

HEALTH AND SAFETY PLAN

Level D Only

February 18, 2016

Methane Monitoring & Mitigation Program
2/4 Foster Avenue and 3 U.S. Avenue
Gibbsboro, NJ

The Sherwin-Williams RI/FS
Gibbsboro, NJ

Prepared For:

The Sherwin-Williams Company
Gibbsboro, NJ

Prepared by:

Weston Solutions, Inc.
40 East Clementon Rd
Gibbsboro, NJ
(856) 782-4935



Work Order No.:
20076.022.084; Document Owner: Gerardo Caprario

General Layout of the Site HASP

- 1. General Site Information/Background**
- 2. Hospital and Emergency Information**
- 3. Hazard Assessment**
- 4. Job Safety Analysis**
- 5. Monitoring Program**
- 6. Decontamination Plan**
- 7. Site Specific Hazard Communication Program**

Attachment A – Weston FLDs

Attachment B – Safety Data Sheets

Attachment C – Chemical Contaminant Data Sheets (NIOSH)

Attachment D – Notification of Mishap Form

Attachment E – Training/Medical Certifications

Attachment F – Access Agreements, Subcontractor HASP, Misc.

Attachment G – HASP Checklist

Attachment H – Site Security Assessment Form

Attachment I – Vehicle Assessment Form and Traffic Control Plan (As Needed)

Attachment J – Environmental Risk Management Plan

Attachment K – Field Site Health and Safety Review Forms

SECTION 1

GENERAL SITE INFORMATION/BACKGROUND

SECTION 1 – GENERAL SITE INFORMATION

PROJECT INFORMATION

Client Name:	Sherwin-Williams	Work Order Nos.:	20076.022.084
Site Names:	2/4 Foster Avenue and 3 U.S. Avenue	Prepared By:	Gerardo Caprario
Project Name:	Sherwin-Williams – Gibbsboro – LEL Monitoring Program	Date Prepared:	February 18, 2016
Site Street Address:	2/4 Foster Avenue and 3 U.S. Avenue	Project Start Date:	January 19, 2016
City, State:	Gibbsboro and Voorhees, Camden County, NJ	Project End Date:	January 2020

PURPOSE OF THIS PLAN

This document serves as the Health and Safety Plan for the Sherwin-Williams Methane (Lower Explosive Limit (LEL)) monitoring and mitigation program at 2/4 Foster Avenue and 3 U.S. Avenue, Gibbsboro, NJ. The plan addresses field activities performed by Weston Solutions and Sherwin-Williams personnel, their contractors, subcontractors, visitors and guests who may be engaged with performing site walks and/or field activities on the above-referenced project. In addition, this Health and Safety Plan is provided to the building owner so that they may incorporate measures detailed here in for field screening of methane prior to any intrusive repair/utility work inside and outside 2, 4 Foster Ave and 3 US Ave. This plan provides administrative controls and contingencies for recognized and predicted hazards associated with approved project tasks. Activities performed at this site should be conducted according to Weston's Environmental Health and Safety Program, Field Operating Procedures, client-specific requirements, and applicable State and Federal regulations. Subcontractors must conform to the provisions of the HASP unless otherwise specified in writing and separate subcontractor health and safety plans should be attached to this plan.

PROJECT SUMMARY

The Sherwin-Williams Company has been tasked with implementing a Methane (LEL) Monitoring Program and implementing appropriate mitigation measures; the effort shall include installation and operation of a fixed real-time LEL monitoring system with data telemetry, monthly manual (handheld instrument) monitoring, as well as implementing appropriate mitigation measures as these are selected and approved.

The installation of the fixed real-time Methane (LEL) Monitoring System will begin on January 19, 2016 and continue for approximately two weeks. Weston will provide periodic oversight to the subcontractor who will install a LEL sensor at 5 designated locations in 2/4 Foster Ave and 3 US Ave. The installation includes wiring the LEL sensors to an electrical source, controller, and modem. The installation will be conducted by a certified electrician.

Weston personnel utilize a Q-RAE meter to measure O₂, CO, H₂S, and LEL. Any O₂ readings outside of the range considered normal according to OSHA (19.5% - 23.5%) and LEL readings above 10% is considered a stop work condition; work will be stopped and Weston and its contractors will leave the area.

This HASP covers the safety procedures associated with those tasks associated with Methane Monitoring and Mitigation. Work will be performed in Level D personal protective equipment only. If an action level is reached or conditions change requiring the use of a higher level of protection, personnel will be removed from the work area and the necessary controls implemented to reduce the hazard risk.

This HASP will be amended to reflect additional Methane Program task assignments and actions taken.

APPROVALS

In accordance with WESTON's Personal Protective Equipment Program and 29 CFR 1910.132, the project Field Safety Officer and/or the Site Manager will evaluate site conditions and verify that the personal protective equipment selection outlined within this plan is appropriate for the hazards known or expected to exist.

Reviewers:	Name (Print):	Signature:	Date:
Prepared By: Gerardo Caprario Plan Writer	Gerardo Caprario		02/18/16
Reviewed By: Patrick Austin Project Safety Officer	Patrick Austin		
Reviewed By: Sam Cheek Local Safety Manager	Sam Cheek		2/29/2016
Approved By: Arthur Fischer Project Manager	Arthur Fischer		

PERIOD OF PERFORMANCE (POP)

This plan may be used for project activities conduct at this location through: **December 31, 2019**
The plan must be reapproved by the WESTON Safety Manager every six months for activities after this date.

POP EXTENSIONS

Amendment Description:	POP Extended To	Approved By:	Date
Period of Performance Extension (Original creation date =)			

AMENDMENTS LOG

AMENDMENTS TO PLAN

No.	Amendment Description	Approved By	Date	Attachment ?
1.	Floor Inspection and Crack Sealing	Steve O'Brian	3/17/16	yes
2.	Sump Depressurization and Venting	Michele Capriglione	3/22/16	yes
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

NOTE

The WESTON Project Manager is responsible for verifying that this plan is kept up to date. The WESTON Project Leader and Field Safety Officer are the document owners. They should document amendments to this plan, present them to local Safety and Quality Control Officers for review, present the revised plan to the project manager for approval, and ensure that copies of the updated plan are maintained in the project file and at the job site. If additional space is required to describe an amendment, log the amendment above and insert pages behind this log providing the amendment details.

KEY PERSONNEL

CLIENT REPRESENTATIVES

Name / Sherwin-Williams	Role / Responsibility	Telephone No.	
Mary Lou Capichioni	SW Technical Committee; Client PM for the Residential, and Hilliards Creek	Office: 216-566-1794 Mobile: 216-577-1010	
Rachel Vocaire	Client PM for the FMP and Special Projects	Office: 216-566-2889 Mobile: 216-219-3374	
Ken Stroebel	Client PM for the Dump Site and Burn Site	Office: 216-515-7544 Mobile: 216-337-2845	

WESTON PROJECT REPRESENTATIVES

Name	Role / Weston Solutions	Responsibility	Telephone
Sally Jones	Client Service Manager	Program and Client Coordination	Office: 732-417-5827 Mobile: 908-881-1726
Arthur Fischer	Program Manager	Technical Direction Field Work Supervision	Office: 732-417-5859 Mobile: 732-406-6567
Paul Landry	Project Manager	FMP Site	Office 610-701-3798 Mobile 484-888-9174
Brian Benson	Technical Manager	Indoor Air / Vapor Intrusion	Office: 334-466-5644 Mobile: 334-728-0252
Patrick Austin/Michele Capriglione	Env. Compliance Officer Weston Solutions, Inc.	Env. Compliance Mgr. ERM & D.G. Review/Support	See below
Patrick Austin	Site Manager / Field Leader Weston Solutions, Inc.	Field Work Supervision QASP Implementation	Office: 732-417-5877 Mobile: 917-295-8849
Michele Capriglione	Field Safety Officer Weston Solutions, Inc.	Field Safety Management QASP Implementation	Office: 732-417-5808 Mobile: 732-425-6048

SUBCONTRACTOR REPRESENTATIVES

Subcontracted Firm	Contact Name	Responsibilities/SOW	Contact Info.
Mechanical Solutions and Associates, LLC. (MSA) <input checked="" type="checkbox"/> Under Weston HASP <input type="checkbox"/> Subcontractor HASP*	Jim McCullough	Remote Monitoring System Installation	Telephone: 484-840-0220 Address: 127A BRINTON LAKE ROAD, CONCORDVILLE, PA
Clean Vapor, LLC (Clean Vapor) <input checked="" type="checkbox"/> Under Weston HASP <input type="checkbox"/> Subcontractor HASP*	Dan Nuzzetti	Floor Crack Cleaning and Sealing; Sump Depressurization and Venting	Telephone: 908-362-5616 Address: 32 Lambert Rd. E. PO Box 688, Blairstown, NJ 07825

*All WESTON subcontractor HASP's must be approved by the WESTON PM.

FIELD PERSONNEL CERTIFICATION STATUS

WESTON FIELD / SAFETY PERSONNEL			
Name / Role / PPE Level	Training		Contact Info.
Site Manager			
Patrick Austin Site Manager / Field Leader Level D Supervisor / C Trained	<input checked="" type="checkbox"/> CPR Current (1-2 Years) <input checked="" type="checkbox"/> First Aid Current (1-2 Years) <input checked="" type="checkbox"/> BB Pathogen Current (1 Year) <input checked="" type="checkbox"/> DG Shipping Current (1 Year)	<input checked="" type="checkbox"/> Medical Current <input checked="" type="checkbox"/> OSHA Training Current <input checked="" type="checkbox"/> FSO 8-Hour Training <input checked="" type="checkbox"/> 30-Hour Construction Safety	Primary: 917-295-8849 cell Secondary: (856) 782-4935 office
Field Safety Officer(s)			
Michele Capriglione Field Safety Officer (FSO) Level D Supervisor / C Trained	<input type="checkbox"/> CPR Current (1-2 Years) <input type="checkbox"/> First Aid Current (1-2 Years) <input checked="" type="checkbox"/> BB Pathogen Current (1 Year) <input type="checkbox"/> DG Shipping Current (1 Year)	<input checked="" type="checkbox"/> Medical Current <input checked="" type="checkbox"/> OSHA Training Current <input checked="" type="checkbox"/> FSO 8-Hour Training <input type="checkbox"/> 30-Hour Construction Safety	Primary: 732-425-6048 cell Secondary: 732-417-5808 office
Alternate FSO Level D Supervisor / C Trained	<input type="checkbox"/> CPR Current (1-2 Years) <input type="checkbox"/> First Aid Current (1-2 Years) <input type="checkbox"/> BB Pathogen Current (1 Year) <input type="checkbox"/> DG Shipping Current (1 Year)	<input type="checkbox"/> Medical Current <input type="checkbox"/> OSHA Training Current <input type="checkbox"/> FSO 8-Hour Training <input type="checkbox"/> 30-Hour Construction Safety	Primary: Secondary: Other:
Other Field Personnel			
Amanda Laskoskie Field Team Member Level D Supervisor / C Trained <input type="checkbox"/> New Employee (<6 Months)	<input checked="" type="checkbox"/> CPR Current (1-2 Years) <input checked="" type="checkbox"/> First Aid Current (1-2 Years) <input checked="" type="checkbox"/> BB Pathogen Current (1 Year) <input checked="" type="checkbox"/> DG Shipping Current (1 Year)	<input checked="" type="checkbox"/> Medical Current <input checked="" type="checkbox"/> OSHA Training Current <input type="checkbox"/> FSO 8-Hour Training <input type="checkbox"/> 30-Hour Construction Safety	Primary: 570-556-9699 cell Secondary: 732-417-5863 office
James Heaton Field Team Member Level D Supervisor / C Trained <input type="checkbox"/> New Employee (<6 Months)	<input checked="" type="checkbox"/> CPR Current (1-2 Years) <input checked="" type="checkbox"/> First Aid Current (1-2 Years) <input checked="" type="checkbox"/> BB Pathogen Current (1 Year) <input type="checkbox"/> DG Shipping Current (1 Year)	<input checked="" type="checkbox"/> Medical Current <input checked="" type="checkbox"/> OSHA Training Current <input type="checkbox"/> FSO 8-Hour Training <input type="checkbox"/> 30-Hour Construction Safety	Primary: 732-417-5823 office
Steve Mauch Field Team Member Level D Supervisor / C Trained <input type="checkbox"/> New Employee (<6 Months)	<input type="checkbox"/> CPR Current (1-2 Years) <input type="checkbox"/> First Aid Current (1-2 Years) <input checked="" type="checkbox"/> BB Pathogen Current (1 Year) <input type="checkbox"/> DG Shipping Current (1 Year)	<input checked="" type="checkbox"/> Medical Current <input checked="" type="checkbox"/> OSHA Training Current <input type="checkbox"/> FSO 8-Hour Training <input type="checkbox"/> 30-Hour Construction Safety	Primary: 484-433-8657
Paul Landry Field Team Member Level D Supervisor / C Trained <input type="checkbox"/> New Employee (<6 Months)	<input type="checkbox"/> CPR Current (1-2 Years) <input type="checkbox"/> First Aid Current (1-2 Years) <input checked="" type="checkbox"/> BB Pathogen Current (1 Year) <input type="checkbox"/> DG Shipping Current (1 Year)	<input checked="" type="checkbox"/> Medical Current <input checked="" type="checkbox"/> OSHA Training Current <input type="checkbox"/> FSO 8-Hour Training <input checked="" type="checkbox"/> 30-Hour Construction Safety	Primary: 484-888-9174 cell
Brian Benson Field Team Member Level D Supervisor / C Trained <input type="checkbox"/> New Employee (<6 Months)	<input type="checkbox"/> CPR Current (1-2 Years) <input type="checkbox"/> First Aid Current (1-2 Years) <input checked="" type="checkbox"/> BB Pathogen Current (1 Year) <input checked="" type="checkbox"/> DG Shipping Current (1 Year)	<input checked="" type="checkbox"/> Medical Current <input checked="" type="checkbox"/> OSHA Training Current <input type="checkbox"/> FSO 8-Hour Training <input type="checkbox"/> 30-Hour Construction Safety	Primary: 334-728-0252
Laura Dale Field Team Member Level D Supervisor / C Trained <input checked="" type="checkbox"/> New Employee (<6 Months)	<input type="checkbox"/> CPR Current (1-2 Years) <input type="checkbox"/> First Aid Current (1-2 Years) <input type="checkbox"/> BB Pathogen Current (1 Year) <input type="checkbox"/> DG Shipping Current (1 Year)	<input checked="" type="checkbox"/> Medical Current <input checked="" type="checkbox"/> OSHA Training Current <input type="checkbox"/> FSO 8-Hour Training <input type="checkbox"/> 30-Hour Construction Safety	Primary 215-460-7010

CERTIFICATION REQUIREMENTS

Field Safety Officer - Changing field conditions may require decisions to be made concerning implementation of additional hazard controls. The personnel assigned as FSOs are experienced and meet the additional training requirements specified by OSHA in 29CFR1910.120. The FSO is responsible for verifying all certifications and fit tests are current.

OSHA Training - All personnel, including visitors, entering the work area(s) must have training and medical certifications of completion in accordance with OSHA 29CFR1910, 29CFR1926, and client requirements

SECTION 2

EMERGENCY INFORMATION

EMERGENCY INFORMATION

EMERGENCY CONTACTS		
Agency:	Contact:	Phone Number:
Local Medical Emergency Facility	911	(856) 346-6000
WorkCare WESTON Medical Director	Dr. Peter Greaney	800.455.6155, ext. 114
WorkCare DAYTIME Contact	Peter Greaney Paula Sandrock	You will be able to reach a WorkCare employee during weekdays between the hours of 7:30 a.m. and 7:30 p.m. (Eastern Time Zone by calling 800-455-6155, extension 2219 [Team Delta]. If a member of Team Delta cannot be reached, dial extension 2110 [Paula Sandrock].
After-Business Hours Contact (In Case of Emergency Only)	WorkCare After-Hours Answering Service 6:30 PM – 8:00 AM (Central Time)	After business hours, follow the prompts to reach the OMC's service and alert them if you need to talk with an administrative staff person or a physician. Administrative staff can assist employees when they are at a clinic.
WorkCare Emergency Injury or Illness (Mishap Intervention Program)	Assistance with employee injuries and medical evaluation. 24 hours a day 7 days a week, call 888-449-7787	An intake coordinator will take your information and direct you to the appropriate medical professional to address your concern. The clinician will then address your concerns and direct you on the next steps.
WESTON Health & Safety Manager (Corporate)	Herold Hannah	(267) 516-0274 (Cell)
Local Health & Safety Manager	Lawrence Werts	(215) 815-6237 (Cell)
WESTON Health & Safety (Pat rick Austin)	856-782-4935 (office)	917-295-8849 (Cell)
WESTON Medical Safety (Mary Cabrera)	732-417-5876 (office)	732-406-8731 (Cell)
Fire/Police Department	Gibbsboro Police Dept: (856) 783-0900	911
On-Site Coordinator- FSO	Pat Austin/Michele Capriglione	917-295-8849/732-425-6048 (Cell)

PRIMARY MEDICAL EMERGENCY FACILITY		
Name of Hospital: Kennedy University Hospital		
Address: 18 East Laurel Road		Phone No.: (856) 346-6000
City: Stratford	State: NJ Zip: 08084	
Type of Service:		Name Of Contact:
<input type="checkbox"/> Physical trauma only <input checked="" type="checkbox"/> Physical trauma and chemical exposure <input type="checkbox"/> Chemical exposure only <input checked="" type="checkbox"/> Available 24 hours		Phone:
Distance to/from site: 2.9 miles	Time to/from site: 6 minutes	***Route to Hospital map attached

RESPONSE ITEMS		
<input checked="" type="checkbox"/> First Aid Kit	Type: Complete	Location: In Weston rental vehicle, trailer, and field office
<input checked="" type="checkbox"/> Fire Extinguisher	Type: ABC	Location: In Weston rental vehicle, trailer, and field office
<input checked="" type="checkbox"/> Eye Wash	Type: Self-contained	Location: In Weston field office
<input type="checkbox"/> Shower	Type:	Location:

RESPONSE ACTION PLAN

SPILL/RELEASE RESPONSE
 There is no spill response associated with methane monitoring or other light construction tasks associated with installations and mitigation.

FIRE/EXPLOSION RESPONSE
 In the event of a fire or explosion, ensure personal safety, assess situation, and perform containment and control measures, as appropriate:

- a. Sound alarm and call for assistance, notify Emergency Coordinator
- b. Evacuate to predetermined safe place
- c. Account for personnel
- d. Use fire extinguisher only if safe and trained in its use
- e. Stand by to inform emergency responders of materials and conditions

MEDICAL – GENERAL
 Provide first aid, if trained; assess and determine need for further medical assistance.
 Transport or arrange for transport after appropriate decontamination.

REPORTING A WORK RELATED MISHAP
 Notify your Local Safety Officer and/or your Project Manager of the mishap immediately.

Complete NOI track for the mishap using the instructions found in **Attachment D**. Remember to **“SAVE”** the mishap record; **DO NOT hit “Submit”**, this will be executed by your Local Safety Officer. At a minimum, attach all project personnel, Managers (PM, Office, PC), and EHS Personnel (Office, PC, Corporate Officers/Managers) to the NOI. Complete the initial draft of the NOI **within 24 hours**.

Mishap investigations are a tool used to determine the cause(s) and corrective actions to prevent mishap recurrence. The mishap investigation should be attached to the electronic NOI in NOITrack.

All work-related cases involving employee injury and serious medical conditions should be reported to Liberty Mutual' s toll free claim reporting number @ **(800) 362-0000**.

Contact Larry Werts, the East Regional EHS Manager, if there are any questions concerning a mishap. Larry can be reached at **215-815-6237 (cell)**.

Insert Hospital Map Here

SECTION 3

SITE HAZARD ASSESSMENT (GENERAL)

SITE HAZARDS ASSESSMENT (GENERAL)

SOURCE/LOCATION OF CONTAMINANTS AND HAZARDOUS SUBSTANCES

Directly Related to Tasks <input checked="" type="checkbox"/> Air <input type="checkbox"/> Other Surface (Sediment) <input type="checkbox"/> Groundwater <input type="checkbox"/> Soil <input type="checkbox"/> Surface Water <input type="checkbox"/> Sanitary Wastewater <input type="checkbox"/> Other:	Indirectly Related to Tasks — Nearby Processes That Could Affect Team Members: <input type="checkbox"/> Client Facility/Weston Work Location <input checked="" type="checkbox"/> Nearby Non-Client Facility Describe: The Paint Works Corporate Center <input checked="" type="checkbox"/> Have activities (task[s]) been coordinated with facility? Yes		
Physiochemical <input checked="" type="checkbox"/> Flammable <input checked="" type="checkbox"/> Explosive <input type="checkbox"/> Corrosive <input type="checkbox"/> Reactive <input type="checkbox"/> O ₂ Rich <input type="checkbox"/> O ₂ Deficient	Chemically Toxic <input checked="" type="checkbox"/> Inhalation <input type="checkbox"/> Ingestion <input type="checkbox"/> Contact <input type="checkbox"/> Absorption <input type="checkbox"/> Carcinogen <input type="checkbox"/> Mutagen <input type="checkbox"/> Teratogen <input type="checkbox"/> OSHA 1910.1000 Substance	Radiation Non-ionizing: <input type="checkbox"/> UV <input type="checkbox"/> IR Ionizing: <input type="checkbox"/> Internal exposure <input type="checkbox"/> External exposure <input type="checkbox"/> RF <input type="checkbox"/> Micro W. <input type="checkbox"/> Laser	Physical Hazards <input checked="" type="checkbox"/> Slip, Trip, Fall, Uneven Terrain <input checked="" type="checkbox"/> General Const. Hazards <input type="checkbox"/> Traffic <input type="checkbox"/> Heavy Equipment In Use <input type="checkbox"/> Heat Stress <input type="checkbox"/> Noise <input type="checkbox"/> Other (heavy lifting):

COMMON BIOLOGICAL HAZARDS (FLD 43)

On Site?	Category	Common Examples of Biological Hazards
<input type="checkbox"/>	Poisonous Plants	Poison Ivy, Poison Oak, Poison Sumac (skin irritation)
<input type="checkbox"/>	Insects	Ticks (Lyme disease), Spiders (poisonous bites), Bees (stings), Fire Ants (bites)
<input type="checkbox"/>	Snakes/Reptiles	Snakes (poisonous bites), alligators (bites)
<input type="checkbox"/>	Animals	Rats (Hanta Virus), Wild animals (bites, Rabies)
<input type="checkbox"/>	Etiological Agents	Sewage
<input type="checkbox"/>	Bodily Fluids	Bloodborne pathogens (HIV, HBV, etc.)
<input type="checkbox"/>	Biowatch	Biological Warfare Agents
<input type="checkbox"/>	Other	

OSHA SPECIFIC HAZARDOUS SUBSTANCES

The following substances may require specific medical, training, or monitoring based on concentration or evaluation of risk. See the appropriate citation listed under 29 CFR 1910 or 1926 for additional information.

<input checked="" type="checkbox"/> 1926.1101 Asbestos	<input type="checkbox"/> 1910.1011 4-Aminodiphenyl	<input checked="" type="checkbox"/> 1910.1028 Benzene (FLD #61)
<input type="checkbox"/> 1910.1002 Coal tar pitch volatiles	<input type="checkbox"/> 1910.1012 Ethyleneimine I	<input type="checkbox"/> 1910.1029 Coke oven emissions
<input type="checkbox"/> 1910.1003 4-Nitrobiphenyl, etc.	<input type="checkbox"/> 1910.1013 beta-Propiolactone	<input type="checkbox"/> 1910.1043 Cotton dust
<input type="checkbox"/> 1910.1004 alpha-Naphthylamine	<input type="checkbox"/> 1910.1014 2-Acetylaminofluorene	<input type="checkbox"/> 1910.1044 1,2-Dibromo3-chloropropane
<input type="checkbox"/> 1910.1005 [Reserved]	<input type="checkbox"/> 1910.1015 4-imethylaminoazobenzene	<input type="checkbox"/> 1910.1045 Acrylonitrile
<input type="checkbox"/> 1910.1006 Methyl chloromethyl ether	<input type="checkbox"/> 1910.1016 N-Nitrosodimethylamine I	<input type="checkbox"/> 1910.1047 Ethylene oxide
<input type="checkbox"/> 1910.1007 3,3'-Dichlorobenzidine	<input type="checkbox"/> 1910.1017 Vinyl chloride	<input type="checkbox"/> 1910.1048 Formaldehyde
<input type="checkbox"/> 1910.1008 bis-Chloromethyl ether	<input type="checkbox"/> 1910.1018 Inorganic arsenic	<input type="checkbox"/> 1910.1050 Methylenedianiline
<input type="checkbox"/> 1910.1009 beta-Naphthylamine	<input type="checkbox"/> 1910.1025 Lead (Att. FLD# 46)	<input type="checkbox"/> 1910.1051 1,3 Butadiene
<input type="checkbox"/> 1910.1010 Benzidine	<input type="checkbox"/> 1910.1027 Cadmium	<input type="checkbox"/> 1910.1052 Methylene chloride

NEARBY HAZARDS:

Other Nearby Hazards: <input checked="" type="checkbox"/> None Identified <input type="checkbox"/> Nearby Client Processes <input type="checkbox"/> Adjacent Facility Processes <input type="checkbox"/> Other (Specify):	Additional Details:
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KNOWN OR ANTICIPATED HAZARDOUS SUBSTANCES THAT MAY BE ENCOUNTERED						
Contaminants Known/Suspected Check Box if Present, Attach NIOSH sheets. (Attachment C)		Chemical Present as Product? (Yes/No/Unk)	Max. Known Conc. In Indoor Air (ppb/v)	Max. Known Concentration in Soil Vapor ($\mu\text{g}/\text{m}^3$)	Max. Known Concentration in ground water (ug/L)	Max. Known Concentration in Sediment (mg/kg)
Chemical Contamin	<input checked="" type="checkbox"/> Benzene	No	5.3	300,000	-	NA
	<input checked="" type="checkbox"/> Naphthalene	No	14.4	< 14,000	5,200	NA
	<input checked="" type="checkbox"/> Methane	No	137 (ppm)	40 (%)	16,000	NA

HAZARDOUS MATERIALS BROUGHT TO THE SITE				
Chemical/Hazardous Materials In Use Check Box if Present Add Additional Chemicals Present To List Attach SDSs in Attachment B		Quantity Anticipated	Storage Requirements	Special PPE Requirement?
Chemicals Anticipated To Be Used During the Course of Work Activities	<input type="checkbox"/> Hydrochloric Acid (HCl) as sample preservative	~ 2 mL / bottle	Sample Container	Nitrile Gloves / Safety Glasses
	<input type="checkbox"/> Nitric Acid (HNO ₃) as sample preservative	~ 2 mL / bottle	Sample Container	Nitrile Gloves / Safety Glasses
	<input type="checkbox"/> Sulfuric Acid (H ₂ SO ₄) as sample preservative	~ 2 mL / bottle	Sample Container	Nitrile Gloves / Safety Glasses
	<input type="checkbox"/> Sodium Hydroxide as sample preservative	~ 2 mL/ bottle	Sample Container	Nitrile Gloves / Safety Glasses
	<input type="checkbox"/> Isobutylene and zero air	~ 0.6 ft ³ / bottle	Air Cylinder	Nitrile Gloves / Safety Glasses
	<input type="checkbox"/> Gasoline as fuel for site equipment	N/A	Fuel Safety Can	Nitrile Gloves / Safety Glasses
	<input type="checkbox"/> Diesel as fuel for site equipment	N/A	Fuel Safety Can	Nitrile Gloves / Safety Glasses
	<input type="checkbox"/> Silica Sand	~ 45 - 90 lb. bags	Bags	Dust Mask
	<input type="checkbox"/> Portland Cement (or Similar)	~ 45 - 90 lb. bags	Bags	Dust Mask
	<input type="checkbox"/> Alconox/Liqinox			
	<input checked="" type="checkbox"/> Polyurethane Sealants	~ 4-8 quarts	Original container	Nitrile gloves, safety glasses, ventilation
	<input type="checkbox"/>			

FLD CHECKLIST (CHECK ALL THAT APPLY)

	WESTON FLD TITLE	DESCRIPTION
<input type="checkbox"/>	FLD02 - Inclement Weather	Rain/humidity/cold/ice/snow/lightning
<input type="checkbox"/>	FLD03 - Hot Process - Steam	Burns/displaced oxygen/wet working surfaces
<input type="checkbox"/>	FLD05 - Heat Stress Prevention/Monitoring	Heat rash/cramps/exhaustion/heat stroke
<input type="checkbox"/>	FLD06 - Cold Stress	Hypothermia/frostbite
<input checked="" type="checkbox"/>	FLD08 - Confined Space Entry	Falls/burns/drowning/engulfment/electrocution
<input type="checkbox"/>	FLD09 – Fork Lifts	Fork Lift Truck Safety
<input type="checkbox"/>	FLD10 - Manual Lifting/Handling Heavy Objects	Back strain/abdomen/arm/leg muscle/joint injury
<input type="checkbox"/>	FLD11 - Rough Terrain	Vehicle accidents/slips/trips/falls
<input type="checkbox"/>	FLD12 - Housekeeping	Slips/trips/falls/punctures/cuts/fires
<input type="checkbox"/>	FLD13 - Structural Integrity	Crushing/overhead hazards/compromised floors
<input type="checkbox"/>	FLD14 - Site Security, Violence Free Workplace	Bodily injury
<input type="checkbox"/>	FLD16 - Pressure Systems - Compressed Gases	Mechanical injury/fire/explosion/suffocation
<input type="checkbox"/>	FLD17 - Diving	Poor visibility/entanglement/drowning/cold stress
<input type="checkbox"/>	FLD18 - Operation and Use of Boats	Drowning/heat/cold stress/hypothermia/falls
<input type="checkbox"/>	FLD19 - Working Over Water	Drowning/frostbite/hypothermia/falls/electrocution
<input type="checkbox"/>	FLD20 - Traffic	Struck by vehicle/collision
<input type="checkbox"/>	FLD21 - Explosives	Explosion/fire/thermal burns
<input type="checkbox"/>	FLD22 - Heavy Equipment Operation	Crushing/pinch points/overhead hazards/electrocution
<input type="checkbox"/>	FLD23 – Cranes, Riggings, and Slings	Overhead hazards/electrocution
<input checked="" type="checkbox"/>	FLD24 - Aerial Lifts	Overhead hazards/falls/electrocution
<input checked="" type="checkbox"/>	FLD25 – Elevation and Fall Protection	Overhead hazards/falls/electrocution
<input checked="" type="checkbox"/>	FLD26 – Ladders	Overhead hazards/falls/electrocution/slips
<input type="checkbox"/>	FLD27 – Scaffolding	Slips/trips/falls/overhead hazards
<input type="checkbox"/>	FLD28 - Excavating/Trenching	Crushing/falling/overhead hazards/suffocation
<input checked="" type="checkbox"/>	FLD30 - Hazardous Materials	Explosions/fires from oxidizing, flam./corr. material
<input checked="" type="checkbox"/>	FLD31 - Fire Prevention and Protection Planning	Fire and explosion
<input type="checkbox"/>	FLD32 – Fire Extinguishers Required	Fire
<input type="checkbox"/>	FLD33 – Demolition	Overhead/electrocution/slips/trips/falls/fire
<input type="checkbox"/>	FLD34 – Utilities	Electrocution/shock/thermal burns
<input checked="" type="checkbox"/>	FLD35 - Electrical Safety	Electrocution/shock/thermal burns
<input type="checkbox"/>	FLD36 - Welding/Cutting/Burning	Heat stress/fires/burns
<input type="checkbox"/>	FLD37 - High Pressure Washers	Thermal burns/high pressure impaction/heat stress
<input checked="" type="checkbox"/>	FLD38 - Hand and Power Tools	Smashing body parts/pinching/cuts/electrocution
<input type="checkbox"/>	FLD39 – Illumination	Slips/trips/falls
<input type="checkbox"/>	FLD40 - Storage Tank Removal/Decommissioning	Burns/impaction
<input type="checkbox"/>	FLD41 - Std. Hand/Emergency Signals	Disruption of communications
<input type="checkbox"/>	FLD42 - Lockout/Tag-out	Unexpected release of energy
<input type="checkbox"/>	FLD43 - Biological Hazards	Biological Hazards at site
<input type="checkbox"/>	FLD43A – Animals	Biological Hazards at site
<input type="checkbox"/>	FLD43B – Stinging and Biting Insects	Biological Hazards at site
<input type="checkbox"/>	FLD43C – Molds and Fungi	Biological Hazards at site
<input type="checkbox"/>	FLD43D – Hazardous Plants	Biological Hazards at site
<input type="checkbox"/>	FLD43E - Etiologic Agents	Biological Hazards at site

FLD CHECKLIST (CHECK ALL THAT APPLY)

	WESTON FLD TITLE	DESCRIPTION
<input type="checkbox"/>	FLD44 - Biological Hazards – Bloodborne Pathogens Exposure Control Plan – First Aid Providers	Biological Hazards/BBP at site/First Aid Providers
<input type="checkbox"/>	FLD45 – Biological Hazards – Bloodborne Pathogens Exposure Control Plan – Work With Infectious Waste	Infectious Waste at site/BBP/ at site/Infectious Waste
<input type="checkbox"/>	FLD46 - Control of Exposure to Lead	Lead poisoning
<input type="checkbox"/>	FLD47 - Clearing, Grubbing and Logging Operations	Cuts/ dismemberment/gouges
<input type="checkbox"/>	FLD48 – Federal, State, Local Regulatory Agency Inspections	
<input type="checkbox"/>	FLD49 – Safe Storage of Samples	Exposure to hazardous materials/waste
<input type="checkbox"/>	FLD50 – Cadmium Exposure Control Plan	Exposure Control
<input type="checkbox"/>	FLD51 – Process Safety Procedure	Safety Procedure
<input type="checkbox"/>	FLD52 – Asbestos Exposure Control Plan	Asbestos Exposure
<input type="checkbox"/>	FLD53 – Hexavalent Chromium Exposure Control Plan	Exposure Control Plan
<input type="checkbox"/>	FLD54 - Benzene Exposure Control Plan	Exposure Control Plan
<input type="checkbox"/>	FLD55 – Working with Hydrofluoric Acid	Hydrofluoric Exposure
<input type="checkbox"/>	FLD56 – Drilling Safety	Electrocution/overhead hazards/pinch points
<input type="checkbox"/>	FLD57 – Motor Vehicle Safety	Driving Safely when performing WESTON activities
<input type="checkbox"/>	FLD58 – Drum Handling Operations	Improper Handling of Hazardous Drums
<input type="checkbox"/>	FLD59 – Decontamination	Minimize Employee Contact with Hazardous Substances
<input type="checkbox"/>	FLD60 – Employee Duty Schedule/Basic Fatigue Management Plan	Basic Fatigue Management Plan
<input type="checkbox"/>	FLD61 – Gasoline Contaminant Exposure	Gasoline Contaminant Exposure
<input type="checkbox"/>	FLD62 – Automatic External Defibrillator (AED) Guidelines	AED Program Guidelines
<input type="checkbox"/>	FLD63 – Handheld X-Ray Fluorescence (XRF) Analyzers	XRF Analyzer Guidelines
<input type="checkbox"/>	FLD64 – Employees Working Alone	Isolated Working Conditions
<input type="checkbox"/>	FLD65 – Respiratory Protection	APR, SCBA, Air-line Program Guidelines
<input type="checkbox"/>	1.6 - Drilling Safety Guide	Electrocution/overhead hazards/pinch points

SECTION 4

JOB SAFETY ANALYSIS (JSA)

TASK-01 RISK ASSESSMENT

TASK- 01 - DESCRIPTION AND TASK LIST

LEVEL D ONLY

Installation and operation of Methane (LEL) Monitoring System.

POTENTIAL HAZARDS AND RISK ANALYSIS

Chemical Hazards

Hazard Present Risk Level: H M L

Explain: Elevated methane and VOCs at the site in the sub slab.

- Air monitoring will be performed using a Q-RAE .
- Exposure to hazardous substances is not anticipated and will be evaluated using the Q-RAE.

Physical Hazards

Hazard Present Risk Level: H M L

Explain: The physical hazards listed below are present at the FMP site.

- Slips, Trips, Falls Hazards – Personnel will be mindful of their step, watch for obstacles in walkway, and keep workspace clear.
- Lifting heavy objects (i.e.: coolers, equipment, etc...) – Personnel will use proper lifting techniques or ask for assistance.
-

Biological Hazards

Hazard Present Risk Level: H M L

Explain: There are no Biological hazards anticipated inside the associated buildings.

Radiological Hazards

Hazard Present Risk Level: H M L

Explain: There are no radiological hazards present inside the associated buildings.

