen
☒	Isobutylene Calibration Gas
☒	Isopropyl Alcohol
☐	KB-1
☐	Methane Calibration Gas
☒	Nitric Acid
☐	Permanganate
☐	Portland Cement
☐	Sulfuric Acid
☐	Other: _____
☐	Other: _____
☐	Other: _____
☐	Other: _____

Note: SDSs are for chemicals that used to perform project work, not site contaminants.

SAFETY DATA SHEETS

ALCONOX MSDS

Section 1 : MANUFACTURER INFORMATION

Product name: Alconox

Supplier: Same as manufacturer.

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Manufacturer emergency phone number: 800-255-3924.
813-248-0585 (outside of the United States).

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Supplier MSDS date: 2009/04/20

D.O.T. Classification: Not regulated.

Section 2 : HAZARDOUS INGREDIENTS

C.A.S.	CONCENTRATION %	Ingredient Name	T.L.V.	LD/50	LC/50
25155-30-0	10-30	SODIUM DODECYLBENZENESULFONATE	NOT AVAILABLE	438 MG/KG RAT ORAL 1330 MG/KG MOUSE ORAL	NOT AVAILABLE
497-19-8	7-13	SODIUM CARBONATE	NOT AVAILABLE	4090 MG/KG RAT ORAL 6600 MG/KG MOUSE ORAL	2300 MG/M3/2H RAT INHALATION 1200 MG/M3/2H MOUSE INHALATION
7722-88-5	10-30	TETRASODIUM PYROPHOSPHATE	5 MG/M3	4000 MG/KG RAT ORAL 2980 MG/KG MOUSE ORAL	NOT AVAILABLE
7758-29-4	10-30	SODIUM PHOSPHATE	NOT AVAILABLE	3120 MG/KG RAT ORAL 3100 MG/KG MOUSE ORAL >4640 MG/KG RABBIT DERMAL	NOT AVAILABLE

Section 2A : ADDITIONAL INGREDIENT INFORMATION

Note: (supplier).
CAS# 497-19-8: LD50 4020 mg/kg - rat oral.
CAS# 7758-29-4: LD50 3100 mg/kg - rat oral.

Section 3 : PHYSICAL / CHEMICAL CHARACTERISTICS

Physical state: Solid

Appearance & odor: Almost odourless.
White granular powder.

Odor threshold (ppm): Not available.

Vapour pressure (mmHg): Not applicable.

Vapour density (air=1): Not applicable.

By weight: Not available.

Evaporation rate (butyl acetate = 1): Not applicable.

Boiling point (°C): Not applicable.

Freezing point (°C): Not applicable.

pH: (1% aqueous solution).
9.5

Specific gravity @ 20 °C: (water = 1).
0.85 - 1.10

Solubility in water (%): 100 - > 10% w/w

Coefficient of water\oil dist.: Not available.

VOC: None

Section 4 : FIRE AND EXPLOSION HAZARD DATA

Flammability: Not flammable.

Conditions of flammability: Surrounding fire.

Extinguishing media: Carbon dioxide, dry chemical, foam.
Water
Water fog.

Special procedures: Self-contained breathing apparatus required.
Firefighters should wear the usual protective gear.

Auto-ignition temperature: Not available.

Flash point (°C), method: None

Lower flammability limit (% vol): Not applicable.

Upper flammability limit (% vol): Not applicable.

Not available.

Sensitivity to mechanical impact: Not applicable.

Hazardous combustion products: Oxides of carbon (COx).
Hydrocarbons.

Rate of burning: Not available.

Explosive power: None

Section 5 : REACTIVITY DATA

Chemical stability:	Stable under normal conditions.
Conditions of instability:	None known.
Hazardous polymerization:	Will not occur.
Incompatible substances:	Strong acids. Strong oxidizers.
Hazardous decomposition products:	See hazardous combustion products.

Section 6 : HEALTH HAZARD DATA

Route of entry:	Skin contact, eye contact, inhalation and ingestion.
Effects of Acute Exposure	
Eye contact:	May cause irritation.
Skin contact:	Prolonged contact may cause irritation.
Inhalation:	Airborne particles may cause irritation.
Ingestion:	May cause vomiting and diarrhea. May cause abdominal pain. May cause gastric distress.
Effects of chronic exposure:	Contains an ingredient which may be corrosive.
LD50 of product, species & route:	> 5000 mg/kg rat oral.
LC50 of product, species & route:	Not available for mixture, see the ingredients section.
Exposure limit of material:	Not available for mixture, see the ingredients section.
Sensitization to product:	Not available.
Carcinogenic effects:	Not listed as a carcinogen.
Reproductive effects:	Not available.
Teratogenicity:	Not available.
Mutagenicity:	Not available.
Synergistic materials:	Not available.
Medical conditions aggravated by exposure:	Not available.
First Aid	
Skin contact:	Remove contaminated clothing. Wash thoroughly with soap and water. Seek medical attention if irritation persists.
Eye contact:	Check for and remove contact lenses. Flush eyes with clear, running water for 15 minutes while holding eyelids open: if irritation persists, consult a physician.
Inhalation:	Remove victim to fresh air. Seek medical attention if symptoms persist.
Ingestion:	Dilute with two glasses of water. Never give anything by mouth to an unconscious person. Do not induce vomiting, seek immediate medical attention.

Section 7 : PRECAUTIONS FOR SAFE HANDLING AND USE

Leak / Spill: Contain the spill.
Recover uncontaminated material for re-use.
Wear appropriate protective equipment.
Contaminated material should be swept or shoveled into appropriate waste container for disposal.

Waste disposal: In accordance with municipal, provincial and federal regulations.

Handling procedures and equipment: Protect against physical damage.
Avoid breathing dust.
Wash thoroughly after handling.
Keep out of reach of children.
Avoid contact with skin, eyes and clothing.
Launder contaminated clothing prior to reuse.

Storage requirements: Keep containers closed when not in use.
Store away from strong acids or oxidizers.
Store in a cool, dry and well ventilated area.

Section 8 : CONTROL MEASURES

Precautionary Measures

Gloves / Type:

Neoprene or rubber gloves.

Respiratory / Type:

If exposure limit is exceeded, wear a NIOSH approved respirator.

Eye / Type:

Safety glasses with side-shields.

Footwear / Type: Safety shoes per local regulations.

Clothing / Type: As required to prevent skin contact.

Other / Type: Eye wash capability should be in close proximity.

Ventilation requirements: Local exhaust at points of emission.

Material Safety Data Sheet

Version 3.0
Revision Date 12/29/2008
Print Date 06/16/2009

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Bentonite

Product Number : 285234
Brand : Sigma-Aldrich

Company : Sigma-Aldrich Canada, Ltd
2149 Winston Park Drive
OAKVILLE ON L6H 6J8
CANADA
Telephone : +1 9058299500
Fax : +1 9058299292
Emergency Phone # : 800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Montmorillonite

Formula : H2Al2O6Si
Molecular Weight : 180.1 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Bentonite a colloidal clay. consist primarily of montmorillonite			
1302-78-9	215-108-5	-	-

3. HAZARDS IDENTIFICATION

Emergency Overview

Target Organs

Lungs

WHMIS Classification

Not WHMIS controlled. Not WHMIS controlled.

HMIS Classification

Health Hazard: 0
Chronic Health Hazard: *
Flammability: 0
Physical hazards: 0

Potential Health Effects

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

4. FIRST AID MEASURES

If inhaled
If breathed in, move person into fresh air. If not breathing give artificial respiration

In case of skin contact
Wash off with soap and plenty of water.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water.

