



# DESCENT INTO MADNESS: Mad Chemists, Collectors and Other Eccentrics Continuing Challenge 2024

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Chapter 1:  
U.S. Environmental  
Protection Agency Region 9  
**EMERGENCY RESPONSE  
SECTION**

# U.S. Environmental Protection Agency

**EMERGENCY RESPONSE PLANNING &  
PREPAREDNESS BRANCH, REGION 9**



# U.S. EPA Region 9 Emergency Response Offices

- **Regional Office**
  - San Francisco, 2 Supervisors, 9 OSCs, 2 Planners & Equipment Warehouse
- **Field Offices**
  - Signal Hill, CA, 1 Supervisor, 6 OSCs & Equipment Warehouse
  - San Diego, CA, 1 OSC & 1 Planner
- **Environmental Response Team (ERT)**
  - Las Vegas, NV



# U.S. EPA Region 9 Emergency Response Offices

Other areas we are responsible for:

*Hawaii*

Guam

Northern  
Mariana  
Islands

*Pacific Island  
Governments*

American  
Samoa

Navajo Nation  
in Utah and  
New Mexico

# On-Scene Coordinators

- Authorities:
  - National Contingency Plan (40 CFR 300)
  - CERCLA 104 (“Superfund”)
  - Oil Pollution Act
  - Stafford Act
- Integrate into Incident/Unified Command (UC)
- Spending Authority - \$200,000 Delegated Procurement Authority (Warrant Authority)
- Direct EPA contractors to execute hazardous substance and oil cleanups

# The Role of the OSC at Oil and Hazmat ERs



Become part of the existing ICS/UC



Monitor the incident and provide support or technical assistance



Mobilize federal resources



Can fund cleanups



Oversee responsible party.



# Response Assets

## **EPA Response/Removal Technical Assistance Contractors**

- Superfund Technical Assessment and Response Team (START)
- Emergency Rapid Response Services (ERRS)
- Emergency Response Equipment Management Services (EREMS)