SAFETY PROCEDURES

1. Personnel will be briefed on task requirements, hazards, and required safety controls prior to task performance.
2. Administrative controls identified in the HASP will be implemented as part of this task.
3. Engineering controls identified in the HASP will be implemented as part of this task.
4. The level of protection specified above will be utilized by site personnel.
5. The team will check in with any site representatives or local authorities as necessary to work on the site.
6. The team will call in to their project manager to confirm arrival and conditions at the site.
7. The team should evacuate the site if unforeseen site conditions are identified or LEL > 10%, and reevaluate the HASP.
8. All work will be performed in accordance with the provisions of this HASP, regulatory guidelines, and WESTON Field Operating Procedures (FLDs).

TASK-01 SPECIFIC PERSONNEL PROTECTION PLAN

ADMINISTRATIVE CONTROLS (check those applicable)

Administrative controls that will be implemented as part of this HASP are as follows:

	Task-Specific Training		Plans / Permits		Required Inspections
<input checked="" type="checkbox"/>	HAZWOPER	<input type="checkbox"/>	Dig Safe Permit	<input type="checkbox"/>	Contact Utility Locate Service
<input type="checkbox"/>	Dangerous Goods Shipping	<input type="checkbox"/>	CSE Permit	<input type="checkbox"/>	FLD-34/FLD-34 Checklist
<input type="checkbox"/>	CPR	<input type="checkbox"/>	Hot Work Permit	<input type="checkbox"/>	Tailgate Safety Meeting
<input type="checkbox"/>	First Aid	<input type="checkbox"/>	Work Permit	<input type="checkbox"/>	Equipment Inspection Sheets
<input type="checkbox"/>	Blood Borne Pathogens	<input type="checkbox"/>	Air Permit	<input type="checkbox"/>	Vehicle Inspection
<input type="checkbox"/>	AED	<input type="checkbox"/>	Traffic Control Plan	<input type="checkbox"/>	Daily Site Inspection
<input checked="" type="checkbox"/>	CSE Training	<input type="checkbox"/>	SWPP Plan	<input type="checkbox"/>	Initial/Daily Equipment Inspection
<input type="checkbox"/>	HAZCOM	<input type="checkbox"/>	SPCC Plan	<input type="checkbox"/>	Vehicle/Heavy Equipment
<input checked="" type="checkbox"/>	HASP Review	<input type="checkbox"/>	Critical Lift Plans	<input checked="" type="checkbox"/>	Air Sampling and Monitoring
<input type="checkbox"/>	Competent Person (specify)	<input type="checkbox"/>	Contingency Plan	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	Driver's License	<input type="checkbox"/>	Lockout/Tag Out	<input type="checkbox"/>	

Additional Information (if applicable)

ENGINEERING CONTROLS (check those applicable)

Engineering controls that will be implemented as part of this HASP are as follows:

	Description		Description		Description
<input type="checkbox"/>	Guard Rails	<input type="checkbox"/>	Isolation	<input type="checkbox"/>	Traffic Cones
<input type="checkbox"/>	Machine Guards	<input type="checkbox"/>	GFCI	<input type="checkbox"/>	Apply Anti-slip/skid Mat
<input type="checkbox"/>	Sound Barriers	<input type="checkbox"/>	Assured Ground Program	<input type="checkbox"/>	

Additional Information (if applicable)

PERSONNEL PROTECTIVE EQUIPMENT (check those applicable to this task)

Personnel protective equipment will be implemented for Level D are as follows:

	Description		Description		Description
<input type="checkbox"/>	Hard Hat	<input checked="" type="checkbox"/>	Nitrile Gloves	<input type="checkbox"/>	Electrical insulation
<input type="checkbox"/>	Ear Plugs	<input type="checkbox"/>	Tyvek coveralls	<input type="checkbox"/>	Ice Vests
<input type="checkbox"/>	Ear Muffs	<input type="checkbox"/>	Coated Coveralls	<input type="checkbox"/>	Cooling Suits
<input checked="" type="checkbox"/>	Safety Glasses	<input type="checkbox"/>	Welding leathers	<input type="checkbox"/>	Safety Vest
<input type="checkbox"/>	Goggles	<input checked="" type="checkbox"/>	Safety Shoes/Boots	<input type="checkbox"/>	
<input type="checkbox"/>	Chemical Goggles	<input type="checkbox"/>	Rubber Boots	<input type="checkbox"/>	
<input type="checkbox"/>	Face Shield	<input checked="" type="checkbox"/>	Fall Arrest	<input type="checkbox"/>	
<input type="checkbox"/>	Leather Gloves	<input type="checkbox"/>	PFD	<input type="checkbox"/>	

OTHER EQUIPMENT (Check all that apply to this task)

	Description		Description		Description
<input type="checkbox"/>	First Aid Kit	<input type="checkbox"/>	Water Level Indicator	<input type="checkbox"/>	Sunblock
<input type="checkbox"/>	Blood Borne Pathogens Kit	<input type="checkbox"/>	Interface Probe	<input type="checkbox"/>	H ₂ S Monitor
<input checked="" type="checkbox"/>	Fire Extinguisher	<input type="checkbox"/>	YSI	<input checked="" type="checkbox"/>	Hand Tools
<input checked="" type="checkbox"/>	PID (See Section 5) ppbRAE	<input type="checkbox"/>	LiquiNox	<input type="checkbox"/>	GPS
→	<input checked="" type="checkbox"/> QRAE <input type="checkbox"/> MultiRAE	<input type="checkbox"/>	Spray Bottles	<input checked="" type="checkbox"/>	Camera
<input type="checkbox"/>	FID (See Section 5)	<input checked="" type="checkbox"/>	Calibration Fluids/Gasses	<input type="checkbox"/>	Sample Bottles
<input type="checkbox"/>	Dräger Pump (List Tubes)	<input checked="" type="checkbox"/>	Tubing	<input type="checkbox"/>	Coolers
<input type="checkbox"/>	Insect Repellant	<input type="checkbox"/>	Buckets	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	Log Book	<input type="checkbox"/>	Bailers	<input type="checkbox"/>	
<input type="checkbox"/>	Peristaltic Pump	<input type="checkbox"/>	Rope	<input type="checkbox"/>	
<input type="checkbox"/>	Bladder Pump	<input type="checkbox"/>	Trash Bags	<input type="checkbox"/>	

SECTION 5

MONITORING PROGRAM

MONITORING PROGRAM

AIR MONITORING INSTRUMENTS

Instrument Selection and Initial Check Record

Reporting Format: Field Notebook Field Data Sheets Air Monitoring Log Trip Report Other

Instrument	Task No.(s)	Number Required	Comment
QRAE	1	1	All reading above background will be recorded; see below for O2 and LEL action levels.

EXPLOSIVE ATMOSPHERE

Action Level		Action
Ambient Air Concentration	Confined Space Concentration	
<10% LEL	0 to 1% LEL	Continue work, consider toxicity potential.
10 to 25% LEL	1 to 10% LEL	Continue working but increase the monitoring frequency. Notify the PM.
>25% LEL	>10% LEL	Stop work and evacuate. Obtain PM approval to ventilate area.

OXYGEN

Action Level		Action
Ambient Air Concentration	Confined Space Concentration	
<19.5% O ₂	<19.5% O ₂	Stop work and evacuate. Re-entry requires HASP revision for SCBA use.
19.5% to 25% O ₂	19.5% to 23.5% O ₂	Continue working and investigate any changes in readings from 21%.
>25% O ₂	>23.5% O ₂	Stop work and evacuate. Ventilate and obtain PM ok before returning.

ORGANIC VAPORS

Action Level*	Action
Benzene	
<input checked="" type="checkbox"/> Benzene Action Guidelines	Consistently above 250 ppb (1/2 PEL) on PID in breathing zone

* Insert hand written calculations following this sheet.

INORGANIC GASES, VAPORS, AND PARTICULATES

Action Level*	Action

* Insert hand written calculations following this sheet.

Insert Air Monitoring Action Guidelines or Calculations Sheet Here

SECTION 6

DECONTAMINATION PLAN

DECONTAMINATION PLAN

All personnel will use inside out techniques when removing spent PPE. Hands and face will be wet wiped prior to any hand to mouth contact.

DECONTAMINATION WASTE DISPOSITION

Consistent with the levels of protection required, provide step-by-step procedures for personnel decontamination:

- Disposable equipment will be used where possible and will be disposed of in plastic trash bags.
- Drums will be properly labeled and logged in the field log book.
-
-
-

HEAVY EQUIPMENT DECONTAMINATION

A procedure for decontamination steps required for non-sampling equipment and heavy machinery follows:

-
-
-
-

SAMPLING EQUIPMENT DECONTAMINATION

Sampling equipment will be decontaminated in accordance with the following procedure:

-
-
-
-
-

IDW DISPOSAL PLAN

Describe procedure to dispose of IDW to include who is responsible for IDW disposal.

- Weston will be responsible for the proper disposal of IDW.
-
-
-
-
-
-

ENVIRONMENTAL COMPLIANCE REVIEW

<input type="checkbox"/>	Generation of Hazardous Waste*	→	
<input checked="" type="checkbox"/>	Generation of Investigation Derived Waste*		
<input type="checkbox"/>	Treatment, Storage, or Disposal of Hazardous Waste*	→	Containers: dated, labeled, closed, full, stored less than 90 days
<input type="checkbox"/>	Contingency to prevent or contain hazardous materials or oil spills or discharges to drains, body of water, soil*	→	Risk of explosion or catastrophic release due to chemical storage or processing involving reactivity, flammables, solvents or explosives
<input type="checkbox"/>	Disturbing of Asbestos Containing Materials (ACM)*	→	Training & Licensing for Asbestos Remediation Activities
<input type="checkbox"/>	Application of Pesticides or Herbicides*		
<input type="checkbox"/>	Work on Above or Under-ground Storage Tanks*		
<input type="checkbox"/>	Transportation, Storage or Disposal of Radioactive Material*	→	Training & Licensing for Use of Radioactive Materials/Sources
<input type="checkbox"/>	Activities producing or generating Air Emissions (or fugitive "fence-line" emissions) requiring either monitoring and/or permit*		
<input type="checkbox"/>	Excavations, Drilling, Probing or other activities that could impact underground utilities, pipelines, sewer or treatment systems.		
<input type="checkbox"/>	Shipment of Hazardous Waste off-site* Shipment of Samples in accordance with DOT/IATA	→	Waste Identification & Manifesting - Marking, Placarding, Labeling

SECTION 7

SITE HAZARD COMMUNICATION PROGRAM

SITE-HAZARD COMMUNICATION PROGRAM

LOCATION SPECIFIC HAZARD COMMUNICATION PROGRAM/CHECKLIST

To ensure an understanding of and compliance with the Hazard Communication Standard, WESTON will use this checklist/document (or similar document) in conjunction with the WESTON Written Hazard Communication Program as a means of meeting site- or location-specific requirements as per 29CFR1910.1200 to include the provisions of the Global Harmonization System (GHS).

While responsibility for activities within this document references the WESTON Field Safety Officer, it is the responsibility of all personnel to effect compliance. Responsibilities under various conditions can be found within the WESTON Written Hazard Communication Program.

To ensure that information about the dangers of all hazardous chemicals used by WESTON is known by all affected employees, the following Hazard Communication Program has been established. All affected personnel will participate in the Hazard Communication Program. This written program, as well as WESTON's Corporate Hazard Communication Program, will be available for review by any employee, employee representative, and representative of OSHA, Client, or any affected employer/employee on a multi-employer site.

- Site or other location name/address: **FMP Site – Paint Works Corporate Center 1 Foster Avenue, Gibbsboro, NJ**
- Site/Project/Location Manager: **Patrick Austin/Paul Landry**
- Site/Location Safety Officer: **Patrick Austin/Michele Capriglione**
- List of chemicals compiled, format: HASP Other:
- Location of SDS files: Gibbsboro Field Office
- Training conducted by (Name): _____ Date: _____
- Indicate format of training documentation: Field Log: Other: **Certificate saved on H&S site**
- Client briefing conducted regarding hazard communication:
- If multi-employer site (client, subcontractor, agency, etc.), indicate name of affected companies:

- Other employer(s) notified of chemicals, labeling, and MSDS information:
- Has WESTON been notified of other employer's or client's hazard communication program(s), as necessary? Yes No

LIST OF HAZARDOUS CHEMICALS

A list of known hazardous chemicals used by WESTON personnel must be prepared and attached to this document or placed in a centrally identified location with the SDSs. Further information on each chemical may be obtained by reviewing the appropriate SDS. The list will be arranged to enable cross-reference with the SDS file and the label on the container. The FSO or Location Manager is responsible for ensuring the chemical listing remains up-to-date.

SAFETY DATA SHEETS (SDS)

The FSO is responsible for establishing and monitoring WESTON's SDS program for the location. The FSO will ensure that procedures are developed to obtain the necessary SDSs and will review incoming SDSs for new or significant health and safety information. He/she will see that any new information is passed on to the affected employees. If an SDS is not received at the time of initial shipment, the FSO will call the manufacturer and have an SDS delivered for that product in accordance with the requirements of WESTON's Written Hazard Communication Program.

A log for, and copies of, SDSs for all hazardous chemicals in use will be kept in the SDS folder at a location known to all site workers. SDSs will be readily available to all employees during each work shift. If an SDS is not available, immediately contact the WESTON FSO or the designated alternate. When a revised SDS is received, the FSO will immediately replace the old SDS.

CONTAINER LABELING

The WESTON FSO will verify that all containers received from the chemical manufacturer, importer, or distributor for use on-site are clearly labeled.

The FSO is responsible for ensuring that labels are placed where required and for comparing SDSs and other information with label information to ensure correctness.

EMPLOYEE TRAINING AND INFORMATION

The FSO is responsible for the WESTON site-specific personnel training program. The FSO will ensure that all program elements specified below are supplied to all affected employees.

At the time of initial assignment for employees to the work site, or whenever a new hazard is introduced into the work area, employees will attend a health and safety meeting or briefing that includes the information indicated below.

- Hazardous chemicals present at the work site.
- Physical and health risks of the hazardous chemicals.
- The signs and symptoms of overexposure.
- Routes of Exposure
- Procedures to follow if employees are overexposed to hazardous chemicals.
- Location of the SDS file and Written Hazard Communication Program.
- How to determine the presence or release of hazardous chemicals in the employee's work area.
- How to read labels and review SDSs to obtain hazard information.
- Steps WESTON has taken to reduce or prevent exposure to hazardous chemicals.
- How to reduce or prevent exposure to hazardous chemicals through the use of controls procedures, work practices, and personal protective equipment.
- Hazardous, non-routine tasks to be performed (if any).
- Chemicals within unlabeled piping (if any).

HAZARDOUS NONROUTINE TASKS

When employees are required to perform hazardous non-routine tasks, the affected employee(s) will be given information by the FSO about the hazardous chemicals he or she may use during such activity. This information will include specific chemical hazards, protective and safety measures the employee can use, and steps WESTON is using to reduce the hazards. These steps include, but are not limited to, ventilation, respirators, presence of another employee, and emergency procedures.

CHEMICALS IN UNLABELED PIPES

Work activities may be performed by employees in areas where chemicals are transferred through unlabeled pipes. Prior to starting work in these areas, the employee will contact the FSO, at which time information as to the chemical(s) in the pipes, potential hazards of the chemicals or the process involved, and the safety precautions that should be taken will be determined and presented.

MULTI EMPLOYER WORK SITES

It is the responsibility of the FSO to provide other employers with information about hazardous chemicals imported by WESTON to which their employees may be exposed, along with suggested safety precautions. It is also the responsibility of all site employees and the Site Manager to obtain information about hazardous chemicals used by other employers to which WESTON employees may be exposed. WESTON's chemical listing will be made available to other employers, as appropriate. SDSs will be available for viewing to all employees and subcontractors maintained in a central location.

The location, format, and/or procedures for accessing SDS information must be relayed to affected employees.

TASK-BY-TASK RISK ASSESSMENT-FORM 8

TASK DESCRIPTION

WESTON oversight of crack sealing at the Vector Office space. Clean Vapor will be sealing cracks in the concrete floor. The building owner and their representative, Homestead Carpeting, will be moving furniture and removing carpets so that Clean Vapor can access the concrete floor. Clean Vapor will also be performing a video investigation of the perimeter walls to locate a slab drain. WESTON will be monitoring for vapor intrusion and for jobsite safety while the cracks are being identified, prepared for sealing and sealed. WESTON will be documenting work site conditions, crack size and location and findings of the video investigation

EQUIPMENT REQUIRED/USED

(Be specific, e.g., hand tools, heavy equipment, instruments, PPE)

Camera, monitoring equipment (Q-RAE and PPBRAE) log book, cell phone, Level D PPE, hard hat safety glasses work boots

POTENTIAL HAZARDS/RISKS

Chemical

Hazard Present Risk Level: H M L

WESTON will monitor the cracks and the work space for flammable gasses during work. If sustained instrument readings of 10% LEL are encountered work will stop, the space will be evacuated and the project Technical lead, Brian Benson, will be contacted.

Physical

Hazard Present Risk Level: H M L

What justifies risk level?

WESTON will stay back from the contractor, Clean Vapor while they are using hand and power tools. WESTON will monitor the air for hazardous atmosphere. WESTON will utilize Level D PPE.

Biological

Hazard Present Risk Level: H M L

What justifies risk level?

There are no known or anticipated biological hazards in this work space.

RADIOLOGICAL

Hazard Present Risk Level: H M L

What justifies risk level?

There are no known or anticipated radiological hazards in this work space.

LEVELS OF PROTECTION/JUSTIFICATION

WESTON personnel will follow the requirements of the attached work plan and the provisions of the site specific safety plan while conducting this work. For phase one of the Vector building crack sealing Steven O'Brien will be WESTON's designated competent person. Mr. Obrien will be responsible for responding to accidents and emergencies involving WESTON employees performing this task.

SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED

See attached WESTON Work Plan for specific procedures.

TASK-BY-TASK RISK ASSESSMENT-FORM 8

TASK DESCRIPTION

Clean Vapor LLC will be identifying, cleaning, measuring and sealing cracks in the concrete floors at 2,4 Foster Ave property located in Gibbsboro, NJ. WESTON will be performing air monitoring of the slab vapor before and during crack sealing activities. Clean Vapor will also investigate for a perimeter drain behind drywall on the exterior walls using an inspection camera and by cutting small (1' x 2') inspection holes at select locations along the exterior wall. Clean Vapor will patch and repair inspection holes and panels. The Property owner Brandywine and their subcontractor Homestead Carpeting will be moving furniture and removing carpets to allow Clean Vapor to access the floor below. This Task-Risk Assessment is for Clean Vapor workers and staff.

EQUIPMENT REQUIRED/USED

(Be specific, e.g., hand tools, heavy equipment, instruments, PPE)

Hand tools including a shop vacuum, electric drills and grinders. A concrete saw. Extension cords. Protective work gloves, safety glasses. Drywall cutting and patching tools. Concrete sealer including low viscosity and high viscosity polyurethane caulk type sealers, joint backer and filler material. An inspection camera for viewing behind stud walls on the building perimeter walls.

POTENTIAL HAZARDS/RISKS

Chemical

Hazard Present Risk Level: H M L

The vapor entering the building through the slab may present a fire hazard. WESTON will conduct monitoring to alert Clean Vapor of potential hazards. Clean Vapor will have SDS sheets for the caulking chemicals being used for sealing onsite during work.

Physical

Hazard Present Risk Level: H M L

What justifies risk level?

Physical hazards include the use of electric power tools, slip trip and fall, hand tools. Extension cords and tools will be inspected for damage prior to use. Damaged cords or tools will be discarded. Only trained qualified personnel will operate power tools.

Biological

Hazard Present Risk Level: H M L

What justifies risk level?

There are no known biological hazards anticipated at this site. The work is being performed in an active office and warehouse environment.

RADIOLOGICAL

Hazard Present Risk Level: H M L

What justifies risk level?

There are no known radiological hazards anticipated at this site.

LEVELS OF PROTECTION/JUSTIFICATION

Clean Vapor's competent person supervising this task is Jim Gibson. He will be responsible to assure that only trained qualified personnel perform work with power tools and drywall cutting tools. Clean Vapor's site supervisor will be responsible for responding to any accident or injuries of Clean Vapor employees. Clean Vapor's personnel will wear the appropriate PPE for the tasks they are performing.

SAFETY PROCEDURES REQUIRED AND/OR UTILIZED

SAFETY DATA SHEET

1. Identification

Material name: VULKEM 45 SSL GRAY QT CTG
Material: 445712A 333

Recommended use and restriction on use

Recommended use: Sealant
Restrictions on use: Not known.

Manufacturer/Importer/Supplier/Distributor Information

Tremco U.S Sealants
3735 Green Road
Cleveland OH 44122
US

Contact person: EH&S Department
Telephone: 216-292-5000
Emergency telephone number: 1-800-424-9300 (US); 1-613-996-6666 (Canada)

2. Hazard(s) identification

Hazard Classification

Health Hazards

Respiratory sensitizer	Category 1
Skin sensitizer	Category 1
Carcinogenicity	Category 1A

Unknown toxicity - Health

Acute toxicity, oral	57.3 %
Acute toxicity, dermal	62.57 %
Acute toxicity, inhalation, vapor	99.85 %
Acute toxicity, inhalation, dust or mist	92.52 %

Environmental Hazards

Acute hazards to the aquatic environment	Category 3
--	------------

Unknown toxicity - Environment

Acute hazards to the aquatic environment	89.68 %
Chronic hazards to the aquatic environment	100 %

Label Elements

Hazard Symbol:



Signal Word:	Danger
Hazard Statement:	May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. May cause cancer. Harmful to aquatic life.
Precautionary Statement:	
Prevention:	Avoid breathing dust/fume/gas/mist/vapors/spray. [In case of inadequate ventilation] wear respiratory protection. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required.
Response:	If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER/doctor. IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. If exposed or concerned: Get medical advice/attention. Specific treatment (see this label). Wash contaminated clothing before reuse.
Storage:	Store locked up.
Disposal:	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
Other hazards which do not result in GHS classification:	None.

3. Composition/information on ingredients
--

Mixtures

Chemical Identity	CAS number	Content in percent (%)*
Calcium Carbonate (Limestone)	1317-65-3	15 - 40%
Polyvinyl chloride	9002-86-2	15 - 40%
Petroleum distillates	64742-47-8	5 - 10%
Titanium dioxide	13463-67-7	1 - 5%
Calcium oxide	1305-78-8	1 - 5%
Xylene	1330-20-7	1 - 5%
Isophorone Diisocyanate	4098-71-9	0.1 - 1%
Ethylbenzene	100-41-4	0.1 - 1%
Hydrotreated heavy naphthenic distillate	64742-52-5	0.1 - 1%
Nonane	111-84-2	0.1 - 1%
Aluminum oxide	1344-28-1	0.1 - 1%

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

4. First-aid measures

Ingestion: Call a POISON CENTER/doctor/.../if you feel unwell. Rinse mouth.

Inhalation: Call a physician or poison control center immediately. If breathing stops, provide artificial respiration. Move to fresh air. If breathing is difficult, give oxygen.

Skin Contact: If skin irritation occurs: Get medical advice/attention. Destroy or thoroughly clean contaminated shoes. Immediately remove contaminated clothing and shoes and wash skin with soap and plenty of water. If skin irritation or an allergic skin reaction develops, get medical attention.

Eye contact: Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. If eye irritation persists: Get medical advice/attention.

Most important symptoms/effects, acute and delayed

Symptoms: May cause skin and eye irritation.

Indication of immediate medical attention and special treatment needed

Treatment: Symptoms may be delayed.

5. Fire-fighting measures

General Fire Hazards: No unusual fire or explosion hazards noted.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical: During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: No data available.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Ventilate closed spaces before entering them. Evacuate area. See Section 8 of the SDS for Personal Protective Equipment. Keep upwind. Keep unauthorized personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Methods and material for containment and cleaning up:

Collect spillage in containers, seal securely and deliver for disposal according to local regulations.

Notification Procedures:

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Environmental Precautions:

Avoid release to the environment. Prevent further leakage or spillage if safe to do so.

7. Handling and storage

Precautions for safe handling:

Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use personal protective equipment as required. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after handling. Ventilate well, avoid breathing vapors. Use approved respirator if air contamination is above accepted level. Use mechanical ventilation in case of handling which causes formation of dust.

Conditions for safe storage, including any incompatibilities:

Store locked up.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	type	Exposure Limit Values	Source
Calcium Carbonate (Limestone) - Total dust.	PEL	15 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Calcium Carbonate (Limestone) - Respirable fraction.	PEL	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Polyvinyl chloride - Respirable fraction.	TWA	1 mg/m ³	US. ACGIH Threshold Limit Values (2011)
Polyvinyl chloride - as vinyl chloride monomer	TWA	1 ppm	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (02 2006)
	STEL	5 ppm	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (02 2006)
	OSHA_A CT	0.5 ppm	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (02 2006)
Polyvinyl chloride - Respirable fraction.	PEL	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Polyvinyl chloride - Total dust.	PEL	15 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	TWA	50 millions of particles	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)

		per cubic foot of air	
Polyvinyl chloride - Respirable fraction.	TWA	15 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Polyvinyl chloride - Total dust.	TWA	15 mg/m ³	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Polyvinyl chloride - Respirable fraction.	TWA	5 mg/m ³	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Petroleum distillates - Non-aerosol. - as total hydrocarbon vapor	TWA	200 mg/m ³	US. ACGIH Threshold Limit Values (2011)
	TWA	200 mg/m ³	US. ACGIH Threshold Limit Values (2011)
Titanium dioxide	TWA	10 mg/m ³	US. ACGIH Threshold Limit Values (2011)
Titanium dioxide - Total dust.	PEL	15 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Calcium oxide	TWA	2 mg/m ³	US. ACGIH Threshold Limit Values (2011)
	PEL	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Xylene	TWA	100 ppm	US. ACGIH Threshold Limit Values (2011)
	STEL	150 ppm	US. ACGIH Threshold Limit Values (2011)
	PEL	100 ppm 435 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Isophorone Diisocyanate	TWA	0.005 ppm	US. ACGIH Threshold Limit Values (2011)
Ethylbenzene	TWA	20 ppm	US. ACGIH Threshold Limit Values (2011)
	PEL	100 ppm 435 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Hydrotreated heavy naphthenic distillate - Inhalable fraction.	TWA	5 mg/m ³	US. ACGIH Threshold Limit Values (03 2014)
Hydrotreated heavy naphthenic distillate	PEL	500 ppm 2,000 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Hydrotreated heavy naphthenic distillate - Mist.	PEL	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Nonane	TWA	200 ppm	US. ACGIH Threshold Limit Values (02 2012)
Aluminum oxide - Respirable fraction.	TWA	1 mg/m ³	US. ACGIH Threshold Limit Values (2011)
	PEL	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Total	PEL	15 mg/m ³	US. OSHA Table Z-1 Limits for Air

dust.			Contaminants (29 CFR 1910.1000) (02 2006)
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Chemical name	type	Exposure Limit Values	Source
Calcium Carbonate (Limestone) - Total dust.	STEL	20 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	10 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Calcium Carbonate (Limestone) - Respirable fraction.	TWA	3 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Calcium Carbonate (Limestone) - Total dust.	TWA	10 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Polyvinyl chloride - Respirable.	TWA	1 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Polyvinyl chloride - Respirable fraction.	TWAEV	1 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Polyvinyl chloride - Total dust.	TWA	10 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Petroleum distillates - Non-aerosol. - as total hydrocarbon vapor	TWA	200 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Petroleum distillates	TWAEV	525 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Petroleum distillates - Non-aerosol. - as total hydrocarbon vapor	TWAEV	200 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	200 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)

Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide	TWAEV	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Calcium oxide	TWA	2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Calcium oxide	TWAEV	2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Calcium oxide	TWA	2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Xylene	TWA	100 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	150 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Xylene	TWAEV	100 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	STEL	150 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Xylene	TWA	100 ppm 434 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	150 ppm 651 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)

Isophorone Diisocyanate	TWA	0.005 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	CEILING	0.01 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Isophorone Diisocyanate	TWAEV	0.005 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	CEV	0.02 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Isophorone Diisocyanate	TWA	0.005 ppm	0.045 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Ethylbenzene	TWA	20 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (09 2011)
Ethylbenzene	STEL	125 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	100 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Ethylbenzene	TWA	100 ppm	434 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	125 ppm	543 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Hydrotreated heavy naphthenic distillate - Mist.	TWA		0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (05 2013)
	TWA		1 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (05 2013)
Hydrotreated heavy naphthenic distillate - Mist.	TWAEV		5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	STEL		10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)

Hydrotreated heavy naphthenic distillate - Mist.	TWA	5 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	10 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)

Biological Limit Values

Chemical Identity	Exposure Limit Values	Source
Xylene (Methylhippuric acids: Sampling time: End of shift.)	1.5 g/g (Creatinine in urine)	ACGIH BEL (03 2013)
Ethylbenzene (Sum of mandelic acid and phenylglyoxylic acid: Sampling time: End of shift.)	0.15 g/g (Creatinine in urine)	ACGIH BEL (02 2014)

Appropriate Engineering Controls Mechanical ventilation or local exhaust ventilation may be required. Observe good industrial hygiene practices. Observe occupational exposure limits and minimize the risk of inhalation of dust.

Individual protection measures, such as personal protective equipment

General information: Use personal protective equipment as required.

Eye/face protection: Wear goggles/face shield.

Skin Protection

Hand Protection: Use suitable protective gloves if risk of skin contact.

Other: Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information.

Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

Hygiene measures: Observe good industrial hygiene practices. Wash hands before breaks and immediately after handling the product. Contaminated work clothing should not be allowed out of the workplace. Avoid contact with skin.

9. Physical and chemical properties

Appearance

Physical state: solid

Form: Paste

Color:	Gray
Odor:	Mild
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	No data available.
Initial boiling point and boiling range:	No data available.
Flash Point:	> 93 °C > 199 °F (Setaflash Closed Cup)
Evaporation rate:	Slower than n-Butyl Acetate
Flammability (solid, gas):	No
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	No data available.
Vapor density:	Vapors are heavier than air and may travel along the floor and in the bottom of containers.
Relative density:	1.32
Solubility(ies)	
Solubility in water:	Insoluble in water
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. Stability and reactivity

Reactivity:	No data available.
Chemical Stability:	Material is stable under normal conditions.
Possibility of Hazardous Reactions:	No data available.
Conditions to Avoid:	Avoid heat or contamination.
Incompatible Materials:	Alcohols. Amines. Strong acids. Avoid contact with oxidizing agents (e.g. nitric acid, peroxides and chromates). Strong bases. Water, moisture.
Hazardous Decomposition Products:	Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors.

11. Toxicological information

Information on likely routes of exposure

Ingestion:	May be ingested by accident. Ingestion may cause irritation and malaise.
Inhalation:	In high concentrations, vapors, fumes or mists may irritate nose, throat and mucus membranes.

Skin Contact: Causes mild skin irritation. May cause an allergic skin reaction.

Eye contact: Eye contact is possible and should be avoided.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product: ATEmix: 163,089.88 mg/kg

Dermal

Product: ATEmix: 11,084.4 mg/kg

Inhalation

Product: No data available.

Repeated dose toxicity

Product: No data available.

Skin Corrosion/Irritation

Product: No data available.

Serious Eye Damage/Eye Irritation

Product: No data available.

Specified substance(s):

Petroleum distillates	in vivo (Rabbit, 24 - 72 hrs): Not irritating
Titanium dioxide	in vivo (Rabbit, 24 - 72 hrs): Not irritating
Calcium oxide	in vivo (Rabbit, 24 hrs): Category 1
Xylene	in vivo (Rabbit, 24 hrs): Moderately irritating
Isophorone Diisocyanate	in vivo (Rabbit, 24 - 72 hrs): Category 1
Ethylbenzene	Irritating
Hydrotreated heavy naphthenic distillate	in vivo (Rabbit, 24 hrs): Not irritating
Nonane	in vivo (Rabbit, 24 - 72 hrs): Not irritating
Aluminum oxide	in vivo (Rabbit, 24 hrs): Not irritating

Respiratory or Skin Sensitization

Product: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause sensitization by inhalation.

Carcinogenicity

Product: No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Titanium dioxide	Overall evaluation: Possibly carcinogenic to humans.
Ethylbenzene	Overall evaluation: Possibly carcinogenic to humans.
Hydrotreated heavy naphthenic distillate	Overall evaluation: Not classifiable as to carcinogenicity to humans. Overall evaluation: Carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

Hydrotreated heavy naphthenic distillate	Known To Be Human Carcinogen.
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US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

Polyvinyl chloride	Cancer
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Germ Cell Mutagenicity

In vitro
Product: No data available.

In vivo
Product: No data available.

Reproductive toxicity
Product: No data available.

Specific Target Organ Toxicity - Single Exposure
Product: No data available.

Specific Target Organ Toxicity - Repeated Exposure
Product: No data available.

Aspiration Hazard
Product: No data available.

Other effects: No data available.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish

Product: No data available.

Specified substance(s):

Petroleum distillates	LC 50 (Rainbow trout,donaldson trout (Oncorhynchus mykiss), 96 h): 2.9 mg/l Mortality
Titanium dioxide	LC 50 (Mummichog (Fundulus heteroclitus), 96 h): > 1,000 mg/l Mortality
Xylene	LC 50 (Fathead minnow (Pimephales promelas), 96 h): 13.41 mg/l Mortality
Ethylbenzene	LC 50 (Bluegill (Lepomis macrochirus), 24 h): 70 - 149 mg/l Mortality LC 50 (Bluegill (Lepomis macrochirus), 24 h): 112 - 170 mg/l Mortality LC 50 (Bluegill (Lepomis macrochirus), 24 h): 113 - 162 mg/l Mortality LC 50 (Bluegill (Lepomis macrochirus), 24 h): 66 - 276 mg/l Mortality LC 50 (Rainbow trout,donaldson trout (Oncorhynchus mykiss), 24 h): 11 - 18 mg/l Mortality

Aquatic Invertebrates

Product: No data available.

Specified substance(s):

Titanium dioxide	EC 50 (Water flea (Daphnia magna), 48 h): > 1,000 mg/l Intoxication
Xylene	LC 50 (Water flea (Daphnia magna), 24 h): > 100 - 1,000 mg/l Mortality
Ethylbenzene	EC 50 (Water flea (Daphnia magna), 24 h): 1.47 - 2.18 mg/l Intoxication EC 50 (Water flea (Daphnia magna), 24 h): 1.51 - 2.14 mg/l Intoxication EC 50 (Water flea (Daphnia magna), 24 h): 1.63 - 2.28 mg/l Intoxication EC 50 (Water flea (Daphnia magna), 24 h): 2.2 mg/l Intoxication EC 50 (Water flea (Daphnia magna), 24 h): 1.53 - 3.17 mg/l Intoxication

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Specified substance(s):

Petroleum distillates	NOAEL (Oncorhynchus mykiss, 28 d): 0.098 mg/l QSAR
Titanium dioxide	LC 0 (Coregonus autumnalis migratorius G., 30 d): 3 mg/l experimental result
Calcium oxide	NOAEL (Oncorhynchus mykiss, 60 d): 307 mg/l interpreted
Xylene	NOAEL (Oncorhynchus mykiss, 56 d): > 1.3 mg/l experimental result
Hydrotreated heavy naphthenic distillate	NOAEL (Oncorhynchus mykiss, 14 d): >= 1,000 mg/l QSAR
Nonane	NOAEL (Oncorhynchus mykiss, 28 d): 0.252 mg/l QSAR
Aluminum oxide	NOAEL (Pimephales promelas, 28 d): 4.7 mg/l experimental result

Aquatic Invertebrates

Product: No data available.

Toxicity to Aquatic Plants**Product:** No data available.**Persistence and Degradability****Biodegradation****Product:** No data available.**BOD/COD Ratio****Product:** No data available.**Bioaccumulative Potential****Bioconcentration Factor (BCF)****Product:** No data available.**Partition Coefficient n-octanol / water (log Kow)****Product:** No data available.**Specified substance(s):**

Xylene Log Kow: 3.12 - 3.20

Ethylbenzene Log Kow: 3.15

Nonane Log Kow: 5.46

Mobility in Soil:

No data available.

Other Adverse Effects:

Harmful to aquatic organisms.

13. Disposal considerations**Disposal instructions:**

Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Contaminated Packaging:

No data available.

14. Transport information**TDG:**

Not Regulated

CFR / DOT:

Not Regulated

IMDG:

Not Regulated

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

<u>Chemical Identity</u>	<u>OSHA hazard(s)</u>
Polyvinyl chloride	Blood Liver Cancer Flammability Central nervous system

CERCLA Hazardous Substance List (40 CFR 302.4):

<u>Chemical Identity</u>	<u>Reportable quantity</u>
Xylene	100 lbs.
Ethylbenzene	1000 lbs.
Nonane	100 lbs.
Toluene	1000 lbs.
Methanol	5000 lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Delayed (Chronic) Health Hazard
Immediate (Acute) Health Hazards

SARA 302 Extremely Hazardous Substance

<u>Chemical Identity</u>	<u>Reportable quantity</u>	<u>Threshold Planning Quantity</u>
Isophorone Diisocyanate	500 lbs.	500 lbs.