5. FIRE-FIGHTING MEASURES

Flammable properties

Flash point	not applicable
Ignition temperature	no data available

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

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Avoid dust formation.

Environmental precautions
Do not let product enter drains.

Methods for cleaning up
Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

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

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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection
Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
For prolonged or repeated contact use protective gloves.

Eye protection
Safety glasses

Hygiene measures
General industrial hygiene practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	granules
Colour	grey, beige

Safety data

pH	6.0 - 9.0
Melting point	no data available
Boiling point	no data available
Flash point	not applicable
Ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Density	2.400 g/cm3
Water solubility	no data available

10. STABILITY AND REACTIVITY

Storage stability
Stable under recommended storage conditions.

Materials to avoid
Strong acids

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Aluminum oxide, silicon oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity

LD50 Intravenous - rat - 35 mg/kg
Remarks: Lungs, Thorax, or Respiration:Acute pulmonary edema.

Irritation and corrosion

no data available

Sensitisation

no data available

Chronic exposure

Carcinogenicity - mouse - Oral
Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Liver:Tumors.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Signs and Symptoms of Exposure

Lung irritation, Asthma

Potential Health Effects

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

Additional Information
RTECS: CT9450000

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

no data available

Ecotoxicity effects

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 19,000 mg/l - 96 h

Further information on ecology

no data available

13. DISPOSAL CONSIDERATIONS

Product
Observe all federal, state, and local environmental regulations.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

15. REGULATORY INFORMATION

DSL Status
All components of this product are on the Canadian DSL list.

WHMIS Classification

Not WHMIS controlled.	Not WHMIS controlled.

16. OTHER INFORMATION

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

M A T E R I A L S A F E T Y D A T A S H E E T

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Company: AccuStandard, Inc.
125 Market Street
New Haven, CT 06513

Date MSDS Printed: 1/31/2008
Preparation Date: 1/31/2008
Information Phone Number: 203-786-5290
Emergency Phone Number: 203-786-5290
Hours: Mon. to Fri. 8am-5pm EDT

Catalog Number: **FU-009-D-40X**
Product Name: Diesel Fuel
Synonyms: N/A
Formula: N/A
Molecular Weight: N/A

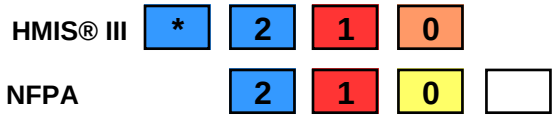
SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Component(s) (1)	CAS #	Appr. %	ACGIH-TLV (mg/m3) TWA	ACGIH-TLV (mg/m3) STEL skin	OSHA-PEL (mg/m3) TWA	OSHA-PEL (mg/m3) STEL skin
#2 Diesel Fuel	68334-30-5	2.0				
Dichloromethane	75-09-2	98.00	174			

SECTION 3 - HAZARDS IDENTIFICATION

Health and Environmental Hazards/Symptoms of Exposure:

Exposure can cause headache, nausea, confusion, drowsiness, dizziness and/or vomiting. Causes depression of central nervous system. Effects may be delayed. Lachrymator. Suspect cancer hazard.



Potential Health Effects:

May be irritating to eyes.
May cause eye damage.
Irritating to skin.
May be harmful if absorbed through the skin.
May be irritating to mucous membrane and upper respiratory system.
May be harmful if inhaled.
Harmful if swallowed.

Routes of Entry:

Inhalation, ingestion or skin contact.

Carcinogenicity:

This product is or contains a component that is classified (ACGIH, IARC, NTP, OSHA) as a possible cancer hazard.

SECTION 4 - FIRST AID MEASURES

Emergency First Aid:

Get medical assistance for all cases of overexposure.
Skin contact: Immediately wash skin with soap and plenty of water. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.
Eye contact: Immediately flush with plenty of water. After initial flushing, remove contact lenses and continue flushing for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers.
Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.
Ingestion: Do NOT induce vomiting. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

SECTION 5 - FIRE FIGHTING MEASURES

Flammable Properties:

Flash Point: >230°F

Flammable Limits LEL (%): 12

Flammable Limits UEL (%): 23

Autoignition Temperature: 556°C

During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
Containers can build up pressure if exposed to heat.

Extinguishing Media:

Use alcohol foam, carbon dioxide, dry chemical, or water spray when fighting fires involving this material.

Fire Fighting Procedures:

As in any fire, wear self-contained breathing apparatus pressure demand, MSHA/NIOSH (approved or equivalent) and full protective

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Spill Response:

Wear a self-contained breathing apparatus and appropriate personal protection. Stop leak if you can do so without risk. Ventilate area. Neutralize spill with soda ash or lime. Take up and containerize for proper disposal. Flush spill area with water. Keep combustibles away from spilled material. Comply with Federal, State, and local regulations.

SECTION 7 - HANDLING AND STORAGE

Store in a tightly closed container.
Store in a cool dry, well-ventilated area away from ignition sources.
Avoid breathing vapors or mists.
Use with adequate ventilation.
Do not get in eyes, on skin or clothing.
Avoid prolonged or repeated exposure.
This product should only by used by persons trained in the safe handling of hazardous chemicals.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls and Personal Protection Equipment (PPE):

Respiratory Protection: If workplace exposure limit(s) of product or any component is exceeded (see TLV/PEL), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your safety equipment supplier). Engineering and/or administrative controls should be implemented to reduce exposure.
Material must be handled or transferred in an approved fume hood or with equivalent ventilation.
Protective gloves must be worn to prevent skin contact.
(Polyethylene, polyvinyl chloride (PVC) or equivalent)
Safety glasses with side shields must be worn at all times.

General Hygiene Considerations:

Wash thoroughly after handling. Do not take internally. Eye wash and safety equipment should be readily available.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear liquid
Odor: Ether-like odor
pH: N/A
Vapor Pressure: 353 mmHg (20 °C)
Vapor Density (Air = 1): 2.93 g/L
Boiling Point: 40 °C
Melting Point: -97 °C
Solubility in Water (%): Slight (1.3%)

Specific Gravity (H_2O = 1): 1.326 g/cm3
Flash Point: >230°F
Explosion Limits (%): 12 to 23
Autoignition Temperature: 556°C
Percent Volatile: 99+
Evaporation Rate (BuAc = 1): 27.5
Molecular Weight: N/A
Molecular Formula: N/A

SECTION 10 - STABILITY AND REACTIVITY

Stability: Stable

Conditions To Avoid: Contact with ignition sources
Materials To Avoid: Bases
Oxidizers
Alkali metals; Aluminum, magnesium, sodium, potassium and lithium

Hazardous Decomposition: Hydrogen chloride gas (HCl); Phosgene; Chlorine
Hazardous Polymerization: Will not occur

SECTION 11 - TOXICOLOGICAL INFORMATION

See section 3 for specific toxicological information for the ingredients of this product.

SECTION 12 - ECOLOGICAL INFORMATION

By complying with sections 6 and 7 there will be no release to the environment.

SECTION 13 - DISPOSAL CONSIDERATIONS

Recycle or incinerate at any EPA approved facility or dispose in compliance with Federal, State and local regulations. Empty containers must be triple-rinsed prior to disposal.

SECTION 14 - TRANSPORT INFORMATION

DOT UN Number: UN1593 Shipping Class: 6.1 Packing Group: III POISON

SECTION 15 - REGULATORY INFORMATION

In addition to Federal and state regulations, local regulations may apply. Check with your local regulatory authorities.

All components are listed on the TSCA Inventory. **For laboratory, research and development use only. Not for manufacturing or commercial purposes.**
WARNING: This product contains chemical(s) known to the state of California to cause cancer.