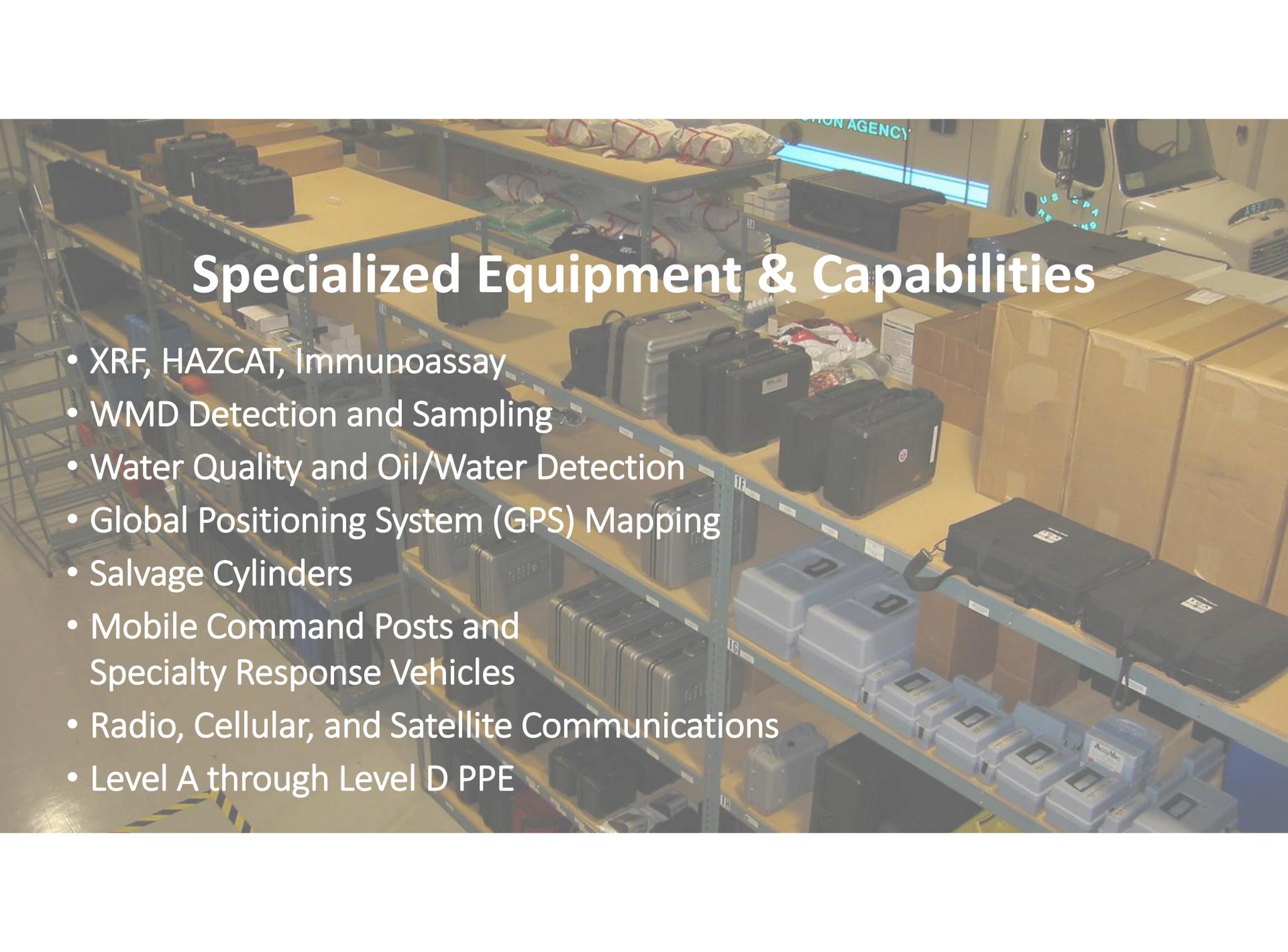
## **Other Commercial Contractors**

- OSCs have the authority to contract with commercial contractors if they need specialized equipment or service.



# Specialized Equipment & Capabilities

- Draeger X-Site Kits integrated w/VIPER
- AreaRAE Monitors integrated w/VIPER
- SPM FLEX Tape Meters integrated w/VIPER
- Alpha, Beta, and Gamma Radiation Detection integrated w/VIPER and CBRN Responder
- Gamma Spectroscopy
- TVA 1000 PID/FID Detectors
- LUMEX and Jerome Mercury Vapor Analyzers
- Air Sampling for Chemical, Biological and Radiological Contaminants



# Specialized Equipment & Capabilities

- XRF, HAZCAT, Immunoassay
- WMD Detection and Sampling
- Water Quality and Oil/Water Detection
- Global Positioning System (GPS) Mapping
- Salvage Cylinders
- Mobile Command Posts and Specialty Response Vehicles
- Radio, Cellular, and Satellite Communications
- Level A through Level D PPE

# Emergency Response Operations

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Pose an imminent and substantial endangerment and threat to public health, welfare and the environment

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Often involve quickly changing circumstances

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Catastrophic discharges or very large releases

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Typical emergency situations

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Disaster Response (Stafford Act)

# Site Characterizations

- Sampling
  - Air
  - Water
  - Soil
  - Containers/Tanks
- Sample Analysis
- Scene Documentation
- Data Management
- Data Visualization