SARA 304 Emergency Release Notification

<u>Chemical Identity</u>	<u>Reportable quantity</u>
Xylene	100 lbs.
Isophorone Diisocyanate	
Ethylbenzene	1000 lbs.
Nonane	100 lbs.
Diisodecyl phthalate	
Toluene	1000 lbs.
Diisodecyl phthalate (mixed Is)	
Methanol	5000 lbs.

SARA 311/312 Hazardous Chemical

<u>Chemical Identity</u>	<u>Threshold Planning Quantity</u>
Isophorone Diisocyanate	500lbs
Calcium Carbonate (Limestone)	500 lbs
Polyvinyl chloride	500 lbs
Petroleum distillates	500 lbs
Titanium dioxide	500 lbs
Calcium oxide	500 lbs
Xylene	500 lbs
Ethylbenzene	500 lbs
Hydrotreated heavy naphthenic distillate	500 lbs
Nonane	500 lbs
Aluminum oxide	500 lbs

SARA 313 (TRI Reporting)**Chemical Identity**

Xylene
Ethylbenzene

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US State Regulations**US. California Proposition 65**

This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm.

US. New Jersey Worker and Community Right-to-Know Act**Chemical Identity**

Calcium Carbonate (Limestone)
Polyvinyl chloride
Petroleum distillates
Titanium dioxide
Calcium oxide
Xylene

US. Massachusetts RTK - Substance List**Chemical Identity**

Calcium Carbonate (Limestone)
Petroleum distillates
Titanium dioxide
Calcium oxide
Xylene
Isophorone Diisocyanate
Crystalline Silica (Quartz)/ Silica Sand

US. Pennsylvania RTK - Hazardous Substances

Chemical Identity

Calcium Carbonate (Limestone)
Petroleum distillates
Titanium dioxide
Calcium oxide
Xylene

US. Rhode Island RTK

Chemical Identity

Xylene

Other Regulations:

Regulatory VOC (less water and exempt solvent):	109 g/l
VOC Method 310:	8.23 %

Inventory Status:

Australia AICS:	One or more components in this product are not listed on or exempt from the Inventory.
Canada DSL Inventory List:	All components in this product are listed on or exempt from the Inventory.
EINECS, ELINCS or NLP:	One or more components in this product are not listed on or exempt from the Inventory.
Japan (ENCS) List:	One or more components in this product are not listed on or exempt from the Inventory.
China Inv. Existing Chemical Substances:	One or more components in this product are not listed on or exempt from the Inventory.
Korea Existing Chemicals Inv. (KECI):	One or more components in this product are not listed on or exempt from the Inventory.
Canada NDSL Inventory:	One or more components in this product are not listed on or exempt from the Inventory.
Philippines PICCS:	One or more components in this product are not listed on or exempt from the Inventory.
US TSCA Inventory:	All components in this product are listed on or exempt from the Inventory.
New Zealand Inventory of Chemicals:	One or more components in this product are not listed on or exempt from the Inventory.
Japan ISHL Listing:	One or more components in this product are not listed on or exempt from the Inventory.

Japan Pharmacopoeia Listing:

One or more components in this product are not listed on or exempt from the Inventory.

16. Other information, including date of preparation or last revision**Revision Date:** 08/04/2015**Version #:** 1.0**Further Information:** No data available.**Disclaimer:** For Industrial Use Only. Keep out of Reach of Children. The hazard information herein is offered solely for the consideration of the user, subject to their own investigation of compliance with applicable regulations, including the safe use of the product under every foreseeable condition.

SAFETY DATA SHEET

1. Identification

Material name: VULKEM 116 GRAY
Material: 426712 323

Recommended use and restriction on use

Recommended use: Sealant
Restrictions on use: Not known.

Manufacturer/Importer/Supplier/Distributor Information

Tremco U.S Sealants
3735 Green Road
Cleveland OH 44122
US

Contact person:	EH&S Department
Telephone:	216-292-5000
Emergency telephone number:	1-800-424-9300 (US); 1-613-996-6666 (Canada)

2. Hazard(s) identification

Hazard Classification

Health Hazards

Respiratory sensitizer	Category 1
Skin sensitizer	Category 1
Germ Cell Mutagenicity	Category 1B
Carcinogenicity	Category 1A

Unknown toxicity - Health

Acute toxicity, oral	13.49 %
Acute toxicity, dermal	17.59 %
Acute toxicity, inhalation, vapor	94.66 %
Acute toxicity, inhalation, dust or mist	99.96 %

Environmental Hazards

Acute hazards to the aquatic environment	Category 1
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Unknown toxicity - Environment

Acute hazards to the aquatic environment	74.73 %
Chronic hazards to the aquatic environment	100 %

Label Elements

Hazard Symbol:



- Signal Word:** Danger
- Hazard Statement:** May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
May cause genetic defects.
May cause cancer.
Very toxic to aquatic life.
- Precautionary Statement/Prevention:** Avoid breathing dust/fume/gas/mist/vapors/spray. [In case of inadequate ventilation] wear respiratory protection. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Avoid release to the environment.
- Response:** If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER/doctor. IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. If exposed or concerned: Get medical advice/attention. Specific treatment (see this label). Wash contaminated clothing before reuse. Collect spillage.
- Storage:** Store locked up.
- Disposal:** Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
- Other hazards which do not result in GHS classification:** None.

3. Composition/information on ingredients

Mixtures

Chemical Identity	CAS number	Content in percent (%)*
Calcium Carbonate (Limestone)	1317-65-3	10 - 30%
Heavy aromatic naphtha	64742-94-5	3 - 7%
Titanium dioxide	13463-67-7	3 - 7%
Aromatic petroleum distillates	64742-95-6	0.5 - 1.5%
4,4'-Methylene bis(phenylisocyanate)	101-68-8	0.5 - 1.5%
1,2,4-Trimethylbenzene	95-63-6	0.5 - 1.5%
Polymethylene polyphenyl isocyanate	9016-87-9	0.1 - 1%

Aluminum oxide	1344-28-1	0.1 - 1%
1,3,5-Trimethylbenzene	108-67-8	0.1 - 1%
Crystalline Silica (Quartz)/ Silica Sand	14808-60-7	0.1 - 1%
Diphenylmethane diisocyanate	26447-40-5	0.1 - 1%

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

4. First-aid measures

- Ingestion:** Call a POISON CENTER/doctor/...if you feel unwell. Rinse mouth.
- Inhalation:** Call a physician or poison control center immediately. If breathing stops, provide artificial respiration. Move to fresh air. If breathing is difficult, give oxygen.
- Skin Contact:** If skin irritation occurs: Get medical advice/attention. Destroy or thoroughly clean contaminated shoes. Immediately remove contaminated clothing and shoes and wash skin with soap and plenty of water. If skin irritation or an allergic skin reaction develops, get medical attention.
- Eye contact:** Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. If eye irritation persists: Get medical advice/attention.

Most important symptoms/effects, acute and delayed

Symptoms: May cause skin and eye irritation.

Indication of immediate medical attention and special treatment needed

Treatment: Symptoms may be delayed.

5. Fire-fighting measures

General Fire Hazards: No unusual fire or explosion hazards noted.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical: During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: No data available.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Ventilate closed spaces before entering them. Evacuate area. See Section 8 of the SDS for Personal Protective Equipment. Keep upwind. Keep unauthorized personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Methods and material for containment and cleaning up: Collect spillage in containers, seal securely and deliver for disposal according to local regulations.

Notification Procedures: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Environmental Precautions: Avoid release to the environment. Prevent further leakage or spillage if safe to do so.

7. Handling and storage

Precautions for safe handling: Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use personal protective equipment as required. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after handling. Ventilate well, avoid breathing vapors. Use approved respirator if air contamination is above accepted level. Use mechanical ventilation in case of handling which causes formation of dust.

Conditions for safe storage, including any incompatibilities: Store locked up.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	type	Exposure Limit Values	Source
Calcium Carbonate (Limestone) - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Calcium Carbonate (Limestone) - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Heavy aromatic naphtha - Non-aerosol. - as total hydrocarbon vapor	TWA	200 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Heavy aromatic naphtha	PEL	100 ppm 400 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Titanium dioxide	TWA	10 mg/m3	US. ACGIH Threshold Limit Values (2011)
Titanium dioxide - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)

4,4'-Methylene bis(phenylisocyanate)	TWA	0.005 ppm	US. ACGIH Threshold Limit Values (2011)
	Ceiling	0.02 ppm 0.2 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
1,2,4-Trimethylbenzene	TWA	25 ppm	US. ACGIH Threshold Limit Values (2011)
Polymethylene polyphenyl isocyanate	TWA	0.005 ppm	US. ACGIH Threshold Limit Values (2011)
	Ceiling	0.02 ppm 0.2 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Respirable fraction.	TWA	1 mg/m ³	US. ACGIH Threshold Limit Values (2011)
	PEL	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Total dust.	PEL	15 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
1,3,5-Trimethylbenzene	TWA	25 ppm	US. ACGIH Threshold Limit Values (2011)
Crystalline Silica (Quartz)/ Silica Sand - Respirable fraction.	TWA	0.025 mg/m ³	US. ACGIH Threshold Limit Values (2011)
Crystalline Silica (Quartz)/ Silica Sand - Respirable.	TWA	2.4 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
	TWA	0.1 mg/m ³	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Crystalline Silica (Quartz)/ Silica Sand - Total dust.	TWA	0.3 mg/m ³	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)

Chemical name	type	Exposure Limit Values	Source
Diisodecyl phthalate	TWAEV	5 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Calcium Carbonate (Limestone) - Total dust.	STEL	20 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	10 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)

Calcium Carbonate (Limestone) - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Calcium Carbonate (Limestone) - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Heavy aromatic naphtha - Non-aerosol. - as total hydrocarbon vapor	TWA	200 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (05 2013)
Heavy aromatic naphtha - Non-aerosol. - as total hydrocarbon vapor	TWAEV	200 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Heavy aromatic naphtha	TWA	400 ppm 1,590 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (11 2011)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide	TWAEV	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
4,4'-Methylene bis(phenylisocyanate)	CEILING	0.01 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.005 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
4,4'-Methylene bis(phenylisocyanate)	TWAEV	0.005 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	CEV	0.02 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)

4,4'-Methylene bis(phenylisocyanate)	TWA	0.005 ppm	0.051 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
1,2,4-Trimethylbenzene	TWA	25 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
1,2,4-Trimethylbenzene	TWAEV	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
1,2,4-Trimethylbenzene	TWA	25 ppm	123 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Polymethylene polyphenyl isocyanate	TWA	0.005 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	CEILING	0.01 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.005 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	CEILING	0.01 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Polymethylene polyphenyl isocyanate	TWAEV	0.005 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	CEV	0.02 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)

Polymethylene polyphenyl isocyanate	TWA	0.005 ppm	0.051 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
1,3,5-Trimethylbenzene	TWA	25 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
1,3,5-Trimethylbenzene	TWAEV	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
1,3,5-Trimethylbenzene	TWA	25 ppm	123 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Crystalline Silica (Quartz)/ Silica Sand - Respirable fraction.	TWA		0.025 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Crystalline Silica (Quartz)/ Silica Sand - Respirable.	TWAEV		0.10 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Crystalline Silica (Quartz)/ Silica Sand - Respirable dust.	TWA		0.1 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)

Appropriate Engineering Controls

Mechanical ventilation or local exhaust ventilation may be required. Observe good industrial hygiene practices. Observe occupational exposure limits and minimize the risk of inhalation of dust.

Individual protection measures, such as personal protective equipment

General information: Use personal protective equipment as required.

Eye/face protection: Wear goggles/face shield.

Skin Protection

Hand Protection: Use suitable protective gloves if risk of skin contact.

Other: Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information.

Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

Hygiene measures: Observe good industrial hygiene practices. Wash hands before breaks and immediately after handling the product. Contaminated work clothing should not be allowed out of the workplace. Avoid contact with skin.

9. Physical and chemical properties
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Appearance

Physical state:	solid
Form:	Paste
Color:	Gray
Odor:	Mild
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	No data available.
Initial boiling point and boiling range:	No data available.
Flash Point:	No data available.
Evaporation rate:	Slower than n-Butyl Acetate
Flammability (solid, gas):	No
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	No data available.
Vapor density:	Vapors are heavier than air and may travel along the floor and in the bottom of containers.
Relative density:	1.1334
Solubility(ies)	
Solubility in water:	Insoluble in water
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. Stability and reactivity

Reactivity:	No data available.
Chemical Stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	No data available.
Conditions to avoid:	Avoid heat or contamination.
Incompatible Materials:	Alcohols. Amines. Strong acids. Avoid contact with oxidizing agents (e.g. nitric acid, peroxides and chromates). Strong bases. Water, moisture.
Hazardous Decomposition Products:	Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors.

11. Toxicological information

Information on likely routes of exposure

- Ingestion:** May be ingested by accident. Ingestion may cause irritation and malaise.
- Inhalation:** In high concentrations, vapors, fumes or mists may irritate nose, throat and mucus membranes.
- Skin Contact:** Causes mild skin irritation. May cause an allergic skin reaction.
- Eye contact:** Eye contact is possible and should be avoided.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

- Oral**
Product: ATEmix: 41,691.2 mg/kg
- Dermal**
Product: ATEmix: 8,468.09 mg/kg
- Inhalation**
Product: No data available.

- Repeated dose toxicity**
Product: No data available.

- Skin Corrosion/Irritation**
Product: No data available.

- Serious Eye Damage/Eye Irritation**
Product: No data available.

- Specified substance(s):**
- Heavy aromatic naphtha in vivo (Rabbit, 24 - 72 hrs): Not irritating
 - Titanium dioxide in vivo (Rabbit, 24 - 72 hrs): Not irritating
 - Aromatic petroleum distillates in vivo (Rabbit, 24 - 72 hrs): Not irritating
 - 4,4'-Methylene bis(phenylisocyanate) in vivo (Rabbit, 24 - 72 hrs): Not irritating
 - 1,2,4-Trimethylbenzene in vivo (Rabbit, 30 min): Not irritating
 - Aluminum oxide in vivo (Rabbit, 24 hrs): Not irritating
 - 1,3,5-Trimethylbenzene in vivo (Rabbit, 30 min): Not irritating

Respiratory or Skin Sensitization

Product: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause sensitization by inhalation.

Carcinogenicity

Product: No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Titanium dioxide Overall evaluation: Possibly carcinogenic to humans.

Crystalline Silica Overall evaluation: Carcinogenic to humans.
(Quartz)/ Silica
Sand

US. National Toxicology Program (NTP) Report on Carcinogens:

Crystalline Silica Known To Be Human Carcinogen.
(Quartz)/ Silica
Sand

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ Cell Mutagenicity**In vitro**

Product: No data available.

In vivo

Product: No data available.

Reproductive toxicity

Product: No data available.

Specific Target Organ Toxicity - Single Exposure

Product: No data available.

Specific Target Organ Toxicity - Repeated Exposure

Product: No data available.

Aspiration Hazard

Product: No data available.

Other effects: No data available.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish

Product:	No data available.
Specified substance(s):	
Titanium dioxide	LC 50 (Mummichog (<i>Fundulus heteroclitus</i>), 96 h): > 1,000 mg/l Mortality
1,2,4-Trimethylbenzene	LC 50 (Fathead minnow (<i>Pimephales promelas</i>), 96 h): 7.19 - 8.28 mg/l Mortality
1,3,5-Trimethylbenzene	LC 50 (Goldfish (<i>Carassius auratus</i>), 96 h): 9.89 - 15.05 mg/l Mortality

Aquatic Invertebrates

Product:	No data available.
Specified substance(s):	
Titanium dioxide	EC 50 (Water flea (<i>Daphnia magna</i>), 48 h): > 1,000 mg/l Intoxication
1,2,4-Trimethylbenzene	LC 50 (Scud (<i>Elasmopus pectinicus</i>), 24 h): 4.89 - 5.62 mg/l Mortality
1,3,5-Trimethylbenzene	EC 50 (Water flea (<i>Daphnia magna</i>), 24 h): 50 mg/l Intoxication

Chronic hazards to the aquatic environment:

Fish

Product:	No data available.
Specified substance(s):	
Heavy aromatic naphtha	NOAEL (<i>Oncorhynchus mykiss</i> , 28 d): 0.098 mg/l QSAR
Titanium dioxide	LC 0 (<i>Coregonus autumnalis migratorius</i> G., 30 d): 3 mg/l experimental result
Aromatic petroleum distillates	NOAEL (<i>Daphnia magna</i> , 21 d): 2.6 mg/l read across
Aluminum oxide	NOAEL (<i>Pimephales promelas</i> , 28 d): 4.7 mg/l experimental result

Aquatic Invertebrates

Product: No data available.

Toxicity to Aquatic Plants

Product: No data available.

Persistence and Degradability

Biodegradation

Product: No data available.

BOD/COD Ratio

Product: No data available.

Bioaccumulative Potential

Bioconcentration Factor (BCF)

Product: No data available.

Partition Coefficient n-octanol / water (log Kow)

Product: No data available.

Mobility in Soil:

No data available.

Other Adverse Effects:

Very toxic to aquatic organisms.

13. Disposal considerations

Disposal instructions:

Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Contaminated Packaging:

No data available.

14. Transport information

TDG:

Not Regulated

CFR / DOT:

Not Regulated

IMDG:

Not Regulated

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

<u>Chemical Identity</u>	<u>Reportable quantity</u>
4,4'-Methylene bis(phenylisocyanate)	5000 lbs.
Polymethylene polyphenyl isocyanate	5000 lbs.
2,4-Toluene diisocyanate	100 lbs.
Cumene	5000 lbs.
Naphthalene	100 lbs.
Xylene	100 lbs.
Toluene-2,6-Diisocyanate	100 lbs.
Ethylbenzene	1000 lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Delayed (Chronic) Health Hazard
Immediate (Acute) Health Hazards

SARA 302 Extremely Hazardous Substance

<u>Chemical Identity</u>	<u>Reportable quantity</u>	<u>Threshold Planning Quantity</u>
2,4-Toluene diisocyanate	100 lbs.	500 lbs.
Toluene-2,6-Diisocyanate	100 lbs.	100 lbs.

SARA 304 Emergency Release Notification

<u>Chemical Identity</u>	<u>Reportable quantity</u>
Diisodecyl phthalate	
4,4'-Methylene bis(phenylisocyanate)	5000 lbs.
Polymethylene polyphenyl isocyanate	5000 lbs.
2,4-Toluene diisocyanate	100 lbs.
Cumene	5000 lbs.
Naphthalene	100 lbs.
Xylene	100 lbs.
Toluene-2,6-Diisocyanate	100 lbs.
Ethylbenzene	1000 lbs.
Diisodecyl phthalate (mixed is)	

SARA 311/312 Hazardous Chemical

<u>Chemical Identity</u>	<u>Threshold Planning Quantity</u>
2,4-Toluene diisocyanate	500lbs
Toluene-2,6-Diisocyanate	100lbs
Calcium Carbonate (Limestone)	500 lbs
Heavy aromatic naphtha	500 lbs
Titanium dioxide	500 lbs
Aromatic petroleum distillates	500 lbs
4,4'-Methylene bis(phenylisocyanate)	500 lbs
1,2,4-Trimethylbenzene	500 lbs
Polymethylene polyphenyl isocyanate	500 lbs
Aluminum oxide	500 lbs
1,3,5-Trimethylbenzene	500 lbs
Crystalline Silica (Quartz)/ Silica Sand	500 lbs
Diphenylmethane diisocyanate	500 lbs

SARA 313 (TRI Reporting)

None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

<u>Chemical Identity</u>	<u>Reportable quantity</u>
2,4-Toluene diisocyanate	10000 lbs
Toluene-2,6-Diisocyanate	10000 lbs

US State Regulations

US. California Proposition 65

This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm.

US. New Jersey Worker and Community Right-to-Know Act

<u>Chemical Identity</u>
Calcium Carbonate (Limestone)
Heavy aromatic naphtha
Titanium dioxide

US. Massachusetts RTK - Substance List

<u>Chemical Identity</u>
Calcium Carbonate (Limestone)
Heavy aromatic naphtha
Titanium dioxide
Crystalline Silica (Quartz)/ Silica Sand
2,4-Toluene diisocyanate
Toluene-2,6-Diisocyanate

US. Pennsylvania RTK - Hazardous Substances**Chemical Identity**

Diisodecyl phthalate
Calcium Carbonate (Limestone)
Heavy aromatic naphtha
Titanium dioxide

US. Rhode Island RTK**Chemical Identity**

Diisodecyl phthalate

Other Regulations:

Regulatory VOC (less water and exempt solvent):	70 g/l
VOC Method 310:	1.72 %

Inventory Status:

Australia AICS:	One or more components in this product are not listed on or exempt from the Inventory.
Canada DSL Inventory List:	All components in this product are listed on or exempt from the Inventory.
EINECS, ELINCS or NLP:	One or more components in this product are not listed on or exempt from the Inventory.
Japan (ENCS) List:	One or more components in this product are not listed on or exempt from the Inventory.
China Inv. Existing Chemical Substances:	One or more components in this product are not listed on or exempt from the Inventory.
Korea Existing Chemicals Inv. (KECI):	One or more components in this product are not listed on or exempt from the Inventory.
Canada NDSL Inventory:	One or more components in this product are not listed on or exempt from the Inventory.
Philippines PICCS:	One or more components in this product are not listed on or exempt from the Inventory.
US TSCA Inventory:	All components in this product are listed on or exempt from the Inventory.
New Zealand Inventory of Chemicals:	One or more components in this product are not listed on or exempt from the Inventory.
Japan ISHL Listing:	One or more components in this product are not listed on or exempt from the Inventory.

Japan Pharmacopoeia Listing:

One or more components in this product are not listed on or exempt from the Inventory.

16. Other information, including date of preparation or last revision**Revision Date:** 10/07/2015**Version #:** 1.0**Further Information:** No data available.**Disclaimer:** For Industrial Use Only. Keep out of Reach of Children. The hazard information herein is offered solely for the consideration of the user, subject to their own investigation of compliance with applicable regulations, including the safe use of the product under every foreseeable condition.

Amendment 2

Sump Depressurization and Venting

WESTON will be performing air monitoring of the breathing zone during installation (depressurization and venting) activities. Clean Vapor LLC (CV) will perform the tasks detailed in Section 2.1 of the *Sump Depressurization & Venting Work Plan*. The work will be performed in the warehouse space of 2 and 4 Foster Ave and the crawl space of 3 United States Ave, Gibbsboro NJ. CV will be responsible for: cleaning and sealing the perimeter joint above existing drain systems in 2 and 4 Foster Ave and the condensate hole and cracks in the 3 US Ave crawl space. CV will install clear polycarbonate lids with silicone on each sump; provide openings (sealed with gaskets/caulk) for pipes, sensors and other penetrations. CV will install a three-inch PVC vent pipe through the sump lid; the vent pipe will have a flex-coupling for access to the sump pump. CV will connect the pipe through the existing ceiling to a roof mounted mitigation blower. CV will install a roof mitigation blower. CV will access the roof using the fixed ladder present on the outside of the building. Blower exhaust will terminate 12-inches above the roof line and at least 10 feet from any intakes or openings. CV will provide power and connect the blowers to the electrical power at panels.

Attached are Westons task by task risk assessment form, which describe the tasks and risks associated with oversight and air monitoring as well as roof access. Also attached are Clean Vapors task by task risk assessment form, which describes the tasks and risks associated with cleaning and sealing cracks and existing drainage systems as well as the installation depressurization vent in sumps and associated roof mitigation blowers. Safety Data Sheets are attached.

Printed Name _____ Signature _____ Firm Representing _____ Date _____

TASK-BY-TASK RISK ASSESSMENT-FORM 8

TASK DESCRIPTION

WESTON will provide oversight of the installation of the sump depressurization and venting system in 2, 4 Foster Ave and 3 United States Ave, Gibbsboro NJ. Clean Vapor will be installing the sump depressurization and venting system as well as sealing all necessary drainage systems and cracks along the walls within the warehouse and crawl space. WESTON will be utilizing a Q RAE in order to monitor the lower explosive limit (LEL) and oxygen and a PPBRAE to ensure safe working conditions as well as documenting all work and site conditions.

EQUIPMENT REQUIRED/USED

(Be specific, e.g., hand tools, heavy equipment, instruments, PPE)

Camera, monitoring equipment (Q-RAE and PPBRAE) log book, cell phone, Level D PPE, hard hat safety glasses work boots. When accessing the roof Weston will maintain a 6-foot safety line.

POTENTIAL HAZARDS/RISKS

Chemical

Hazard Present Risk Level: H M L

WESTON will monitor the sumps and the work space for flammable gasses during work. If sustained instrument readings of 10% LEL are encountered work will stop, the space will be evacuated and the project technical lead, Brian Benson, will be contacted.

Physical

Hazard Present Risk Level: H M L

What justifies risk level?

WESTON will stay back from the contractor, Clean Vapor while they are working. WESTON will monitor the air for hazardous atmosphere. WESTON will utilize Level D PPE and fall protection, when necessary. Weston will use the ladder fixed on the side of the building when accessing the roof. Weston will maintain a six foot safety line from the roof edge while on the roof.

Biological

Hazard Present Risk Level: H M L

What justifies risk level?

There are no known or anticipated biological hazards in this work space.

RADIOLOGICAL

Hazard Present Risk Level: H M L

What justifies risk level?

Sunblock will be used to mitigate exposure to ultra violet (UV) radiation (sunlight) while performing the outside portions of the work.

LEVELS OF PROTECTION/JUSTIFICATION

WESTON personnel will follow the requirements of the attached work plan and the provisions of the site specific safety plan while conducting this work. Brian Benson or Michele Capriglione will be WESTON's designated competent person. The designated competent person will be responsible for responding to accidents and emergencies involving WESTON employees performing this task.

SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED

See attached WESTON Work Plan for specific procedures.

TASK-BY-TASK RISK ASSESSMENT-FORM 8

TASK DESCRIPTION

Clean Vapor LLC (CV) will perform the tasks detailed in Section 2.1 of the *Sump Depressurization & Venting Work Plan*. The work will be performed in the warehouse space of 2 and 4 Foster Ave and the crawl space of 3 United States Ave, Gibbsboro NJ. CV will be responsible for: cleaning and sealing the perimeter joint above existing drain systems in 2 and 4 Foster Ave and the condensate hole and cracks in the 3 US Ave crawl space. CV will install clear polycarbonate lids with silicone on each sump; provide openings (sealed with gaskets/caulk) for pipes, sensors and other penetrations. CV will install a three-inch PVC vent pipe through the sump lid; the vent pipe will have a flex-coupling for access to the sump pump. CV will connect the pipe through the existing ceiling to a roof mounted mitigation blower. CV will install a roof mitigation blower. CV will access the roof using the fixed ladder present on the outside of the building. Blower exhaust will terminate 12-inches above the roof line and at least 10 feet from any intakes or openings. CV will provide power and connect the blowers to the electrical power at panels.

WESTON will be performing air monitoring of the breathing zone during installation (depressurization and venting) activities. This Task-Risk Assessment is for Clean Vapor workers and staff.

EQUIPMENT REQUIRED/USED

(Be specific, e.g., hand tools, heavy equipment, instruments, PPE)

Hearing protection, eye protection, and gloves shall be worn when operating any power tools during these tasks. It is anticipated that hand held drills and reciprocating saws will be required to complete the stated tasks.

POTENTIAL HAZARDS/RISKS

Chemical

Hazard Present Risk Level: H M L

The vapor entering the building through the sumps may present a fire hazard. WESTON will conduct monitoring to alert CV of potential hazards. CV will have SDS sheets for the caulking chemicals being used for sealing onsite during work. The SDS sheets are attached to this Amendment.

Physical

Hazard Present Risk Level: H M L

What justifies risk level?

Physical hazards include the use of electric power tools, slip trip and fall, hand tools. Extension cords and tools will be inspected for damage prior to use. Damaged cords or tools will be discarded. Only trained qualified personnel will operate power tools. When working on the roof; work should not be performed within 6 feet of the roof edge. A direct walking path should be taken from the roof access to the working area.

Biological

Hazard Present Risk Level: H M L

What justifies risk level?

There are no known biological hazards anticipated at this site. The work is being performed in an active office and warehouse environment.

RADIOLOGICAL

Hazard Present Risk Level: H M L

What justifies risk level?

Sunblock will be used to mitigate exposure to ultra violet (UV) radiation (sunlight) while performing the outside portions of the work.

LEVELS OF PROTECTION/JUSTIFICATION

Clean Vapor's competent person supervising this task is Jim Gibson or Paul Kearney. He will be responsible to assure that only trained qualified personnel perform work with power tools and perform the required tasks. Clean Vapor's site supervisor will be responsible for responding to any accident or injuries of Clean Vapor employees. Clean Vapor's personnel will wear the appropriate PPE for the tasks they are performing; including any necessary fall protection.

SAFETY PROCEDURES REQUIRED AND/OR UTILIZED

See attached WESTON Work Plan for specific procedures.

	<h1>Safety Data Sheet</h1>	<p>24 Hour Emergency Phone Numbers Medical/Poison Control: In U.S.: Call 1-800-222-1222</p> <p>Outside U.S.: Call your local poison control center</p> <p>Transportation/National Response Center:</p> <p style="text-align: center;">1-800-535-5053 1-352-323-3500</p> <p>NOTE: The National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.</p>
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IMPORTANT: Provide this information to employees, customers, and users of this product. Read this SDS before handling or disposing of this product. This product is covered by the OSHA Hazard Communication Standard and this document has been prepared in accordance with requirements of this standard. All abbreviated terms used in this MSDS are further described in Section 16.

1. Identification

This Safety Data Sheet is available in American Spanish upon request.
 Los Datos de Seguridad pueden obtenerse en Espanol si lo requiere.

Product Name:	Silicone Plus Premium Kitchen & Bath Sealant Clear	Revision Date:	7/28/2015
Product UPC Number:	070798087811	Supercedes Date:	New SDS
Product Use/Class:	Caulking Compound	SDS No:	00008781004
Manufacturer:	DAP Products Inc. 2400 Boston Street Suite 200 Baltimore, MD 21224-4723 888-327-8477 (non - emergency matters)		
Preparer:	Regulatory Department		

2. Hazards Identification

EMERGENCY OVERVIEW: High concentration of vapors may cause irritation to eyes and respiratory system.

GHS Classification

Eye Irrit. 2, Skin Sens. 1, STOT RE 2

Symbol(s) of Product



Signal Word

Warning

GHS HAZARD STATEMENTS

Skin Sensitizer, category 1	H317	May cause an allergic skin reaction.
Eye Irritation, category 2	H319	Causes serious eye irritation.

STOT, repeated exposure, category 2 H373 May cause damage to organs through prolonged or repeated exposure.

GHS LABEL PRECAUTIONARY STATEMENTS

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P302+P352 IF ON SKIN: Wash with plenty of soap and water.
 P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

GHS SDS PRECAUTIONARY STATEMENTS

P363 Wash contaminated clothing before reuse.

3. Composition/Information on Ingredients

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Wt. %</u>	<u>GHS Symbols</u>	<u>GHS Statements</u>
Silica, amorphous	7631-86-9	2.5-10	GHS03-GHS07	H270-332
Methyltri(ethylmethylketoxime)silane	22984-54-9	2.5-10	GHS03-GHS07- GHS08	H270-317-319-373
Titanium dioxide	13463-67-7	0.1-1.0	No Information	No Information

The text for GHS Hazard Statements shown above (if any) is given in the "Other information" Section.

4. First-aid Measures

FIRST AID - INHALATION: Material is not likely to present an inhalation hazard at ambient conditions. If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical attention immediately.

FIRST AID - SKIN CONTACT: Wash skin with soap and water for 15 minutes. Get medical aid if symptoms persist.

FIRST AID - EYE CONTACT: In case of contact, immediately flush eyes with large quantities of water for at least 15 minutes until irritation subsides. Get medical attention immediately.

FIRST AID - INGESTION: If swallowed, DO NOT INDUCE VOMITING. Get medical attention immediately.

5. Fire-fighting Measures

UNUSUAL FIRE AND EXPLOSION HAZARDS: 465 <undefined>

SPECIAL FIREFIGHTING PROCEDURES: Wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent) and full protective gear. Use water spray to cool exposed surfaces.

EXTINGUISHING MEDIA: Carbon Dioxide, Dry Chemical, Foam, Water Fog

6. Accidental Release Measures

ENVIRONMENTAL MEASURES: No Information

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations. Scrape up dried material and place into containers. Use personal protective equipment as necessary. In case of spillage, absorb with inert material and dispose of in accordance with applicable regulations.

7. Handling and Storage

HANDLING: KEEP OUT OF REACH OF CHILDREN! DO NOT TAKE INTERNALLY. Avoid breathing vapor and contact with eyes, skin and clothing. Use only with adequate ventilation. Wash thoroughly after handling. Remove contact lenses before using. Do not handle contact lenses until all sealant has been cleaned from fingertips, nails and cuticles. Residual sealant may transfer to contact lenses and cause severe eye irritation.

STORAGE: Avoid excessive heat and freezing. Do not store at temperatures above 120 degrees F. Store away from caustics and oxidizers.

8. Exposure Controls/Personal Protection

Ingredients with Occupational Exposure Limits

<u>Chemical Name</u>	<u>ACGIH TLV-TWA</u>	<u>ACGIH-TLV STEL</u>	<u>OSHA PEL-TWA</u>	<u>OSHA PEL-CEILING</u>
Silica, amorphous	N.E.	N.E.	N.E.	N.E.
Methyltri(ethylmethylketoxime)silane	N.E.	N.E.	N.E.	N.E.
Titanium dioxide	10 mg/m3 TWA	N.E.	15 mg/m3 TWA total dust	N.E.

Further Advice: MEL = Maximum Exposure Limit OES = Occupational Exposure Standard SUP = Supplier's Recommendation
Sk = Skin Sensitizer N.E. = Not Established

Personal Protection



RESPIRATORY PROTECTION: No personal respiratory protective equipment normally required.



SKIN PROTECTION: Wear nitrile or neoprene gloves.



EYE PROTECTION: Goggles or safety glasses with side shields.



OTHER PROTECTIVE EQUIPMENT: Not required under normal use.



HYGIENIC PRACTICES: Wash hands before breaks and at the end of workday. Remove and wash contaminated clothing before re-use.

9. Physical and Chemical Properties

Appearance:	Clear	Physical State:	Paste
Odor:	Slight	Odor Threshold:	Not Established
Density, g/cm3:	1.04 - 1.04	pH:	Not Established
Freeze Point, °C:	Not Established	Viscosity (mPa.s):	Not Established
Solubility in Water:	Not Established	Partition Coeff., n-octanol/water:	Not Established
Decomposition Temperature, °C:	Not Established	Explosive Limits, %:	N.I. - N.I.
Boiling Range, °C:	N.I. - N.I.	Auto-Ignition Temperature, °C	Not Established
Minimum Flash Point, °C:	93.3	Vapor Pressure, mmHg:	No Information
Evaporation Rate:	Slower Than n-Butyl Acetate	Flash Method:	Seta Closed Cup
Vapor Density:	Heavier Than Air	Flammability:	No Information
Combustibility:	Does not support combustion		

(See "Other information" Section for abbreviation legend)

(If product is an aerosol, the flash point stated above is that of the propellant.)

10. Stability and Reactivity

STABILITY: This product is considered stable under normal and anticipated storage and handling conditions.

CONDITIONS TO AVOID: Oxidizing agents. Excessive heat and freezing.

INCOMPATIBILITY: Keep away from strong oxidizing agents. Incompatible with strong bases and oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Normal decomposition products, i.e., COx, NOx.

11. Toxicological Information

EFFECT OF OVEREXPOSURE - INHALATION: During application and cure, this product releases methanol. Inhalation may cause irritation to the respiratory tract (nose, mouth, mucous membranes). May cause allergic respiratory reaction.

EFFECT OF OVEREXPOSURE - SKIN CONTACT: Direct skin contact may cause irritation. May cause allergic skin reaction.

EFFECT OF OVEREXPOSURE - EYE CONTACT: May cause mild eye irritation.

EFFECT OF OVEREXPOSURE - INGESTION: Single dose oral toxicity is very low. Amounts ingested incidental to industrial handling are not likely to cause injury; however, ingestion of large amounts may cause injury. Ingestion of large amounts may cause nausea, gastrointestinal upset, and pain. May cause liver and kidney damage, and central nervous system depression. Ingestion may result in obstruction when material hardens.