SECTION 16 - OTHER INFORMATION

This document has been designed to meet the requirements of OSHA, ANSI and CHIPs regulations.

The statements contained herein are offered for informational purposes only and are based on technical data that we believe to be accurate. It is intended for use only by persons having the necessary technical skill and at their own discretion and risk. Since conditions and manner of use are outside our control, we make

NO WARRANTY, EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE.

Legend : N/A = Not Available ND = Not Determined NR = Not Regulated

* * * End of Document * * *

Material Safety Data Sheet
Hydrochloric acid

MSDS# 94460

Section 1 - Chemical Product and Company Identification

MSDS Name:	Hydrochloric acid
Catalog Numbers:	SA5-5, SA50-1, SA50-20, SA50-4, SA52-20, SA52-500, SA54-1, SA54-10, SA54-20, SA54-4, SA60-1, SA62-1
Synonyms:	Chlorohydric acid; Hydrogen chloride; Muriatic acid; Spirits of salt; Hydrochloride.
Company Identification:	Fisher Scientific One Reagent Lane Fair Lawn, NJ 07410
For information in the US, call:	201-796-7100
Emergency Number US:	201-796-7100
CHEMTREC Phone Number, US:	800-424-9300

Section 2 - Composition, Information on Ingredients

Risk Phrases: 34 37

CAS#:	7647-01-0
Chemical Name:	Hydrochloric acid
%:	<2.0
EINECS#:	231-595-7
Hazard Symbols:	C

Risk Phrases:

CAS#:	7732-18-5
Chemical Name:	Water
%:	>98
EINECS#:	231-791-2
Hazard Symbols:	

Text for R-phrases: see Section 16

Hazard Symbols:	None listed
Risk Phrases:	None listed

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Warning! May cause eye, skin, and respiratory tract irritation. Target Organs: No data found.

Potential Health Effects

Eye:	May cause eye irritation.
Skin:	May cause skin irritation.
Ingestion:	May cause irritation of the digestive tract.
Inhalation:	May cause respiratory tract irritation. Exposure to the mist and vapor may erode exposed teeth.
Chronic:	Prolonged or repeated skin contact may cause dermatitis. Repeated exposure may cause erosion of teeth. Repeated exposure to low concentrations of HCl vapor or mist may cause bleeding of nose and gums. Chronic bronchitis and gastritis have also been reported.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.

Skin: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.

Ingestion: If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

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

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Not flammable, but reacts with most metals to form flammable hydrogen gas. Use water spray to keep fire-exposed containers cool. Containers may explode when heated.

Extinguishing Media: Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

Autoignition Temperature: Not applicable.

Flash Point: Not applicable.

Explosion Limits: Lower: Not available

Explosion Limits: Upper: Not available

NFPA Rating: health: 1; flammability: 0; instability: 1;

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation. Cover with dry earth, dry sand, or other non-combustible material followed with plastic sheet to minimize spreading and contact with water.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Discard contaminated shoes.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Do not store in metal containers. Store away from alkalies.

Section 8 - Exposure Controls, Personal Protection

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Hydrochloric acid	2 ppm Ceiling	50 ppm IDLH	5 ppm Ceiling; 7 mg/m3 Ceiling
Water	none listed	none listed	none listed

OSHA Vacated PELs: Hydrochloric acid: None listed Water: None listed

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Personal Protective Equipment

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

Skin:	Wear neoprene or polyvinyl chloride gloves to prevent exposure.
Clothing:	Wear appropriate protective clothing to prevent skin exposure.
Respirators:	A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State:	Clear liquid
Color:	colorless to slight yellow
Odor:	Not available
pH:	0.10 (1.0N soln)
Vapor Pressure:	Not available
Vapor Density:	Not available
Evaporation Rate:	Not available
Viscosity:	Not available
Boiling Point:	Not available
Freezing/Melting Point:	Not available
Decomposition Temperature:	Not available
Solubility in water:	Soluble
Specific Gravity/Density:	Not available.
Molecular Formula:	HCl
Molecular Weight:	36.46

Section 10 - Stability and Reactivity

Chemical Stability:	Stable under normal temperatures and pressures.
Conditions to Avoid:	Excess heat.
Incompatibilities with Other Materials	Bases.
Hazardous Decomposition Products	Hydrogen chloride.
Hazardous Polymerization	Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 7647-01-0: MW4025000 MW4031000
CAS# 7732-18-5: ZC0110000

LD50/LC50:

RTECS:
CAS# 7647-01-0: Inhalation, mouse: LC50 = 1108 ppm/1H;
Inhalation, mouse: LC50 = 20487 mg/m3/5M;
Inhalation, mouse: LC50 = 3940 mg/m3/30M;
Inhalation, mouse: LC50 = 8300 mg/m3/30M;
Inhalation, rat: LC50 = 3124 ppm/1H;
Inhalation, rat: LC50 = 60938 mg/m3/5M;
Inhalation, rat: LC50 = 7004 mg/m3/30M;
Inhalation, rat: LC50 = 45000 mg/m3/5M;
Inhalation, rat: LC50 = 8300 mg/m3/30M;
Oral, rabbit: LD50 = 900 mg/kg;
.
RTECS:
CAS# 7732-18-5: Oral, rat: LD50 = >90 mL/kg;
.

Carcinogenicity:

Hydrochloric acid - IARC: Group 3 (not classifiable)
Water - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

Other: Rinsed with water test: Administration into the eye (rabbit) = 5 mg/30sec (Mild).

Section 12 - Ecological Information

Ecotoxicity:

Fish: Bluegill/Sunfish: 3.6 mg/L; 48 Hr; Lethal (unspecified)
Fish: Bluegill/Sunfish: LD50; 96 Hr; pH 3.0-3.5

Section 13 - Disposal Considerations

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

Section 14 - Transport Information

US DOT
Shipping Name: HYDROCHLORIC ACID
Hazard Class: 8
UN Number: UN1789
Packing Group: II
Canada TDG
Shipping Name: Not regulated as a hazardous material
Hazard Class:
UN Number:
Packing Group:

USA RQ: CAS# 7647-01-0: 5000 lb final RQ; 2270 kg final RQ

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:Not available

Risk Phrases:

Safety Phrases:

S 24/25 Avoid contact with skin and eyes.

WGK (Water Danger/Protection)

CAS# 7647-01-0: 1

CAS# 7732-18-5: Not available

Canada

CAS# 7647-01-0 is listed on Canada's DSL List

CAS# 7732-18-5 is listed on Canada's DSL List

Canadian WHMIS Classifications: Not controlled.

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

CAS# 7647-01-0 is listed on Canada's Ingredient Disclosure List

CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.

US Federal

TSCA

CAS# 7647-01-0 is listed on the TSCA Inventory.

CAS# 7732-18-5 is listed on the TSCA Inventory.

Section 16 - Other Information

MSDS Creation Date: 12/19/2007

Revision #2 Date 7/20/2009

MATERIAL SAFETY DATA SHEET
29 CFR 1910.1200 OSHA Hazard
Communication Rule Format
Chem-Tel 24 Hour Emergency # 1-800-255-3924

MINE SAFETY APPLIANCES COMPANY
P.O. Box 426
Pittsburgh, PA 15230
PHONE (412) 967-3000

This product contains isobutylene, oxygen and nitrogen, substances subject to the Pennsylvania Worker and Community Right-To-Know Act.