# Types of Removal Actions

Can be conducted by EPA or the responsible parties

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## Emergencies

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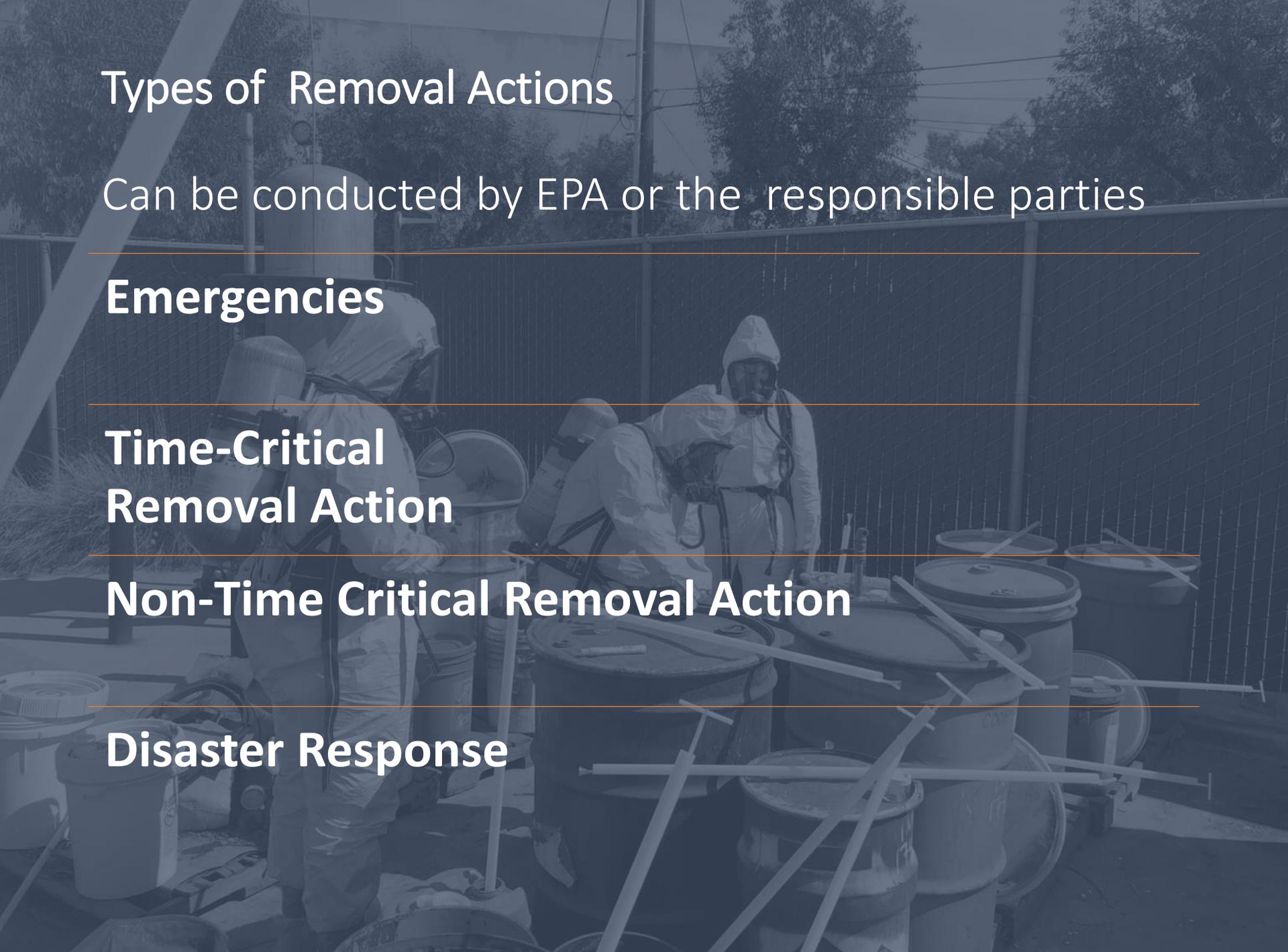
## Time-Critical Removal Action

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## Non-Time Critical Removal Action

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## Disaster Response



# Who Provides the OSC?

- **Oil Releases**
  - **EPA – Inland Zone Area of Responsibility (AOR)**
  - U.S. Coast Guard (USCG) – Marine Zone AOR
- **Hazardous Substance Releases**
  - **EPA – Inland Zone AOR**
  - USCG – Marine Zone AOR
  - U.S. Department of Defense (DOD) and U.S. Department of Energy (DOE) have jurisdiction for emergency/non-emergency releases from facilities/vessels under their jurisdiction.
  - Releases from federal facilities/vessels not under the control of EPA, USCG, DOD, or DOE are the jurisdiction of the agency that controls that asset for non-emergencies. For emergencies, EPA and USCG have the discretion to provide the OSC in their respective AOR.



Cleanup  
Referrals

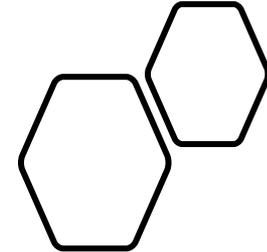
EPA Spill Phone:  
**(800) 300-2193, ext. 3**



**Module 2:  
Hoarding**

# HOARDING

Hoarding is the compulsive need to find and keep objects, animals or trash regardless of their value. Items commonly hoarded include newspapers, photographs, boxes, clothes, food, furniture, paper and plastic bags, appliances or electronics.