CARCINOGENICITY: No Information

EFFECT OF OVEREXPOSURE - CHRONIC HAZARDS: Repeated or prolonged exposure may cause irritation of eyes and skin. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Inhalation, Skin Contact

Acute Toxicity Values

The acute effects of this product have not been tested. Data on individual components are tabulated below

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>
7631-86-9	Silica, amorphous	>3300 mg/kg Rat	>5000 mg/kg Rabbit	>20 mg/L
22984-54-9	Methyltri(ethylmethylketoxime)silane	>2520 mg/kg Rat	>2000 mg/kg Rat	>50 mg/L Rat
13463-67-7	Titanium dioxide	>10000 mg/kg Rat	>5000 mg/kg Rabbit	>20 mg/L

N.I. = No Information

12. Ecological Information

ECOLOGICAL INFORMATION: Ecological injuries are not known or expected under normal use.

13. Disposal Information

DISPOSAL INFORMATION: This product does not meet the definition of a hazardous waste according to U.S. EPA Hazardous Waste Management Regulation, 40 CFR Section 261. Dispose as hazardous waste according to all local, state, federal and provincial regulations. State and Local regulations/restrictions are complex and may differ from Federal regulations. Responsibility for proper waste disposal is with the owner of the waste. Do not flush into surface water or sanitary sewer system.

14. Transport Information

SPECIAL TRANSPORT PRECAUTIONS: No Information

DOT UN/NA Number:	N.A.
DOT Proper Shipping Name:	Not Regulated.
DOT Technical Name:	N.A.
DOT Hazard Class:	N.A.
Hazard SubClass:	N.A.
Packing Group:	N.A.

Icons for GHS Pictograms shown in Section 3 describing each ingredient:

GHS03



GHS07



GHS08



Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

DAP believes the data and statements contained herein are accurate as of the date hereof. They are offered in good faith as typical values and not as a product specification. NO WARRANTY OF MERCHANTABILITY, WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE WITH REGARD TO THE INFORMATION HEREIN PROVIDED OR THE PRODUCT TO WHICH THE INFORMATION REFERS. Since this document is intended only as a guide to the appropriate use and precautionary handling of the referenced product by a properly trained person, it is therefore the responsibility of the user to (i) review the recommendations with due consideration for the specific context of the intended use and (ii) determine if they are appropriate.

SAFETY DATA SHEET

1. Identification

Material name: VULKEM 45 SSL GRAY QT CTG
Material: 445712A 333

Recommended use and restriction on use

Recommended use: Sealant
Restrictions on use: Not known.

Manufacturer/Importer/Supplier/Distributor Information

Tremco U.S Sealants
3735 Green Road
Cleveland OH 44122
US

Contact person: EH&S Department
Telephone: 216-292-5000
Emergency telephone number: 1-800-424-9300 (US); 1-613-996-6666 (Canada)

2. Hazard(s) identification

Hazard Classification

Health Hazards

Respiratory sensitizer	Category 1
Skin sensitizer	Category 1
Carcinogenicity	Category 1A

Unknown toxicity - Health

Acute toxicity, oral	57.3 %
Acute toxicity, dermal	62.57 %
Acute toxicity, inhalation, vapor	99.85 %
Acute toxicity, inhalation, dust or mist	92.52 %

Environmental Hazards

Acute hazards to the aquatic environment	Category 3
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Unknown toxicity - Environment

Acute hazards to the aquatic environment	89.68 %
Chronic hazards to the aquatic environment	100 %

Label Elements

Hazard Symbol:



Signal Word:	Danger
Hazard Statement:	May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. May cause cancer. Harmful to aquatic life.
Precautionary Statement:	
Prevention:	Avoid breathing dust/fume/gas/mist/vapors/spray. [In case of inadequate ventilation] wear respiratory protection. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required.
Response:	If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER/doctor. IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. If exposed or concerned: Get medical advice/attention. Specific treatment (see this label). Wash contaminated clothing before reuse.
Storage:	Store locked up.
Disposal:	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
Other hazards which do not result in GHS classification:	None.

3. Composition/information on ingredients
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Mixtures

Chemical Identity	CAS number	Content in percent (%)*
Calcium Carbonate (Limestone)	1317-65-3	15 - 40%
Polyvinyl chloride	9002-86-2	15 - 40%
Petroleum distillates	64742-47-8	5 - 10%
Titanium dioxide	13463-67-7	1 - 5%
Calcium oxide	1305-78-8	1 - 5%
Xylene	1330-20-7	1 - 5%
Isophorone Diisocyanate	4098-71-9	0.1 - 1%
Ethylbenzene	100-41-4	0.1 - 1%
Hydrotreated heavy naphthenic distillate	64742-52-5	0.1 - 1%
Nonane	111-84-2	0.1 - 1%
Aluminum oxide	1344-28-1	0.1 - 1%

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

4. First-aid measures

Ingestion:	Call a POISON CENTER/doctor/.../if you feel unwell. Rinse mouth.
Inhalation:	Call a physician or poison control center immediately. If breathing stops, provide artificial respiration. Move to fresh air. If breathing is difficult, give oxygen.
Skin Contact:	If skin irritation occurs: Get medical advice/attention. Destroy or thoroughly clean contaminated shoes. Immediately remove contaminated clothing and shoes and wash skin with soap and plenty of water. If skin irritation or an allergic skin reaction develops, get medical attention.
Eye contact:	Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. If eye irritation persists: Get medical advice/attention.

Most important symptoms/effects, acute and delayed

Symptoms: May cause skin and eye irritation.

Indication of immediate medical attention and special treatment needed

Treatment: Symptoms may be delayed.

5. Fire-fighting measures

General Fire Hazards: No unusual fire or explosion hazards noted.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical: During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: No data available.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Ventilate closed spaces before entering them. Evacuate area. See Section 8 of the SDS for Personal Protective Equipment. Keep upwind. Keep unauthorized personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Methods and material for containment and cleaning up:

Collect spillage in containers, seal securely and deliver for disposal according to local regulations.

Notification Procedures:

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Environmental Precautions:

Avoid release to the environment. Prevent further leakage or spillage if safe to do so.

7. Handling and storage

Precautions for safe handling:

Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use personal protective equipment as required. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after handling. Ventilate well, avoid breathing vapors. Use approved respirator if air contamination is above accepted level. Use mechanical ventilation in case of handling which causes formation of dust.

Conditions for safe storage, including any incompatibilities:

Store locked up.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	type	Exposure Limit Values	Source
Calcium Carbonate (Limestone) - Total dust.	PEL	15 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Calcium Carbonate (Limestone) - Respirable fraction.	PEL	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Polyvinyl chloride - Respirable fraction.	TWA	1 mg/m ³	US. ACGIH Threshold Limit Values (2011)
Polyvinyl chloride - as vinyl chloride monomer	TWA	1 ppm	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (02 2006)
	STEL	5 ppm	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (02 2006)
	OSHA_A CT	0.5 ppm	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (02 2006)
Polyvinyl chloride - Respirable fraction.	PEL	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Polyvinyl chloride - Total dust.	PEL	15 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	TWA	50 millions of particles	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)

		per cubic foot of air	
Polyvinyl chloride - Respirable fraction.	TWA	15 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Polyvinyl chloride - Total dust.	TWA	15 mg/m ³	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Polyvinyl chloride - Respirable fraction.	TWA	5 mg/m ³	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Petroleum distillates - Non-aerosol. - as total hydrocarbon vapor	TWA	200 mg/m ³	US. ACGIH Threshold Limit Values (2011)
	TWA	200 mg/m ³	US. ACGIH Threshold Limit Values (2011)
Titanium dioxide	TWA	10 mg/m ³	US. ACGIH Threshold Limit Values (2011)
Titanium dioxide - Total dust.	PEL	15 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Calcium oxide	TWA	2 mg/m ³	US. ACGIH Threshold Limit Values (2011)
	PEL	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Xylene	TWA	100 ppm	US. ACGIH Threshold Limit Values (2011)
	STEL	150 ppm	US. ACGIH Threshold Limit Values (2011)
	PEL	100 ppm 435 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Isophorone Diisocyanate	TWA	0.005 ppm	US. ACGIH Threshold Limit Values (2011)
Ethylbenzene	TWA	20 ppm	US. ACGIH Threshold Limit Values (2011)
	PEL	100 ppm 435 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Hydrotreated heavy naphthenic distillate - Inhalable fraction.	TWA	5 mg/m ³	US. ACGIH Threshold Limit Values (03 2014)
Hydrotreated heavy naphthenic distillate	PEL	500 ppm 2,000 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Hydrotreated heavy naphthenic distillate - Mist.	PEL	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Nonane	TWA	200 ppm	US. ACGIH Threshold Limit Values (02 2012)
Aluminum oxide - Respirable fraction.	TWA	1 mg/m ³	US. ACGIH Threshold Limit Values (2011)
	PEL	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Total	PEL	15 mg/m ³	US. OSHA Table Z-1 Limits for Air

dust.			Contaminants (29 CFR 1910.1000) (02 2006)
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Chemical name	type	Exposure Limit Values	Source
Calcium Carbonate (Limestone) - Total dust.	STEL	20 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	10 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Calcium Carbonate (Limestone) - Respirable fraction.	TWA	3 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Calcium Carbonate (Limestone) - Total dust.	TWA	10 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Polyvinyl chloride - Respirable.	TWA	1 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Polyvinyl chloride - Respirable fraction.	TWAEV	1 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Polyvinyl chloride - Total dust.	TWA	10 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Petroleum distillates - Non-aerosol. - as total hydrocarbon vapor	TWA	200 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Petroleum distillates	TWAEV	525 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Petroleum distillates - Non-aerosol. - as total hydrocarbon vapor	TWAEV	200 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	200 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)

Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide	TWAEV	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Calcium oxide	TWA	2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Calcium oxide	TWAEV	2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Calcium oxide	TWA	2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Xylene	TWA	100 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	150 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Xylene	TWAEV	100 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	STEL	150 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Xylene	TWA	100 ppm 434 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	150 ppm 651 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)

Isophorone Diisocyanate	TWA	0.005 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	CEILING	0.01 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Isophorone Diisocyanate	TWAEV	0.005 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	CEV	0.02 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Isophorone Diisocyanate	TWA	0.005 ppm	0.045 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Ethylbenzene	TWA	20 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (09 2011)
Ethylbenzene	STEL	125 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	100 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Ethylbenzene	TWA	100 ppm	434 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	125 ppm	543 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Hydrotreated heavy naphthenic distillate - Mist.	TWA		0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (05 2013)
	TWA		1 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (05 2013)
Hydrotreated heavy naphthenic distillate - Mist.	TWAEV		5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	STEL		10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)

Hydrotreated heavy naphthenic distillate - Mist.	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)

Biological Limit Values

Chemical Identity	Exposure Limit Values	Source
Xylene (Methylhippuric acids: Sampling time: End of shift.)	1.5 g/g (Creatinine in urine)	ACGIH BEL (03 2013)
Ethylbenzene (Sum of mandelic acid and phenylglyoxylic acid: Sampling time: End of shift.)	0.15 g/g (Creatinine in urine)	ACGIH BEL (02 2014)

Appropriate Engineering Controls Mechanical ventilation or local exhaust ventilation may be required. Observe good industrial hygiene practices. Observe occupational exposure limits and minimize the risk of inhalation of dust.

Individual protection measures, such as personal protective equipment

General information: Use personal protective equipment as required.

Eye/face protection: Wear goggles/face shield.

Skin Protection

Hand Protection: Use suitable protective gloves if risk of skin contact.

Other: Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information.

Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

Hygiene measures: Observe good industrial hygiene practices. Wash hands before breaks and immediately after handling the product. Contaminated work clothing should not be allowed out of the workplace. Avoid contact with skin.

9. Physical and chemical properties

Appearance

Physical state: solid

Form: Paste

Color:	Gray
Odor:	Mild
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	No data available.
Initial boiling point and boiling range:	No data available.
Flash Point:	> 93 °C > 199 °F (Setaflash Closed Cup)
Evaporation rate:	Slower than n-Butyl Acetate
Flammability (solid, gas):	No
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	No data available.
Vapor density:	Vapors are heavier than air and may travel along the floor and in the bottom of containers.
Relative density:	1.32
Solubility(ies)	
Solubility in water:	Insoluble in water
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. Stability and reactivity

Reactivity:	No data available.
Chemical Stability:	Material is stable under normal conditions.
Possibility of Hazardous Reactions:	No data available.
Conditions to Avoid:	Avoid heat or contamination.
Incompatible Materials:	Alcohols. Amines. Strong acids. Avoid contact with oxidizing agents (e.g. nitric acid, peroxides and chromates). Strong bases. Water, moisture.
Hazardous Decomposition Products:	Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors.

11. Toxicological information

Information on likely routes of exposure

Ingestion:	May be ingested by accident. Ingestion may cause irritation and malaise.
Inhalation:	In high concentrations, vapors, fumes or mists may irritate nose, throat and mucus membranes.

Skin Contact: Causes mild skin irritation. May cause an allergic skin reaction.

Eye contact: Eye contact is possible and should be avoided.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product: ATEmix: 163,089.88 mg/kg

Dermal

Product: ATEmix: 11,084.4 mg/kg

Inhalation

Product: No data available.

Repeated dose toxicity

Product: No data available.

Skin Corrosion/Irritation

Product: No data available.

Serious Eye Damage/Eye Irritation

Product: No data available.

Specified substance(s):

Petroleum distillates	in vivo (Rabbit, 24 - 72 hrs): Not irritating
Titanium dioxide	in vivo (Rabbit, 24 - 72 hrs): Not irritating
Calcium oxide	in vivo (Rabbit, 24 hrs): Category 1
Xylene	in vivo (Rabbit, 24 hrs): Moderately irritating
Isophorone Diisocyanate	in vivo (Rabbit, 24 - 72 hrs): Category 1
Ethylbenzene	Irritating
Hydrotreated heavy naphthenic distillate	in vivo (Rabbit, 24 hrs): Not irritating
Nonane	in vivo (Rabbit, 24 - 72 hrs): Not irritating
Aluminum oxide	in vivo (Rabbit, 24 hrs): Not irritating

Respiratory or Skin Sensitization

Product: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause sensitization by inhalation.

Carcinogenicity

Product: No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Titanium dioxide	Overall evaluation: Possibly carcinogenic to humans.
Ethylbenzene	Overall evaluation: Possibly carcinogenic to humans.
Hydrotreated heavy naphthenic distillate	Overall evaluation: Not classifiable as to carcinogenicity to humans. Overall evaluation: Carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

Hydrotreated heavy naphthenic distillate	Known To Be Human Carcinogen.
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US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

Polyvinyl chloride	Cancer
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Germ Cell Mutagenicity

In vitro
Product: No data available.

In vivo
Product: No data available.

Reproductive toxicity
Product: No data available.

Specific Target Organ Toxicity - Single Exposure
Product: No data available.

Specific Target Organ Toxicity - Repeated Exposure
Product: No data available.

Aspiration Hazard
Product: No data available.

Other effects: No data available.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish

Product: No data available.

Specified substance(s):

Petroleum distillates	LC 50 (Rainbow trout,donaldson trout (Oncorhynchus mykiss), 96 h): 2.9 mg/l Mortality
Titanium dioxide	LC 50 (Mummichog (Fundulus heteroclitus), 96 h): > 1,000 mg/l Mortality
Xylene	LC 50 (Fathead minnow (Pimephales promelas), 96 h): 13.41 mg/l Mortality
Ethylbenzene	LC 50 (Bluegill (Lepomis macrochirus), 24 h): 70 - 149 mg/l Mortality LC 50 (Bluegill (Lepomis macrochirus), 24 h): 112 - 170 mg/l Mortality LC 50 (Bluegill (Lepomis macrochirus), 24 h): 113 - 162 mg/l Mortality LC 50 (Bluegill (Lepomis macrochirus), 24 h): 66 - 276 mg/l Mortality LC 50 (Rainbow trout,donaldson trout (Oncorhynchus mykiss), 24 h): 11 - 18 mg/l Mortality

Aquatic Invertebrates

Product: No data available.

Specified substance(s):

Titanium dioxide	EC 50 (Water flea (Daphnia magna), 48 h): > 1,000 mg/l Intoxication
Xylene	LC 50 (Water flea (Daphnia magna), 24 h): > 100 - 1,000 mg/l Mortality
Ethylbenzene	EC 50 (Water flea (Daphnia magna), 24 h): 1.47 - 2.18 mg/l Intoxication EC 50 (Water flea (Daphnia magna), 24 h): 1.51 - 2.14 mg/l Intoxication EC 50 (Water flea (Daphnia magna), 24 h): 1.63 - 2.28 mg/l Intoxication EC 50 (Water flea (Daphnia magna), 24 h): 2.2 mg/l Intoxication EC 50 (Water flea (Daphnia magna), 24 h): 1.53 - 3.17 mg/l Intoxication

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Specified substance(s):

Petroleum distillates	NOAEL (Oncorhynchus mykiss, 28 d): 0.098 mg/l QSAR
Titanium dioxide	LC 0 (Coregonus autumnalis migratorius G., 30 d): 3 mg/l experimental result
Calcium oxide	NOAEL (Oncorhynchus mykiss, 60 d): 307 mg/l interpreted
Xylene	NOAEL (Oncorhynchus mykiss, 56 d): > 1.3 mg/l experimental result
Hydrotreated heavy naphthenic distillate	NOAEL (Oncorhynchus mykiss, 14 d): >= 1,000 mg/l QSAR
Nonane	NOAEL (Oncorhynchus mykiss, 28 d): 0.252 mg/l QSAR
Aluminum oxide	NOAEL (Pimephales promelas, 28 d): 4.7 mg/l experimental result

Aquatic Invertebrates

Product: No data available.

Toxicity to Aquatic Plants**Product:** No data available.**Persistence and Degradability****Biodegradation****Product:** No data available.**BOD/COD Ratio****Product:** No data available.**Bioaccumulative Potential****Bioconcentration Factor (BCF)****Product:** No data available.**Partition Coefficient n-octanol / water (log Kow)****Product:** No data available.**Specified substance(s):**

Xylene Log Kow: 3.12 - 3.20

Ethylbenzene Log Kow: 3.15

Nonane Log Kow: 5.46

Mobility in Soil: No data available.**Other Adverse Effects:** Harmful to aquatic organisms.**13. Disposal considerations****Disposal instructions:** Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.**Contaminated Packaging:** No data available.**14. Transport information****TDG:**

Not Regulated

CFR / DOT:

Not Regulated

IMDG:

Not Regulated

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

<u>Chemical Identity</u>	<u>OSHA hazard(s)</u>
Polyvinyl chloride	Blood Liver Cancer Flammability Central nervous system

CERCLA Hazardous Substance List (40 CFR 302.4):

<u>Chemical Identity</u>	<u>Reportable quantity</u>
Xylene	100 lbs.
Ethylbenzene	1000 lbs.
Nonane	100 lbs.
Toluene	1000 lbs.
Methanol	5000 lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Delayed (Chronic) Health Hazard
Immediate (Acute) Health Hazards

SARA 302 Extremely Hazardous Substance

<u>Chemical Identity</u>	<u>Reportable quantity</u>	<u>Threshold Planning Quantity</u>
Isophorone Diisocyanate	500 lbs.	500 lbs.

SARA 304 Emergency Release Notification

<u>Chemical Identity</u>	<u>Reportable quantity</u>
Xylene	100 lbs.
Isophorone Diisocyanate	
Ethylbenzene	1000 lbs.
Nonane	100 lbs.
Diisodecyl phthalate	
Toluene	1000 lbs.
Diisodecyl phthalate (mixed Is)	
Methanol	5000 lbs.

SARA 311/312 Hazardous Chemical

<u>Chemical Identity</u>	<u>Threshold Planning Quantity</u>
Isophorone Diisocyanate	500lbs
Calcium Carbonate (Limestone)	500 lbs
Polyvinyl chloride	500 lbs
Petroleum distillates	500 lbs
Titanium dioxide	500 lbs
Calcium oxide	500 lbs
Xylene	500 lbs
Ethylbenzene	500 lbs
Hydrotreated heavy naphthenic distillate	500 lbs
Nonane	500 lbs
Aluminum oxide	500 lbs

SARA 313 (TRI Reporting)Chemical Identity

Xylene
Ethylbenzene

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US State Regulations**US. California Proposition 65**

This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm.

US. New Jersey Worker and Community Right-to-Know ActChemical Identity

Calcium Carbonate (Limestone)
Polyvinyl chloride
Petroleum distillates
Titanium dioxide
Calcium oxide
Xylene

US. Massachusetts RTK - Substance ListChemical Identity

Calcium Carbonate (Limestone)
Petroleum distillates
Titanium dioxide
Calcium oxide
Xylene
Isophorone Diisocyanate
Crystalline Silica (Quartz)/ Silica Sand

US. Pennsylvania RTK - Hazardous Substances

Chemical Identity

Calcium Carbonate (Limestone)
Petroleum distillates
Titanium dioxide
Calcium oxide
Xylene

US. Rhode Island RTK

Chemical Identity

Xylene

Other Regulations:

Regulatory VOC (less water and exempt solvent):	109 g/l
VOC Method 310:	8.23 %

Inventory Status:

Australia AICS:	One or more components in this product are not listed on or exempt from the Inventory.
Canada DSL Inventory List:	All components in this product are listed on or exempt from the Inventory.
EINECS, ELINCS or NLP:	One or more components in this product are not listed on or exempt from the Inventory.
Japan (ENCS) List:	One or more components in this product are not listed on or exempt from the Inventory.
China Inv. Existing Chemical Substances:	One or more components in this product are not listed on or exempt from the Inventory.
Korea Existing Chemicals Inv. (KECI):	One or more components in this product are not listed on or exempt from the Inventory.
Canada NDSL Inventory:	One or more components in this product are not listed on or exempt from the Inventory.
Philippines PICCS:	One or more components in this product are not listed on or exempt from the Inventory.
US TSCA Inventory:	All components in this product are listed on or exempt from the Inventory.
New Zealand Inventory of Chemicals:	One or more components in this product are not listed on or exempt from the Inventory.
Japan ISHL Listing:	One or more components in this product are not listed on or exempt from the Inventory.

Japan Pharmacopoeia Listing:

One or more components in this product are not listed on or exempt from the Inventory.

16. Other information, including date of preparation or last revision**Revision Date:** 08/04/2015**Version #:** 1.0**Further Information:** No data available.**Disclaimer:** For Industrial Use Only. Keep out of Reach of Children. The hazard information herein is offered solely for the consideration of the user, subject to their own investigation of compliance with applicable regulations, including the safe use of the product under every foreseeable condition.

ATTACHMENT A
SAFETY PROCEDURES/FIELD OPERATING PROCEDURES (FLDs)

FLD 38 HAND AND POWER HAND TOOLS

REFERENCES

29 CFR 1926 Subpart I
29 CFR 1910 Subpart P
ANSI Standard A10.3-1970, Safety Requirements for Explosive-Actuated Fastening Tools

RELATED FLDs

FLD 06 – Cold Stress
FLD 10 – Manual Lifting and Handling of Heavy Objects
FLD 16 – Pressure Systems: Compressed Gas Systems
FLD 35 – Electrical Safety

INTRODUCTION

Injuries from hand tools are often caused by improper use, using the wrong tool for the job, or from using a defective tool. Workers often assume that they know how to use a common hand tool. Working with something other than the simplest non-powered hand tools shall be performed only by those persons competent or qualified through formal training or documented experience.

Like all tools, hand and power tools must be maintained properly for effective use and safety. This Field Operating Procedure describes general safety guidelines for the four major categories of hand tools: cutting tools, torsion tools, impact tools, and power tools.

The use of any machinery, tool, material, or equipment which is not in compliance with any applicable OSHA 1910/1926 requirement is prohibited. Any tools or equipment identified as unsafe or defective will be “tagged or locked-out.” Controls shall be applied rendering the unsafe or defective tool or equipment inoperable. Any damaged or defective equipment shall be removed from its place of operation. Weston shall be responsible for the safe condition of tools and equipment used by employees, including tools and equipment that may be furnished by employees.

Tags shall be used as a means to prevent accidental injury or illness to employees who are exposed to hazardous or potentially hazardous conditions, equipment or operations, which are out of the ordinary, unexpected, or not readily apparent. Tags shall be used until the identified hazard is eliminated or the hazardous operation is completed. Tags need not be used where signs, guarding, or other positive means of protection are being used.

GENERAL SAFETY RULES – APPLICABLE TO USE OF ALL TOOLS

- Tools will be inspected prior to each use. Tools found to be unsafe will be tagged by the inspector “Do Not Use” and either repaired or removed from the site.
- Keep the work area clear of clutter.
- Keep the work area properly illuminated.
- Maintain and keep tools sharpened, oiled, and stored in a safe, dry place.
- Wear ear and eye protection when cutting, sawing, drilling, or grinding.
- Supervisor should instruct everyone using equipment on safe procedures before they use them.
- Inspect tools, cords, and accessories regularly and document any repairs.

- Repair or replace problem equipment immediately.
- Electric power tools must have a 3-wire cord plugged into a grounded receptacle, be double-insulated or powered by a low-voltage isolation transformer, and fitted with guards and safety switches.
- Machine guards must be in-place and not removed during equipment operation.
- Do not alter factory-supplied safety features on tools.
- Install and repair equipment only if you are qualified.
- Use the right tool for the job; for instance, do not use a screwdriver as a chisel or a wrench as a hammer.
- Carry a sharp tool pointed downward or place in a tool belt or toolbox.
- Protect a sharp blade with a shield.
- Store tools in drawers or chests with cutting edge down.
- When using power tools, wear long hair in a protective manner, do not wear jewelry or loose clothing, use safety glasses, respiratory protection, hard hats, etc., as needed/specified by the manufacturer. Note that protective gloves should not be worn when operating powered woodworking tools because of the possibility of the work piece snagging the glove and pulling the hand to the cutting surface.
- All hand-held power-driven tools must be equipped with one of the following: a constant pressure switch that shuts off the power upon release (e.g., circular saws, hand-held power drills, chain saws) or an on-off switch (e.g., routers, planers scrolls saws, jigsaws).
- Never leave a running tool unattended.
- All workers using hand and power tools must be properly trained, and training must be documented.
- Tools of a non-sparking material must be used if fire/explosion hazards exist.
- All fuel-operated tools shall be stopped and allowed to cool prior to being refueled, serviced, or maintained, and proper ventilation provided when used in enclosed spaces.
- Bench grinders shall be properly grounded. Work rests must be kept at a distance not to exceed 1/8 inch from the grinding wheel surface.
- All persons using grinders or abrasive wheels shall use approved eye-protective devices.
- Hand held grinders shall have grinding wheel guards in place during operation.
- Train personnel to recognize that tasks involving lifting, repetitive motion, excess pressure, vibration, awkward positions, and remaining stationary for prolonged periods and work in cold conditions increase the risk of musculoskeletal injury. Procedures for avoiding or minimizing risk include: using mechanical devices for lifting, following procedures in FLD 10 when manual lifting is necessary, using shock absorbing gloves when using vibrating tools, choosing tools that reduce gripping force and align joints in a neutral position or holding tools in an ergonomically neutral position, taking breaks or alternating repetitive jobs, and following procedures in FLD 06.
- Hand tools such as chisels and punches, which develop mushroomed heads during use must be taken out of service and reconditioned by qualified persons or replaced, as necessary.
- Broken or fractured handles on hammers, axes and similar equipment must be replaced promptly.
- Worn or bent wrenches must be replaced.

- Handles designed for use on files and similar tools must be used.
- Jacks must be checked periodically to ensure they are in good operating condition

TORSION TOOLS

Torsion tools are used to grip, fasten, and turn. These include wrenches, pliers, screwdrivers, vises, and clamps. There is a variety of each type of these tools. Selection is very important. Here are a few safety precautions for common torsion tools:

- Wrenches should always be pulled and not pushed. Pushing a wrench can cause a loss of control if there is a sudden release of pressure. A short, steady pull should be used rather than quick, jerky motions. Where available, use a socket wrench instead of an adjustable or open-ended wrench. Socket wrenches are generally easier to control, are more convenient, and are less likely to damage a bolt or nut. When using an adjustable wrench, the pressure should be applied to the fixed jaw
- Pipe wrenches can easily slip on pipes or fittings, causing injury. To prevent slipping, make sure that the pipe or fitting is clean and the wrench jaws are sharp and kept clean of oil and debris.
- Pliers should never be substituted for a wrench. They do not have the same gripping power and can easily slip on a tight object. When using cutting pliers, the object being cut can fly off and cause injury. Wear safety glasses when cutting with pliers.
- Screwdrivers are often misused. They should not be used for prying, or as punches or wedges. These misuses can damage the head of the screwdriver. A dull tip can cause the screwdriver to slip. The tip must be flat at the tip and tapered for a snug fit on the screw.
- When using vises, make sure that the vise is bolted solidly to a base (e.g., work bench). When cutting material in a vise, try to cut as close to the vise as possible to minimize vibration.
- Oil vises regularly.

Screwdrivers

- Most screwdrivers are not designed to be used on electrical equipment. Use an insulated screwdriver.
- Do not hold an object in the palm of one hand and press a screwdriver into it; place the object on a bench or a table.
- Never hammer with a screwdriver.
- Check for broken handles, bent blade, etc.
- Select a screwdriver of the proper size to fit the screw.
- Screwdrivers with a split or splintered handle shall not be used.
- The point shall be kept in proper shape with a file or grinding wheel.
- Screwdrivers shall not be used as a substitute punch, chisel, nail-puller, etc.

Pliers

- Do not use pliers as a substitute for hammers or wrenches.
- Use insulated pliers when doing electrical work.

- Inspect pliers frequently to make certain that they are free of breaks or cracks.
- Pliers shall be kept free from grease and oil and- the teeth or cutting edges shall be kept clean and sharp.
- The fulcrum pin, rivet or bolt shall be snug but not tight.

Wrenches

- Select the correct size of wrench for the job.
- Never use a piece of pipe or another wrench as a wrench handle extension.
- Too much leverage can ruin a tool and cause injury.
- To avoid sudden slips, stand in a balanced position and always pull on the wrench instead of pushing against the fixed jaw.
- Only wrenches in good condition shall be used; a bent wrench, if straightened, has been weakened and shall not be used.
- Watch for sprung jaws on adjustable wrenches.
- Always pull toward yourself, never push, since it is easier to brace against a sudden lunge toward you should the tool slip or break.
- When using a wrench on a tight nut - first use some penetrating oil, use the largest wrench available that fits the nut, when possible pull on the wrench handle rather than pushing, and when possible apply force to the wrench with both hands while both feet are firmly placed. Always assume that you may lose your footing - check the place where you may fall for sharp objects.
- Keep all pipe wrenches clean and in good repair. The jaws of pipe wrenches should be wire brushed frequently to prevent an accumulation of dirt and grease that would otherwise build up and cause wrenches to slip.
- Never use pipe wrenches in place of a rod holding device.
- Replace hook and heel jaws when they become visibly worn.
- Position your hands so that your fingers will not be smashed between the wrench handle and the ground or other work surface; when breaking joints the wrench may slip or the joint may suddenly let go.

IMPACT TOOLS

Impact tools include various types of hammers such as riveting hammers, carpenter's claw hammers, and sledgehammers. The main hazard associated with all these tools is damage to the hands and arms. The following safety procedures should be employed when using hammers:

- The handle shall be securely fitted and suited for the type of job and type of hammerhead. The striking face of the hammer shall be kept well dressed according to the application.
- The handle shall be smooth and free of oil to prevent slippage.
- Safety goggles shall be worn at all times when hammering to protect from flying nails, wood chips, and metal or plastic fragments.

- To properly drive a nail, hold the hammer near the end of the handle and start off with a light blow. Increase power after the nail is set.
- To avoid chipping or spalling of the hammerhead, use the lightest swing possible, hammer straight and not on an angle. Inspect the head of the hammer for potential chipping and spalling.

Hammers

- Use the correct hammer for the type of work to be done.
- Have an unobstructed swing when using a hammer and watch for overhead interference.
- Check for defects before using.
- The head of a hammer shall be wedged securely and squarely on the handle and neither the head nor the handle shall be chipped or broken.

CUTTING TOOLS

The main hazard associated with cutting tools is tool slippage. A dull tool or poor tool technique can cause a slip, which can redirect the cutting part of the tool toward the body. In addition, a sudden release or change in the force applied to a tool can throw the user off balance, possibly falling into another object, which may cause injury. To prevent slippage, tools shall be kept sharp and handled in such a way that, if a slip occurs, the direction of force will be away from the body. In addition, cutting along the grain of a material can help prevent changes in the pressure applied to the tool, thereby preventing slippage.

Chisels

- Always wear safety goggles or a face shield when using a chisel.
- Drive wood chisel outward and away from your body.
- Do not use chisels to pry.
- Keep edges sharp for most effective work and protect when not in use.

Knives

- Always cut away from the body.
- Keep hands and body clear of the knife stroke.
- Use a locking blade knife when possible.
- Keep blades sharp.
 - Knives and other sharp or edged tools must be maintained in proper condition. A sharp edged tool, used properly, is safer than a dull or improperly maintained tool.
 - When not in immediate use edged tools must be properly secured via, sheathing, closing, capping or covering.
 - Any task involving the use of an edged tool must be properly evaluated, alternatives to edged tools reviewed and training in the proper use, maintenance and handling verified by management and/or the site safety officer.
 - Knives, box cutters or like tools will not be authorized for cutting plastic wire ties or tubing. Use appropriately shaped and sized wire cutters or snips.
 - Remove knives from carry on luggage and place in checked baggage.

POWERED TOOLS

- Portable power tools shall be carefully inspected before use and shall be kept repaired.
- Switches and plugs must operate properly, and the cords must be clean and free from defects.
- Portable powered tools capable of receiving guards and/or designed to accommodate guards shall be equipped with guards to prevent the operator from having any part of his body in the danger zone during the operating cycle.
- Electric powered portable tools with exposed conducting parts shall be grounded. Portable tools protected by an approved system of double insulation, or its equivalent, need not be grounded. Where such an approved system is employed, the equipment shall be distinctively marked.
- Hand-held powered tools of a hazardous nature such as circular saws having a blade diameter greater than two inches, chain saws, percussion tools, drills, tappers, fasteners, drivers, grinders with wheels greater than two inches in diameter, disc sanders, belt sanders, reciprocating saws, saber scroll saws and jig saws with blade shanks greater than one-fourth inch, and other similarly operating powered tools shall be equipped with a constant pressure switch or control ("dead-man switch") that will shut the power off when the pressure is released.
- Portable circular saws having a blade diameter over two inches shall be equipped with guards or hoods which will automatically adjust themselves to the work when the saw is in use, so that none of the teeth are exposed to contact above the work. When withdrawn from the work, the guard shall completely cover the saw to at least the depth of the teeth. The saw shall not be used without a shoe or guide.
- Pneumatic powered portable tools shall be equipped with automatic air shut-off valves that stop the tool when the operators hand is no longer in contact with the tool. Safety clips, retainers, or other effective means shall be installed on pneumatic tools to prevent the tools from accidentally misfiring.
- Abrasive wheels with a diameter of more than two inches shall be used only on machines provided with safety guards. The guards shall cover the spindle end, nut, and flange projections. Guards on operations where the work provides a suitable measure of protection to the operator may be so constructed that the spindle end, nut, and other flanges are exposed.
- Explosive-actuated fastening tools' muzzle ends shall have a protective shield or guard designed to confine any flying fragments or particles. The tool shall be so designed that it cannot be fired unless it is equipped with a protective shield or guard. Weston Solutions, Inc. employees are not permitted to use a power-actuated tool until properly trained as prescribed by the manufacturer.

Extension Cords

See FLD 35, Electric Safety, for requirements and procedures for using extension cords.

SPECIALTY TOOLS

Pneumatic Powered Tools

Tools powered by air must be inspected and maintained as described above. Hose or tubing used to deliver air to pneumatic tools must be used as required and according to procedures in FLD 16, Pressure Systems: Compressed Gas Systems.

Powder-Actuated Tools

- Only employees who have been trained in the operation of the particular tool in use shall be allowed to operate a powder-actuated tool.
- Powder-actuated tools shall be tested each day before loading to see that safety devices are in proper working condition. The method of testing shall be in accordance with the manufacturer's recommended procedure.
- Any tool found not in proper working order, or that develops a defect during use, shall be immediately removed from service and not used until properly repaired.
- Personal protective equipment shall be selected in accordance with manufacturer's recommendations and in consideration of the potential hazards of the task.
- Tools shall not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any employees. Hands shall be kept clear of the open barrel end.
- Loaded tools shall not be left unattended.
- Fasteners shall not be driven into very hard or brittle materials including, but not limited to, cast iron, glazed tile, surface-hardened steel, glass block, live rock, face brick, or hollow tile.
- Driving into materials easily penetrated shall be avoided unless such materials are backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying missile hazard on the other side.
- No fastener shall be driven into a spalled area caused by an unsatisfactory fastening.
- Tools shall not be used in an explosive or flammable atmosphere.
- All tools shall be used with the correct shield, guard, or attachment recommended by the manufacturer.
- Powder-actuated tools used by employees shall meet all other applicable requirements of American National Standards Institute, A10.3-1970, Safety Requirements for Explosive-Actuated Fastening Tools.