PRODUCT IDENTITY

LABEL IDENTITY - MSA P/N 10028038 Calibration Check Gas, 100 ppm Isobutylene in Air

CHEMICAL NAME - Isobutylene, Oxygen, Nitrogen Mixture

ADDITIONAL IDENTITIES - MSA P/N 10028038 Calibration Gas

FORMULA - C_4H_8 in Air

APPLICABLE CHEMICAL CONTENTS

	ppm	TWA
Isobutylene (CAS 115-11-7)	100	None
Air	Balance	None

NOTE: Gas under pressure, 1000 PSIG at 70°F, Approx. 100 Liters gas at atmospheric pressure

PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR - Colorless odorless gas.

BOILING POINT - N/A

SPECIFIC GRAVITY (H_2O = 1) - N/A

VAPOR PRESSURE - N/A

PERCENT VOLATILE BY VOLUME - N/A

VAPOR DENSITY (AIR = 1) - > 1

SOLUBILITY IN WATER - Isobutylene - Insoluble
Oxygen - 3.2 cm^3/100 ml (25°C)
Nitrogen - 2.3 cm^3/100 ml (0°C)

N/A - Not Applicable

PHYSICAL HAZARD INFORMATION

PHYSICAL HAZARD - Compressed gas, 1000 PSIG at 70°F

CONDITIONS OR MATERIALS TO AVOID - None

FLASH POINT - N/A LEL - N/A UEL - N/A

EXTINGUISHING MEDIA - This calibration gas mixture is not flammable. Use extinguishing media appropriate to surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES - See Next Item

UNUSUAL FIRE AND EXPLOSION HAZARDS - Gas under pressure, 1000 PSIG at 70°F. Do not exceed 120°F.

HEALTH HAZARDS

HEALTH HAZARDS - None Known for 100 ppm Isobutylene in Air. Isobutylene Inhalation Rat LC50: 620 Gm/M^3/4H. Isobutylene Inhalation Mouse LC50: 415 gm/M^3/2H.

SIGNS AND SYMPTOMS OF EXPOSURE - N/A to this gas mixture.

PRIMARY ROUTES OF ENTRY - Inhalation

TARGET ORGANS - Isobutylene is an asphyxiant, which displaces oxygen in the environment..

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE - No information

EXPOSURE LIMITS - None (ACGIH 2009)

CARCINOGENICITY DATA - Component gases are not listed by NIOSH RTECS, OSHA, NTP or IARC.

EMERGENCY AND FIRST AID PROCEDURES - None

SAFE HANDLING AND USE

HYGIENIC PRACTICES - Avoid breathing gas.

PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT - N/A

PROCEDURES FOR SPILL OR LEAK CLEANUP - Ventilate area

WASTE DISPOSAL - Do not puncture or incinerate cylinder. Before discarding cylinder, slowly release contents to a safe exhaust. Dispose of cylinder in accordance with local, state and federal regulations

STORAGE - Store in a cool, dry, well-ventilated area. Do not exceed 120°F.

CONTROL MEASURES

PERSONAL PROTECTIVE EQUIPMENT - Due to the limited amount of gas in the cylinder, and the low release rate employed in instrument calibration, respiratory protection is not indicated under conditions of intended use.

ENGINEERING CONTROLS - Mechanical ventilation is suitable.

WORK PRACTICES - Avoid breathing gas. Use in well-ventilated areas. Follow the calibration procedure detailed in the MSA instruction manual provided with the instrument under calibration.

DATE OF PREPARATION - Rev. 2, April 2009

Fisher Scientific

Material Safety Data Sheet

Isopropyl alcohol 70% in water

MSDS# 89530

Section 1 - Chemical Product and Company Identification

MSDS Name:	Isopropyl alcohol 70% in water
Catalog Numbers:	AC613190040, AC613245000, A459-1, A459-20, A459-4, A459-500, NC9761180
Synonyms:	Isopropanol; Dimethylcarbinol; sec-Propyl alcohol; Rubbing alcohol; Petrohol; 1-Methylethanol; 1-Methylethyl alcohol; 2-Hydroxypropane; 2-Propyl alcohol; Isopropyl alcohol; Propan-2-ol; IPA; 2-Propanol.
Company Identification:	Fisher Scientific One Reagent Lane Fair Lawn, NJ 07410
For information in the US, call:	201-796-7100
Emergency Number US:	201-796-7100
CHEMTREC Phone Number, US:	800-424-9300

Section 2 - Composition, Information on Ingredients

Risk Phrases: 11 36 67

CAS#:	67-63-0
Chemical Name:	Isopropyl alcohol
%:	70
EINECS#:	200-661-7
Hazard Symbols:	F Xi

Risk Phrases:

CAS#:	7732-18-5
Chemical Name:	Water
%:	30
EINECS#:	231-791-2
Hazard Symbols:	

Text for R-phrases: see Section 16

Hazard Symbols: Xi F

Risk Phrases: 11 36 67

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Warning! Flammable liquid and vapor. Prolonged or repeated contact causes defatting of the skin with irritation, dryness, and cracking. May cause central nervous system depression. Aspiration hazard if swallowed. Can enter lungs and cause damage. Breathing vapors may cause drowsiness and dizziness. Causes eye and respiratory tract irritation. Target Organs: Central nervous system, respiratory system, eyes, skin.

Potential Health Effects

Eye:	Produces irritation, characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury. May cause transient corneal injury.
Skin:	May cause irritation with pain and stinging, especially if the skin is abraded. Isopropanol has a low potential to cause allergic skin reactions; however, rare cases of allergic contact dermatitis have been reported. May be absorbed through intact skin.
Ingestion:	Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause kidney damage. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal.
Inhalation:	Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. May cause narcotic effects in high concentration. Causes upper respiratory tract irritation. Inhalation of vapors may cause drowsiness and dizziness.
Chronic:	Prolonged or repeated skin contact may cause defatting and dermatitis.

Section 4 - First Aid Measures

Eyes:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.
Skin:	In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.
Ingestion:	Potential for aspiration if swallowed. Get medical aid immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward.
Inhalation:	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician:	Urine acetone test may be helpful in diagnosis. Hemodialysis should be considered in severe intoxication. Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information:	As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Use water spray to keep fire-exposed containers cool. Flammable liquid and vapor. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas.
Extinguishing Media:	Water may be ineffective. Do NOT use straight streams of water. For large fires, use dry chemical, carbon dioxide, alcohol-resistant foam, or water spray. For small fires, use carbon dioxide, dry chemical, dry sand, or alcohol-resistant foam. Cool containers with flooding quantities of water until well after fire is out.
Autoignition Temperature:	399 deg C (750.20 deg F)
Flash Point:	18 deg C (64.40 deg F)
Explosion Limits: Lower:	2.0 vol %
Explosion Limits: Upper:	12.7 @ 93.3°C
NFPA Rating:	health: 1; flammability: 3; instability: 0;

Section 6 - Accidental Release Measures

General Information:	Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks:	Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Use water spray to dilute spill to a non-flammable mixture. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

Section 7 - Handling and Storage

Handling:	Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous.

Take precautionary measures against static discharges. Keep container tightly closed. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Use only with adequate ventilation. Avoid breathing vapor or mist.