	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
Light amounts of clutter and no noticeable odors	✓	✓	✓	✓	✓
All doors and stairways are accessible	✓	✓	✓	✓	✓
Pet waste on the floor		✓	✓	✓	✓
Evidence of household rodents		✓	✓	✓	✓
Overflowing garbage cans		✓	✓	✓	✓
Dirty food preparation surfaces		✓	✓	✓	✓
At least one unusable bathroom or bedroom			✓	✓	✓
Overflowing garbage cans			✓	✓	✓
Odors throughout the house			✓	✓	✓
No clean dishes or utensils				✓	✓
Bugs				✓	✓
More than one blocked exit				✓	✓
At least four too many pets, per local regulations					✓
Noticeable human feces					✓
Rotting food on surfaces and inside a non-working refrigerator					✓

# Dealing with a Hoarder



Get family members involved



Get Public Health Nurse involved if the chemist is showing signs of anxiety related to cleanup



Chemist may need to be removed from the site



Chemist may not be mentally capable of providing legal access



<https://www.mayoclinic.org/diseases-conditions/hoarding-disorder/symptoms-causes/syc-20356056>



<https://www.therecoveryvillage.com/mental-health/hoarding/related/levels-of-hoarding/#gref>

# Module 3: Examples of Mad Chemists

- Chemical Collectors, Hoarders and Pack Rats
- Used Chemical Brokers and Formulators
- Illegal Hazardous Waste Brokers and TSDFs
- Non-Viable R&D Labs
- Drug Labs
- Bomb Makers
- Ammo Hoarders
- Terrorists





Doeskin Road  
Abandoned  
Chemicals: A  
Joint EPA-DTSC  
Removal Action  
Apple Valley, San  
Bernardino Co., CA

## Summary

- A vacant home in a rural area of unincorporated areas of Apple Valley. Home had been empty for 12 years.
- Discovered by the San Bernardino County Sheriff's Department during a burglary report.
- The landowner owned a chemical company that went bankrupt, left over chemicals moved to the property.
- Landowner planned to move the chemicals to a mine in Colorado
  - State of Colorado denied permission
- Site referred to EPA by Apple Valley Fire Department through DTSC.
- EPA and DTSC conducted a joint removal action.
- Multiple on-site detonations to destroy unstable chemicals by the FBI Hazardous Device Team

# Assessment Activities at Doeskin



Joint inventory between EPA and DTSC.



All containers inventoried.



Six enforcement samples collected and analyzed for pH, total cyanide, California Metals, Total Petroleum Hydrocarbons and VOCs.



Assessment identified the presence of heavily decayed Tetrahydrofuran. Destroyed by the bomb squad.



Identified a septic tank that was full of liquid. Sampled but no hazardous substances present.

# Chemical Classes Found at Doeskin

- Waste Toxic Solid, Inorganic
- Waste, Toxic Solid, Organic
- Waste Flammable Liquid
- Corrosive Solid
- Paint Related Material
- Non-RCRA Solid
- Non-RCRA Liquids
- Waste Corrosive Liquid, Basic
- Waste Corrosive Liquid, Flammable
- Waste Corrosive Solid, Acidic
- Waste Corrosive Liquids, Toxic
- Waste Chlorosulfonic acid
- Waste Phosphorus Oxychlor
- Waste Sodium Nitrate
- Waste Potassium Nitrate
- Waste Cyanides
- Waste Corrosive Solid, Basic
- Waste Sodium Sulfide
- Waste Aerosols
- Waste Carbon Disulfide
- Waste Mercury Compounds
- Waste Trimethoxysilane
- Waste Perchloric Acid







Module 4:  
The Chemicals of  
the Mad Chemist

# Chemical Classes Found at Mad Chemist's Sites

- Flammables Liquids and Solids
  - Compressed Gases
  - Explosives/Munitions
  - Unstable/ Shock Sensitive
  - Reactives
  - Dangerous When Wet
  - Corrosives
  - Poisons
  - Poison by Inhalation
- 
- Halogenated Solvents
  - Medical Waste
  - Drugs
  - Exotic Chemicals
  - Oxidizers
  - Hazardous Wastes
  - Radioactive
  - Multiple Hazards
  - Biological Agents
  - Anything Else...

