

Specialty Products Inc. (SPI) HazMat and Fire Investigation



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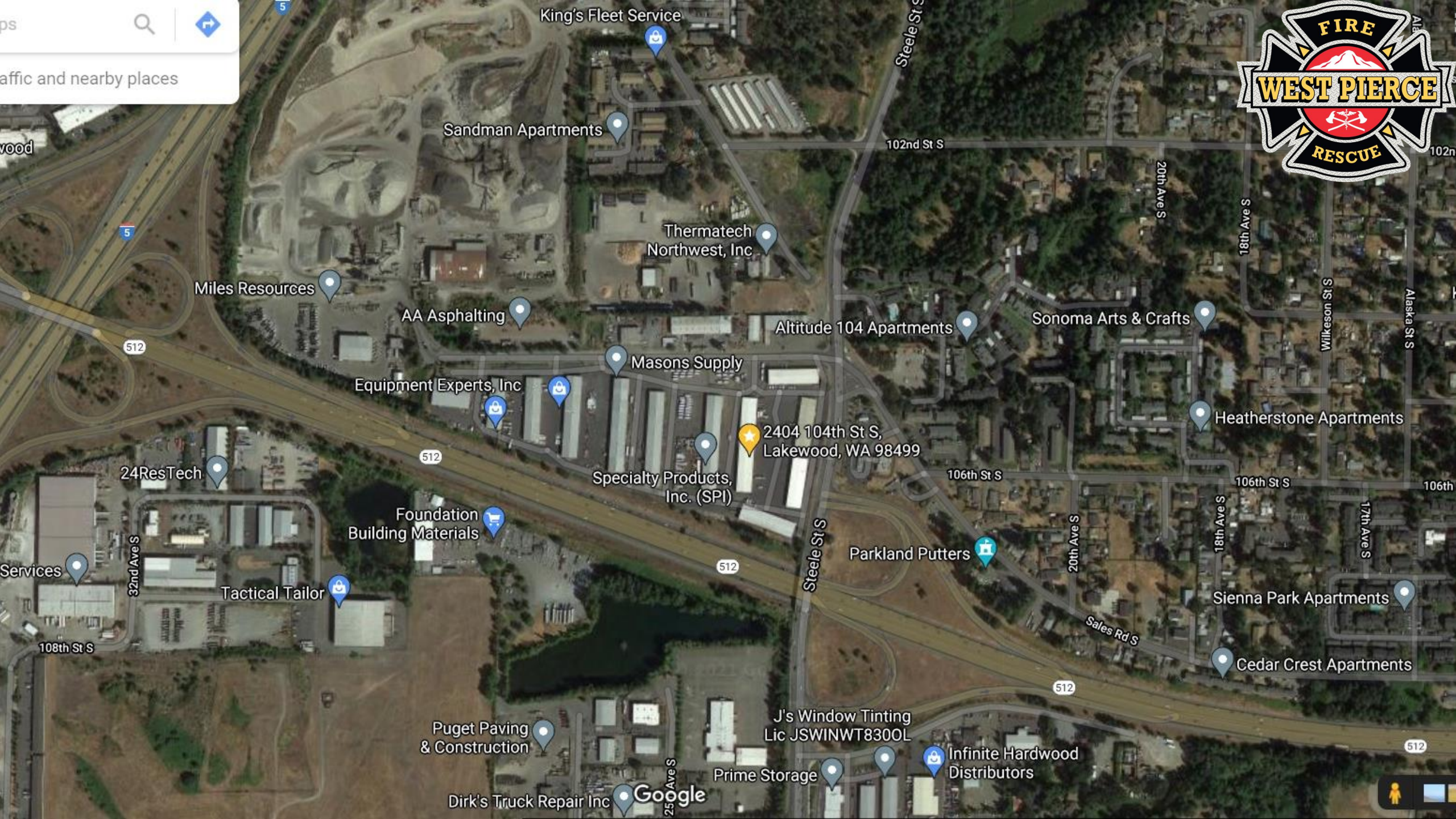




Specialty Products Inc. (SPI)

- What is SPI?
 - January 14th 2021 @ 0637
 - 2404 104th St Ct S #E Lakewood, WA 98499
 - Polyurea Coating & Polyurethane Foam Manufacturer
 - Spray in foam insulation, pickup truck bedliners, etc.