Storage: Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Isopropyl alcohol	200 ppm; 400 ppm STEL	400 ppm TWA; 980 mg/m3 TWA 2000 ppm IDLH (10% LEL)	400 ppm TWA; 980 mg/m3 TWA
Water	none listed	none listed	none listed

OSHA Vacated PELs: Isopropyl alcohol: 400 ppm TWA; 980 mg/m3 TWA Water: None listed

Engineering Controls:

Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Personal Protective Equipment

Eyes: Wear chemical splash goggles.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Color: colorless

Odor: alcohol-like

pH: Not available

Vapor Pressure: 33 mm Hg @ 20 deg C

Vapor Density: 2.1 (Air=1)

Evaporation Rate: 1.7 (n-butyl acetate=1)

Viscosity: 2.27 mPas @ 20 deg C

Boiling Point: 82 deg C @ 760 mm Hg (179.60°F)

Freezing/Melting Point: -88 deg C (-126.40°F)

Decomposition Temperature: Not available

Solubility in water: Miscible

Specific Gravity/Density: 0.7850 (water=1)

Molecular Formula: C3H8O

Molecular Weight: 60.09

Section 10 - Stability and Reactivity

Chemical Stability: Stable.

Conditions to Avoid: Ignition sources, excess heat.

Incompatibilities with Other Materials: Strong oxidizing agents, strong acids, strong bases, amines, ammonia, ethylene oxide, isocyanates, acetaldehyde, chlorine, phosgene, Attacks some forms of plastics, rubbers, and coatings., aluminum at high temperatures.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#: CAS# 67-63-0: NT8050000
CAS# 7732-18-5: ZC0110000

RTECS:
CAS# 67-63-0: Draize test, rabbit, eye: 100 mg Severe;
Draize test, rabbit, eye: 10 mg Moderate;
Draize test, rabbit, eye: 100 mg/24H Moderate;
Draize test, rabbit, skin: 500 mg Mild;
Inhalation, mouse: LC50 = 53000 mg/m3;
Inhalation, rat: LC50 = 16000 ppm/8H;
Inhalation, rat: LC50 = 72600 mg/m3;
Oral, mouse: LD50 = 3600 mg/kg;
Oral, mouse: LD50 = 3600 mg/kg;
Oral, rabbit: LD50 = 6410 mg/kg;
Oral, rat: LD50 = 5045 mg/kg;
Oral, rat: LD50 = 5000 mg/kg;
Skin, rabbit: LD50 = 12800 mg/kg;

LD50/LC50:

RTECS:
CAS# 7732-18-5: Oral, rat: LD50 = >90 mL/kg;

Carcinogenicity: Isopropyl alcohol - IARC: Group 3 (not classifiable)
Water - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

Other: See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Ecotoxicity: Fish: Fathead Minnow: >1000 ppm; 96h; LC50
Daphnia: >1000 ppm; 96h; LC50
Fish: Gold orfe: 8970-9280 ppm; 48h; LC50

Section 13 - Disposal Considerations

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

Section 14 - Transport Information

US DOT
Shipping Name: ISOPROPANOL
Hazard Class: 3
UN Number: UN1219
Packing Group: II
Canada TDG
Shipping Name: ISOPROPANOL
Hazard Class: 3
UN Number: UN1219
Packing Group: II

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XI F

Risk Phrases:

R 11 Highly flammable.

R 36 Irritating to eyes.

R 67 Vapours may cause drowsiness and dizziness.

Safety Phrases:

S 7 Keep container tightly closed.

S 16 Keep away from sources of ignition - No smoking.

S 24/25 Avoid contact with skin and eyes.

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

WGK (Water Danger/Protection)

CAS# 67-63-0: 1

CAS# 7732-18-5: Not available

Canada

CAS# 67-63-0 is listed on Canada's DSL List

CAS# 7732-18-5 is listed on Canada's DSL List

Canadian WHMIS Classifications: B2, D2B

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

CAS# 67-63-0 is listed on Canada's Ingredient Disclosure List

CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.

US Federal

TSCA

CAS# 67-63-0 is listed on the TSCA Inventory.

CAS# 7732-18-5 is listed on the TSCA Inventory.

Section 16 - Other Information

MSDS Creation Date: 7/27/1999

Revision #12 Date 7/20/2009

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantibility 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 the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.

Material Safety Data Sheet

Version 3.0
Revision Date 05/12/2009
Print Date 06/23/2009

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Nitric acid

Product Number : 258121
Brand : Sigma-Aldrich

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA
Telephone : +1 800-325-5832
Fax : +1 800-325-5052
Emergency Phone # : (314) 776-6555

2. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : HNO3

CAS-No.	EC-No.	Index-No.	Concentration
Nitric acid			
7697-37-2	231-714-2	007-004-00-1	>= 90 %
Water			
7732-18-5	231-791-2	-	<= 10 %

3. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Target Organ Effect, Corrosive

Target Organs

Lungs, Teeth., Cardiovascular system.

HMIS Classification
Health Hazard: 3
Chronic Health Hazard: *
Flammability: 0
Physical hazards: 0

NFPA Rating
Health Hazard: 3
Fire: 0
Reactivity Hazard: 3
Special hazard.: OX

Potential Health Effects

Inhalation	May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Skin	May be harmful if absorbed through skin. Causes skin burns.
Eyes	Causes eye burns.
Ingestion	May be harmful if swallowed. Causes burns.

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

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

In case of skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Continue rinsing eyes during transport to hospital.Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Flammable properties

Flash point	no data available
Ignition temperature	no data available

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

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

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

Environmental precautions
Do not let product enter drains.

Methods for cleaning up
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

7. HANDLING AND STORAGE

Handling
Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking. Keep away from combustible material.

Storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis
Nitric acid	7697-37-2	TWA	2 ppm	2007-01-01	USA. ACGIH Threshold Limit Values (TLV)
Remarks	Eye & Upper Respiratory Tract irritation Dental erosion				
		STEL	4 ppm	2007-01-01	USA. ACGIH Threshold Limit Values (TLV)
	Eye & Upper Respiratory Tract irritation Dental erosion				
		TWA	2 ppm 5 mg/m3	1989-01-19	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		STEL	4 ppm 10 mg/m3	1989-01-19	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	2 ppm 5 mg/m3	1997-08-04	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
	The value in mg/m3 is approximate.				

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves.

Eye protection
Safety glasses

Skin and body protection
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid
Colour	colourless

Safety data

pH	< 1 at 20 °C (68 °F)
Melting point	no data available
Boiling point	100 °C (212 °F) at 1,013 hPa (760 mmHg)
Flash point	no data available
Ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	11 hPa (8 mmHg) at 20 °C (68 °F)
Density	1.4 g/cm3
Water solubility	completely soluble

10. STABILITY AND REACTIVITY

Storage stability
Stable under recommended storage conditions. Stable under recommended storage conditions.

Conditions to avoid
May discolor on exposure to air and light.

Materials to avoid
Alkali metals, Organic materials, Acetic anhydride, Acetonitrile, Alcohols, Acrylonitrile

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - nitrogen oxides (NOx)

11. TOXICOLOGICAL INFORMATION

Acute toxicity

no data available

Irritation and corrosion

Skin - rabbit - Extremely corrosive and destructive to tissue. - Draize Test

Sensitisation

no data available

Chronic exposure

IARC:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as

a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Developmental Toxicity - rat - Oral
Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Reproductive toxicity - rat - Oral
Effects on Newborn: Biochemical and metabolic.

Signs and Symptoms of Exposure

burning sensation, Cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Potential Health Effects

Inhalation	May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Skin	May be harmful if absorbed through skin. Causes skin burns.
Eyes	Causes eye burns.
Ingestion	May be harmful if swallowed. Causes burns.
Target Organs	Lungs, Teeth., Cardiovascular system.,

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

no data available

Ecotoxicity effects

Toxicity to fish	LC50 - Asterias rubens - 100 - 330 mg/l - 48 h

Further information on ecology

May be harmful to aquatic organisms due to the shift of the pH.