# Special Friends of the Mad Chemist

- Mercury Compounds
- Ethers
- Water Reactives and Pyrophoric Materials
- Compressed Gases
- Strong Acids and Bases
- Weird Stuff
- Picric Acid
- Explosives
- Biological Agents



# MERCURY; MERCURY COMPOUNDS AND MERCURY ITEMS

- Volatile and Inhalation Hazard
- May be an explosive or explosive precursor
- Special PPE is needed
- Disposal is expensive
- Requires the use of a Mercury Vapor Analyzer to properly assess if loose

For more information on responding to Mercury Spills go to [response.epa.gov/Region9Training](https://response.epa.gov/Region9Training) to take EPA's Mercury Response and Cleanup course



# Ethers



- Narcotic Properties
- Flammable and Potentially Explosive
- React Violently with Oxidizers
- Form Explosive Peroxides that are Shock Sensitive
  - Autodetonation

Examples of  
Peroxide  
Forming  
Ethers

- Ethyl Ether
  - Dioxane
  - Tetrahydrofuran
  - Isopropyl Ether
  - Diethylene glycol dimethyl ether
  - Ethylene glycol dimethyl ether
  - Furan
  - Vinyl Ethers
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- Use WISER App to identify unstable ethers



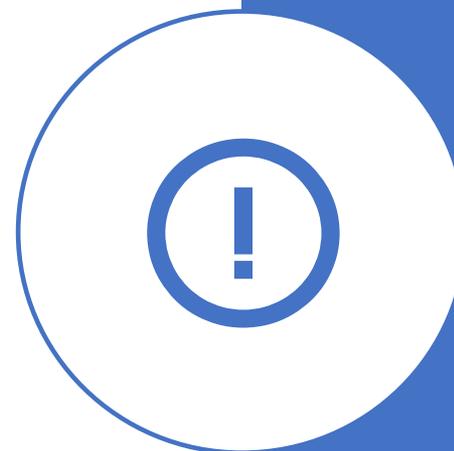
# HAZARD IDENTIFICATION: HAZARDOUS MATERIALS

## DOT Class 5 – Oxidizers and Organic Peroxides



# Water/Air Reactives: Alkali Metals

- Sodium
- Potassium
- Lithium
- Rubidium
- Radioactive Alkali Metals
  - Cesium
  - Francium
- Water/Air Reactive
- May spontaneously combust in the presence of air or water



# HAZARD IDENTIFICATION: HAZARDOUS MATERIALS

DOT Class 4 – Flammable Solids, Spontaneously Combustible, Dangerous When Wet

(Click on video to play)