King's Fleet Service

Sandman Apartments

Thermatech Northwest, Inc

Miles Resources

AA Asphaltting

Altitude 104 Apartments

Sonoma Arts & Crafts

Equipment Experts, Inc

Masons Supply

Heatherstone Apartments

2404 104th St S,
Lakewood, WA 98499

Specialty Products, Inc. (SPI)

24ResTech

Foundation Building Materials

Parkland Putters

Sienna Park Apartments

Cedar Crest Apartments

Puget Paving & Construction

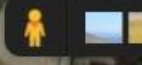
J's Window Tinting
Lic JSWINWT8300L

Infinite Hardwood Distributors

Prime Storage

Dirk's Truck Repair Inc

Google





104th St S

Mountain Village Kimchi

First Transit

104th St S

Superior Mobile Home Parts

Sales Rd S

Supply

Custom-Bilt Metal

Uncor Pressure Repair

The Supply Guy, Inc.

Bigfoot Java Takeout

Specialty Products, Inc. (SPI)

Compass Productions

76

Pacific Brew

Steele St S

Pacific Blvd S

TIER II reporting chemicals



- 009046-10-0 Jeffamine D 2000 polyoxypropylenediamine (13,5800lbs)
- **009046-10-0 Polyshield HT-100F (BPS)** (45,000lbs)
- 009049-71-2 Jeffolo SG-360 (56,000lbs)
- 025791-96-2 Pluracol GP-730 Polyol (25,000lbs)
- 005873-54-1 MDI-50F (900lbs)
- 068479-98-1 Ethacure 100 Curing Agent (83,000lbs)
- 000108-32-7 Jeffsol PC (propylene carbonate) (43,000lbs)
- 005873-54-1 Mondur ML (7,100lbs)
- 000584-84-9 Airthane PHP 80D (2,500lbs)
- 025322-69-4 Carpol PGP-2000 (Plurocol 2010) (50,000lbs)
- 157937-75-2 Rubinate 9272 (8,000lbs)
- 064852-22-8 Jeffamine T-5000 (30,000lbs)
- 102093-68-5 Ethacure 300 Curing Agent (4,000lbs)
- 070749-97-2 TERATE 4020 (4,700lbs)
- 000108-01-0 DMEA (7,000lbs)
- **009046-10-0 Polyshield HT-100F (BPS)** (45,000lbs)
- 000101-68-8 55 45 PRE POL (45,000lbs)
- 026570-73-0 Poly S2000EBA (13,000lbs)
- 026447-40-5 DIPHENYMETHANEDIISOCYANATE (8,000lbs)
- ES 2LB IB POLYURETHANE FOAM B (75,000lbs)
- ES H2O BLOWN POLYURATHANE FOAM (40,000lbs)
- POLYURATHANE FOAM BASE MIX (16,000lbs)
- SUPRASEC 2004 (16,000lbs)
- HT-100F A (21,000lbs)



The Building and other occupants



Lightweight Metal Frame construction (Built in 1979)

- A – Frozen Fish Storage facility
- B – Iron/Steel welding shop
- C – Small Engine Repair shop
- D, E, F – Specialty Products Inc.

No built in fire protection systems
(sprinkler, alarm, foam, etc.)



Fire Response and Initial Efforts



- 0637 – Commercial Fire Reported. Pierce Transit employees reported a possible electrical box fire
 - E61 (CPFR) “on scene of a working fire in a 1 story small sized storage warehouse. “oil spill” coming out of the man door. Making access to the roll up door.
 - B20 (WPFR) assumed command, OFFENSIVE strategy, hold the alarm. E20 to supply E61
 - E61 noted spilled material in the fire unit, recommend going DEFENSIVE.
 - Command – “DEFENSIVE on the fire unit”, OFFENSIVE on the Bravo & Delta exposures
 - L21 reported spilled product in the Bravo exposure

CAM1 Battalion20

14-01-20
07:00:40

Hazmat Response and Continued Efforts

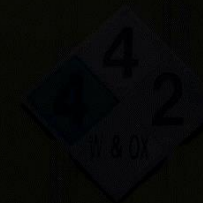


- PCHIT (County Hazmat Team) Called, HM21, HM69, HM94, HM59, E118
 - PCDEM was notified and established a ½ mile evacuation radius
 - Interstate 5 & SR 512 were shut down temporarily by WSDOT
 - JBLM runway was shut down temporarily
 - Technical Decon was conducted throughout the day
 - DOE & EPA assisted with air and water monitoring
 - Lakewood Police assisted with Drone videos
 - Many Firefighters were exposed
 - One had significant ongoing symptoms