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Purpose

The purpose of this program is to set forth procedures for the safe use and maintenance of electrical equipment, electric tools, and electrical testing/service equipment. To ensure worker safety, all work will be conducted in accordance with the requirements found in the National Electrical Code, National Fire Protection Association [NFPA] 70E with consideration of the American Petroleum Institute's recommended practices for electrical installations for production facilities (API-RP-500B), USACE EM 385-1-1, Section 11 and USCG regulations.

Scope

This program applies to all Weston Solutions, Inc. (WESTON) employees, temporary employees, and contractors. When work is performed on a non-owned or operated site, the operator's or client's program shall take precedence; however, this document covers WESTON employees and contractors and shall be used on owned premises, or when an operator's or client's program doesn't exist or is less stringent.

WESTON shall advise its Contractors/Subcontractors of:

- Any unique hazards presented by the task/work assignment,
- Any unanticipated hazards found during work by WESTON that the facility owner did not mention, and
- The measures WESTON took to correct any hazards reported by the facility owner to prevent employee exposure to such hazards in the future.

Responsibilities

Managers/Supervisor

The EHS Manager will develop electrical safety programs and procedures in accordance with OSHA requirements and the National Electrical Code, National Fire Protection Association [NFPA] 70E with consideration of the American Petroleum Institute's recommended practices for electrical installations for production facilities (API-RP-500B), USACE EM 385-1-1, Section 11 and USCG regulations, as applicable to the project circumstances.

Operations Managers and Supervisors are responsible for ensuring that only qualified employees and or qualified contractors perform electrical repairs or installations. Unqualified persons shall not be permitted to enter spaces that are required to be accessible to qualified employees only,

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unless the electric conductors and equipment involved are in an electrically safe work condition or completely shielded from the workers.

Operations Managers and Supervisors shall ensure a documented job briefing is held before starting each job and will include all employees involved. The briefing will cover hazards associated with the job, work procedures involved, special precautions, energy source controls and PPE requirements.

Operations Managers are also responsible for ensuring all applicable electrical safety programs are implemented and maintained at their locations.

Employees are responsible to use electrical equipment, tools, and appliances according to this program, for attending required training sessions when directed to do so and to report unsafe conditions to their supervisor immediately. Only qualified employees may work on electric circuit parts or equipment that has not been de-energized. Such employees shall be made familiar with the use of special precautionary techniques, PPE, insulating and shielding materials and insulated tools.

Safe Work Practices

Before any work is begun, WESTON's site manager or lead person will ascertain by inquiry, direct observation, and by instruments, whether any part of an electric power circuit (exposed or concealed) is located such that the performance of work could bring any person, tool, or machine into physical or electrical contact with it. Every electric conductor or circuit part is considered energized until a qualified person proves otherwise. Whenever possible, all equipment and circuits to be worked on will be de-energized before work is started and personnel protected by clearance procedures, lockout/tag out, and grounding. WESTON lockout tag-out procedures (FLD 42) will be used when de-energizing equipment as well as the procedures applicable to de-energizing.

Precautions for work around overhead and underground utilities are described in FLD 34. A competent person in underground and overhead utilities must evaluate work to determine hazards and risks and appropriate protective procedures.

Whenever it is necessary to work on energized parts greater than 50 volts to ground, a hazard risk analysis must be conducted in accordance with NFPA 70E, 2012 Article 130, by a qualified person. This assessment will address hazards and risk of electrocution, arc flash, and explosion. Electrical shock and Arc Flash boundaries will be determined and protective procedures

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including use of engineering controls, administrative controls (Permitting procedures and outage procedures), and PPE will be established.

Prior to any work being done within the Limited Approach Boundary a hazard risk analysis shall be performed. The analysis shall contain event severity, frequency, probability and avoidance to determine the level of safe practices employed. A permit is required when working within the limited approach boundary or the arc flash boundary of exposed energized electrical conductors or circuit parts that are not placed in an electrically safe work condition.

Safe Work Practices for Working within the Limited Approach Boundary

The **Limited Approach Boundary** is the distance from an exposed live part within which a shock hazard exists.

Only qualified persons complete tasks such as testing, troubleshooting and voltage measuring within the limited approach boundary. Only qualified persons shall perform tasks such as testing, troubleshooting and voltage measuring within the limited approach boundary of energized electrical conductors or circuit parts operating at 50 volts or more or where an electrical hazard exists.

The **Restricted Approach Boundary** is the closest distance to exposed live parts a qualified person can approach with without proper PPE and tools. Inside this boundary, accidental movement can put a part of the body or conductive tools in contact with live parts or inside the prohibited approach boundary. To cross the restricted approach boundary, the qualified person must:

- Have an energized work permit that is approved by the supervisor or manager responsible for the health and safety plan (HASP), with input/review by the appropriate Division EHS Manager(s) (DEHSM).
- Use PPE suitable for working near exposed lived parts and rated for the voltage and energy level involved.
- Be certain that no part of the body enters the prohibited space.
- Minimize the risk from unintended movement, by keeping as much of the body as possible out of the restricted space; body parts in the restricted space should be protected.

The **Prohibited Approach Boundary** is the minimum approach distance to exposed live parts to prevent flashover or arcing. Approaching any closer is comparable to making direct contact with a live part. To cross the prohibited approach boundary, the qualified person must:

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- Have specified training to work on exposed live parts.
- Have a permit with proper written work procedures and justifying the need to work that close.
- Complete a hazard risk analysis.
- Have bullets (2) and (3) above approved by the appropriate supervisor, with input/review by the appropriate Division EHS Manager(s) (DEHSM).
- Use PPE appropriate for working near exposed live parts and rated for the voltage and energy level involved.

The **Flash Protection Boundary** is the approach limit at a distance from exposed live parts within which a person could receive a second degree burn if an electrical arc flash were to occur.

- Use PPE appropriate for working near exposed live parts and rated for the voltage and energy level involved.
- For systems of 600 volts and less, the flash protection boundary is 4 feet, based on an available bolted fault current of 50 kA and a clearing time of 6 cycles for the circuit breaker to act, or any combination of fault currents and clearing times not exceeding 300 kA cycles. If we have differing conditions, different boundaries may apply and we may involve an Electrical Engineer to perform the analysis.
- When working on de-energized parts and inside the flash protection boundary for nearby live exposed parts - If the parts cannot be de-energized, use barriers such as insulated blankets to protect against accidental contact or wear proper PPE. Specific details on this shielding and PPE must be provided in the Permit.

Arc Flash Hazard Analysis (performed by Qualified Person and checked by another Qualified Person)

An arc flash hazard analysis includes the following:

- Collect data on the facility's power distribution system.
 - Arrangement of components on a one-line drawing with nameplate specifications of every device.
 - Lengths and cross-section area of all cables.
- Contact the electric utility for information including the minimum and maximum fault currents that can be expected at the entrance to the facility.
- Conduct a short circuit analysis followed by a coordination study is performed.
- Feed the resultant data into the NFPA 70E equations.
 - These equations produce the necessary flash protection boundary distances and incident energy to determine the minimum PPE requirement.

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- The flash protection boundary is the distance at which PPE is needed to prevent incurable burns (2nd degree or worse) if an arc flash occurs. (It is still possible to suffer 1st or 2nd degree burns.)
- For systems of 600 volts and less, the flash protection boundary is 4 feet, based on an available bolted fault current of 50 kA (kiloamps) and a clearing time of 6 cycles (0.1 seconds) for the circuit breaker to act, or any combination of fault currents and clearing times not exceeding 300 kA cycles (5000 ampere seconds).

When working on de-energized parts, but still inside the flash protection boundary, as well as the limited approach distance for nearby live exposed parts:

- If the parts cannot be de-energized, barriers such as insulated blankets must be used to protect against accidental contact or PPE must be worn.
- Employees shall not reach blindly into areas that might contain exposed live parts.
- Employees shall not enter spaces containing live parts unless illumination is provided that allows the work to be performed safely.
- Conductive articles of jewelry and clothing (such as watchbands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, metal headgear, or metal frame glasses) shall not be worn where they present an electrical contact hazard with exposed live parts.
- Conductive materials, tools, and equipment that are in contact with any part of an employee's body shall be handled in a manner that prevents accidental contact with live parts. Such materials and equipment include, but are not limited to long conductive objects such as ducts, pipes, tubes, conductive hose and rope, metal-lined rules and scales, steel tapes, pulling lines, metal scaffold parts, structural members, and chains.
- When an employee works in a confined space or enclosed spaces (such as a manhole or vault) that contains exposed live parts, the employee shall use protective shields, barriers or insulating materials as necessary to avoid contact with these parts.
- Doors, hinged panels, and the like shall be secured against gravity, wind or other forces to prevent them from swinging into employees. Refer to the confined space entry program.

Inspections

- Electrical equipment, tools, and appliances must be inspected prior to each use.
- The use of a hard fixed GFCI or a portable GFCI adapter shall be used with all portable hand tools, electric extension cords, drop lights and all 110 volt equipment.
- Faulty equipment, tools, or appliances shall be removed from service immediately and tagged "Out of Service", dated and signed by the employee applying the tag.

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Equipment

All test instruments, equipment and their accessories shall be rated for circuits and equipment to which they will be connected. Test instruments, equipment, and their accessories shall meet the requirements of ANSI/ISA-61010-1-Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Part 1 General Requirements, for rating and design requirements for voltage measurement and test instruments intended for use on electrical systems 1000 Volts and below.

Test instruments must be verified to be in proper working order when used for the testing for the absence of voltage on conductors or circuit parts operating at 50 volts or more. Note: the operation of the test instrument shall be verified before and after an absence of voltage test is performed or for any other electrical measurements.

Personal Protective Equipment

When an employee is working within the **restricted approach boundary**, the worker will wear personal protective equipment in accordance with the hazard/risk analysis. When an employee is working within the arc flash boundary, he or she will wear protective clothing and other personal protective equipment determined in accordance with the hazard/risk analysis

All parts of the body inside the arc flash boundary will be protected. Employees will wear hearing protection whenever working within the arc flash boundary. Employees shall wear **arc-rated** clothing wherever there is possible exposure to an electric arc flash above the threshold incident energy level for a second degree burn [1.2 cal/cm²] (FR clothing is not acceptable unless it is **arc-rated**). Where insulated footwear is used as protection against step and touch potential, dielectric overshoes shall be required. Insulated soles shall not be used as primary electrical protection. Heavy-duty leather work shoes provide some arc flash protection to the feet and shall be used in all exposures greater than 4 cal/cm².

Clothing and equipment that provide worker protection from shock and arc flash hazards shall be used. If arc-rated clothing is required, it shall cover associated parts of the body as well as all flammable apparel while allowing movement and visibility. Clothing and equipment required for the degree of exposure shall be permitted to be worn alone or integrated with flammable, non-melting apparel. **Garments that are not arc rated must not be permitted to be used to increase the arc rating of a garment or a clothing system.**

Non-melting, flammable fiber garments may be permitted to be used as under-layers in conjunction with arc-rated garments in a layered system for added protection. If non-melting, flammable fiber garments are used as under-layers, the system arc rating shall be sufficient to

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prevent break-open of the innermost arc-rated layer at the expected arc exposure incident energy level to prevent ignition of flammable under-layers.

Head Protection

An arc-rated balaclava must be used with an arc-rated face shield when the back of the head is within the arc flash boundary. An arc-rated hood shall be permitted to be used instead of an arc-rated face shield and balaclava.

An arc-rated hood must be used when the anticipated incident energy exposure exceeds 12 cal/cm².

Face Protection

Face shields shall have an arc rating suitable for the arc flash exposure. Face shields with a wraparound guarding to protect the face, chin, forehead, ears, and neck area must be used. Face shields without an arc rating must not be used. Eye protection (safety glasses or goggles) shall always be worn under face shields or hoods.

Hand Protection

Heavy-duty leather gloves or arc-rated gloves shall be worn where required for arc flash protection. Heavy-duty leather gloves are made entirely of leather with minimum thickness of 0.03 in. are unlined or lined with nonflammable, non melting fabrics.

PPE - Electrical

Persons working on electrical systems will be provided with the appropriate electrical protective equipment, which will be inspected, tested, and maintained in safe condition in accordance with the standards referenced in Table 1.

Employees may use rubber gloves, sleeves, blankets, covers, and line hose only when required by special conditions for work on energized facilities. Rubber goods provided to protect employees who work on energized facilities must meet ASTM specifications. Electrical workers' rubber insulating protective equipment will be visually inspected for damage and defects prior to each use.

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**TABLE 1
STANDARDS FOR ELECTRICAL PROTECTIVE EQUIPMENT**

SUBJECT	NUMBER AND TITLE
Apparel – Arc Rated	ASTM F 1506- 10a <i>Standard Performance Specification for Flame Resistant and Arc Rated Textile Materials for Wearing Apparel for Use by Electrical Workers Exposed to Momentary Electric Arc and Related Thermal Hazards,</i>
Aprons - Insulating	ASTM F2677–08a, <i>Standard Specification for Electrically Insulating Aprons.</i>
Eye and face protection - General	ANSI/ASSE Z87.1, 2003 <i>Practice for Occupational and Educational Eye and Face Protection</i>
Face Protection	ASTM F 2178-08, <i>Standard Test Method for Determining the Arc Rating of Face Protection Products</i>
Fall Protection	ASTM F 887-10, <i>Standard Specification for Personal Climbing Equipment</i>
Foot Wear – Dielectric Specification	ASTM F 1117-03(2008), <i>Standard Specification for Dielectric Overshoe Footwear</i>
Foot Wear – Dielectric Test Method	ASTM F 1116-03(2008), <i>Standard Test Method for Determining Dielectric Strength of Dielectric Footwear</i>
Footwear - Standard Performance Specification	ASTM F 2413-05 <i>Standard Specification for Performance Requirements for Foot Protection.</i>
Footwear – Standard Test method	ASTM F 2412-05 <i>Standard Test Methods for Foot Protection</i>
Gloves - Leather Protectors	ASTM F696-06, <i>Standard Specification for Leather Protectors for Rubber Insulating Gloves and Mittens</i>
Gloves – Rubber Insulating	ASTM D120-09, <i>Standard Specification for Rubber Insulating Gloves</i>
Gloves and Sleeves – In Service Care	ASTM F496-08, <i>Standard Specification for In-Service Care of Insulating Gloves and Sleeves</i>
Head Protection	ANSI/ISEA Z89.1-2009, <i>Requirements for Protective Headwear for Industrial Workers</i>
Raingear	ASTM F 1891-06, <i>Standard Specifications for Arc and Flame Resistant Rainwear</i>
Rubber Protective Products - Visual inspection	ASTM F1236-97(2007) , <i>Standard Guide for Visual Inspection of Electrical Protective Rubber Products</i>
Sleeves	ASTM D1051-08, <i>Standard Specification for Rubber Insulating Sleeves</i>

Only live-line tool poles having a manufacturer’s certification to withstand at least the following tests will be used:

- a. 100,000 volts per foot of length for 5 minutes when the tool is made of fiberglass, or
- b. 75,000 volts per foot of length for 3 minutes when the tool is made of wood, or
- c. Other equivalent tests.

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Only tools and equipment intended for live-line bare hand work will be used on transmission lines. The tools will be kept dry and clean and will be visually inspected before use each day.

All insulating PPE must be inspected before each day's use and immediately following any incident that can reasonably be suspected of having caused damage. Insulating gloves shall be given an air test, along with the inspection before each day's use.

Maximum test intervals for rubber insulating personal protective equipment (including blankets, covers and line hose):

- Blankets-before first issue/every 12 months thereafter
- Gloves-before first issue and every 6 months
- Slevvers before first issue and every 12 months
- Covers and line hose shall be tested if insulating value is suspect.

Energized Electrical Work Permit

Work on energized electrical conductors or circuit parts that are not placed in an electrically safe work condition shall be considered energized electrical work and shall be performed by written permit only. If electrical conductors and equipment cannot be de-energized, work areas will be provided with shielding or located at sufficient distance from electrical sources to prevent contact or arcing to personnel or equipment.

- **Only if it can be documented that working on energized or live electrical conductors or circuit parts will be less dangerous than de-energizing will live work be considered or authorized.**

Proper Illumination of Work Areas

Employees shall not enter spaces containing electrical hazards unless illumination is provided that enables the employees to perform the work safely. Where lack of illumination or an obstruction precludes observation of the work to be performed employees shall not perform any task within the Limited Approach Boundary of energized electrical conductors or circuit parts operating at 50 volts or more or where an electrical hazard exists.

Extension Cords

- Use only three-wire, grounded, extension cords and cables that conform to a hard service rating of 14 amperes or higher, and grounding of the tools or equipment being supplied.

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- Cords must have a service rating for hard or extra-hard service and have S, AJ, ST, SO, SJO, SJT, STO, or SJTO printed on the cord.
- Only commercial or industrial rated-grounded extension cords may be used in shops and outdoors.
- Cords for use other than indoor appliances must have a rating of at least 14 amps.
- Cords must have suitable strain relief provisions at both the plug the receptacle ends.
- Work lamps (drop light) used to power electrical tools must have a 3 wire, grounded outlet, unless powering insulated tools.
- Adapters that allow three wire, grounded prongs, connected to two wire non-grounded outlets are strictly prohibited.
- Cords may not be run through doorways, under mats or carpets, across walkways or aisles, concealed behind walls, ceilings or floors, or run through holes in walls, or anywhere where they can become a tripping hazard.
- High current equipment or appliances should be plugged directly into a wall outlet whenever possible.
- All extension cords and or electrical cords shall be inspected daily or before each use, for breaks, plug condition and ground lugs, possible internal breaks, and any other damage. If damage is found, the extension cord or electrical cord shall be remove from service and repaired or replaced.
- Extension cords shall not be used on compressor skid to operated heat tapes or any other type of equipment on a temporary basis. Heat tapes or other equipment shall be hard wired per applicable electrical codes.

GFCI (Ground Fault Circuit Interrupter)

The following requirements apply to temporary wiring installations that are used during construction-like activities, including certain maintenance, remodeling, or repair activities:

- All receptacle outlets that are not part of the permanent wiring of the building or structure and that are in use by personnel shall have ground-fault circuit-interrupter protection for personnel.

Outlets

- Outlets connected to circuits with different voltages must use a design such that the attachment plugs on the circuits are not interchangeable.

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Multiple Outlet Boxes

- Multiple outlet boxes must be plugged into a wall receptacle.
- Multiple outlet boxes must not be used to provide power to microwave ovens, toasters, space heaters, hot plates, coffeepots, or other high-current loads.

Double Insulated Tools

- Double insulated tools must have the factory label intact indicating the tool has been approved to be used without a three wire grounded supply cord connection.
- Double insulated tools must not be altered in any way, which would negate the factory rating.

Switches, circuit breakers, and disconnects

- All electrical equipment and tools must have an on and off switch and may not be turned on or off by plugging or unplugging the supply cord at the power outlet.
- Circuit breaker panel boxes and disconnects must be labeled with the voltage rating.
- Each breaker within a breaker panel must be labeled for the service it provides.
- Disconnect switches providing power for individual equipment must be labeled accordingly.

Ladders

- Only approved, non-conductive ladders, may be used when working near or with electrical equipment, which includes changing light bulbs.
- Ladders must be either constructed of wood, fiberglass, or have non-conductive side rails.
- Wood ladders should not be painted, which can hide defects, except with clear lacquer.
- When using ladders they shall be free from any moisture, oils, and greases.

Energized and Overhead High Voltage Power Lines & Equipment

- A minimum clearance of 10 feet from high voltage lines must be maintained when operating vehicular and mechanical equipment such as forklifts, winch trucks, and other similar equipment. Cranes require a minimum 20 foot clearance.
- When possible, power lines shall be de-energized and grounded or other protective measures shall be provided before work is started.
- Minimum approach distance to energized high power voltages lines for unqualified employees is 10 feet.
- Minimum approach distance for qualified employees shall be followed: See page 15 of 16.

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Confined or Enclosed Work Spaces

- When an employee works in a confined or enclosed space that contains exposed energized parts, the employee shall isolate the energy source and turn off the source and lock and tag out the energy source (Only qualified electricians can work on an exposed energy source).
- Protective shields, protective barriers or insulating materials as necessary shall be provided.
- Doors, hinged panels, and the like shall be secured against gravity, wind or other forces to prevent them from swinging into employees. Refer to the confined space entry program.

Enclosures, Breaker Panels, and Distribution Rooms

- A clear working space must be maintained in the front, back and on each side of all electrical enclosures and around electrical equipment for a safe operation and to permit access per the following Table:

Minimum Depth of Clear Working Space - Electric Equipment

Nominal voltage to ground	Minimum clear distance for condition ^{2 3}					
	Condition A		Condition B		Condition C	
	m	ft	m	ft	m	ft
50 – 600 V	0.9	3.0	1.2	4.0	1.5	5.0
601-2500 V	0.9	3.0	1.2	4.0	1.5	5.0
2501-9000 V	1.2	4.0	1.5	5.0	1.8	6.0
9001 V-25 kV	1.5	5.0	1.8	6.0	2.8	9.0
Over 25-75 kV ¹	1.8	6.0	2.5	8.0	3.0	10.0
Above 75 kV ¹	2.5	8.0	3.0	10.0	3.7	12.0

- **Notes to Table:**

¹ Minimum depth of clear working space in front of electric equipment with a nominal voltage to ground above 25,000 volts may be the same as that for 25,000 volts under Conditions A, B, and C for installations built before April 16, 1981.

² Conditions A, B, and C are as follows:

Condition A -- Exposed live parts on one side and no live or grounded parts on the other side of the working space, or exposed live parts on both sides effectively guarded by suitable wood or other insulating material. Insulated wire or insulated bus-bars operating at not over 300 volts are not considered live parts.

Condition B -- Exposed live parts on one side and grounded parts on the other side. Concrete, brick, and tile walls are considered as grounded surfaces.

Condition C -- Exposed live parts on both sides of the work space (not guarded as provided in Condition A)

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with the operator between.

³ Working space is not required in back of equipment such as dead-front switchboards or control assemblies that has no renewable or adjustable parts (such as fuses or switches) on the back and where all connections are accessible from locations other than the back. Where rear access is required to work on the de-energized parts on the back of enclosed equipment, a minimum working space 762 mm (30 in.) horizontally shall be provided.

- A minimum two-foot working floor space in front of panels and enclosures shall be painted yellow.
- Employees may not enter spaces containing exposed energized parts unless illumination is provided that enables the employees to work safely.
- Housekeeping in distribution rooms must receive high priority to provide a safe working and walking area in front of panels and to keep combustible materials to the minimum required to perform maintenance operations.
- All enclosures and distribution rooms must have “Danger: High Voltage – Authorized Personnel Only” posted on the front panel and on entrance doors.
- Flammable materials are strictly prohibited inside distribution rooms (Boxes, rags, cleaning fluids, etc.)

Lock Out/Tag Out

- No work shall be performed on (or near enough to them for employees to be exposed due to the dangers of tools or other equipment coming into contact with the live parts) live parts and the hazards they present.
- If any employee is exposed to contact with parts of fixed electric equipment or circuits which have been deenergized, the circuits energizing the parts shall be locked out or tagged or both.
- Conductors and parts of electrical equipment that have been de-energized but not been locked or tagged out shall be treated as live parts.
- Per WESTON procedure, work will be performed only by qualified and licensed electrical personnel who are familiar with the use of special precautionary techniques, PPE, insulating and shielding materials and insulated tools. Any equipment being made ready for maintenance will be locked out using WESTON’s Control of Hazardous Energy – Lock Out/Tag Out Program. Lockouts are performed by the individuals on the Project Team, including the Supervisor. If live sources are to be worked it will only be performed with the knowledge of local management and the appropriate DEHSM. Only qualified electricians may work on electric circuit parts or equipment.
- Only authorized personnel may perform lock out/tag out work on electrical equipment and will follow WESTON’s Control of Hazardous Energy – Lock out/Tag Out Program.

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- Authorized personnel will be trained in lock out/tag out procedures.
- Affected personnel will be notified when lock out/tag out activities are being performed in their work area.

Contractors

- Only approved, certified/qualified, electrical contractors may perform construction and service work on WESTON or client property.
- It is the Manager/Supervisors responsibility to verify the contractor's certification.

Fire Extinguishers

- Approved fire extinguishers must be provided near electrical breaker panels and distribution centers.
- Water type extinguishers shall not be located closer than 50 feet from electrical equipment.

Electric Shock-CPR:

- If someone is discovered that has received an electric shock and is unconscious, first check to see if their body is in contact with an electrical circuit. Do not touch a person until you are sure there is no contact with an electrical circuit.
- When it is safe to make contact with the victim, begin CPR if the person's heart has stopped or they are not breathing.
- Call for help immediately.

Electric Welders

- A disconnecting means shall be provided in the supply circuit for each motor-generator arc welder, and for each AC transformer and DC rectifier arc welder which is not equipped with a disconnect mounted as an integral part of the welder.
- A switch or circuit breaker shall be provided by which each resistance welder and its control equipment can be isolated from the supply circuit. The ampere rating of this disconnecting means may not be less than the supply conductor ampacity.

Equipment Grounding

- All gas compressors, air compressors, separators, vessels, etc. shall be grounded by means of using a lug and ground strap, nominal in size to a ½" bolt or larger, attached to a ground rod six feet or longer.
- Equipment bonding jumpers shall be of copper or other corrosion-resistance material.

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- The transfer of hazardous or flammable material from a metal or plastic container with a flash point of 100 degrees F or less shall have a ground strap from the container and attached to the skid or a ground rod placed in the ground.

Additional Training Requirements for Qualified Persons Who Are Allowed to Work Within the Limited Approach Boundary

Employees are trained to understand the specific hazards associated with electrical energy. Employees shall be trained in safety-related work practices and procedural requirements as necessary to provide protection from the electrical hazards associated with their respective jobs. Employees shall be trained to identify and understand the relationship between electrical hazards and possible injury.

Employees shall be trained in the skills and techniques to distinguish exposed energized electrical conductors and circuit parts from other parts of electrical equipment, to determine the nominal voltage of exposed energized electrical conductors and circuit parts, the approach distances specified in Table 130.2 (below), and the decision making process necessary to determine the degree and extent of the hazard and the personal protective equipment and job planning necessary to perform the task safely.

Limited Approach Boundary				
Nominal system voltage range, phase to phase	Exposed movable conductor	Exposed fixed-circuit part	Restricted approach boundary (allowing for accidental movement)	Prohibited approach boundary
0 to 50 volts	Not specified	Not specified	Not specified	Not specified
51 to 300 volts	10 ft. 0 in.	3 ft. 6 in.	Avoid contact	Avoid contact
301 to 750 volts	10 ft. 0 in.	3 ft. 6 in.	1 ft. 0 in.	0 ft. 1 in.
751 to 15 KV KV	10 ft. 0 in.	5 ft. 0 in.	2 ft. 2 in.	0 ft. 7 in.
15.1 kV to 36 KV	10 ft. 0 in.	6 ft. 0 in.	2 ft. 7 in.	0 ft. 10 in.
36.1 KV to 46 kV	10 ft. 0 in.	8 ft. 0 in.	2 ft 9 in.	1 ft. 5 in.
46.1 KV to 72.5 KV	10 ft. 0 in.	8 ft. 0 in.	3 ft 2 in.	2 ft. 1 in.
72.6 KV to 121 KV	10 ft. 8 in.	8 ft. 0 in.	3 ft. 3 in.	2 ft. 8 in.

Employees shall be trained in safety related work practices that pertain to their respective job assignments.

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Retraining

Retraining will be conducted when the employee is not complying with safety-related work practices or when workplace changes necessitate the use of safety-related work practices that are different from those that the employee would normally use. An employee shall receive additional training (or retraining) under any of the following conditions:

- If the supervision or annual inspections indicate that the employee is not complying with the safety-related work practices
- If new technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices that are different from those that the employee would normally use
- If he or she must employ safety-related work practices that are not normally used during his or her regular job duties

Retraining shall be performed at intervals not to exceed 3 years. Retraining shall be performed at intervals not to exceed 3 years.

Safe work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are or may be energized.

Training shall be documented and maintained for the duration of the employee's employment. Documentation shall be made when the employee demonstrates proficiency, be maintained for the duration of the worker's employment, and contain each employee's name and date of training.

Related FLDs

FLD 02 – Inclement Weather; FLD 08 – Confined Space Entry Program; FLD 24 – Aerial Lifts/Manlifts; FLD 25 – Working at Elevation/Fall Protection; FLD 26 – Ladders; FLD 27 – Scaffolding; FLD 34 – Utilities; FLD 38 – Hand and Power Hand Tools; FLD 42 – Lockout/Tagout; FLD 56 – Drilling Safety

FLD 31 FIRE PREVENTION AND PROTECTION PLANNING

Fire prevention and protection are key elements to any activity conducted. This FLD focuses on the understanding of fire hazards, protection and equipment options available for use, minimal inspection requirements for equipment and worksites, guidance on limiting fire hazards, training, and site-specific planning. The objectives of this program are to ensure that personnel can understand the hazards associated with fires, how to prevent fires from occurring, and how to act safely and appropriately in the event of a fire emergency.

RELATED FLDs AND PLANS

*FLD 32 – Fire Extinguishers Required and Requirements
Emergency Response Plan
Health and Safety Plan*

RESPONSE ACTIONS

In case of fire, immediately take the following actions:

- Evacuate the building or area in accordance with the evacuation plan. Activate fire alarms if they have not already been activated.
 - Use nearest exit.
 - Do not use elevators.
 - Close all doors behind you.
- Dial 911 or the established Fire Emergency Number from a safe location.
 - Indicate what is happening, location of fire, if any injuries.
 - Comply with requests from the 911 operator for information.
 - Do not hang up with the operator until told to do so by the operator, or they hang up first.

Upon completion of emergency phase comply with incident notification procedures.

NOTE: If the fire is small and manageable with fire extinguishing equipment at hand, and provided you are trained in the use of this equipment, you may make the decision to use this equipment while waiting for advanced assistance. Never place yourself in danger, always have a plan for escape, and never attempt to fight a fire if there are any doubts about the type of fire or your ability to successfully fight the fire. Never allow the fire to get between you and your escape route.

LIFE SAFETY

- All workers are required to follow the Emergency Action Plan (EAP) and Health and Safety Plan (HASP) developed for the respective work location.
- Exit signs must be visible from all areas of a room.
- All exits maintained unobstructed, unblocked, and unlocked.
- Egress pathways maintained per National Fire Protection Association (NFPA) Standard 101. In no event less than 28 inches wide.

- Adequate and reliable illumination must be available.
- Provisions must be made within local EAPs to assist any potentially physically challenged personnel or visitors.

FIRE PROTECTION (EQUIPMENT AND PROCEDURES)

Classes of Fire

- Class A: Combustibles (e.g., wood, paper, cloth).
- Class B: Flammable and combustible liquids, gasses and greases.
- Class C: Denotes presence of electrical and energized electrical equipment.
- Class D: Combustible metals
- Class K: Combustible cooking media (e.g., oils and greases).

Type(s) of Fire Protection Equipment or Systems

The following types of systems are typically used in most occupancy. In the event a different system is installed or anticipated, contact Environmental Compliance, Health, and Safety (EHS) Staff for assistance.

- Fixed Systems
 - Sprinkler Systems: Keep heat sources and dust generating sources away from sprinkler heads. Allow a minimum of 18 inches clearance below the sprinkler head. Do not paint sprinkler heads. Maintain working clearance around sprinkler control valves. Ensure that system tests are conducted in accordance with local fire code requirements.
 - Fire Hydrants and Fire Lanes: Ensure that clearance for fire fighting equipment (trucks) and fire fighters is maintained in fire lanes and around hydrants. Do not use fire hydrants for any purpose other than fire fighting unless express approval is obtained from the local fire department.
- Portable Fire Extinguishers
 - Selecting: Ensure that portable fire extinguishers are appropriate for the class and size of potential fire. Selection will be based on the more restrictive requirements of Occupational Safety and Health Administration (OSHA), NFPA, or Local fire code. Contact EHS staff for assistance as necessary.
 - Training and Education: In accordance with 29 CFR 1910.157 and NFPA Standard 10, WESTON will provide portable fire extinguisher general use education, routine inspection guidelines, and incipient fire hazard recognition and prevention training to all new employees upon initial employment and at least annually thereafter. The portable fire extinguisher training education will be documented and a record of that training will be maintained on file for a period of at least one year. Only persons who have been trained may use portable fire extinguishers.
 - Maintenance and Inspection: Maintenance and inspection will be in accordance with 29 CFR 1910.157 and NFPA Standard 10. Each portable fire extinguisher inspection documentation/tags shall include the fire extinguisher type and/or identifier, the person inspecting, date of the routine inspection, date of last recharge, and the date of the annual maintenance check by a qualified person. Each portable fire extinguisher shall document at least a monthly visual inspection by a trained inspector and shall consist of the following:

- Annual maintenance check.
- Appropriate pressure charge.
- Clean and clear discharge port or hose used in lieu thereof.
- Pressure handle pin in place and secured.
- Extinguisher properly mounted.
- Extinguisher properly identified
- Each inspection period to include both annual and routine inspections for active and stored portable fire extinguishers will be documented and documentation will be maintained on file for a period of at least one year after the last entry or the life of the shell, whichever is less. The inspection and maintenance record will be available to the assistant secretary of OSHA, or any other responsible authority upon request.
- Alarm Systems
 - Fixed alarm systems are to be installed, maintained, and tested by approved vendors.
 - In the event of a fire emergency alarm, immediately evacuate.
- Fire Doors
 - All doors designated as fire doors are to remain closed.
 - In the event of a fire, close (but do not lock) all doors while evacuating.

Incident Notifications and Actions

Any discharge of a portable or fixed fire extinguishing system requires Notice of Incident (NOI) reporting. Discharged extinguishers are to be replaced immediately by acceptable units and the discharged units submitted for testing and recharge.

Responsibilities

EHS Staff

- Assists management in determining appropriate numbers and types of fire protection equipment and/or systems based upon site or building criteria.
- Verifies through inspection that fire extinguishers and systems are properly selected, used, and maintained.
- Provides technical assistance to management and reviews plans to ensure that fire hazards are limited.

Management (OU, Office, Project, and Site)

- Ensure that occupancies have appropriate numbers and types of fire protection equipment and/or systems.
- Ensure that required inspections of equipment and systems are conducted.
- Ensure that any deficiencies in equipment or systems are corrected in a timely manner without impact to overall fire protection of occupancy.

- Designates a person or persons to be responsible for the selection, purchase, repair or replacement of portable fire extinguishers and as necessary, other fire protection systems for site or building/occupancies.
- Ensures, as appropriate, that personnel are trained in the use of portable fire extinguishers.
- Ensure that all affected personnel are trained in the EAP and evacuation procedures.
- Notifies EHS staff and others, as appropriate, prior to building modifications, site activities, or other tasks that impact fire prevention and protection.
- Ensures that flammable and combustible materials are used and maintained in a safe manner.
- Ensures that housekeeping is routinely conducted.
- Ensures that heat producing materials and equipment are properly rated, used, and maintained.

All Personnel

- Take all appropriate measures to limit fire hazards.
- Report all fires.
- Evacuate as trained and directed in the event of an emergency.
- Do not prop open fire doors.
- Keep exits and exit ways clean, clear, and unblocked.
- Take all appropriate measures to limit fire hazards.
- Use and store flammable and combustible materials appropriately.

FIRE PREVENTION AND PROTECTION (LIMITING HAZARDS)

Flammable and Combustible Materials (liquids, gases)

- Flammable materials must be properly labeled, stored, handled, and used.
- No smoking or use of open flame-producing devices within 50 feet of flammable and combustible materials.
- Obtain Material Safety Data Sheets (MSDS) for all flammable materials in use and ensure all personnel are aware of hazards.
- All containers are to be properly labeled with contents, the word Flammable, and in accordance with hazard communication requirements.
- Store materials in well ventilated areas that are free of ignition sources and flame or sparks.
- Ensure that incompatible materials are stored in remote locations from each other (e.g., keep flammables from oxidizers).
- Limit quantities to minimum required.
- Store cylinders in upright and secure positions.
- Bond and ground containers as (and where) necessary.
- Use proper storage cabinets for flammable and combustible materials. Contact EHS Staff for assistance.

- Use only approved containers.
- Use and dispense only in well-ventilated areas.

Combustible Materials (solids)

- Solid combustible materials include; wood, paper, and cloth. Proper housekeeping reduces concerns for combustion of these materials. Use proper receptacles for disposal and dispose of routinely.

Oxidizers

- An oxidizer is a substance that increases the flammability of materials, allowing them to burn easier. Examples include; pure oxygen, chlorine, ammonium nitrate. Store oxidizers in a remote location from flammable and combustible materials.

Electric Appliances

- Do not use electric appliances near flammable or combustible materials. Never place an appliance on an unstable surface. Use on UL or FM approved appliances. Follow the manufactures recommendations or requirements for use and maintenance. Obtain approval from EHS staff prior to purchase and use of portable heater units in office settings. Do not leave portable heaters on and unattended.