13. DISPOSAL CONSIDERATIONS

Product
Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN-Number: 2031 Class: 8 (5.1) Packing group: I
Proper shipping name: Nitric acid
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN-Number: 2031 Class: 8 (5.1) Packing group: I EMS-No: F-A, S-Q
Proper shipping name: NITRIC ACID
Marine pollutant: No

IATA
UN-Number: 2031 Class: 8 (5.1) Packing group: I
Proper shipping name: Nitric acid
IATA Passenger: Not permitted for transport

15. REGULATORY INFORMATION

OSHA Hazards
Target Organ Effect, Corrosive

DSL Status
All components of this product are on the Canadian DSL list.

SARA 302 Components

	CAS-No.	Revision Date
Nitric acid	7697-37-2	2007-07-01

SARA 313 Components

	CAS-No.	Revision Date
Nitric acid	7697-37-2	2007-07-01

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Nitric acid	7697-37-2	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Water	7732-18-5	
Nitric acid	7697-37-2	2007-07-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Water	7732-18-5	
Nitric acid	7697-37-2	2007-07-01

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.

16. OTHER INFORMATION

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: GASOLINE, UNLEADED AUTOMOTIVE
Product Description: Hydrocarbons and Additives
Product Code: 123455-20, 9700, 977032, 977217, 977306, 977360, 977371, 977381, 977445, 977562, 977767, 977920, 979533, 97A039, 97A065, 97A078, 97A087, 97A102, 97A108, 97A146, 97A147, 97A152, 97A193, 97A200, 97A240, 97A266, 97A273, 97A290, 97A305, 97A316, 97A317, 97A328, 97A347, 97A380, 97A404, 97A424, 97A431, 97A441, 97A514, 97A556, 97A557, 97A613, 97A634, 97A653, 97A655, 97A659, 97A686, 97A696, 97A703, 97A712, 97A726, 97A736, 97A746, 97A767, 97A794, 97A798, 97A827, 97A848, 97A851, 97A876, 97A883, 97A907, 97A934, 97A948, 97A949, 97A960, 97A983, 97A989, 97AV99, 97AW00, 97AW01, 97AW38, 97AZ87, 97AZ88, 97AZ89, 97AZ90, 97AZ91, 97AZ92, 97AZ93, 97AZ94, 97AZ95, 97AZ96, 97AZ97, 97AZ98, 97AZ99, 97BA11, 97BA12, 97BA13, 97BA14, 97BA15, 97BA16, 97BA67, 97BA68, 97BA69, 97BA70, 97BE24, 97BE25, 97BE26, 97BE27, 97BE28, 97BE29, 97BE30, 97BE31, 97BE32, 97BE33, 97BE34, 97BE35, 97BE36, 97BE37, 97BE38, 97BE39, 97BN13, 97BN50, 97C070, 97C072, 97C075, 97C110, 97C112, 97C113, 97C118, 97C127, 97C140, 97C148, 97C166, 97C417, 97C558, 97C576, 97C632, 97C702, 97C731, 97C759, 97C770, 97C782, 97C794, 97C870, 97C917, 97D130, 97D228, 97E002, 97E010, 97E041, 97E065, 97E087, 97E103, 97E104, 97E11, 97E112, 97E113, 97E170, 97E171, 97E196, 97E197, 97E259, 97E260, 97E304, 97E305, 97E347, 97E42, 97E532, 97E564, 97E581, 97E595, 97E606, 97E611, 97E619, 97E649, 97E655, 97E66, 97E682, 97E749, 97E860, 97E88, 97E999, 97F005, 97F020, 97F030, 97F054, 97F312, 97F344, 97F952, 97M190, 97M191, 97M192, 97M193, 97M194, 97M195, 97M229, 97M230, 97M232, 97N832, 97N844, 97N848, 97N861, 97N873, 97N877, 97N879, 97N891, 97N895, 97N913, 97N917, 97N921, 97N941, 97N942, 97N954, 97Q303, 97Q763, 97Q781, 97Q782, 97R368, 97S760, 97U927, 97V321, 97V323, 97V325, 97V326, 97X861, EMGF20
Intended Use: Fuel, Gasoline

COMPANY IDENTIFICATION

Supplier: **EXXON MOBIL CORPORATION**
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300
ExxonMobil Transportation No.	281-834-3296
Product Technical Information	800-662-4525, 800-947-9147
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*
ETHYL ALCOHOL	64-17-5	< 11%
Gasoline	86290-81-5	89 - 100%

Hazardous Constituent(s) Contained in Complex Substance(s)

Name	CAS#	Concentration*
BENZENE	71-43-2	0.1 - 5%
ETHYL BENZENE	100-41-4	1 - 5%

N-HEXANE	110-54-3	1 - 5%
NAPHTHALENE	91-20-3	<1%
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	95-63-6	1 - 5%
Toluene	108-88-3	5 - 10%
TRIMETHYL BENZENE	25551-13-7	1 - 5%
XYLENES	1330-20-7	5 - 10%

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

NOTE: The concentration of the components shown above may vary substantially. In certain countries, benzene content may be limited to lower levels. Oxygenates such as tertiary-amyl-methyl ether, ethanol, di-isopropyl ether, and ethyl-tertiary-butyl ether may be present. Because of volatility considerations, gasoline vapor may have concentrations of components very different from those of liquid gasoline. The major components of gasoline vapor are: butane, isobutane, pentane, and isopentane. The reportable component percentages, shown in the composition/information on ingredients section, are based on API's evaluation of a typical gasoline mixture.

SECTION 3 HAZARDS IDENTIFICATION

This material is considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL PHYSICAL / CHEMICAL EFFECTS

Extremely flammable. Material can release vapors that readily form flammable mixtures. Vapor accumulation could flash and/or explode if ignited. Material can accumulate static charges which may cause an incendiary electrical discharge.

POTENTIAL HEALTH EFFECTS

Irritating to skin. If swallowed, may be aspirated and cause lung damage. May be irritating to the eyes, nose, throat, and lungs. May cause central nervous system depression. High-pressure injection under skin may cause serious damage. Prolonged and repeated exposure to benzene may cause serious injury to blood forming organs and is associated with anemia and to the later development of acute myelogenous leukemia (AML).

Target Organs: Lung | Skin |

ENVIRONMENTAL HAZARDS

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

NFPA Hazard ID:	Health:	1	Flammability:	3	Reactivity:	0
HMIS Hazard ID:	Health:	1*	Flammability:	3	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

Inhalation

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

Ingestion

Seek immediate medical attention. Do not induce vomiting.

NOTE TO PHYSICIAN

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

PRE-EXISTING MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE

Benzene- Individuals with liver disease may be more susceptible to toxic effects.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Extremely Flammable. Vapors are flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

Hazardous Combustion Products: Smoke, Fume, Aldehydes, Sulfur Oxides, Incomplete combustion products, Oxides of carbon

FLAMMABILITY PROPERTIES

Flash Point [Method]: <-40C (-40F) [ASTM D-56]
Flammable Limits (Approximate volume % in air): LEL: 1.4 UEL: 7.6
Autoignition Temperature: >250°C (482°F)

SECTION 6 ACCIDENTAL RELEASE MEASURES

Notification Procedures

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the

applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for Personal Protective Equipment.

SPILL MANAGEMENT

Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapor; but may not prevent ignition in closed spaces. Recover by pumping or with suitable absorbent.