End of first day, Request for Cleanup



- Fire Crews & Hazmat worked to fully extinguish the fire (1436)
 - CCS contract hazmat cleaning company arrived and began a plan for cleanup
 - Crews began talking about their boots being “sticky”
 - Pierce Transit busses flooded by contaminated water
 - Station 20 (WPFR) clogged drains





Fire Investigator arrived at 0650

Assisted in taking pictures of the event and exterior exam

Made contact with SPI manager and procured SDS

At the end of the day, Chemical Consultant was hired

Methyl Diisocyanate (MDI) was the main chemical involved

Over 2,000 gallons of product were released

Hydrogen Cyanide was a common fire gas

No entry for investigation was made on the first day

Polyshield HT SL "A"



SEAMLESS SOLUTIONS FOR OVER 40 YEARS

SAFETY DATA SHEET

POLYSHIELD HT™ SL "A" Component

Revised Date: 10/2/2018

Version: 11

SDS-047

SECTION 1: IDENTIFICATION

PRODUCT NAME	POLYSHIELD HT™ SL "A" Component
CAS NUMBER	Not available
PRODUCT USE	Polyurea Coating
MANUFACTURER	Specialty Products, Inc. (SPI)
ADDRESS	2410 104TH ST. CT. S. STE D LAKEWOOD, WA 98499
PHONE	253 588 7101 800 627 0773
FAX	253 588 7196
EMERGENCY CONTACT	FOR SPILLS, LEAKS, FIRE, OR EXPOSURE CALL CHEMTREC
TOLL FREE	800 424 9300
INTERNATIONAL	+1 703 527 3887
FAX	913 321 1490

SECTION 2: HAZARDS IDENTIFICATION

GHS LABEL ELEMENTS

GHS PICTOGRAM



DANGER

*NOTE – Around 25 Chemicals were involved.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	% WEIGHT
Isocyanates, reaction product of polyol with MDI	*Proprietary	10-30
2,4'-Diphenylmethane diisocyanate	5873-54-1	20-40
4,4'-Diphenylmethane diisocyanate	101-68-8	20-40
Propylene carbonate	108-32-7	1-10
Polymethylene polyphenylene isocyanate	9016-87-9	1-5
2,2'-Diphenylmethane diisocyanate	2536-05-2	1-5

*The specific chemical identity and exact percentage (concentration) is withheld as a trade secret per applicable regulations and statutes.

Polyshield HT SL "A"



SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS:

COMPONENT NAME	CAS NUMBER	EXPOSURE LIMITS
Isocyanates, reaction product of polyol with MDI	*Proprietary	Not available
2,4'-Diphenylmethane diisocyanate	5873-54-1	Not available
4,4'-Diphenylmethane diisocyanate	101-68-8	ACGIH TLV TWA: 0.005 ppm 8 hour(s) OSHA PEL CEIL: 0.02 ppm CEIL: 0.2 mg/m ³ NIOSH REL CEIL: 0.2 mg/m ³ 10 minute(s) CEIL: 0.02 ppm 10 minute(s) TWA: 0.05 mg/m ³ 10 hour(s) TWA: 0.005 ppm 10 hour(s)

SECTION 10: STABILITY & REACTIVITY

STABILITY:	Stable when handled and stored at temperatures 60-90°F (15-32°C).
INCOMPATIBILITY:	Incompatible with water, alcohols, amines, bases, and acids.
HAZARDOUS REACTION:	Exothermic reaction will occur when combined with sister component. Under normal conditions of storage and use, hazardous reactions will not occur. Reaction with water (moisture) produces CO ₂ gas. An exothermic reaction with materials containing active hydrogen groups can occur. The reaction becomes progressively more vigorous and can be violent at higher temperatures if the miscibility of the reaction partners is good or is supported by stirring or by the presence of solvents. This material is insoluble with and heavier than water. It sinks to the bottom, but reacts slowly at the interface. A solid water insoluble layer of polyurea is formed at the interface by liberating carbon dioxide.
HAZARDOUS POLYMERIZATION:	Polymerization may occur at elevated temperatures in the presence of alkalis, tertiary amines and metal compounds. Under normal conditions of storage and use, hazardous polymerization should not occur.
CONDITIONS TO AVOID:	Avoid moisture contamination and high temperatures.
HAZARDOUS DECOMPOSITION:	May produce toxic fumes of carbon dioxide, carbon monoxide, and/or nitrogen oxides when near heat source/flame.