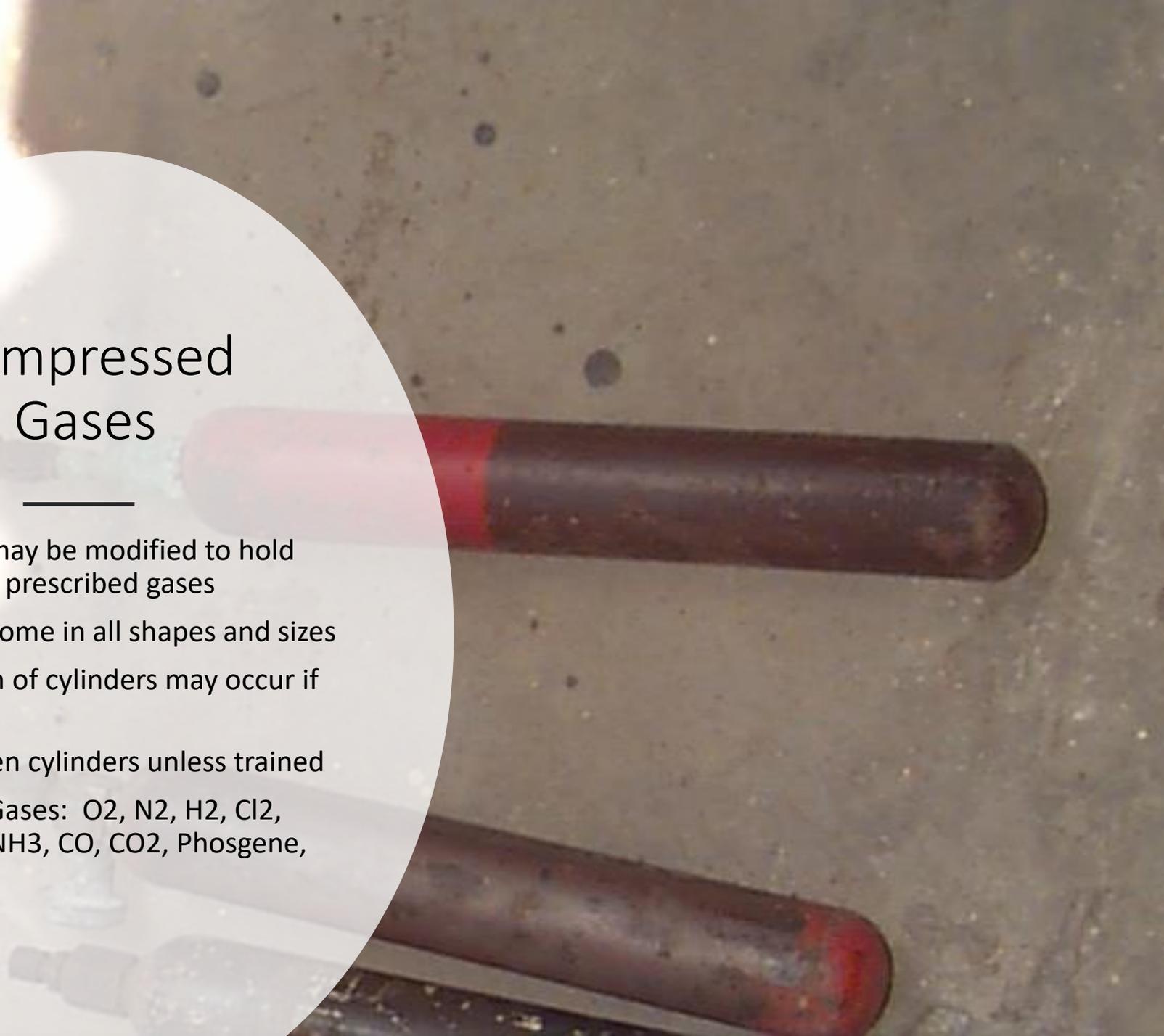
Reaction of rubidium and water



# Compressed Gases

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- Cylinders may be modified to hold other than prescribed gases
- Cylinders come in all shapes and sizes
- Detonation of cylinders may occur if breached
- Do not open cylinders unless trained
- Common Gases: O<sub>2</sub>, N<sub>2</sub>, H<sub>2</sub>, Cl<sub>2</sub>, HCl, CH<sub>4</sub>, NH<sub>3</sub>, CO, CO<sub>2</sub>, Phosgene, Acetylene