Hot Work Permits

- A permit is required for any “hot” work such as; welding, brazing, and cutting or the use of an open flame device (other than that by an FM or UL approved device used in accordance with manufacture’s requirements).
- Hot work permits will be issued by local or site EHS staff, or as designated by project management. Permits are typically associated with one task and for one shift. At the discretion of local EHS personnel, permits may be authorized for longer periods.

Smoking

- Smoking is prohibited indoors. Smoking is only allowed in outdoor, designated areas. Smokers are to maintain smoking areas in a clean and safe condition. Ensure that receptacles for disposal of cigarettes and other smoking materials are appropriately constructed, free of combustible debris and when necessary, are cool before emptying into waste receptacles.

Housekeeping

- All personnel are responsible for keeping work areas free of combustible materials and debris.
- Weeds and grass must be properly maintained to limit potential fire hazard.

FIRE PREVENTION AND PROTECTION MINIMUM REQUIREMENTS

OSHA outlines minimum requirements for emergency evacuation planning and fire prevention plans (see www.osha.gov). Site-specific HASPs are developed to implement these requirements.

For evacuation planning, the minimum requirements are:

- Description of routes and procedures to follow.
- Procedures for accounting of personnel.
- Procedures for evacuation of physically impaired employees where necessary.
- Procedures for those employees who must remain temporarily behind to shut down critical equipment before they evacuate.
- Alerting systems must be identified.

Training must be conducted for all employees on what to do in the event of an evacuation emergency.

FLD 26 LADDERS

REFERENCES

ANSI A-14.1, A-14.2, A-14.3
29 CFR 1910.25, 1910.16, 1910.27

RELATED FLDs

FLD 25 – Working at Elevation/Fall Protection

Portable Ladders

Portable ladders must be used for their designed purpose only. Portable ladders must be used, maintained, and constructed according to American National Standards Institute (ANSI) Standards A-14.1 and A-14.2, Occupational Safety and Health Administration (OSHA) 29 CFR 1910.25 and .26 and manufacturer's instructions.

Inspection

Portable ladders must be examined for defects prior to use. Examination shall include, but not be limited to, ensuring that:

1. Joints between steps or rungs are tight.
2. Hardware and fittings are secure, and rivets are not sheared.
3. Metal bearings (e.g., locks, wheels, pulleys) are lubricated.
4. Rope on extension ladders is in good condition.
5. Rungs are not loose, cracked, bent, or dented; are free of splinters or splinters; and are treated to prevent slipping.
6. Side rails are not cracked, bent, or dented and are free of splinters.

Note: defective ladders must not be used. Ladders found to be defective should be clearly tagged to indicate NO USE, if repairable, or destroyed immediately if repair is not possible.

Use Requirements

Ladders must be set on a flat, firm surface with both handrails in contact with an upper support which is sufficiently strong and rigid.

Straight ladders must have secure footing provided by a combination of safety feet, top of ladder tie-offs and mud sills, or a person holding the ladder to prevent slipping.

When middle or top sections of sectional ladders are used as bottom sections, they must have safety feet.

The ratio of the distance to the foot of a ladder from the base of the vertical plane to the height from the base to the top of the vertical plane when the ladder rests on the top of the vertical plane shall be no more than 1:4 and no less than 1:3 (e.g., 1 foot out from a wall for every 4 feet up the wall to the point where the ladder rests against the wall).

The handrails of a straight ladder must extend at least 36 inches above the landing.

Straight ladders may not be lashed together to make sectional ladders.

Metal ladders must not be used near electrical conductors.

Workers must use both hands, and must face the ladder when ascending and descending.

No more than one person may use a straight portable ladder at a time.

Standing on the top rung/step or above the manufacturer's safe indication is prohibited.

Ladders should be positioned so workers do not have to lean more than half of their body beyond (outside of) either handrail.

Ladders must not be placed in front of doors that open toward the ladder unless the door is locked and the person(s) using the ladder has the key, the door is blocked open and other persons are warned of the presence of the ladder, or a guard is posted at the door.

Ladders must be inspected after each use and if acceptable, stored in a manner not to damage or stress the ladder. Ideally, ladders should be hung from a side rail in an area where sunlight or extremes in temperature or humidity will not affect them.

Ladders must never be used as scaffolding, storage racks, or shelves. Requirements for construction of portable ladders include:

- Ladders must conform to construction criteria of ANSI Standards A-14.1 and A-14.2.
- Ladders must have at least 12 inches between side rails and should have 12 inches between rungs.
- Ladder length must not exceed 30 feet for single section ladders, 48 feet for two-section ladders, and 60 feet for ladders with more than two sections. The minimum overlap for extension ladders must be 36 inches for up to 36 feet, 48 inches for 36 to 48 feet, and 60 inches for up to 60 feet. There must be positive stops to ensure proper overlap.
- Metal ladders must be of sufficient strength and corrosion resistant.
- Steps or rungs of metal ladders must be treated to prevent slipping.

Fixed Ladders

Fixed ladders shall be constructed and used in accordance with OSHA Standards, 29 CFR 1910.27, and ANSI Standard A-14.3.

Requirements for Construction

Loading Requirements: A minimum live load capacity of 200 lb. is concentrated at the points of maximum stress. Capacity must be increased in 200-lb increments for each additional person, based on the rate of use and potential for more than one person using a ladder or ladder section at the same time.

Weight of the ladder itself and appurtenances must be considered in designing the railings and fastenings.

Wooden ladders must meet design stress requirements of 29 CFR 1910.25.

Feature Requirements: Metal rungs must be a minimum of 3/4-inch in diameter, except where corrosive atmospheres exist. In corrosive atmospheres, metal rungs must be 1-inch minimum diameter or coated to

prevent corrosion. Wooden rungs must be a minimum of 1 inch in diameter. The distance between rungs, cleats, or steps must be no more than 12 inches. Rungs, cleats, or steps must be uniformly spaced throughout the length of the ladder.

The minimum clear width of rungs, cleats, or steps is 16 inches.

Rungs, cleats or steps, and side rails that may be used for handholds when climbing, must offer adequate gripping surface and be free of splinters, splinters or burrs, and substances that could cause slipping.

Ladders constructed of different metals, which could result in electrolytic action, must incorporate electrolytic protection. Ladders in atmospheres that could affect the integrity of the ladder must be treated to prevent corrosion or deterioration.

Fixed ladders (unless of sufficient height to use caging or a well construction as fall protection) must have as a minimum:

- 15 inches of clearance from the centerline of the rungs to each side.
- 30 to 36 inches from the rungs to any obstruction on the climbing side of the ladder.
- 7 inches between the rungs and any obstruction on the non-climbing side of the ladder.
- grab rails or extensions of side rails reaching a minimum of 40 inches above the landing.
- be oriented so that it is not necessary to step across more than 12 inches to a point of landing through or to the side of the ladder.

Ladders of greater than 20 feet must have cages or other approved fall protection devices. Where cages or wells are used for fall protection, the cage must begin no lower than 7 feet from the "ground" landing, but no higher than 8 feet. Ladders of more than 30 feet must have sections offset with side-accessed landings (minimum dimensions 24 inches wide by 30 inches long) located at least 4 feet below the top of a 30-foot section (or fraction thereof). The distance from the rungs to the cage back on the climbing side must be between 27 and 28 inches, and the width of the cage or well no less than 27 inches. There should be no projections through the cage. Projections in wells may reduce space from rung to projection to no less than 24 inches, and projections must have deflectors for head protection.

Where fall protection is provided by ladder safety systems (body belts or harnesses, lanyards, and braking devices with safety lines or rails), systems must meet the requirements of and be used in accordance with FLD 25 and be compatible with construction of the ladder system.

FLD 25 WORKING AT ELEVATION/FALL PROTECTION

This procedure establishes the minimum requirements for elevated work/fall prevention for WESTON operations.

Requirements listed in this procedure are not all-inclusive; each specific work location must be evaluated to ensure that workers are offered practical and effective means to assure safe elevated work.

All activities, including steel erection and sheet piling must incorporate appropriate fall protection at elevations of 6 feet or more*. Options to reduce exposures to fall hazards can be managed by reducing the number of workers exposed, relocating equipment/work areas, use of a positioning device, or by choosing different equipment options (i.e., choosing an aerial lift rather than a ladder or a scaffold) and must be evaluated.

Fall protection is required for those workers conducting inspection, investigation, or assessment of fall hazards during construction activities. It is realized that the provision of fall protection for the first person up for establishing anchorages only would be difficult. In this situation, fall protection may not be required. After anchorages are installed, fall protection is required.

WESTON will take every reasonable precaution to protect the health and safety of our employees. Implicit in this policy is the requirement that employees use effective fall protection systems when working in any situation that presents a known or foreseeable fall exposure.

While this operating practice combines elements of OSHA and the Corps of Engineers EM 385-1-1 not all aspects of each are completely covered, therefore, those personnel writing and reviewing plans containing fall protection elements must be familiar with the appropriate regulations and/or agency requirements and act appropriately.

*Employees performing work under General Industry Standards (29CFR1910) must provide protection at 4 feet. Workers must be provided protection where there is a possibility of a fall from any height onto dangerous equipment, into a hazardous environment, or onto an impalement hazard.

REFERENCES

29 CFR 1910 Subpart D, *Walking-Working Surfaces*
29 CFR 1926 Subpart M, *Fall Protection*; Subpart L, *Scaffolds*

EM 385-1-1, Corps of Engineers Safety and Health Requirements Manual (15 September 2008), Section 21, *Fall Protection*

ANSI/ASSE Z.359-2007; Fall Protection Code

Related FLDs:

FLD 24 Aerial Lifts
FLD 26 Ladders
FLD 27 Scaffolding

RESPONSIBILITY

WESTON will assure that adequate and timely resources are available to support this fall protection program. To this end:

The Corporate Environmental Health and Safety Director will serve as (or directly appoint) the Program Administrator with responsibilities for developing implementing, monitoring and evaluating WESTON's Fall Protection Program.

Local Management (Division Manager, Client Services Manager, Project Manager, and Site Manager) is responsible for ensuring that fall protection programs and procedures are implemented and followed within their areas of responsibility.

The Corporate Environmental Health and Safety Director designates the Division Environmental Health and Safety Managers (DEHSM) to serve as Program Administrators and as (or directly appoint) Competent Persons for this Program. The DEHSM must be consulted during the planning phase for projects/sites where fall protection is determined to be infeasible as defined within this Field Operating Practice (FLD).

The function of Competent Persons in Fall Protection will be held by those employees who have completed WESTON's Fall Protection Competent Person training, or those named by the Program Administrator as having equivalent and accepted credentials. A Competent Person must be available at any location with fall hazards meeting the criteria outlined within this Program.

Employees must be trained and authorized to perform tasks with exposure to fall hazards as outlined within this Program.

Provisions for prompt rescue (both self-rescue and assisted rescue) must be evaluated and implemented prior to putting employees into situations with the risk of falling. The plan shall contain provisions for self-rescue and assisted rescue of any worker who falls including rescue equipment. If other methods of rescue are planned (e.g., by a jurisdictional public or Government emergency rescue agencies), it shall be indicated in the rescue plan including how to contact and summon agency to the mishap site.

GENERAL REQUIREMENTS

Work performed at elevation where there is a risk of injury due to falls, will be performed in accordance with the following general requirements:

- Activities with potential fall hazards will be identified as part of the pre-job planning hazard assessment process. A Fall Hazard Plan will be developed and routinely evaluated as by a competent person as part of the site-specific health and safety plan (HASP).
- Fall hazards shall be identified and mitigated during the design or pre-planning phase on all new equipment and/or facility design (Safety through Design).
- The order of control measures (the hierarchy of controls) to abate fall hazards or to select and use a fall protection method to protect workers performing work at heights shall be:
 - Elimination: Remove the hazard from the work areas or change task, process, controls or other means to eliminate the need to work at heights and subsequent exposure to fall hazards (i.e. build roof trusses on ground level and then lift into place or design change by lowering a meter or valve at high locations to a worker's level;

- Prevention (traditional or same-level barrier): Isolate and separate fall hazards from work areas by erecting same level barriers such as guardrails, walls, covers or parapets;
 - Work platforms (movable or stationary): Use scaffolds, scissors lifts or aerial lift equipment to facilitate access to work location and protect workers from falling when performing work at high locations;
 - Personal Protective Systems and Equipment: Use of fall protection systems, including restraint, positioning or personal fall arrest, (i.e. requiring the use of full body harness, lanyard, and lifeline);
 - Administrative Controls: Introduce new work practices that reduce the risk of falling from heights, or to warn a person to avoid approaching a fall hazard (i.e. warning system, warning lines, audible alarms, signs or training or workers to recognize specific fall hazards).
- As available, exposure to fall hazards will be managed by reducing the number of workers exposed, relocating equipment/work area, or by choosing different equipment options (i.e., choosing an aerial lift rather than a ladder or scaffold).
 - Workers performing activities with fall hazards not mitigated by installation of standard guardrails, walls, or other barriers will be protected by the use of fall protection equipment or a WLS. When working between the leading edge and the WLS, fall protection equipment shall be used.
 - Equipment (aerial lifts, ladders, body harnesses, lanyards, etc.) shall be visually inspected by trained workers or the Field Safety Officer (FSO) prior to each use. Defective equipment shall be tagged, removed from service immediately, and the Site Manager notified.
 - Each employee performing construction work on a walking/working surface (horizontal and vertical) with an unprotected side or edge which is 6 feet (1.8m) or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems. Employees performing work under General Industry Standards (29CFR1910) must provide protection at 4 feet.
 - WESTON shall:
 - Review and approve selected fall protection equipment or alternative fall hazard control measures for unusual circumstances or for the use of fall protective equipment not previously approved
 - Perform periodic assessments of operations to evaluate performance and assure compliance with this FLD.
 - Provide technical guidance and regulatory interpretations to ensure consistent and compliant implementation of this program.
 - Provide comments on and communicate changes in fall prevention regulations.
 - Ensure an adequate supply of standard fall protection equipment is available for issue.
 - Ensure portable ladders and fall protection equipment are inspected prior to placing them in service.

– In the event an employee falls, or some other related, serious incident occurs, (e.g., a near miss), investigate the circumstances of the fall or other incident to determine if the fall protection plan needs to be changed (e.g. new practices, procedures, or training) and implement those changes to prevent similar types of falls or incidents.

FALL PROTECTION SYSTEMS

The following is not a comprehensive outline of fall protection methods for all fall hazard situations. The PM and FSO must evaluate each site and work activity for appropriate fall protection and worker safety requirements as outlined in OSHA 29 CFR 1910, 29 CFR1926, and or EM 385-1-1. WESTON's Program Administrator and/or Competent Person(s) must be made aware of unique situations not fully covered by this FLD and/or listed regulatory reference.

PREVENTION

Guardrails

Top edge height of top rails, or equivalent guardrail system members, must be between 39 and 45 inches above the walking/working level, except when conditions warrant otherwise and all other criteria are met (e.g., when employees are using stilts, the top edge height of the top rail must be increased by an amount equal the height of the stilts).

Midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structures, must be installed between the top edge and the walking/working surface when there is no wall or other structure at least 21 inches high.

- Midrails must be midway between the top edge of the guardrail system and the walking/working level.
- Screens and mesh must extend from the top rail to the walking/working level, and along the entire opening between rail supports.
- Intermediate members (such as balusters) between posts must be no more than 19 inches apart.
- Other structural members (such as additional midrails or architectural panels) must be installed so as to leave no openings wider than 19 inches.
- Guardrail systems must be capable of withstanding at least 200 pounds of force applied within 2 inches of the top edge, in any direction and at any point along the edge, and without causing the top edge of the guardrail to deflect downward to a height less than 39 inches above the walking/working level. In the event the guardrail system will be subject to heavy stresses from workers or equipment the system will be evaluated to determine if it must be reinforced beyond the minimum criteria.
- Midrails, screens, mesh, and other intermediate members must be capable of withstanding at least 150 pounds of force applied in any direction at any point along the midrail or other member.

- Top rails and midrails must not cause a projection hazard by overhanging the terminal posts.
- Guardrail systems shall be so surfaced as to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.
- Steel banding and plastic banding shall not be used as top rails or midrails.
- Guardrail systems (Per 29 CFR 1926.500, Appendix A Guardrail construction must be to the standards listed below:

(1) For wood railings: Wood components shall be minimum 1500 lb-ft/in (2) fiber (stress grade) construction grade lumber. The posts shall be at least 2-inch by 4-inch (5 cm x 10 cm) lumber spaced not more than 8 feet (2.4 m) apart on centers. The top rail shall be at least 2-inch by 4-inch (5 cm x 10 cm) lumber; the intermediate rail shall be at least 1-inch by 6-inch (2.5 cm x 15 cm) lumber. All lumber dimensions are nominal sizes as provided by the American Softwood Lumber Standards, dated January 1970.

(2) For pipe railings: posts, top rails, and intermediate railings shall be at least one and one-half inches nominal diameter (schedule 40 pipe). Posts shall be at least 1 ½ in (3.8 cm) nominal diameter (schedule 40 steel pipe) spaced not more than 8 ft (2.4 m) on centers.

(3) For structural steel railings: posts, top rails, and intermediate rails shall be at least 2-inch by 2-inch (5 cm x 10 cm) by 3/8-inch (1.1 cm) angles, with posts spaced not more than 8 feet (2.4 m) apart on centers.

(4) For Steel Cable (Wire Rope) railings: Toprail and midrail shall be ¼-in (6.25 mm) steel cable, flagged every 6 ft (1.8 m) with high visibility material, and may be used only if tension is maintained to provide not more than 3 in (7.5 cm) deflection, in any direction from the center line, under a 200 lb (0.89 kN) load; Support posts shall be located to insure proper tension is maintained;

(5) Toe boards (Used to protect those below from falling objects).

(a) Toe boards shall be 3 ½ in (8.75 cm) in vertical height and shall be constructed from 1-in x 4-in (2.5-cm x 10.1-cm) lumber or the equivalent.

(b) Toe boards shall be securely fastened in place and have not more than ¼ in (0.6 cm) clearance above floor level.

(c) Toe boards shall be made of any substantial material, either solid or with openings not greater than 1 in (2.5 cm) in greatest dimension.

(d) Where material is piled to such a height that a standard toe board does not provide protection, paneling or screening from floor to toprail or midrail shall be provided.

POSITIONING DEVICE SYSTEMS

These body harness systems are to be set up so that workers can free fall no farther than 2 feet. They shall be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's

fall or 3,000 pounds, whichever is greater. Requirements for snaphooks, D-rings, and other connectors used with positioning device systems must meet the same criteria as those for personal fall arrest systems.

Personal Fall Arrest Systems

A Personal Fall Arrest System (PFAS) must do the following:

- Limit maximum arresting force on an employee to 1,800 pounds when used with a body harness;
- Be rigged so that employees can neither free-fall more than 6 feet nor contact any lower level;
- Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet and
- Have sufficient strength to withstand twice the potential impact energy of an employee free-falling a distance of 6 feet or the free-fall distance permitted by the system, whichever is less.
- PFAS are generally only certified for users within the capacity range of 130 to 310 lbs (59 to 140.6 kg) including the weight of the worker, equipment and tools. Workers shall not be permitted to exceed the 310 lbs (140.6 kg) limit unless permitted in writing by the manufacturer. For workers with body weight less than 130 lbs (59 kg), a specially designed harness and also a specially designed energy absorbing lanyard shall be utilized which will properly deploy if this person were to fall.

Key components of the PFAS must be in place and properly used to provide maximum worker protection. Each of the following pieces of the PFAS must meet the requirements of ANSI Z359.1-2007.

Anchor Point

- Anchor Point or Anchorage: Commonly referred to as a tie-off point. Anchorages must be capable of supporting 5,000 pounds of force per worker or designed with a safety factor of 2.

Harnesses

The personal protective equipment worn by the worker (i.e., full-body harness)

- The only form of body wear acceptable for fall arrest is the full-body harness.
- Should be selected based on work to be performed and the work environment.

Connecting Device

Connecting Device: The critical link which joins the harness to the anchorage/anchorage connector (e.g., shock-absorbing lanyard, fall limiter, self-retracting lifeline, rope grab). The connecting device includes the hardware (e.g., snaphooks, carabiners, D-rings, etc.) associated with both the connecting device and the harness.

- Potential fall distance must be calculated to determine type of connecting device to be used.

Construction and Use

Safety Harnesses, Lanyards, and Lifelines

- The construction of this equipment shall comply with requirements set forth in ANSI Z359.1, Safety Requirements for Personal Fall Arrest Systems, Subsystems, and Components for General Industry.
- Each belt and harness assembly shall bear identification marks that identify the manufacturer. The identification shall also bear the date of manufacture and "ANSI Z359.1-2007."
- Each belt, harness, lanyard, and lifeline assembly shall be visually inspected for defects prior to each use.
- Each belt and harness assembly shall be inspected, according to the manufacturer's recommendations by a competent person, other than the user, or at intervals of no more than semi-annually, one year, whichever is less. Faulty equipment shall not be used and shall be tagged as defective or immediately destroyed.
- Body belts (safety belts) may only be used in conjunction with a restraint line to prevent a worker from reaching 6 feet from the edge of a roof/elevated platform. Body belts shall not be used as part of a fall arrest system.
- Personal fall protection equipment (harnesses, lanyard, lifelines, etc.) subjected to an arresting fall or a shock load shall not be reused.
- Fall arrest systems shall be tested as complete systems. Only components that are fully compatible with one another shall be used together.
- Anchorage used for attachment of personal fall arrest equipment shall be capable of supporting at least 5,000 pounds per worker attached. Anchorage for suspended platforms (Boatswain chair, two point suspended scaffold, etc.) shall be independent of any anchorage being used to support or suspend the platform from which work is being performed.
- Anchorage points for positioning devices which automatically limit free fall distances to 2 feet or less shall be capable of supporting at least twice the potential impact load of a worker's fall or 3000 pounds, whichever is greater. A positioning system shall not be used as a primary fall arrest system. Positioning systems use some of the same equipment as a fall protection system (such as a harness), however a positioning system used alone does not constitute fall protection. While positioning (working with both hands free), a person is exposed to a fall hazard and is required under this section to use a separate system that provides backup protection from a fall.
- Self-retracting lifelines and lanyards that automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.
- Self-retracting lifelines and lanyards that do not limit free fall distance to 2 feet or less, ripstitch lanyards, and tearing and deforming lanyards shall be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.
- Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body belts and body harnesses shall be made of synthetic fibers.
- Lanyards and vertical lifelines must have a minimum breaking strength of 5,000 pounds. .

Connectors

Connectors, including D-rings and snaphooks, must be made from drop-forged, pressed or formed steel or equivalent materials. They must have a corrosion-resistant finish, with smooth surfaces and edges to prevent damage to connecting parts of the system.

Snaphooks and carabiners must meet the requirements of ANSI/ASSE Z359.1-2007.

D-Rings must have a minimum tensile strength of 5,000 pounds, and be proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or becoming permanently deformed.

Snaphooks must have a minimum tensile strength of 5,000 pounds, and be proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or becoming permanently deformed. They must also be locking-type, double-locking, designed and used to prevent disengagement.

Unless it is designed for the following connections, snaphooks must not be engaged:

- Directly to webbing, rope, or wire.
- To each other.

- To a D-ring to which another snaphook or other connector is attached.

Safety Nets

Safety nets must be installed as close as practicable under the walking/working surface on which employees are working and never more than 25 feet below such levels. Defective nets shall not be used. Safety nets shall be inspected at least once a week for wear, damage, and other deterioration. The maximum size of each safety net mesh opening shall not exceed 36 square inches nor be longer than 6 inches on any side, and the openings, measured center-to-center, of mesh ropes or webbing, shall not exceed 6 inches. All mesh crossings shall be secured to prevent enlargement of the mesh opening. Each safety net or section shall have a border rope for webbing with a minimum breaking strength of 5,000 pounds. Connections between safety net panels shall be as strong as integral net components and be spaced no more than 6 inches apart.

Safety nets and safety net installations shall be tested in the suspended position immediately after installation under the supervision of Qualified Person [and in the presence of the Government Designated Authority (GDA) when working on a site subject to EM 385-1-1] and before being used as a fall protection system; whenever relocated, after major repair; and when left at one location, at not more than 6 month intervals.

The test shall consist of dropping into the net a 400 lb (180 kg) bag of sand, not more than 30 in \pm 2 in (76.2 cm \pm 5 cm) in diameter, at least 42 in (106.6 cm) above the highest working/walking surface at which workers are exposed to fall hazards. Means must be taken to ensure the weight can be safely retrieved after the test is conducted.

Shackles and hooks used in safety net installations shall be made of forged steel. When used with safety nets, debris nets shall be secured on top of the safety net but shall not compromise the design, construction, or performance of the safety nets. Materials, scrap pieces, equipment, and tools that have fallen into the safety net shall be removed as soon as possible and at least before the next work shift. Safety nets shall be protected from sparks and hot slag resulting from welding and cutting operations.

Safety nets shall be installed in accordance with 29 CFR 1926 Subpart M and EM 385-1-1 Section 21.G and Table 21-1, using the most restrictive regulation for safety of the worker.

Horizontal Life Lines (HLL)

The HLL system must meet the requirements of OSHA 29 CFR 1926.502(d)(8) and EM 385-1-1, Section 21.H.05.d.(6) Lifelines

Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.

A HLL is a fall arrest system consisting of flexible wire, rope or synthetic cable, spanned horizontally between two end anchorages. It may include in-line energy absorber, lifeline tensioner, turnbuckles or intermediate anchorages.

Locally manufactured HLLs are not acceptable.

Off-the-shelf commercial HLLs shall be installed, and used, under the supervision of a Qualified Person for fall protection only, as part of a complete fall arrest system that maintains a factor of

safety of at least two. The design shall include drawings, required clearance, instructions on proper installation, and use procedures and inspection requirements.

A Qualified person is a person with a recognized degree or professional certificate and with extensive knowledge, training, and experience in the HLL system that is capable of designing, analyzing, evaluating and specifying HLL systems.

ACTIVITIES AND SYSTEMS

Hoist Areas

Each employee in a hoist area shall be protected from falling 6 feet or more by guardrail systems or personal fall arrest systems. Guardrails at hoist areas will extend a minimum of 4 feet on each side of the access area/opening. If guardrail systems (or chain gate or guardrail) or portions thereof must be removed to facilitate hoisting operations, as during the landing of materials, and a worker must lean through the access opening or out over the edge of the access opening to receive or guide equipment and materials, that employee must be protected by a personal fall arrest system.

Holes

Personal fall arrest systems, covers, or guardrail systems shall be erected around holes (including skylights) that are more than 6 feet above lower levels. All holes (defined as any opening 2 or more inches in its least dimension) must be evaluated for falling through or tripping hazards no matter what the fall distance to lower levels is.

Excavations

If the edge of the excavation is obscured, each employee at the edge of an excavation 6 feet or more deep shall be protected from falling by guardrail systems, fences, barricades, or covers. Where walkways are provided to permit employees to cross over excavations, guardrails are required on the walkway if it is 6 feet or more above the excavation.

Leading Edges

Each employee who is constructing a leading edge 6 feet or more above lower levels shall be protected by guardrail systems, safety net systems, or personal fall arrest systems. If WESTON can demonstrate that it is infeasible or creates a greater hazard to implement these systems, WESTON must develop and implement a fall protection plan that meets the requirements of 29 CFR 1926.502(k).

Low Slope Roofs

Each employee engaged in roofing activities on low-sloped roofs, with unprotected sides and edges 6 feet or more above lower levels shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or a combination of warning line systems and guardrail systems, or a warning line system and safety net

- The use of a Safety Monitoring System (SMS) by itself as a fall protection method is prohibited. This is defined as a safety system where a competent person for fall protection is responsible for recognizing and warning employees of fall hazards. SMS may only be used in conjunction with other fall protection systems.

Warning Line Systems

Warning line systems consist of ropes, wires, or chains, and supporting stanchions. Minimal requirements include:

- A WLS shall consist of wires, rope or chains 34-39 in (0.9-1.0 m) high with supporting stanchions. WLS shall be flagged at not more than 6-foot (1.8 m) intervals with high-visibility material.
- The wire, rope or chains shall have a minimum tensile strength of 500 lbs (2.2 kN) and after being attached to the stanchions shall be capable of supporting without bracing, the loads applied to the stanchions.
- Stanchions shall be capable of resisting without tipping a force of 16 lbs (71 N) applied horizontally against the stanchions 30 in (76.2 cm) above the walking/working surface, perpendicular to the warning line and in the direction of the roof floor or platform edge. The line consisting of wire rope or chains shall be attached at each stanchion in such a way that the pulling on one section of the line will not result in a slack being taken up in adjacent sections before the stanchion tips over. \
- Working within the WLS does not require fall protection. No worker shall be allowed in the area between the roof or floor edge and the WLS without fall protection. Fall protection is required when working outside the line.
- For roofing work the WLS shall be erected not less than 6 ft (1.8 m) from the roof edge. For other work (i.e. use of mechanical equipment) the WLS shall be erected not less than 15 ft (4.5 m) from the edge of the roof.
- Mechanical equipment on roofs shall be used or stored only in areas where workers are protected by a WLS, guardrail or PFAS.

Warning lines shall be erected around all sides of roof work areas. When mechanical equipment is being used, the warning line shall be erected not less than 6 feet from the roof edge parallel to the direction of mechanical equipment operation, and not less than 10 feet from the roof edge perpendicular to the direction of mechanical equipment operation.

When mechanical equipment is not being used, the warning line must be erected not less than 6 feet from the roof edge.

Ladders

Ladders will be used in accordance with FLD 26, *Ladders*.

Scaffolds

Scaffolds will be constructed, erected, and used in accordance with FLD 27, *Scaffolding*.

RESCUE

Provisions for prompt and safe rescue after a worker has fallen and remains at elevation or suspended must be evaluated and in-place before putting employees at risk of falling. **Prompt rescue (typically defined as response and communication within 6 minutes)** must be part of the planning and plans for

the site or activity. Rescue procedures and equipment will meet the requirements outlined in ANSI/ASSE Z359.2 and Z359.4. The buddy system (e.g., spotter) is required whenever employees are in fall protection and exposed to fall hazards. The spotter must immediately call for assistance in the event of a fall.

As safety allows, the best option for rescue is employee self-rescue. The employee's physical and mental state must be taken into consideration before allowing this option.

On-site rescue can be performed by trained employees. This rescue is typically conducted by means such as the use of ladders, aerial lifts, self-contained rope systems or other retrieval devices. On-site rescuers must work under the requirements of a site-specific written plan, are trained by a competent person with appropriate skills in the technique(s) chosen, and have practiced the specific procedure(s) chosen. The use of outside rescue agencies (e.g., fire departments, technical rescue groups) will require advance planning and communication. The Safety Plan for fall protection activities will document the agency chosen, how to contact them and agreements established.

Rescue provisions chosen for the site or activity must document agreements above, the type equipment needed, techniques and medical provisions for suspension trauma and other injury potential, as well as off-site ambulance/medical assistance.

TRAINING

- Workers performing elevated work shall receive site-specific training by a competent person.
- For this Program, Competent Persons in Fall Protection are identified as those employees who have completed WESTON's Fall Protection Competent Person training, or those named by the Program Administrator as having equivalent and accepted credentials.
- Workers required to use personal protective equipment will be instructed on its proper use and limitations and demonstrate proficiency.
- Retraining shall be conducted at a minimum every 2 years and/or when:
 - Changes in the workplace render previous training obsolete;
 - Changes in the types of fall protection systems or equipment to be used render previous training obsolete; or
 - Inadequacies in an affected worker's knowledge or use of fall protection systems or equipment indicate that the worker has not retained the necessary understanding or skill.
- Supervisors (PMs and/or SMs) must be able to recognize hazards of elevated work and understand the procedures to be followed to minimize these hazards.
- At least one named Competent Person must be on-site during any work involving potential falls from elevation. Competent Person training requires an initial course (prior to site activities) and refresher training on a minimum 2 year basis.
- Weston's Fall Protection Program Trainers (e.g., Program Administrator, DEHSM) who provide WESTON's Fall Protection Competent Person training must meet the criteria outlined in ANSI/ASSE Z359.2-2007, Section 3.3.8, specifically:
 - Documented experience, knowledge, training and education equal to, or greater than the level they are instructing.

- Documented experience, knowledge and skills in adult education methods.
- Proof on on-going training with minimal annual equivalents to 1.6 CEUs relating to fall protection and rescue.

A written certification record shall be prepared with the name of workers trained, the date(s) of training, and the signature of the person who conducted the training. This written certification record shall be forwarded to the WESTON Safety Officer responsible for that project.

RECORDS/INSPECTIONS

Fall protection hazard assessments (e.g., AHAs), site safety plans, equipment inspection forms, and employee training information will be maintained in accordance with WESTON requirements at the site or project office.

Employee training records will additionally be maintained through the EHS Track System.

All fall protection equipment shall be inspected daily before each use by the user and periodically in accordance with the equipment manufactures requirements. In all cases fall protection equipment must be inspected at least annually by a competent person, other than the user.

FLD 24 AERIAL LIFTS/MANLIFTS

REFERENCES

- 29 CFR 1926 Construction
- EM 385-1-1 US Army Corps of Engineers Safety and Health Requirements Manual
- ANSI A92.2 American National Standard Vehicle-Mounted Elevating and Rotating Aerial Devices

RELATED FLDs

- FLD 22 – Heavy Equipment Operation*
- FLD 23 – Cranes, Rigging, and Slings*
- FLD 25 – Working at Elevation/Fall Protection*

PROCEDURE

Aerial lifts include the following types of vehicle-mounted aerial devices used to elevate personnel to job-site above the ground.

- Extensible boom platforms
- Aerial ladders
- Articulating boom platforms
- Vertical towers

Although aerial lifts may be “field modified” for uses other than those intended by the manufacturer, it is Weston Solutions, Inc. policy that no modification shall be made on any aerial lift. Aerial lifts, including those listed above or combinations thereof, must be used in conformance with OSHA 29 CFR 1926.556, ANSI Standard A92.2, and manufacturer specifications and instructions.

- Electrical systems must be tested according to Section 5 of ANSI Standard A92.2.
- Critical hydraulic lines (line whose failure could result in a free fall) must have bursting capacities four times the normal use pressure. Non-critical lines must have 2:1 bursting factors.
- Aerial lifts must be equipped with backup safety devices to prevent free descent if power supply systems or primary suspension systems fail.
- Secondary controls that can override the platform controls and emergency descent must also be provided in case of a failure of the primary systems.
- Mechanical power transmission apparatus must be appropriately guarded and guards kept in place
- Boom and basket load limits specified by the manufacturer shall not be exceeded.

Aerial lifts must be maintained in safe operating condition at all times. Daily recorded inspections must be made to ensure welds are not cracked, lifting cables or chains are sound, hydraulic lines are tight and not leaking, control lines and cables are sound, electrical connections are tight, and tires are sound.

Required daily testing for safe operation of lift controls must be recorded.

Only authorized persons shall operate an aerial lift. The operator must be trained, completely familiar with the safety and operating instructions prior to use.

- A full body harness shall be worn with a shock absorbing lanyard attached to a secure point on the boom or basket when working from an aerial lift. Belting off to an adjacent pole, structure, or equipment while working from an aerial lift shall not be permitted. Operators shall be trained in the full wear of fall protection personal protective equipment (PPE). PPE shall be inspected daily.
- Employee shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position. Aerial lifts shall not be used to raise or lower non-personal equipment.
- When working near energized lines or equipment, aerial lifts trucks shall be grounded or barricaded and considered as energized equipment, or the aerial lift truck shall be insulated for the work being performed.
- For lines rated 50 kV, or below, minimum clearance between the lines and any part of the man lift/aerial lift or load shall be 10 feet. WESTON guidance recommends using a safety factor of 2, increasing the clearance to 20 feet to maximize personnel safety.
- A manual of inspection and operation must be kept with the lift or be immediately available and must contain instructions for use as well as clearly indicating capacity, height limits, restrictions, warnings, and cautions.
- A statement of insulation must be prominently displayed on the unit. The insulated portion of an aerial lift shall not be altered in any manner that might reduce its insulating value.
- Posted on the machine must be the name and address of the manufacturer, listing acceptable alterations or alternative operating procedures and a notice to operators to read and thoroughly understand operating instructions before use.
- Equipment or material shall not be passed between a pole or structure and an aerial lift while an employee is working from the basket and is within the reaching distance of energized conductors or equipment that is not covered with insulating protective equipment.
- Articulating boom and extensible boom platforms, primarily designed as personnel carriers, shall have both platform (upper) and lower controls. Upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower controls shall not be operated unless permission has been obtained from the employee in the lift, except in the case of an emergency.

A backup alarm which emits an audible alarm will be utilized when the machine is moved in the reverse direction. The alarm must be heard above the surrounding noise. If the machine is not equipped with a backup alarm a spotter will be utilized.