Polyshield HT SL "A"



SECTION 11: TOXICOLOGY INFORMATION

ACUTE HEALTH EFFECTS:

EYE CONTACT:	Causes eye irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor or aerosol may cause irritation with symptoms of burning and tearing.
SKIN CONTACT:	Causes skin irritation with symptoms of reddening, itching, and swelling. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove. Contact with MDI can cause discoloration.
INHALATION:	Diisocyanate vapors or mist at concentrations above the TLV or PEL can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the TLV or PEL with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the TLV or PEL may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g., fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible. The test atmosphere generated in the animal study is not representative of workplace environments, how the substance is placed on the market, and how it can reasonably be expected to be used. Therefore the test result cannot be directly applied for the purpose of assessing hazard. Based on expert judgment and the weight of the evidence, a modified classification for acute inhalation toxicity is justified.

POTENTIAL CHRONIC EFFECTS:

CHRONIC EFFECTS:	As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to isocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to isocyanates at levels well below the TLV or PEL. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Extreme asthmatic reactions can be life threatening. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Sensitization can be permanent. Chronic overexposure to isocyanates has also been reported to cause lung damage (including fibrosis, decrease in lung function) that may be permanent. Prolonged contact with skin can cause reddening, swelling, rash, and, in some cases, skin sensitization. Animal tests and other research indicate that skin contact with MDI can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to prevent direct skin contact with isocyanates. Prolonged vapor contact with the eyes may cause conjunctivitis.
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Polyshield HT SL "A"



SECTION 16: OTHER INFORMATION

NFPA & HMIS	
4	Extreme
3	Serious
2	Moderate
1	Slight
0	No Hazard



National Fire Protection Association (NFPA)



HEALTH	2
FLAMMABILITY	1
REACTIVITY	1
SPECIAL INFORMATION	

Hazardous Material Information System (HMIS)

HEALTH	2
FLAMMABILITY	1
REACTIVITY	1
SPECIAL INFORMATION	

Note: The customer is responsible for determining the PPE code for this material. At the time of publishing, the NFPA/HMIS and the New GHS scale had opposite scales of severity. Check the most recent publications for current information.

- 4 - Death or major residual injury
- 3 - Serious temporary injury or moderate residual injury
- 2 - Temporary incapacitation or possible residual injury
- 1 - Irritants; minor residuals
- 0 - No health hazard

- 4 - Flammable gases; pyrophoric
- 3 - Ignites at ambient temperatures
- 2 - Ignites when heated
- 1 - Must be preheated to burn
- 0 - Will not burn



- W - Water reactive
- OX - Oxidizer
- SA - Simple asphyxiant

- 4 - Can detonate at ambient conditions
- 3 - Can detonate or explode with a strong initiating force
- 2 - Violent chemical change possible when heated or pressurized
- 1 - May be unstable if heated
- 0 - Normally stable



Day 2 - Cleanup



No Fire Investigation. Contractor cleanup and prep for investigation





Contaminated Gear & Site

1800Ft of Fire Hose

22 Pairs of Boots

23 Sets of Bunker Pants

22 Bunker Jackets

2 SCBAs, 5 Nozzles, Other Various tools

Multiple Vehicles (1 Fire Engine OS)



Day 3 – Investigation Attempt

0700- Morning brief with Contractors and Investigators

0820- URGENT message from Consultant. DO NOT ENTER

MDI is the product, dermal and inhalation hazard

Entry into structure may exceed occupational levels

Without Monitoring Equipment, We must assume we are over limits

HM call out to all regional teams for possible monitors (no success)

The only place that we can find monitoring items is in Pittsburg, PA





Day 4 – Investigation

- 0700- Setup for Level B PPE entries & investigation
- 0800- Safety brief from Contractors
- 0900- Safety brief from WPFR Hazmat team

Handwritten notes and diagrams on a whiteboard:

Bus Side is ALPHA
 CHANNEL **BIS**
 Obj. - Remove Cont. CCS
 Investigate WPFR
 NOTES

Organizational chart showing roles: HM SAFETY, STAGING, REHAB, HM TEAM LEADER, ENTRY LEADER, DECON LEADER, MEDICAL LEADER, RESOURCE, INFORMATION, ENTRY, DECON, BACK UP, WARM ZONE, HOT ZONE.

Handwritten labels: AIR, CCS, DECON, WARM ZONE, HOT ZONE, BUS, CRANE.