Water Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. Do not confine in area of spill. Advise occupants and shipping in downwind areas of fire and explosion hazard and warn them to stay clear. Allow liquid to evaporate from the surface. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid breathing mists or vapors. Avoid contact with skin. Use non-sparking tools and explosion-proof equipment. Potentially toxic/irritating fumes/vapors may be evolved from heated or agitated material. Do not siphon by mouth. Use only with adequate ventilation. Use proper bonding and/or grounding procedures. Do not use as a cleaning solvent or other non-motor fuel uses. For use as a motor fuel only. It is dangerous and/or unlawful to put fuel into unapproved containers. Do not fill container while it is in or on a vehicle. Static electricity may ignite vapors and cause fire. Place container on ground when filling and keep nozzle in contact with container. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers or other electronic devices, etc.) in or around any fueling operation or storage area unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source).

Static Accumulator: This material is a static accumulator.

STORAGE

Ample fire water supply should be available. A fixed sprinkler/deluge system is recommended. Keep container

closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Outside or detached storage preferred. Storage containers should be grounded and bonded. Drums must be grounded and bonded and equipped with self-closing valves, pressure vacuum bungs and flame arresters.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Source	Form	Limit / Standard			NOTE	Source
BENZENE		OSHA Action level	0.5 ppm		N/A	OSHA Sp.Reg.
BENZENE		STEL	5 ppm		N/A	OSHA Sp.Reg.
BENZENE		TWA	1 ppm		N/A	OSHA Sp.Reg.
BENZENE		STEL	2.5 ppm		Skin	ACGIH
BENZENE		TWA	0.5 ppm		Skin	ACGIH
ETHYL ALCOHOL		TWA	1900 mg/m3	1000 ppm	N/A	OSHA Z1
ETHYL ALCOHOL		STEL	1000 ppm		N/A	ACGIH
ETHYL BENZENE		TWA	435 mg/m3	100 ppm	N/A	OSHA Z1
ETHYL BENZENE		STEL	125 ppm		N/A	ACGIH
ETHYL BENZENE		TWA	100 ppm		N/A	ACGIH
Gasoline		STEL	200 ppm		N/A	ExxonMobil
Gasoline		TWA	100 ppm		N/A	ExxonMobil
Gasoline		STEL	500 ppm		N/A	ACGIH
Gasoline		TWA	300 ppm		N/A	ACGIH
N-HEXANE		TWA	1800 mg/m3	500 ppm	N/A	OSHA Z1
N-HEXANE		TWA	50 ppm		Skin	ACGIH
NAPHTHALENE		TWA	50 mg/m3	10 ppm	N/A	OSHA Z1
NAPHTHALENE		STEL	15 ppm		Skin	ACGIH
NAPHTHALENE		TWA	10 ppm		Skin	ACGIH
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)		TWA	25 ppm		N/A	ACGIH
Toluene		Ceiling	300 ppm		N/A	OSHA Z2
Toluene		Maximum concentration	500 ppm		N/A	OSHA Z2
Toluene		TWA	200 ppm		N/A	OSHA Z2
Toluene		TWA	20 ppm		N/A	ACGIH
TRIMETHYL BENZENE		TWA	25 ppm		N/A	ACGIH
XYLENES		TWA	435 mg/m3	100 ppm	N/A	OSHA Z1
XYLENES		STEL	150 ppm		N/A	ACGIH
XYLENES		TWA	100 ppm		N/A	ACGIH

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:
Use explosion-proof ventilation equipment to stay below exposure limits.

Personal Protection

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:
No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:
If prolonged or repeated contact is likely, chemical resistant gloves are recommended. If contact with forearms is likely, wear gauntlet style gloves.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:
If prolonged or repeated contact is likely, chemical, and oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS
See Sections 6, 7, 12, 13.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Liquid
Color: Clear (May Be Dyed)
Odor: Petroleum/Solvent
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 C): 0.74
Flash Point [Method]: <-40C (-40F) [ASTM D-56]
Flammable Limits (Approximate volume % in air): LEL: 1.4 UEL: 7.6
Autoignition Temperature: >250°C (482°F)
Boiling Point / Range: > 20C (68F)
Vapor Density (Air = 1): 3 at 101 kPa
Vapor Pressure: > 26.6 kPa (200 mm Hg) at 20 C
Evaporation Rate (N-Butyl Acetate = 1): > 10
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3
Solubility in Water: Negligible
Viscosity: <1 cSt (1 mm²/sec) at 40 C
Oxidizing Properties: See Sections 3, 15, 16.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Avoid heat, sparks, open flames and other ignition sources.

MATERIALS TO AVOID: Halogens, Strong Acids, Alkalies, Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m³	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: No end point data.	Elevated temperatures or mechanical action may form vapors, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs. Based on assessment of the components.
Ingestion	
Toxicity (Rat): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar

	materials.
Irritation: No end point data.	Moderately irritating to skin with prolonged exposure. Based on test data for structurally similar materials.
Eye	
Irritation: Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS

For the product itself:

Laboratory animal studies have shown that prolonged and repeated inhalation exposure to light hydrocarbon vapors in the same boiling range as this product can produce adverse kidney effects in male rats. However, these effects were not observed in similar studies with female rats, male and female mice, or in limited studies with other animal species. Additionally, in a number of human studies, there was no clinical evidence of such effects at normal occupational levels. In 1991, The U.S. EPA determined that the male rat kidney is not useful for assessing human risk.

Vapor concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

Gasoline unleaded: Caused cancer in animal tests. Chronic inhalation studies resulted in liver tumors in female mice and kidney tumors in male rats. Neither result considered significant for human health risk assessment by the United States EPA and others. Did not cause mutations In Vitro or In Vivo. Negative in inhalation developmental studies and reproductive tox studies.Inhalation of high concentrations in animals resulted in reversible central nervous system depression, but no persistent toxic effect on the nervous system. Non-sensitizing in test animals. Caused nerve damage in humans from abusive use (sniffing).

Contains:

BENZENE: Caused cancer (leukemia), damage to the blood-producing system, and serious blood disorders from prolonged, high exposure based on human epidemiology studies. Caused genetic effects and effects on the immune system in laboratory animal and some human studies. Caused toxicity to the fetus in laboratory animal studies.

ETHANOL: Prolonged or repeated exposure to high concentrations of ethanol vapor or overexposure by ingestion may produce adverse effects to brain, kidney, liver, and reproductive organs, birth defects in offspring, and developmental toxicity in offspring.

NAPHTHALENE: Exposure to high concentrations of naphthalene may cause destruction of red blood cells, anemia, and cataracts. Naphthalene caused cancer in laboratory animal studies, but the relevance of these findings to humans is uncertain.

N-HEXANE: Prolonged and/or repeated exposures to n-Hexane can cause progressive and potentially irreversible damage to the peripheral nervous system (e.g. fingers, feet, arms, legs, etc.). Simultaneous exposure to Methyl Ethyl Ketone (MEK) or Methyl Isobutyl Ketone (MIBK) and n-Hexane can potentiate the risk of adverse effects from n-Hexane on the peripheral nervous system. n-Hexane has been shown to cause testicular damage at high doses in male rats. The relevance of this effect for humans is unknown.

TOLUENE : Concentrated, prolonged or deliberate inhalation may cause brain and nervous system damage. Prolonged and repeated exposure of pregnant animals (> 1500 ppm) have been reported to cause adverse fetal developmental effects.

TRIMETHYLBENZENE: Long-term inhalation exposure of trimethylbenzene caused effects to the blood in laboratory animals.

ETHYLBENZENE: Caused cancer in laboratory animal studies. The relevance of these findings to humans is uncertain.

Additional information is available by request.