Prior to moving over a highway or traveling where overhead utility lines or obstructions may be present, ladders, platforms or towers must be locked in the down position.

- When moving with the boom up, an inspection must be made of the entire route of the move to ensure there are no obstructions, overhead utilities, underpasses, or ground/terrain conditions that would prohibit a safe move.
- The operator/driver must have an unobstructed view of the path of travel and must maintain a safe speed.
- A recorded inspection must be made to ensure proper cradling of ladders, booms, platforms or towers, and stowage of outriggers.

FLD 08 CONFINED SPACE ENTRY (CSE) PROGRAM

REFERENCES

29 CFR 1910.146

29 CFR 1926.21

EM 385-1-1, Section 34

RELATED FLDs

FLD 36 Welding/Cutting/Brazing/Radiography

FLD 37 Pressure Washers/Abrasive Blasting

FLD 38 Hand and Power Hand Tools

FLD 42 – Lockout/Tag out

FLD 46 – Control of Exposure to Lead

FLD 50 – Cadmium Exposure Control Plan

FLD 52 – Asbestos Exposure Control Plan

FLD 53 – Hexavalent Chrome Exposure Control Plan

FLD 54 – Benzene Exposure Control Plan

FLD 61 – Gasoline Contaminate Exposures

GENERAL

A confined space is any space having:

1. Limited or restricted means of entry or exit
2. Is large enough and so configured that an employee can bodily enter and perform assigned activities
3. Is not designed for continuous employee occupancy.

Confined spaces become more dangerous when they can subject personnel to physical hazards or by exposure to hazardous atmospheres such as oxygen deficient or oxygen-rich atmospheres, flammable or combustible atmospheres caused by flammable or explosive gases, vapors, fibers or dust, or airborne substances which exceed occupational exposure limits for toxicity. . This CSE Program contains requirements, practices, and procedures which must be followed in order to protect WESTON employees, our subcontractors, and others from the hazards associated with entry to confined spaces on Weston projects.

This FLD, including the application of other operating procedures in WESTON's written Health and Safety Program, constitutes WESTON's written Confined Space Entry Program. Due to the complexity and various types of confined space hazards encountered by WESTON personnel this CSE Program must be augmented by site-

specific CSE Plans that are subject to an annual review by the responsible Division EHS Manager to ensure continuing effectiveness of our program.

Additional information regarding confined space entry can be found in 29 CFR 1926.21, 29 CFR 1910.146, EM 385-1-1, Section 34, and NIOSH 80-106. Compliance with the conditions of this operating practice and any additional, more restrictive, requirements issued by state or local governments or clients constitute the minimum acceptable actions in WESTON's Confined Space Program.

Responsibilities

Project Manager or Site Manager: The Project Manager (PM), Site Manager (SM), Field or Site Safety and Health Officers and Technical Resources reviewing Accident Prevention Plans (APP) or HASPs must ensure that WESTON personnel and subcontractor personnel comply with the requirements of this Program and have the necessary training and resources to assure compliance. In addition to daily checks and evaluations, the PM or persons delegated responsibility must conduct periodic evaluation of confined space entry activities to ensure compliance with this FLD. The PM or SM as well as PC and Division EHS Managers must review each Notice of Incident or Near-Incident that is related to a confined space entry on his/her project within 24 hours of the date of the report. Any conditions noted during these reviews that indicate a need to revise this FLD will be immediately reported in writing to the Corporate Environmental Health and Safety (CEH&S) Director.

Field Safety Officer (FSO): The FSO shall assist the PM or SM by providing technical support for implementation of this FLD.

Corporate Environmental Health and Safety (CEH&S) Director: The CEH&S Director, or designees – specifically the Division EHS Managers, shall annually review, revise (as necessary), and maintain this FLD. Project conditions that indicate the need for revision of this FLD will be brought to the attention of the CEH&S Director by PMs, SMs or others who note shortcomings during their reviews of site entries and entry permits on their projects.

When significant changes are made, re-training must be provided for all involved in Confined Space Entry work.

Confined Space Entrant: Specific duties required of the confined space entrant are as follows:

- Know and understand the hazards of the specific confined space.
- Use the required equipment properly for safe entry.
- Communicate with the attendant as necessary and/or required.
- Alert the attendant immediately if any warning signs or symptoms of exposure are detected, or any condition not allowed by the permit (prohibited condition) is detected.
- Comply with the requirements of this procedure and any applicable confined space entry permits.

- Exit from the space immediately if an order to evacuate is given by the attendant or entry supervisor, the entrant recognizes any warning signs or symptoms of exposure, the entrant detects a prohibited condition, or an evacuation alarm is activated.

Confined Space Attendant: Specific duties of the confined space attendant are as follows:

- Know and understand the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of exposure to atmospheric hazards and the types and injury potential of physical hazards anticipated.
- Know possible behavioral effects of exposure to hazards in the space.
- Remain outside the space during entry operations until relieved by another qualified attendant.
- Communicate with entrants as necessary to monitor entrant status and alert entrants of the need to evacuate the space if necessary.
- Maintain an accurate count of and document the identity of all personnel in the space.
- Ensure unauthorized personnel do not enter the space or perform activities that may increase the risk to entrants. Inform the authorized entrants and confined space supervisor if unauthorized personnel enter the confined space.
- Monitor the activities and conditions inside the space, and provide external assistance to those in the space. The attendant will have no other duties which may distract his attention from the work or require him to leave his post at the confined space at any time while personnel are in the space.
- Maintain some form of contact with all personnel in the confined space. Visual contact is preferred, if possible. Additional communications would include a 2-way radio, voice, or video. The attendant shall be constantly aware of possible behavioral effects due to hazard exposure to entrants.
- Be knowledgeable in the method for contacting rescue personnel and immediately initiate those contacts in the event of an emergency. All communications equipment and rescue equipment (if required) will be available and in working condition at all times personnel are within the space.
- Order personnel within the space to exit immediately if irregularities within the space are detected by the observer. Such irregularities would include subtle behavioral changes in entrants, changes in speech patterns, variations in established communications procedures, and inappropriate actions by unauthorized personnel.
- NEVER enter the confined space in the event of an emergency prior to summoning emergency/rescue services and contacting and receiving assistance from a helper. A properly qualified helper shall be available to provide assistance

to the confined space attendant in case the observer must enter the confined space to retrieve personnel.

- Prior to the arrival of assistance or a replacement certified attendant, the attendant should attempt to remove personnel with the lifeline and to perform all other rescue functions from outside the space.

Confined Space Entry Supervisor/Competent Person for Confined Space: The entry supervisor performs oversight and verification activities to ensure that entry requirements are fully implemented. Specific duties of the entry supervisor are as follows:

Know and understand the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of exposure to atmospheric hazards and the types and injury potential of physical hazards anticipated and, who has the authority to take prompt corrective measures with regard to such hazards.

- Verify that all entries on the permit have been completed, all monitoring/testing has been conducted, and all procedures and equipment necessary to affect safe entry are in place prior to endorsing the permit and allowing the entry to begin.
- Terminate the entry and cancel the permit as required upon completion of task, expiration of the permit time-frame, or upon evacuation of the space due to unforeseen circumstances or emergency situations.
- Verify that emergency/rescue services are available and that the means for summoning them are operable.
- Remove or arrange for removal of unauthorized personnel who enter or attempt to enter the space during entry operations.
- Ensure that entry operations remain consistent with the acceptable entry conditions and permit requirements at all times.
- Turn over to the PM or SM canceled Confined Space Entry Permits (CSEPs) for review, follow –up with the CEH&S Director as necessary, and placement in the project files.

The duties of the attendant and supervisor may be assigned to a single individual as long as that person is trained and equipped to perform each duty. When necessary, more than one person will be used.

Recognition and Risk Assessment

Confined spaces can include, but are not limited to storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines, and open-top spaces more than 4 feet in depth such as pits, tubs, vaults, and vessels.

Entering confined spaces presents many health and safety hazards if not performed properly. These hazards include asphyxiation, falls, burns, drowning, engulfment, toxic exposure, and electrocution. A confined space represents the potential for unusually

high concentrations of contaminants, explosive atmospheres, limited visibility, physical injury, and restricted movement.

Initial Procedure for All Confined Spaces

1. The PM or SM will coordinate with the client to identify local confined spaces and hazards associated with these spaces. In the event subcontractors will enter confined spaces under WESTON control, verification of training and regulatory compliance will be made prior to any entry operation. Effective measures (e.g., signage, barricades) shall be implemented to prevent unauthorized entry into any confined space identified at a WESTON site.
2. When possible, confined spaces are to be identified with a posted sign which reads:

**DANGER
PERMIT-REQUIRED CONFINED SPACE
DO NOT ENTER**

WESTON operations (e.g., incinerators, water or waste treatment facilities) which contain confined spaces meeting the definition under this procedure must be posted as described.

3. No task involving entry to a confined space may begin until an initial evaluation is made of the hazards associated with the space and the results documented. This initial evaluation will be completed without entering the space. The Confined Space Entry Permit (CSEP) form, or an equivalent format, must be used to document the initial evaluation. A copy of the form is provided in Attachment 1. The CSEP form must also be used to document on-going evaluations and monitoring of the conditions within the confined space, and must be reissued at the beginning of each shift during which work will be performed in the space.
4. Only personnel trained and knowledgeable of the requirements of these confined space entry procedures will be authorized to conduct or supervise initial evaluations. Natural ventilation shall be provided in the confined space prior to initial evaluation.
5. Remote atmospheric testing of the confined space during the initial evaluation will include the following monitoring:
 - Verification of acceptable oxygen content.
 - Verification of non-flammable, non-explosive atmosphere.
 - Verification of potential or known air contaminant concentrations to ensure that levels are within the acceptable entry criteria for the planned level of protection.
6. In addition, the confined space and its surroundings will be physically inspected and the following conditions will be specifically identified and noted:
 - Potential sources of engulfment by liquid or solid materials,
 - Internal configurations or conditions that could trap or asphyxiate entrants, or
 - Other recognizable safety or health hazards.

7. Based on the results of the initial evaluation, the space will be identified as one of the following three types of confined spaces:
 - Permit-Required Confined Spaces
 - Conditional Entry Confined Space
 - Non-Permit Entry Confined Spaces

Definitions are provided for each type in the following section, along with the applicable procedures and precautions for entry to the space.

Permit-Required Confined Space Procedures

A permit-required confined space is defined as any confined space that has one or more of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere. Hazardous atmosphere means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from one or more of the following causes:
 - Flammable gas, vapor, or mist in excess of 10% of its lower explosive level (LEL);
 - Airborne combustible dust at a concentration that meets or exceeds its LEL;
 - Atmospheric oxygen concentration below 19.5% or above 23.5%;
 - Atmospheric concentration of any substance with a published exposure value in excess of its dose or permissible exposure limit;
 - Any other atmospheric condition that is immediately dangerous to life or health (IDLH).
- Contains a material that has the potential to engulf an entrant,
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
- Contains any other recognized serious safety or health hazard.

The following conditions and requirements apply when entering permit-required confined spaces:

1. Evaluate the job to be done and identify the potential hazards before a job in a confined space is scheduled.
2. Ensure that all process piping, mechanical and electrical equipment, and other items as necessary have been disconnected, purged, or blanked-off as necessary. Sources of hazardous energy (e.g., electrical, pneumatic, hydraulic, or mechanical energy which could be activated in any area of the confined space) must be identified, tagged, and locked-out prior to anyone entering a confined space. Lockout/Tagout procedures must be documented in the CSEP.

3. The contents of any confined space shall, where feasible, be removed prior to entry. If possible, ensure removal of any materials from the space that may produce toxic or air displacing gases, vapors, or dust. All sources of ignition must be eliminated prior to entry. Smoking in confined spaces is prohibited.
4. Ensure that any hot work (welding, burning, open flames, or spark-producing operation) that is to be performed in the confined space has been approved, documented on a Hot Work Permit, and indicated on the CSEP. For hot work performed in confined spaces, no combustible or flammable gases or vapors and no concentrations of combustible dusts may be evident. (Note that based on contract requirements entry into fuel storage tanks may also require certification by a Marine Chemist as Safe for Hot Work and Entry)
5. Ensure that the confined space is ventilated before starting work and for the duration of the time that the work is to be performed in the space, unless limited by design.
6. Ensure that the personnel who enter the confined space, the entry supervisor, and the confined space attendants have completed required training and are familiar with the contents/conditions in the space, the permit requirements, and the requirements of this procedure.
7. Ensure that specialized communication equipment, personal protective equipment (PPE), and rescue services are available, operating appropriately, and used as required by the permit. Ensure that training in the use of the specialized equipment has been completed and documented for the appropriate personnel. (Refer to sections of this FLD that address training and rescue services.)
8. A CSEP must be issued prior to the performance of any work within the confined space. The CSEP must either be posted at the confined space or available with the attendant. The CSEP shall be canceled by the Entry Supervisor at the completion of the job or the end of the shift, whichever is first. Upon termination, the CSEP will be reviewed by the PM or SM and will become a part of the permanent and official record of the site. Only trained personnel who are knowledgeable of the requirements of these confined space entry procedures will be authorized to enter a confined space (authorized entrant), be a confined space attendant (attendant), or supervise the entry (entry supervisor).
9. If a hazardous atmosphere is suspected or known and if remote testing of all areas of the confined space is not possible, Level B PPE is required. A monitor for oxygen content and combustible gases will be carried into the confined space with the entry team. Periodic and/or continuous monitoring for levels of other atmospheric contaminants must be conducted by the attendant or the entry team as appropriate.
10. If positive/forced mechanical ventilation is used to achieve an acceptable atmosphere, care must be taken to prevent the spread of contamination outside of the enclosed area. Chemicals and toxic materials shall be removed from the vicinity of the air inlet to prevent their introduction into the confined space.
11. Intrinsically-safe equipment (instruments, lighting, etc.) will be used if actual or potential flammable or explosive conditions may exist in the confined space.

12. Hand tools used in confined spaces shall be in good repair and selected according to intended use.
13. Hand-held lights and other illumination utilized in permit-required confined spaces shall be equipped with guards to prevent contact with the bulb.
14. Compressed gas cylinders, except cylinders used for self-contained breathing apparatus, shall not be taken into confined spaces. Gas hoses shall be removed from the space and the supply turned off at the cylinder valve when personnel exit from the confined space.
15. Safety belts, body harnesses, and lifelines must be used unless a determination can be made that use of the retrieval system increases risk to the entrant and will not assist in retrieval. For entry into vertical type permit-required confined spaces greater than 5 feet deep, a mechanical device must be available to retrieve personnel. The attendant shall be provided with appropriate equipment for emergency response, communication, and rescue purposes, and shall be trained in the use of the equipment.
16. Self-contained breathing apparatus or NIOSH-approved airline respirators equipped with a minimum 5-minute emergency air supply (egress bottle) shall be used in confined spaces which cannot be completely characterized or monitored, with conditions determined to be Immediately Dangerous to Life and Health (IDLH), or meeting the conditions requiring Level B PPE.
17. Vehicles shall not be left running near confined space work or near air-moving equipment being used for confined space ventilation.
18. Any deviation from these Confined Space Entry procedures requires the prior permission of the PM.

Permit-Required Confined Space – Conditional Entry Procedure (see 29 CFR 1910.146 (c)(5))

1. Conditional entry to a Permit-Required Confined Space may be made without full implementation of the permit-required confined space criteria under the following conditions if forced air ventilation is used and shown to control all hazards in the space:
 - The space only poses the hazard of an actual or potential hazardous atmosphere, not hazards associated with engulfment, entrapment or asphyxiation, or other recognizable safety or health risks.
 - It is demonstrated and documented that continuous forced ventilation into the immediate areas occupied by workers will maintain safe entry conditions.
 - There is no hazardous atmosphere within the space whenever employees are inside. Frequent monitoring must continue to show that the atmosphere is continually at or below one-half of the published exposure value for any contaminant.
2. If a hazardous atmosphere develops:
 - the space must be immediately evacuated,

- the space must be evaluated to determine how hazards developed and
 - measures must be implemented to ensure employee safety prior to subsequent entry.
3. Monitoring and documentation (see Attachment 1) are required prior to implementation of this option. If the above conditions can be met, entry can be made without following conditions and requirements 7, 11, and 16 from the Permit-Required Confined Space Procedures.
 4. These types of confined spaces may, after initial monitoring and evaluation, also be entered without attendant oversight and for extended time-periods, as necessary. Monitoring to verify the continued presence of a safe atmosphere must be maintained. Allowance for entry under these conditions must be indicated in the Health and Safety Plan (HASP).
 5. Should any condition arise within the confined space that is contrary to the allowable conditions, all entrants must leave the space. Re-entry is allowed only under full permit requirements or upon correction of conditions leading to non-compliance.
 6. If entry into the space must be made to access or eliminate all hazards, the entry must be made under full permit requirements.
 7. If operations or tasks conducted within the space will or may result in the generation of a hazardous atmosphere (e.g., welding or painting) the entry must be conducted as a PRCS.

Non-Permit Entry Confined Space Procedure (see 29 CFR 1910.146 (c)(7))

1. Under the following conditions a confined space may be entered without full compliance with the permit-required confined space criteria. These criteria are allowed only if the space meets the following conditions without employing forced air ventilation:
 - a. It has no actual or potential hazardous atmosphere.
 - b. Any other hazard(s) within the space are eliminated without entry into the space.
 - c. The space is monitored and documentation is maintained (see Attachment 1) to verify that no hazardous atmosphere is evident. (*Note:* the use of forced ventilation does not constitute elimination of atmospheric hazards.)
 - d. If entry into the space must be made to eliminate all hazards, the entry must be made under full permit requirements.
2. Under WESTON's Non-Permit Entry Criteria, if the above conditions can be met, entry can be made without the following:
 - specialized PPE
 - outside communications
 - rescue service compliance.
3. Compliance with all other provisions of the permit must be maintained.

4. These types of confined spaces may, after initial monitoring and evaluation, also be entered without attendant oversight and for extended time-periods, as necessary. Allowance for entry under these conditions must be indicated in the HASP.
5. Should any condition arise within the confined space that is contrary to the allowable conditions, all entrants must leave the confined space. Re-entry is allowed only under full permit requirements or upon correction of conditions leading to non-compliance.

Multi Employers Working in the Same Confined Space

When more than one contractor or group is working in a confined space, communication and establishment of procedures for coordinating entry operations so that employees of one employer do not endanger the employees of any other employer will be developed as part of the evaluation and permitting process. This process will include:

1. Meeting with the host to be apprised of the elements, including the hazards identified and the host employer's experience with the space, that make the space in question a permit space.
2. Meeting with the host to be apprised of any precautions or procedures that the host employer has implemented for the protection of employees in or near permit spaces where contractor personnel will be working.
3. Coordinate entry operations with the contractor, when both host employer personnel and contractor personnel who will be working in or near permit spaces. This will include:
 - Ensuring that each contractor or group entering the confined space is trained and has a permit required confined space entry program acceptable to the client and Weston,
 - Ensuring that entry permits have been completed, approved and posted for each contractor or group entering the confined space,
 - Ensuring that attendants and non-entry rescue equipment are coordinated among each contractor or group entering the confined space so there is no interference among the entrants, attendants and rescuers,
 - Ensuring that air monitoring is coordinated among each contractor or group entering the confined space,
 - Ensuring that activities constituting "Hot Work" by each contractor or group entering the confined space are controlled by hot work permitting processes acceptable to the client and Weston,
 - Ensuring that communication is established among each contractor or group entering the confined space when materials brought in or activities may generate hazardous atmospheres or conditions.
 - Ensuring that entry rescue procedures are coordinated among each contractor or group entering the confined space,

- Ensuring that control of hazardous energy and confined space isolation procedures are implemented and coordinated among each contractor or group entering the confined space,
4. Debrief with the host at the conclusion of the entry operations regarding the permit space program followed and regarding any hazards confronted or created in permit spaces during entry operations.

Rescue and Emergency Operations

The HASP and the CSEP must indicate names and phone numbers of rescue and medical response agencies or personnel. It must be determined prior to on-site entry operations whether entry rescue or non-entry rescue will be required. In the event that entry rescue is necessary, an evaluation of off-site responders (e.g., local fire department teams) or the use of on-site or employee rescue teams will be made by the FSO and/or Entry Supervisor.

Pre-emergency planning: An agreement (see Attachment 2) shall be established between Weston and the local emergency responders (on or off-site), and the servicing emergency medical facility that specifies the responsibilities of on-site personnel, emergency response personnel, and the emergency medical facility in the event of an on-site emergency

Technical capabilities of any on or off-site responders must be evaluated and the ability to respond within necessary time-frames must be documented. Off-site responders must be allowed the option of visiting the site and evaluating the confined spaces prior to entry activities.

Use of off-site responders as entry rescue resources must be documented by written agreements such as forms or E-Mails signed by Weston and responder officials with authority to commit to such agreements. A Checklist for evaluating on or off-site resources is found in Attachment 2 If on or off-site responders are not available full time (e.g., in the event they must respond to another emergency) the agreement must include provisions for notifying Weston of their unavailability and Weston Confined Space work potentially requiring entry rescue must be suspended until notification is received of availability.

Should it be decided that WESTON personnel on site will perform entry rescue, those personnel **must be trained specifically** in accordance with the hazards, configuration of the confined spaces encountered, and equipment to be used. Site-specific training and rescue procedures will be documented and implemented.

Entry Rescue

The following criteria apply to personnel who will perform emergency rescue operations within confined spaces. In addition, minimal equipment required to be worn by entrants for efficient rescue will be indicated.

- All rescue personnel shall be trained to perform assigned duties. Training shall consist minimally of that afforded to entrants, attendants, and supervisors.

- All rescue personnel will be provided with and trained to use properly, the PPE and rescue equipment necessary for making rescues from confined spaces.
- All rescue personnel will practice making confined space rescues at least once every 12 months.
- Each member of the rescue team will be trained in CPR and first aid. At least one member will hold current certification.

Non-Entry Rescue

In order to facilitate non-entry rescue, retrieval systems or methods will be used whenever an authorized entrant enters a permit-required confined space, unless the use of retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. ***Entry procedures which propose not to use retrieval equipment must be identified and approved within the HASP.*** Retrieval systems will meet the following requirements:

- Each entrant will use either a chest or a full-body, harness, properly worn with the retrieval line attached at the center of the entrants back.
- Wristlets may be used in lieu of the chest or full-body harness if it can be demonstrated that the use of the harness is not feasible or creates a greater hazard
- The end of the retrieval line outside of the confined space must be attached to a mechanical device or a fixed point outside the permit space so that non-entry rescue can be initiated as soon as necessary.
- A mechanical device must be available to retrieve personnel from vertical type permit spaces more than 5 feet deep.

Minimal equipment required for non-entry rescue is as follows:

- First-aid kit.
- Full body harness and retrieval line.
- Retrieval device (optional based upon depth and configuration of space).
- Communications equipment to outside assistance (on- or off-site).

Training

Prior to allowing any employee to enter confined spaces, training and certification of training proficiency must be provided. All employees involved in confined space entry, whether as authorized entrants, attendants, rescuers, or entry supervisors, will receive training designed to provide knowledge, skills, and competence necessary for the safe performance of duties assigned during confined space evaluation and entry. Training shall be provided to all affected employees as follows:

- Prior to performing assigned duties.
- Prior to a change in assigned duties.

- Whenever the confined space presents a hazard to which the affected employees have not been trained.
- Whenever there is evidence of deviation from the established procedure or evidence that procedures are not protective of the affected employees.

WESTON will ensure that all participants receive training that will combine and indicate proficiency, allowing personnel to function as entrants, attendants, and supervisors.

Minimal training criteria for entrants, attendants, and supervisors are as follows:

- Knowledge of the hazards that may be faced during entry including information on the mode, signs or symptoms, and consequences of exposure.
- Knowledge of and demonstrated proficiency in the performance of the duties as appropriate for the role of the employee in the entry process (entrant, attendant, or supervisor).
- Use, maintenance, and calibration of monitoring instrumentation.
- Use of ventilation equipment.
- Use of communication equipment.
- Use of appropriate PPE.
- Use and selection of lighting equipment.
- Use and selection of barriers and/or shields necessary to prevent the entry of unauthorized personnel or adverse conditions into the space.
- Use and selection of ingress and egress equipment.
- Use and selection of rescue and emergency equipment.
- Use and selection of any specialized or other equipment needed for safe entry and rescue from the confined space.

Entry supervisors will also complete WESTON's 8-Hour Site Managers and Supervisors Training Course.

Rescue practice/proficiency training for rescue personnel will have been conducted no more than 12 months prior to the date of any entry they participate in. Rescue personnel will complete the training required for entrants, attendants, and supervisors, as described above. In addition, students will demonstrate proficiency in use of PPE and rescue equipment necessary to remove entrants from anticipated confined spaces. Mock rescue exercises utilizing dummies, mannequins, or actual persons will be conducted to ensure that rescue personnel are knowledgeable and proficient in conducting safe and effective rescues.

Records/Reports/Notification

The original of the Confined Space Entry Permit must be available for review by employees during entry operations, forwarded to the SM or PM for review upon termination of the permit, and maintained in the project files upon completion of the manager's review.

**ATTACHMENT 1
WESTON CONFINED SPACE ENTRY PERMIT**

DESCRIPTION

LOCATION: _____

CLIENT: _____ WO#: _____

DESCRIPTION OF CONFINED SPACE: _____

DATE/TIME OF PERMIT ISSUE: _____ DATE/TIME OF EXPIRATION: _____

HAZARDS IDENTIFIED DURING INITIAL EVALUATION: _____

(Check One) PERMIT-REQUIRED CONDITIONAL ENTRY NON-PERMIT ENTRY

MEASURES USED TO ISOLATE SYSTEM AND PROTECT PERSONNEL

ITEM	YES	NO	N/A	ITEM	YES	NO	N/A
Space drained and cleaned as much as possible				Portable electrical tools grounded and safe condition			
All lines blanked or valves closed and locked out				Monitoring instruments calibrated and available			
Systems (electrical/mechanical/other) lockout, tagout protected				Communications available for entrants and attendants (specify)			
Space purged and ventilated to provide safe work conditions				Communications available for emergency assistance (specify)			
Area secure and posted				First aid kit available			
Respiratory protection required (if so, indicate type)				Rescue equipment available (specify)			
Level of Protection Appropriate (specify level)				Fire extinguisher available (specify)			
Low voltage or explosion-proof lighting provided (as necessary)				Welding/Cutting Permit required? Attach to CSE permit			
Tripod, mechanical hoist available and used				Respiratory Protection required?			
Safety shower and eyewash available							
Attendant trained and properly equipped				Other:			
Rescue harness and lifelines available and used				Other:			

PRECAUTIONS

	<u>N/A</u>	<u>YES</u>	<u>NO</u>
1. External Source Isolation (Pumps, lines, or pipes blinded, blocked, or disconnect)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Forced Ventilation Required: Fans, blowers operational.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Monitoring Instruments: CGI / O2 monitor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PID	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FID	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Equipment: Communication: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Harnesses, lifelines: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hoist, tri-pod: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Airlines, SCBAs: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protective clothing: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ACTION LEVELS FOR THIS ENTRY

Condition	% Oxygen	Flammable (% LEL)	Toxics (organic)	Toxics (inorganic)
Max. Concentration or Range	19.5 to 23.5	Less than 10 %		

MONITORING AND TESTING RESULTS

Monitoring conducted by (print name): _____

Tests	Reading/Time					
Oxygen						
LEL						
PID						
FID						
Monitox						
Draeger						
Other						
Other						

RESCUE AND EMERGENCY PHONE NUMBERS:

Fire Department: _____ Police Department: _____

Ambulance: _____ Medical: _____

Specify communications available and location: _____

DOCUMENTATION

Entry team members (please print): _____

1.	6.
2.	7.
3.	8.
4.	9.
5.	10.

Confined Space Attendant (please print): _____

Permit reviewed and approved by Confined Space Entry Supervisor (print and sign, date and time):

_____	_____	_____	_____
(Print)	Signature	Date	Time

Permit terminated by Confined Space Entry Supervisor (signature, date, and time):

_____	_____	_____	_____
(Print)	Signature	Date	Time

Reason for termination/Comments: _____

Note: The original of this permit must be available during entry operations, forwarded to the Site Manager or Project Manager upon termination for review, must be maintained in the project files upon completion, and reviewed annually. Modification of this form is not allowed without approval of the DEHSM or CEHS.

ATTACHMENT 2
EVALUATION OF ON AND OFF-SITE ENTRY RESCUE RESPONDERS

Name of Responding Group or Agency: _____

Name of Individual(s) Contacted: _____

Confirmation of Authority to commit to supporting Weston in Confined Space Entry Rescue:

Contact information: Non Emergency Phone Number: ___-___-_____

Emergency Phone Number: ___-___-_____

Address : _____

Distance in miles and time from site(s) where Confined Space Entry: Miles: ___ Time: _____

Note: Time to be able to institute rescue operation must be determined and documented based on known or perceived hazards. In the event of hazardous atmospheres typical response times should be 5 minutes or less.

Hours of availability: ___ AM to _____ PM or 24 Hours _____

Confirmation of training for Confined Space Entry Rescue: Confirmed: YES; NO ___

Confirmation of ability to perform other rescues that may be associated with Confined Space entries such as:

High Angle Rescue (Rescue at elevation): Yes ___; NO ___;

Excavation Rescue: Yes ___; NO ___;

Fall Arrest System Rescue: Yes ___; NO ___;

Ability to respond to more than one emergency: Yes _____ No _____

If "NO", provisions must be made for other rescue options or entry operations must cease until responders are available again.

If "NO" what mechanism(s) will be in place to verify when responders are both unavailable and when they are available to respond again (e.g., phone call, radio to responder channel, etc.).

ATTACHMENT B
SAFETY DATA SHEETS (SDS)

A complete binder of safety data sheets is available onsite for review.

ATTACHMENT C
CHEMICAL CONTAMINANTS DATA SHEETS (NIOSH GUIDE)

These data sheets are for contaminants suspected to be at the site.

SAFETY DATA SHEET

Methane

Section 1. Identification

GHS product identifier	: Methane
Chemical name	: methane
Other means of identification	: Methane or natural gas; Marsh gas; Methyl hydride; CH ₄ ; Fire Damp;
Product use	: Synthetic/Analytical chemistry.
Synonym	: Methane or natural gas; Marsh gas; Methyl hydride; CH ₄ ; Fire Damp;
SDS #	: 001033
Supplier's details	: Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
Emergency telephone number (with hours of operation)	: 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Compressed gas

GHS label elements

Hazard pictograms



Signal word

: Danger

Hazard statements

: Extremely flammable gas.
May form explosive mixtures with air.
Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.

Precautionary statements

General

: Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Approach suspected leak area with caution.

Prevention

: Never Put cylinders into unventilated areas of passenger vehicles. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use and store only outdoors or in a well ventilated place.

Response

: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.

Storage

: Protect from sunlight. Protect from sunlight when ambient temperature exceeds 52°C/125°F. Store in a well-ventilated place.

Disposal

: Not applicable.

Date of issue/Date of revision : 5/20/2015. **Date of previous issue** : 1/27/2015. **Version** : 0.04 1/12

Section 2. Hazards identification

Hazards not otherwise classified : In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

Section 3. Composition/information on ingredients

Substance/mixture : Substance
Chemical name : methane
Other means of identification : Methane or natural gas; Marsh gas; Methyl hydride; CH₄; Fire Damp;

CAS number/other identifiers

CAS number : 74-82-8
Product code : 001033

Ingredient name	%	CAS number
methane	100	74-82-8

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Wash contaminated skin with soap and water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.
Inhalation : No known significant effects or critical hazards.
Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.
Frostbite : Try to warm up the frozen tissues and seek medical attention.
Ingestion : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

Eye contact : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.

Section 4. First aid measures

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Section 6. Accidental release measures

Methods and materials for containment and cleaning up

- Small spill** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.
- Large spill** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Keep container tightly closed and sealed until ready for use. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
methane	ACGIH TLV (United States, 3/2012). TWA: 1000 ppm 8 hours.

- Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

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Section 8. Exposure controls/personal protection

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Gas. [Compressed gas.]
- Color** : Colorless.
- Molecular weight** : 16.05 g/mole
- Molecular formula** : C-H4
- Boiling/condensation point** : -161.48°C (-258.7°F)
- Melting/freezing point** : -187.6°C (-305.7°F)
- Critical temperature** : -82.45°C (-116.4°F)
- Odor** : Odorless.
- Odor threshold** : Not available.
- pH** : Not available.
- Flash point** : Closed cup: -188.15°C (-306.7°F)
- Burning time** : Not applicable.
- Burning rate** : Not applicable.
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and oxidizing materials.
- Lower and upper explosive (flammable) limits** : Lower: 1.8%
Upper: 8.4%

Section 9. Physical and chemical properties

Vapor pressure	: Not available.
Vapor density	: 0.55 (Air = 1) Liquid Density@BP: 26.5 lb/ft ³ (424.5 kg/m ³)
Specific Volume (ft³/lb)	: 2.3641
Gas Density (lb/ft³)	: 0.423 (25°C / 77 to °F)
Relative density	: Not applicable.
Solubility	: Not available.
Solubility in water	: 0.0244 g/l
Partition coefficient: n-octanol/water	: 1.09
Auto-ignition temperature	: 287°C (548.6°F)
Decomposition temperature	: Not available.
SADT	: Not available.
Viscosity	: Not applicable.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
Incompatibility with various substances	: Extremely reactive or incompatible with the following materials: oxidizing materials.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

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Section 11. Toxicological information

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

- Eye contact** : Contact with rapidly expanding gas may cause burns or frostbite.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : Contact with rapidly expanding gas may cause burns or frostbite.
- Ingestion** : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Potential chronic health effects

Not available.

- General** : No known significant effects or critical hazards.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.

Methane

Section 11. Toxicological information

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
methane	1.09	-	low

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1971	UN1971	UN1971	UN1971	UN1971
UN proper shipping name	Methane, compressed	Methane, compressed or Methane or Natural gas, compressed (with high methane content)	Methane, compressed	Methane, compressed	Methane, compressed
Transport hazard class(es)	2.1 	2.1 	2.1 	2.1 	2.1 

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Section 14. Transport information

Packing group	-	-	-	-	-
Environment	No.	No.	No.	No.	No.
Additional information	-	<u>Explosive Limit and Limited Quantity Index</u> 0.125 <u>ERAP Index</u> 3000 <u>Passenger Carrying Ship Index</u> Forbidden <u>Passenger Carrying Road or Rail Index</u> Forbidden	-	-	<u>Passenger and Cargo Aircraft</u> Quantity limitation: 0 Forbidden <u>Cargo Aircraft Only</u> Quantity limitation: 150 kg

“Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.”

Special precautions for user : **Transport within user’s premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined
United States inventory (TSCA 8b): This material is listed or exempted.
Clean Air Act (CAA) 112 regulated flammable substances: methane

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Fire hazard
Sudden release of pressure

Composition/information on ingredients

Section 15. Regulatory information

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
methane	100	Yes.	Yes.	No.	No.	No.

State regulations

- Massachusetts** : This material is listed.
New York : This material is not listed.
New Jersey : This material is listed.
Pennsylvania : This material is listed.
Canada inventory : This material is listed or exempted.

International regulations

- International lists** : **Australia inventory (AICS)**: This material is listed or exempted.
China inventory (IECSC): This material is listed or exempted.
Japan inventory: This material is listed or exempted.
Korea inventory: This material is listed or exempted.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): This material is listed or exempted.
Philippines inventory (PICCS): This material is listed or exempted.
Taiwan inventory (CSNN): Not determined.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

Canada

- WHMIS (Canada)** : Class A: Compressed gas.
Class B-1: Flammable gas.
CEPA Toxic substances: This material is listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

Section 16. Other information

- Canada Label requirements** : Class A: Compressed gas.
Class B-1: Flammable gas.

Hazardous Material Information System (U.S.A.)

Health	0
Flammability	4
Physical hazards	3

Section 16. Other information

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

[National Fire Protection Association \(U.S.A.\)](#)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

[History](#)

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Key to abbreviations :

- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- UN = United Nations
- ACGIH – American Conference of Governmental Industrial Hygienists
- AIHA – American Industrial Hygiene Association
- CAS – Chemical Abstract Services
- CEPA – Canadian Environmental Protection Act
- CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act (EPA)
- CFR – United States Code of Federal Regulations
- CPR – Controlled Products Regulations
- DSL – Domestic Substances List
- GWP – Global Warming Potential
- IARC – International Agency for Research on Cancer
- ICAO – International Civil Aviation Organisation
- Inh – Inhalation
- LC – Lethal concentration
- LD – Lethal dosage
- NDSL – Non-Domestic Substances List
- NIOSH – National Institute for Occupational Safety and Health

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Section 16. Other information

TDG – Canadian Transportation of Dangerous Goods Act and Regulations

TLV – Threshold Limit Value

TSCA – Toxic Substances Control Act

WEEL – Workplace Environmental Exposure Level

WHMIS – Canadian Workplace Hazardous Material Information System

References

: Not available.