TIMES	NAME	IN	OUT	EST. A
	ART	0952	1047	1015
	MATT	1109	1236	1138
	ART	1245	1344	1308
	MIKE	1325	1344	

0952 - FIRST IN
 1344 - LAST OUT

Totes Proms



Day 4 – Investigation



Day 4 – Investigation



Day 4 – Investigation



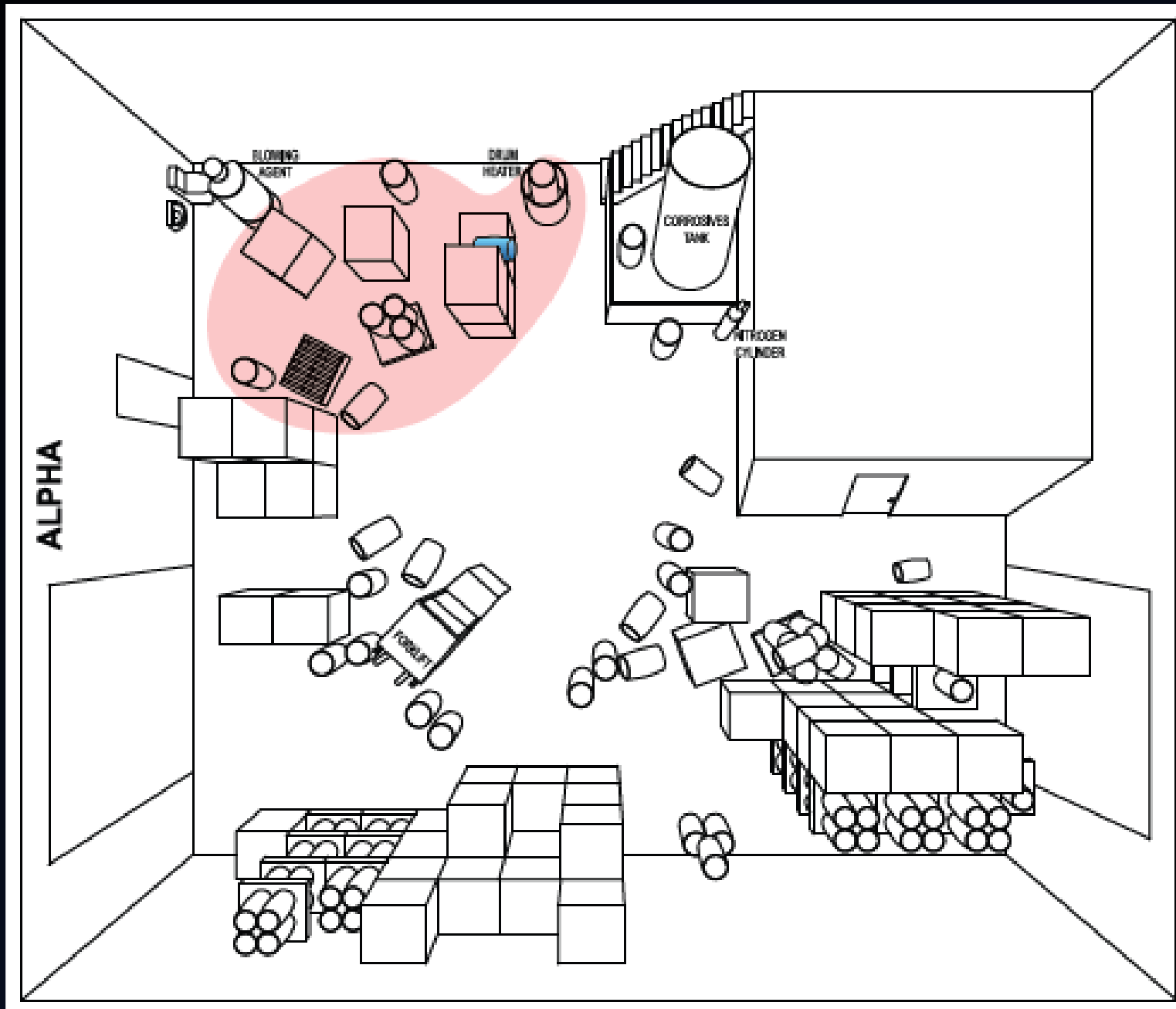
Day 4 – Investigation



Day 4 – Investigation



Day 4 – Investigation



Day 4 – Investigation



Day 4 – Investigation



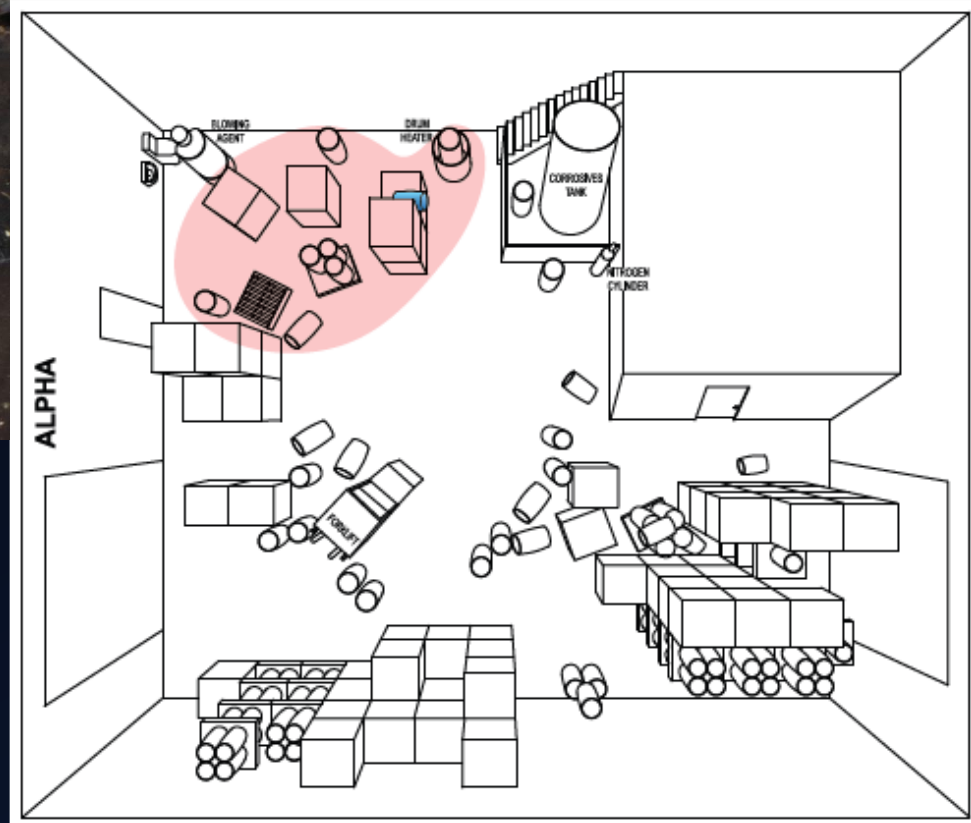
Day 4 – Investigation



Day 4 – Investigation



Day 4 – Investigation



Ruled Accidental due to evidence spoliation during Hazmat removal.



Why such a high level of PPE, and Hazmat response?

29 CFR 1910.120 (*HAZWOPER*)

NFPA 470 & 921

WAC 296-305 & 296-824

Already had one exposed FF

Could not verify safe operating levels



29 CFR 1910.120 (HAZWOPER), NFPA & WAC



Need Proper Training on PPE & Hazards

Pre & Post Entry Medical Screening

Decontamination Available

Must have an Incident Safety Officer

Must have a Pre-Entry Brief

BLS Transport Capable Unit on Scene





Ok, what's the correct level of PPE for Investigation?

NFPA 921 13.6 (2021 Edition) Safety

13.6.2.1 Respiratory Protection

13.6.2 (Table) Skin Protection

13.6.2.2 Hand Protection

13.8.1 Decontamination

13.8.2 Medical Screening





Other Resources to Support

DOE, EPA, FBI, DEA, ATF, DOH, PD, FD, HM, RT

Private Crane/Rigging/Excavation

Hazmat Contract Cleaners

Industry Representatives (CHEMTREC)

Others?



Summary



Fires with Hazmat need to be approached with EXTREME caution

If you cannot QUANTIFY a chemical concentration, do not enter...

Only use PPE that you have been trained to use

Obtain resources to ensure the location is safe (billing)

On multi-day investigations, ensure security of the entire site

Fire investigators are critical help during hazmat events

Don't lick it



Where can I find more info?



NFPA 921 (2021 edition) Chapter 13

NFPA 470 (2022 edition) Chapters 6 & 7

NFPA 1990 (2022 edition) {PPE}

NFPA 1981 (2018 edition) {SCBA}

WAC 296-824 (respirators)

Fire Safety Research Institute (Dr. Gavin Horn)

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