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
BENZENE	71-43-2	1, 3, 6
ETHYL BENZENE	100-41-4	5
Gasoline	86290-81-5	5
NAPHTHALENE	91-20-3	2, 5

--REGULATORY LISTS SEARCHED--

1 = NTP CARC
2 = NTP SUS
3 = IARC 1
4 = IARC 2A
5 = IARC 2B
6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

MOBILITY

More volatile component -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.
Less volatile component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Majority of components -- Expected to be inherently biodegradable

Atmospheric Oxidation:

More volatile component -- Expected to degrade rapidly in air

BIOACCUMULATION POTENTIAL

Majority of components -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP). Potential RCRA characteristics: IGNITABILITY. TCLP (BENZENE)

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT)

Proper Shipping Name: Gasoline
Hazard Class & Division: 3
ID Number: 1203
Packing Group: II
Marine Pollutant: MP: 100 %weight PP: 0 %weight
ERG Number: 128
Label(s): 3
Transport Document Name: UN1203, GASOLINE, 3, PG II, MARINE POLLUTANT

LAND (TDG)

Proper Shipping Name: Gasoline
Hazard Class & Division: 3
UN Number: 1203
Packing Group: II
Special Provisions: 17

SEA (IMDG)

Proper Shipping Name: MOTOR SPIRIT or GASOLINE or PETROL
Hazard Class & Division: 3
EMS Number: F-E, S-E
UN Number: 1203
Packing Group: II
Marine Pollutant: Yes
Label(s): 3
Transport Document Name: UN1203, MOTOR SPIRIT or GASOLINE or PETROL, 3, PG II, (-40°C c.c.), MARINE POLLUTANT

AIR (IATA)

Proper Shipping Name: Gasoline
Hazard Class & Division: 3
UN Number: 1203
Packing Group: II
Label(s) / Mark(s): 3
Transport Document Name: UN1203, GASOLINE, 3, PG II

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purpose, this material is classified as hazardous in accordance with OSHA 29CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: AICS, DSL, EINECS, ENCS, KECI, PICCS, TSCA

EPCRA: This material contains no extremely hazardous substances.

CERCLA: This material is not subject to any special reporting under the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Contact local authorities to determine if other reporting requirements apply.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: Fire. Immediate Health. Delayed Health.

SARA (313) TOXIC RELEASE INVENTORY:

Chemical Name	CAS Number	Typical Value
ETHYL BENZENE	100-41-4	1 - 5%
N-HEXANE	110-54-3	1 - 5%
NAPHTHALENE	91-20-3	<1%
Toluene	108-88-3	5 - 10%
XYLENES	1330-20-7	5 - 10%
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	95-63-6	1 - 5%
BENZENE	71-43-2	0.1 - 5%

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
BENZENE	71-43-2	1, 2, 4, 10, 11, 13, 15, 16, 17, 18, 19
ETHYL ALCOHOL	64-17-5	1, 4, 13, 17, 18, 19
ETHYL BENZENE	100-41-4	1, 4, 10, 13, 16, 17, 18, 19
Gasoline	86290-81-5	1, 17, 18
N-HEXANE	110-54-3	1, 4, 13, 16, 17, 18, 19
NAPHTHALENE	91-20-3	1, 4, 5, 9, 10
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	95-63-6	1, 13, 16, 17, 18, 19
Toluene	108-88-3	1, 4, 11, 13, 15, 16, 17, 18, 19
TRIMETHYL BENZENE	25551-13-7	1, 13, 16, 17, 18, 19
XYLENES	1330-20-7	1, 4, 5, 9, 13, 15, 17, 18, 19

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Revision Changes:
Section 04: First Aid Inhalation - Header was modified.
Section 04: First Aid Ingestion - Header was modified.
Section 06: Notification Procedures - Header was modified.
Section 01: Product Code was modified.
Section 10 Stability and Reactivity - Header was modified.
Section 13: Disposal Recommendations - Note was modified.
Section 09: Evaporation Rate - Header was modified.
Section 08: Personal Protection - Header was modified.
Section 08: Personal Protection was modified.
Section 11: Inhalation Lethality Test Data was modified.
Section 05: Hazardous Combustion Products was modified.
Section 09: Relative Density - Header was modified.
Section 09: Viscosity was modified.
Section 14: Transport Document Name was modified.
Section 14: Proper Shipping Name was modified.
Section 14: Label(s) - Header was modified.
Section 14: Proper Shipping Name was modified.
Section 14: Proper Shipping Name was modified.
Section 14: Transport Document Name was modified.
Composition: Component Table was modified.
Section 15: List Citations Table was modified.
Section 11: Tox List Cited Table was modified.
Section 15: List Citation Table - Header was modified.
Section 15: SARA (313) TOXIC RELEASE INVENTORY - Table was modified.
Section 16: Materials Covered was modified.
Composition: Component Table was modified.
Section 16: Precautions - Header was modified.
Section 16: NA Contains was modified.
Section 08: Exposure Limits Table was modified.
Section 08: OEL Table - Notation Column - Header was modified.
Section 08: Exposure Limit Values - Header was modified.
Section 14: Marine Pollutant - Header was added.
Section 14: Marine Pollutant was added.
Section 14: Marine Pollutant - Header was added.
Section 14: Marine Pollutant was added.
Section 08: Exposure limits/standards was deleted.
THIS MSDS COVERS THE FOLLOWING MATERIALS: ESSO EXTRA MIDGRADE UNLEADED | ESSO MIDGRADE UNLEADED | ESSO PREMIUM UNLEADED | ESSO REGULAR UNLEADED | ESSO SUPER PREMIUM UNLEADED | EXXON MIDGRADE UNLEADED | EXXON PREMIUM UNLEADED | EXXON REGULAR UNLEADED | Gasoline | INDOLENE GASOLINE | MIDGRADE UNLEADED | MOBIL EXTRA UNLEADED | MOBIL REGULAR UNLEADED | MOBIL SPECIAL UNLEADED | MOBIL SUPER UNLEADED | PREMIUM UNLEADED | REGULAR UNLEADED | UNLEADED GASOLINE

PRECAUTIONARY LABEL TEXT:
Contains: BENZENE, Gasoline
DANGER!
HEALTH HAZARDS
Irritating to skin. If swallowed, may be aspirated and cause lung damage. Prolonged and repeated exposure to benzene may cause serious injury to blood forming organs and is associated with anemia and to the later development of acute myelogenous leukemia (AML).
Target Organs: Lung | Skin |

PHYSICAL HAZARDS
Extremely flammable. Material can accumulate static charges which may cause an incendiary electrical discharge. Material can release vapors that readily form flammable mixtures. Vapor accumulation could flash and/or explode if ignited.

Precautions
Avoid breathing mists or vapors. Avoid contact with skin. Use non-sparking tools and explosion-proof equipment. Potentially toxic/irritating fumes/vapors may be evolved from heated or agitated material. Do not siphon by mouth. Use only with adequate ventilation. Use proper bonding and/or grounding procedures.

FIRST AID
Inhalation: Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

Eye: Flush thoroughly with water. If irritation occurs, get medical assistance.

Oral: Seek immediate medical attention. Do not induce vomiting.

Skin: Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

FIRE FIGHTING MEDIA
Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

SPILL/LEAK
Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. Prevent entry into waterways, sewer, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Recover by pumping or with suitable absorbent.

Water Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. Do not confine in area of spill. Advise occupants and shipping in downwind areas of fire and explosion hazard and warn them to stay clear. Allow liquid to evaporate from the surface. Seek the advice of a specialist before using dispersants.

This warning is given to comply with California Health and Safety Code 25249.6 and does not constitute an admission or a waiver of rights. This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm. Chemicals known to the State of California to cause cancer, birth defects, or other

reproductive harm are created by the combustion of this product.

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