✔ Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

MATERIAL SAFETY DATA SHEET
F-120
07/13/89 LAST REVISED JUNE 1989

SECTION I PRODUCT SPECIFICATIONS
CAT. NO. F4 BENZENE
CAS. NO. 71-43-2 OTHER NAME: BENZOL
SUPPLIED BY CHEM SERVICE, INC. PO BOX 3108, WEST CHESTER, PA, 19381
(215) 692-3026
EMERGENCY PHONE #: 215-386-2100
SECTION II TOXICITY DATA

```
=====
RAT OR MOUSE LD50 ! RTECS# ! OSHA PEL ! ACGIH TLV
-----
3800MG/KG CY1400000 10 PPM 10 PPM (30MG/M3)
-----
```

THIS COMPOUND IS CONSIDERED TO BE SLIGHTLY TOXIC.

SECTION III PHYSICAL DATA

```
=====
MELTING POINT ! BOILING POINT ! DENSITY ! VAPOR PRESSURE ! VAPOR DENSITY
-----
5.5 C 80.2 C 0.874 75 MM@20 C 2.8
-----
```

```
=====
EVAPORATION RATE
(BUTYL ACETATE=1)! ODOR ! COLOR ! PHASE ! SOLUBILITY IN WATER
-----
NA AROMATIC COLORLESS LIQUID VERY SLIGHTLY SOLUBLE
-----
```

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: -11 C THIS IS A FLAMMABLE CHEMICAL.
EXTINGUISHING MEDIA: CARBON DIOXIDE OR DRY CHEMICAL POWDER. DO NOT USE WATER!
UPPER EXPLOSION LIMIT: 7.1% LOWER EXPLOSION LIMIT: 1.3%

SECTION V HEALTH HAZARD DATA

CONTACT LENSES SHOULD NOT BE WORN IN THE LABORATORY.
ALL CHEMICALS SHOULD BE CONSIDERED HAZARDOUS - AVOID DIRECT PHYSICAL CONTACT!
SUSPECTED CARCINOGEN - MAY PRODUCE CANCER. CAN BE HARMFUL IF INHALED. PRO-
LONGED EXPOSURE MAY CAUSE NAUSEA/HEADACHE/DIZZINESS AND/OR EYE DAMAGE. NAR-
COTIC AT HIGH CONCENTRATIONS. CAN CAUSE BLOOD DISORDERS. CAN CAUSE EYE IR-
RITATION. CAN CAUSE SKIN IRRITATION. DUST AND/OR VAPORS CAN CAUSE IRRITATION
TO RESPIRATORY TRACT. MAY BE FATAL IF SWALLOWED! MAY BE RAPIDLY ABSORBED THRU
THE SKIN WITH POTENTIAL ADVERSE HEALTH EFFECTS. CAN CAUSE DELAYED ADVERSE
HEALTH EFFECTS. BASED ON THE TOXICITY OF COMPOUNDS OF SIMILAR STRUCTURE THIS
MATERIAL IS PROBABLY HIGHLY HAZARDOUS. CAN BE HARMFUL IF ABSORBED THROUGH
THE SKIN. REPEATED EXPOSURE TO VAPORS AND/OR DUST CAN CAUSE EYE INJURY.
CAN BE FATAL IF ABSORBED THROUGH THE SKIN! CAN CAUSE LIVER INJURY. CAN CAUSE
GENERAL FEELING OF DISORIENTATION. CAN CAUSE KIDNEY INJURY. CAN CAUSE AN AL-
LERGIC RESPIRATORY REACTION. CAN CAUSE AN ALLERGIC SKIN REACTION. CAN CAUSE
GASTRO-INTESTINAL DISTURBANCES.

SECTION VI FIRST AID

AN ANTIDOTE IS A SUBSTANCE INTENDED TO COUNTERACT THE EFFECT OF A POISON. IT
SHOULD BE ADMINISTERED ONLY BY A PHYSICIAN OR TRAINED EMERGENCY PERSONNEL.
MEDICAL ADVICE CAN BE OBTAINED FROM A POISON CONTROL CENTER.
IN CASE OF CONTACT: FLUSH EYES CONTINUOUSLY WITH WATER FOR 15-20 MINUTES.
FLUSH SKIN WITH WATER FOR 15-20 MINUTES. IF NO BURNS HAVE OCCURRED, USE SOAP
AND WATER TO CLEANSE SKIN. IF INHALED REMOVE PATIENT TO FRESH AIR. ADMINISTER
OXYGEN IF PATIENT IS HAVING DIFFICULTY BREATHING. IF PATIENT HAS STOPPED
BREATHING ADMINISTER ARTIFICIAL RESPIRATION. IF PATIENT IS IN CARDIAC ARREST
ADMINISTER CPR. CONTINUE LIFE SUPPORTING MEASURES UNTIL MEDICAL ASSISTANCE
HAS ARRIVED. REMOVE AND WASH CONTAMINATED CLOTHING. IF PATIENT IS EX-
HIBITING SIGNS OF SHOCK - KEEP WARM AND QUIET. CONTACT POISON CONTROL CENTER
IMMEDIATELY IF NECESSARY. DO NOT ADMINISTER LIQUIDS OR INDUCE VOMITING TO AN
UNCONSCIOUS OR CONVULSING PERSON.
IF PATIENT IS VOMITING - WATCH CLOSELY TO MAKE SURE AIRWAY DOES NOT BECOME
OBSTRUCTED BY VOMIT. IF SWALLOWED DO NOT INDUCE VOMITING. GET MEDICAL
ATTENTION IF NECESSARY. IF TAKEN INTERNALLY GIVE MILK MILK OF MAGNESIA OR EGG
WHITES BEATEN WITH WATER.

SECTION VII REACTIVITY DATA

INCOMPATIBLE WITH STRONG OXIDIZING AGENTS. DECOMPOSITION LIBERATES TOXIC FUMES
HYGROSCOPIC. READILY ABSORBED AND RETAINED ON CLOTHING AND/OR SHOES.
FLAMMABLE. DECOMPOSED BY CHLORINE GAS. HANDLE AND STORE UNDER NITROGEN.
EXPLOSIVE. VOLATILE.
INCOMPATIBLE WITH STRONG ACIDS.
AIR SENSITIVE.

SECTION VIII SPILL OR LEAK PROCEDURES

SPILLS OR LEAKS: EVACUATE AREA. WEAR APPROPRIATE OSHA REGULATED EQUIPMENT.
VENTILATE AREA. ABSORB ON VERMICULITE OR SIMILAR MATERIAL. SWEEP UP AND
PLACE IN AN APPROPRIATE CONTAINER. HOLD FOR DISPOSAL. WASH CONTAMINATED
SURFACES TO REMOVE ANY RESIDUES.
DISPOSAL: BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND
SCRUBBER.

SECTION IX PRECAUTIONS TO BE TAKEN IN HANDLING

THIS CHEMICAL SHOULD BE HANDLED ONLY IN A HOOD. EYE SHIELDS SHOULD BE WORN.
USE APPROPRIATE OSHA/MSHA APPROVED SAFETY EQUIPMENT. AVOID CONTACT WITH SKIN,
EYES AND CLOTHING. KEEP TIGHTLY CLOSED IN A COOL DRY PLACE. STORE ONLY WITH
COMPATIBLE CHEMICALS. STORE UNDER NITROGEN.

SECTION X SPECIAL PRECAUTIONS AND COMMENTS

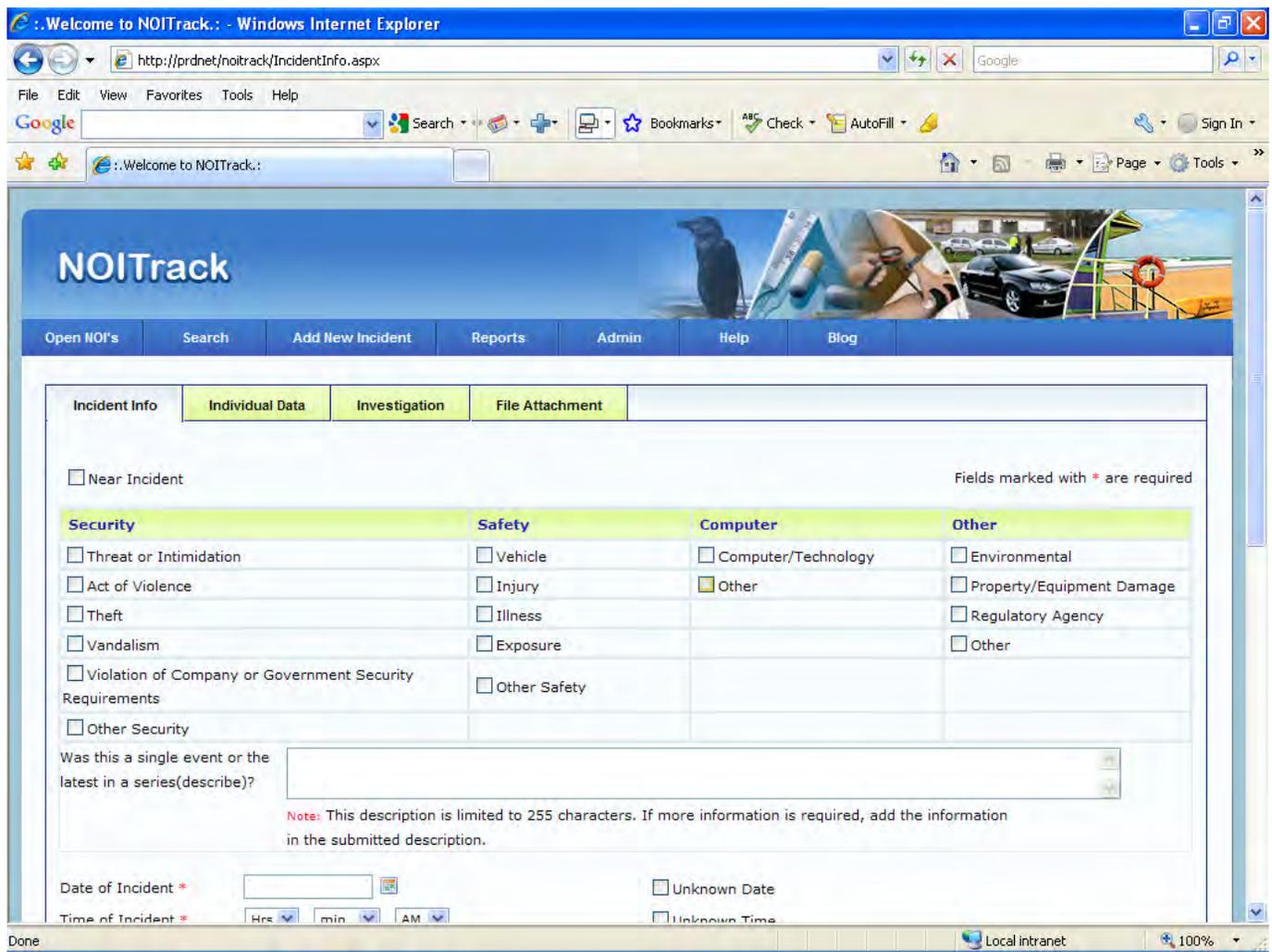
THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT ON THE DATE IT IS PUBLISHED AND
MUST NOT BE CONSIDERED ALL INCLUSIVE. THE INFORMATION HAS BEEN OBTAINED ONLY
BY A SEARCH OF AVAILABLE LITERATURE AND IS ONLY A GUIDE FOR HANDLING THE
CHEMICALS. OSHA REGULATIONS REQUIRE THAT IF OTHER HAZARDS BECOME EVIDENT, AN
UPGRADED MSDS MUST BE MADE AVAILABLE TO THE EMPLOYEE WITHIN THREE MONTHS.
RESPONSIBILITY FOR UPDATES LIES WITH THE EMPLOYER AND NOT WITH
CHEM SERVICE, INC. PERSONS NOT SPECIFICALLY AND PROPERLY TRAINED SHOULD NOT
HANDLE THIS CHEMICAL OR ITS CONTAINER. THIS MSDS IS PROVIDED WITHOUT ANY
WARRANTY EXPRESSED OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR ANY
PARTICULAR PURPOSE.

THIS PRODUCT IS FURNISHED FOR LABORATORY USE ONLY! OUR PRODUCT MAY NOT BE
USED AS DRUGS, COSMETICS, AGRICULTURAL OR PESTICIDAL PRODUCTS, FOOD ADDITIVES
OR AS HOUSEHOLD CHEMICALS.

ATTACHMENT D MISHAP REPORTING

Instructions for Mishap reporting attached. Use WESTON NOITrack to complete the mishap form online.

<http://asweb/NOITrack/IncidentInfo.aspx>



Please go to NOITrack using the following link to complete mishap reporting. If you are in the field and do not have access to NOITrack, please contact someone in your office to do the reporting for you.

<http://asweb/noitrack/MishapInfo.aspx>

Questions can be directed to Larry Werts @ (215) 815-6237

ATTACHMENT E
TRAINING AND MEDICAL CERTIFICATION SHEETS

WESTON and Subcontractor certification sheets are available onsite.

ATTACHMENT F
ACCESS AGREEMENTS, SUBCONTRACTOR HASP, OR MISC

Access agreements, subcontractor HASPs, or other important site specific documents are available onsite.

**ATTACHMENT G
HASP CHECKLIST**

Site Manager/EHS Officer: Refer to Field Book Date: Address:	Task Team (name or reference via daily sign-in sheet) See sign in sheet
--	--

HAZARDS IDENTIFIED (check those applicable)

Chemical		Biological		Physical			
<input type="checkbox"/>	Flammable/combustible	<input type="checkbox"/>	Insects	<input type="checkbox"/>	Noise	<input type="checkbox"/>	Man. Material Handling
<input type="checkbox"/>	Corrosive	<input type="checkbox"/>	Animals	<input type="checkbox"/>	Heat	<input type="checkbox"/>	Demolition
<input type="checkbox"/>	Oxidizer	<input type="checkbox"/>	Plants	<input type="checkbox"/>	Cold	<input type="checkbox"/>	Excavation
<input type="checkbox"/>	Reactive	<input type="checkbox"/>	Mold/Fungus	<input type="checkbox"/>	Inclement Weather	<input type="checkbox"/>	Pile Driving
<input type="checkbox"/>	Toxic	<input type="checkbox"/>	Viral/Bacterial	<input type="checkbox"/>	Hot Work	<input type="checkbox"/>	Welding/Cutting/Burn
<input type="checkbox"/>	Inhalation	<input type="checkbox"/>	Density Gauges	<input type="checkbox"/>	Confined Spaces	<input type="checkbox"/>	Hot Surfaces
<input type="checkbox"/>	Eyes/Skin	<input type="checkbox"/>	Radiological	<input type="checkbox"/>	Stored hazardous Energy	<input type="checkbox"/>	Hot Materials
<input type="checkbox"/>	Pesticides	<input type="checkbox"/>	Ultra-Violet	<input type="checkbox"/>	Elevation	<input type="checkbox"/>	Rough Terrain
<input type="checkbox"/>	Carcinogen	<input type="checkbox"/>	Sunlight	<input type="checkbox"/>	Utilities	<input type="checkbox"/>	Compressed Gases
<input type="checkbox"/>	Asbestos	<input type="checkbox"/>	Infrared	<input type="checkbox"/>	Machinery	<input type="checkbox"/>	Hazardous Mat. Storage
<input type="checkbox"/>	Lead	<input type="checkbox"/>	Lasers	<input type="checkbox"/>	Mobile equipment	<input type="checkbox"/>	Diving
<input type="checkbox"/>	UXO/OE/ CWM	<input type="checkbox"/>	XRF	<input type="checkbox"/>	Cranes	<input type="checkbox"/>	Operation of Boats
<input type="checkbox"/>	Process Safety	<input type="checkbox"/>	Isotopes	<input type="checkbox"/>	Manual Material Handling	<input type="checkbox"/>	Working Over Water
<input type="checkbox"/>	Applying Paint/Coatings	<input type="checkbox"/>		<input type="checkbox"/>	Ladders	<input type="checkbox"/>	Traffic
<input type="checkbox"/>	PCE, TCE, DCE	<input type="checkbox"/>		<input type="checkbox"/>	Scaffolding	<input type="checkbox"/>	Site Security

REQUIRED PROTECTION (check those applicable)

Engineering Controls		Administrative Control		PPE		Contingency	
<input type="checkbox"/>	Guard Rails	<input type="checkbox"/>	Qualified for task	<input type="checkbox"/>	Air Supplying Respirator	<input type="checkbox"/>	Tyvek coveralls
<input type="checkbox"/>	Machine Guards	<input type="checkbox"/>	Trained/Certified	<input type="checkbox"/>	Air Purifying Respirator	<input type="checkbox"/>	Coated Coveralls
<input type="checkbox"/>	Sound Barriers	<input type="checkbox"/>	Hot Work Permit	<input type="checkbox"/>	SCBA	<input type="checkbox"/>	Welding leathers
<input type="checkbox"/>	Enclosure	<input type="checkbox"/>	CSE Permit	<input type="checkbox"/>	Hard Hat	<input type="checkbox"/>	CWM
<input type="checkbox"/>	Elevation	<input type="checkbox"/>	Lockout/Tag Out	<input type="checkbox"/>	Ear Plugs	<input type="checkbox"/>	Safety Shoes/Boots
<input type="checkbox"/>	Isolation	<input type="checkbox"/>	Work Permit	<input type="checkbox"/>	Ear Muffs	<input type="checkbox"/>	Rubber Boots
<input type="checkbox"/>	GFCI	<input type="checkbox"/>	Dig Safe Permit	<input type="checkbox"/>	Safety Glasses	<input type="checkbox"/>	Gloves
<input type="checkbox"/>	Assured Ground Program	<input type="checkbox"/>	Contingency Plan	<input type="checkbox"/>	Goggles	<input type="checkbox"/>	Cooling Suits
<input type="checkbox"/>	Apply Anti-slip/skid Mat	<input type="checkbox"/>	Critical Lift Plans	<input type="checkbox"/>	Chemical Goggles	<input type="checkbox"/>	Ice Vests
		<input type="checkbox"/>	Equip. Inspection Sheets	<input type="checkbox"/>	Face Shield	<input type="checkbox"/>	Radiant heat Suits
				<input type="checkbox"/>	Thermal Shield	<input type="checkbox"/>	Fall Arrest
				<input type="checkbox"/>	Welding Mask	<input type="checkbox"/>	PFD
				<input type="checkbox"/>	Cutting Glasses	<input type="checkbox"/>	Electrical insulation

Any Modification to Tasks (list)	Other tasks or activities that may affect my activity	Reasons for any changes indicated above
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ATTACHMENT H
SITE SECURITY ASSESSMENT FORM

SITE SECURITY ASSESSMENT FORM

SITE POINT OF CONTACT INFORMATION

Site Name: **Sherwin-Williams - Gibbsboro**
 Site POC Name: **Patrick Austin/Michele Capriglione**
 Date Contacted:
 Site Setting: Commercial Industrial Residential Other:
 Conversation Details:

THREAT INDICATORS

<http://www.spotcrime.com> – Website that allows you to search by state, city, and plug in address.

List below the number of arrests (AR), assaults (AS), burglary (BG), robbery shootings (ROB), and theft (TFT) in the general area of the site:

AR: **0** AS: **0** BG: **0** ROB: **0** SHT: **0** TFT: **0**

Other relevant details:

SECURITY COUNTERMEASURES

Field work conducted during daylight hours? Yes No
 Buddy system at all times? Yes No
 Routine phone check-ins with PM or SO? Yes No
 Badges required at all times? Yes No
 Site area fenced/secure? Yes No
 Site security guards/hired protection? Yes No

Other:

EMERGENCY SERVICES

Local Police Station and Phone Number:	911	
Did you contact the Police Dept.?	<input type="checkbox"/> Yes (Required for High Risk)	<input checked="" type="checkbox"/> No

If so, conversation details:

APPROVAL

Site Security Level? High Medium Low

Field Safety Officer Signature

PM Signature

ATTACHMENT I
VEHICLE ASSESSMENT FORM AND TRAFFIC CONTROL PLAN (AS NEEDED)

VEHICLE USE ASSESSMENT AND SELECTION

Driving is one of the most hazardous and frequent activities for WESTON Employees. The most appropriate type vehicle(s) authorized for use on this project is/are:

1. Pickup trucks
2. SUVs
3. Mini Van
- 4.

The following Project Team Member's qualifications and experience in driving these types of vehicles was evaluated and found to be acceptable (indicate vehicle type(s) number next to employee name).

1. Brian Benson – 1, 2, 3
2. Amanda Laskoskie – 1, 2, 3
3. James Heaton – 1, 2, 3
4. Laura Dale – 1, 2, 3
5. Michele Capriglione – 1, 2, 3
6. Patrick Austin – 1, 2, 3
- 7.
- 8.
- 9.
- 10.

The project site was evaluated and a **Traffic Control Plan** is required is not required.

If required, the **Traffic Control Plan** can be found on the next page.

ATTACHMENT J
ENVIRONMENTAL RISK MANAGEMENT PLAN

Environmental Risk Management Plan available onsite.

ATTACHMENT K
FIELD SITE HEALTH AND SAFETY AUDIT FORMS

MANAGER'S FIELD SITE HEALTH AND SAFETY AUDIT FORM

PM name: _____ Date: _____

Client name: _____ W.O. No.: _____

Site location: _____ Site phone no.: _____

Inspection conducted by:

PM in person PM via phone (Contact Name: _____)

PM's designee (Designee's Name: _____)

1. Is the HASP available at the site? yes no Signed by all personnel? yes no
(Have the cover page and site worker sign-off page faxed and attached to this form.)

2. What tasks are active?
_____.

3. What special H&S considerations are necessary? (e.g., confined spaces, fall protection, construction safety, excavation evaluations, radiation, etc.) _____.

4A. List the name of the SHSC/FSO on Line (a) and any other employees working at the site on lines (b) through (i). Verify and check (✓) if field certifications are current:

Name	Weston or Sub?	Training	Medical	Fit Test
a.				
(For above, circle: SHSC or FSO)				
b.				
c.				
d.				
e.				
f.				
g.				
h.				
i.				

4B. For large projects, is documentation on-site for employee certifications? yes no NA

5. Is emergency contact information available on-site? yes no
(Have a copy faxed from the site and attached to this report.)

6. Describe the ambient temperatures during recent work shifts:
_____.

7. Was the level of PPE used for each task today as required by the HASP? yes no

8A. What contaminant monitoring is conducted?
_____.

8B. How are results documented? ___Logbook ___Forms ___other (describe): _____.
(Have the most recent results and calibration information faxed and attached to this form.)

9. What other monitoring is done? (e.g., heat stress, cold, noise, etc.)
_____.

10. How are work zones marked and/or designated?
_____.

11. Are personnel and equipment decon performed as required by the HASP? ___yes ___no

12. Are first aid and CPR services provided as required by the HASP? ___yes ___no

13. When were first aid kits, BBP kits, and fire extinguishers last inspected? _____.
(Have documentation faxed and attached to this form.)

14. Was site-specific hazard communication completed and properly documented? ___yes ___no
(Have checklist in HASP Attachment D faxed and attached to this form.)

15. When was the last safety briefing conducted? _____.
List topic(s) discussed: _____.
(Have minutes/sign-up sheet attached to this form.)

16. Explain any negative findings below: _____

PM Signature/Date: _____

HEALTH AND SAFETY FIELD AUDIT

Legend X = Yes, O = No

PROJECT NAME: _____

WO #: _____

LOCATION: _____

INSPECTOR: _____

DATE: _____

CERTIFICATION OF PERSONNEL:

1. _____ All WESTON personnel on site are currently active on certification list?
2. _____ Site Safety Officer and Site Supervisor are qualified?

MEDICAL AND FIRST AID:

1. _____ First Aid Kits accessible and identified?
2. _____ Emergency eye/safety washes available?
3. _____ Daily First Aid logs up to date?
4. _____ First Aid Kits inspected weekly?
5. _____ At least two First Aid trained persons on site at all times when working?

SITE SAFETY/EMERGENCY PLANS:

1. _____ Safety plan posted on site and given to each person?
2. _____ Initial site safety plan meeting held and documented before work begins?
3. _____ Hazardous materials information available for all hazards?
4. _____ Designated, qualified site health and safety coordinator on site?
5. _____ Employees trained in toxicology/exposure risks?
6. _____ Emergency telephone numbers posted?
7. _____ Emergency routes designated?
8. _____ Emergency plan and signal reviewed with all persons?

TRAINING:

1. _____ Daily safety meetings documented?
2. _____ Question and answer time available to all site personnel?
3. _____ All employees instructed in hazardous materials handling practices?
4. _____ New personnel to site receive:
Copy of safety plan _____, Site orientation _____,
Review of:
LOP _____, DECON _____, ZONES _____, Site specific safety and health hazards? _____

HEALTH AND SAFETY FIELD AUDIT - Continued

Legend X = Yes, O = No

PERSONAL PROTECTION:

1. ____ All equipment meets ANSI/OSHA/EPA criteria?
2. ____ Levels of protection (LOP) established?
3. ____ Site control zones (Exclusion, CRZ, Support) clearly designated?
4. ____ All employees know their LOP scheme?
5. ____ OSHA respirator program in place?
6. ____ Employees fit tested for respirators?
 ____ On site?
 ____ Fit tests current?
7. ____ Defective equipment tagged out?
8. ____ Breathing air grade "D" certified?
9. ____ Sufficient quantities of equipment?
10. ____ Safety instrumentation maintained and calibrated?
 ____ Maintenance & Calibration logs up to date?

DECONTAMINATION:

1. ____ Decon system set up on site?
 ____ Used?
 ____ According to safety plan?
2. ____ Contamination reduction corridor clearly delineated within the CRZ?
3. ____ Appropriate waste receptacles available for all waste?
4. ____ Receptacles properly closed at end of day?
5. ____ All Decon liquids properly contained and disposed of?
6. ____ All wastes disposed of according to approved plan?
7. ____ All personnel received Decon training?
8. ____ All reusable personal protective gear decontaminated and disinfected at least daily?

FIRE PREVENTION/PROTECTION:

1. ____ Hot work permits required?
2. ____ Smoking restricted to designated area?
3. ____ Fire lanes established, clearly designated & maintained?
4. ____ Flammable/combustible liquid dispensing transfer systems grounded & bonded?
5. ____ Proper flammable materials storage?
6. ____ Fire alarm established, workers aware?
7. ____ Location and use of fire extinguisher known by all personnel?
8. ____ Fire extinguishers checked before each shift?
 ____ Inspected monthly?
9. ____ Fire extinguisher appropriate for fire hazard potential?
10. ____ Combustible materials segregated from ignition sources?

HEALTH AND SAFETY FIELD AUDIT - Continued

Legend X = Yes, O = No

WALKING AND WORKING SURFACES:

1. ____ Access ways, stairs, ramps and ladders free of ice, mud, snow or debris?
2. ____ Ladders exceed max length?
3. ____ Ladders used in passageways, doors or driveways?
4. ____ Broken or damaged ladders tagged out?
5. ____ Metal ladders prohibited in electrical service?
6. ____ Safety feet on straight and extension ladders?
7. ____ Stairways, floor and wall openings guarded?
8. ____ Elevated work areas guard railed or safety chained?
9. ____ Flotation devices worn when working on or over water?
10. ____ Toe boards on overhead work surfaces?
11. ____ Mobile offices/labs have fixed stairs and handrails?
12. ____ Work areas kept free of debris and equipment?

EXCAVATIONS, CONFINED SPACES, TUNNELS:

1. ____ Excavations sloped, shored or benched to prevent cave-ins?
2. ____ Shoring approved by engineer?
3. ____ Guardrails or fences placed around excavations near walkways or roads?
4. ____ Excavation locations lighted/or otherwise made visible at night?
5. ____ Utility check performed and documented before excavation or drilling?
6. ____ Ladders available in trenches more than 4 feet deep and at a minimum, 25' intervals along a fence?
7. ____ All excavated material, personnel, heavy equipment is at least 24" from the edge of all trenches?
8. ____ Confined space entry permit procedure in place and communicated to all?
9. ____ Employee training includes CSE hazards?
10. ____ Tunnels are adequately ventilated?
11. ____ There is proper lighting?
12. ____ Tunnel tested for: % O₂?
 - ____ LEL, flammable gases, vapors?
 - ____ TOX?
13. ____ Communication available inside to out?
14. ____ No flammables or combustibles in tunnel?
15. ____ CSE procedures used for Tunnels?
16. ____ CSE procedure checklist:
 - ____ Safety watch?
 - ____ Safety watch protected same as enterers?
 - ____ Safety line?
 - ____ Appropriate harness?
 - ____ Continuous monitoring for % O₂, % LEL & TOX?

HEALTH AND SAFETY FIELD AUDIT - Continued

Legend X = Yes, O = No

EXCAVATIONS, CONFINED SPACES, TUNNELS (continued):

- Level B or constant ventilation and monitoring?
- Instruments calibrated?
- Maintain and inspect log for all equipment?

17. Confined space isolated from electrical/mechanical activation by following lock out/tag out proceedings?
- Confined space isolated from any raw materials/chemical lines by disconnecting or blanking these lines?

MOTOR VEHICLES/HEAVY EQUIPMENT:

1. Inspected before each use?
2. Operators licensed for equipment used?
3. Unsafe equipment tagged out and reported?
4. All safety appliances/guards in place?
5. Shut down for fueling?
6. Equipped with back-up alarms or spotter used if 360° visibility restricted?
7. Loads are secure before transport?
8. Roads and structures inspected for load capacity per vehicle weights?
9. Riders prohibited on heavy equipment?

SLINGS AND CHAINS:

1. Slings, chains and rigging rated for intended use and inspected per OSHA. Documentation of inspection in daily log?
2. Damaged slings, chains or rigging tagged out and reported?
3. Employees are instructed and keep clear of suspended loads?

ELECTRICAL:

1. Warning signs indicate the presence and location of high voltage equipment, 250 V or greater present and location?
2. Electrical equipment and wiring properly guarded?
3. Electrical lines, extension cords and cables guarded and properly maintained?
4. Extension cords kept dry out of puddles and rain?
5. Damaged equipment tagged out?
6. Underground electrical lines located and indicated?
7. Overhead electrical lines de-energized or elevated work platforms, work areas, booms or ladders erected so no contact can occur with electrical lines?
8. A positive electrical lock-out system is used whenever work is done on or in electric equipment or electrically activated equipment?

HEALTH AND SAFETY FIELD AUDIT - Continued

Legend X = Yes, O = No

HAND AND POWER TOOLS:

1. ___ Guards and safety devices in place and used?
2. ___ Inspected before each use?
3. ___ Tagged out if defective?
4. ___ Eye protection areas identified and protection worn?
5. ___ Non sparking tools available?

WELDING AND CUTTING:

1. ___ Fire extinguishers present at all welding and cutting operations?
2. ___ Confined spaces, tanks, pipelines tested before welding or cutting?
3. ___ Hot work permitting system in use?
4. ___ Proper helmets and shields (including proper tint for UV protection) used?
5. ___ Properly grounded?
6. ___ Fuel gas and O₂ gas cylinders stored at least 20' apart?
___ Stored upright and secured?
7. ___ Only trained welders permitted?

COMPRESSED GAS CYLINDERS/PRESSURIZED LINES:

1. ___ Breathing air cylinders charged only to prescribed pressure?
2. ___ No other gas system can be mistaken for breathing air?
___ Fittings prohibit cross connection?
3. ___ Cylinders segregated appropriately in controlled, protected but well ventilated areas?
4. ___ Smoking prohibited in storage areas?
5. ___ Cylinders stored upright and secured?
6. ___ Cylinder caps in place when stored (not in use) or when cylinders moved?
7. ___ Fuel gas and O₂ minimum 20' apart when stored?
8. ___ Pressurized air or waterlines are securely connected?
9. ___ All site personnel know never to step across a pressurized line?
10. ___ Gas or other hazardous lines are labeled appropriately?

MISCELLANEOUS:

1. ___ Tools and other equipment (portable) are stored away from walkways, roads or driveways where they cannot fall on or be fallen over by site personnel?
2. ___ Overhead hazards are noted, communicated to all and labeled as needed?
3. ___ Hard hat, eye hearing and protection areas are defined and signs in place?
4. ___ Hard hats, eye and head protection used where appropriate?
5. ___ Signs or labels are in place or appropriate training received?

HEALTH AND SAFETY FIELD AUDIT - Continued

Legend X = Yes, O = No

- 6. _____ Copies of contracts with client and sub-contractors are on-site, WESTON's role regarding site health and safety responsibilities clear in these and in the minds of the site manager(s)?
- 7. _____ Sub-contractors have received approved copies of their safety plan or have signified their intent to conform to Weston's safety plan?
- 8. _____ Site managers understand their responsibilities for sub-contractors' conformance with all OSHA and other health and safety requirements?
- 9. _____ Site managers know what to do in the event of an OSHA inspection?

COMMENTS:

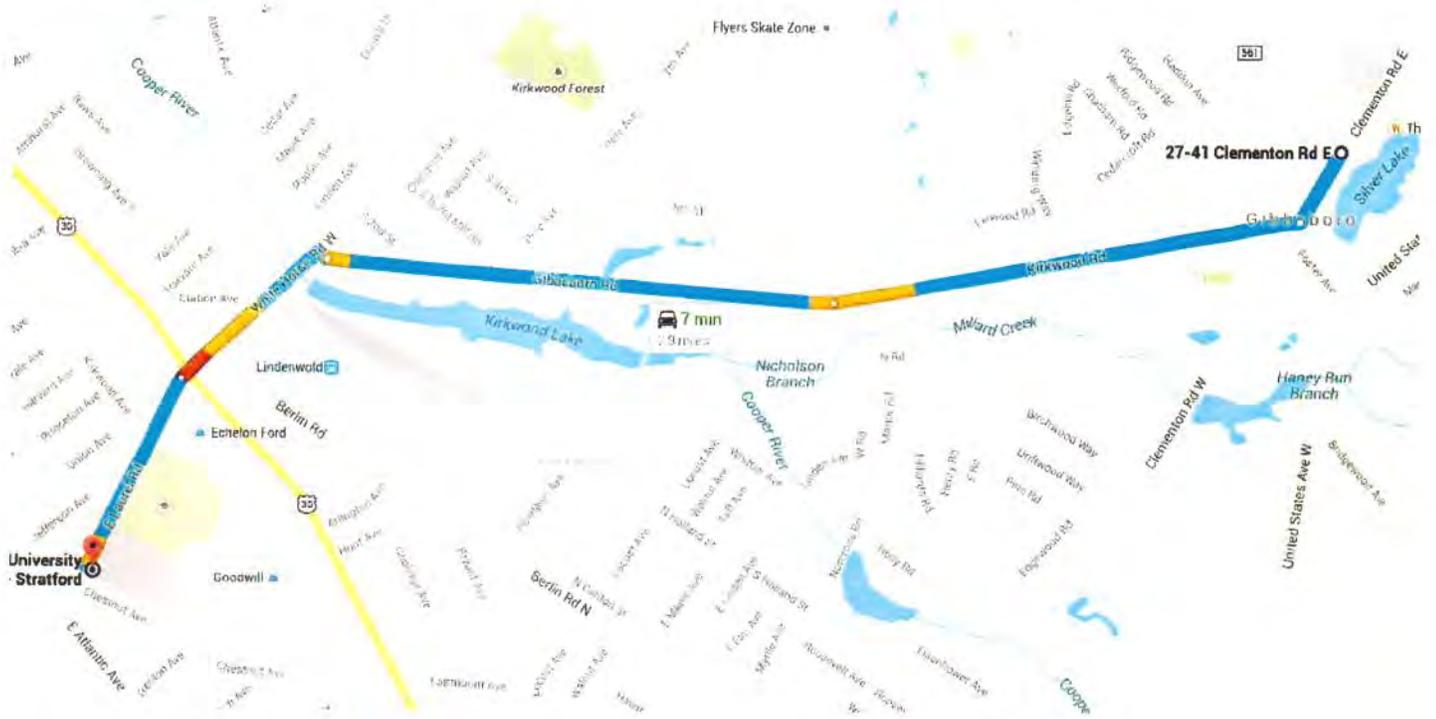
PM REVIEW COMMENTS:

PM Signature

Date



Directions from 27-41 Clementon Rd E to Kennedy University Hospital - Stratford



○ 27-41 Clementon Rd E
Gibbsboro, NJ 08026

- ↑
 1. Head southwest on Clementon Rd E toward Haddon Ave
0.2 mi
- ↘
 2. Turn right onto Kirkwood Rd
0.9 mi
- ↑
 3. Continue onto Gibbsboro Rd
1.0 mi
- ↙
 4. Turn left onto White Horse Rd W
0.4 mi
- ↙
 5. Slight left onto E Laurel Rd
 ⓘ Destination will be on the left
0.4 mi

○ Kennedy University Hospital - Stratford
18 East Laurel Road, Stratford, NJ 08084

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