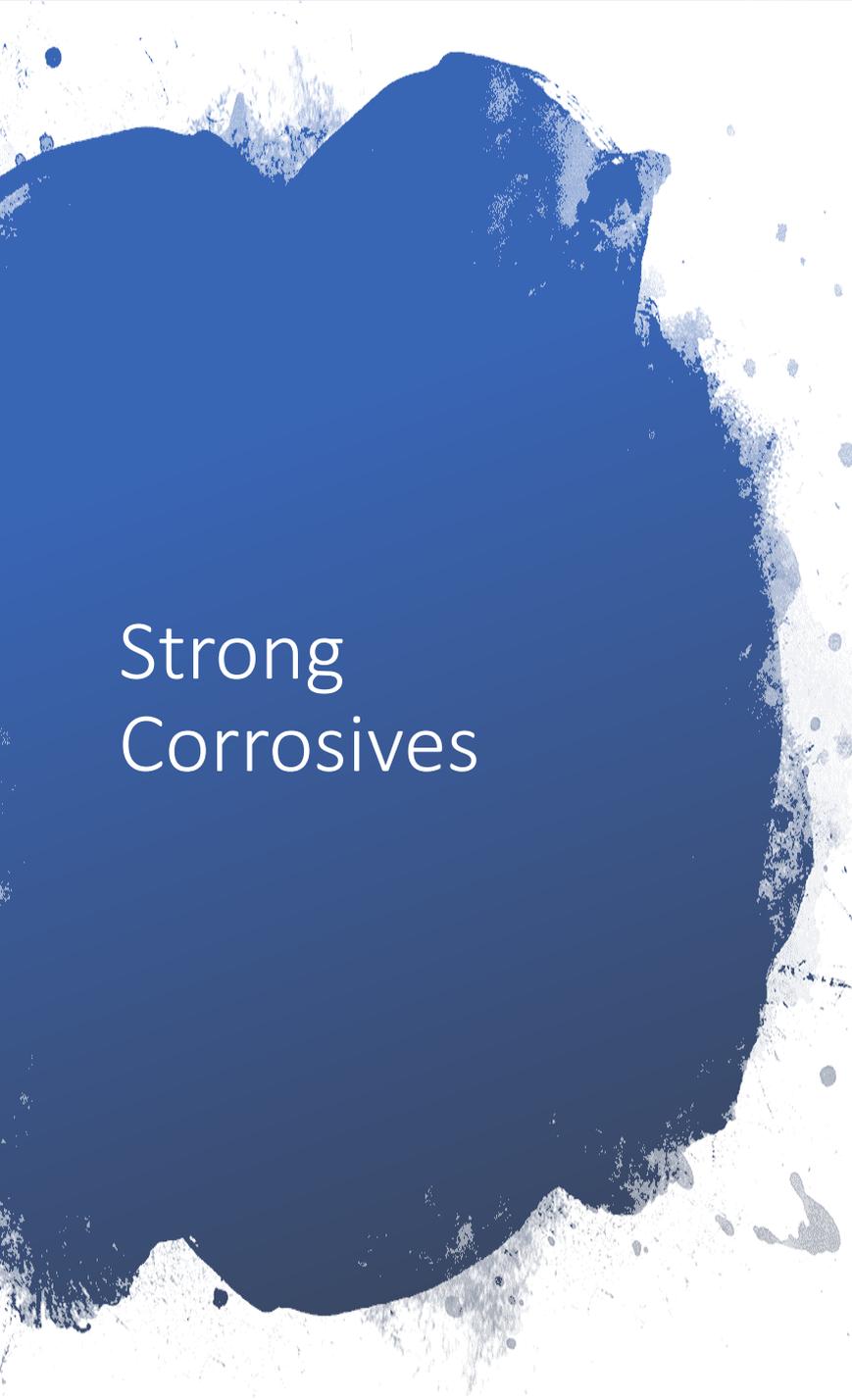


# HAZARD IDENTIFICATION: HAZARDOUS MATERIALS

DOT Class 2 – Gases (Compressed)

Click on the video to play





# Strong Corrosives

- Common compounds:  
Hydrochloric Acid, Hydrofluoric Acid, Nitric Acid, Sulfuric Acid, Acetic Acid, Perchloric Acid, and Various Hydroxides
- May have Oxidizing Properties
- May be able to form unstable decomposition products
- Neutralization Reactions can produce flammable and toxic gases
- May react violently with Water and Metals
- Acids can react with cyanides and sulfides to form toxic gases.

# Weird Stuff

- Pharmaceuticals
- Custom Blended Gases
- Experimental Chemicals
- Home Made Explosives
- The Mad Chemist



# Pharmaceuticals Found at the Mad Chemist

- Narcotics Tagged with Carbon 14
  - Heroin
  - MDMA
  - Methamphetamine
  - Phenyl barbital
- Drug Labs
  - Methamphetamine
  - Anabolic Steroids
  - Fentanyl
- Precursor Chemicals
  - Lysergic Acid
  - Ephedrine



# Picric Acid (Trinitrophenol)

- Yellow Crystalline Solid
- Strong Acid and Oxidizer
- Forms Explosive Salts with Common Metals
- Shock Sensitive if <10% Water Content
- Shipped as a Flammable Solid or Explosive Depending on Water Content
- If White Crystals have formed on the outside of the container or dry, treat as an unstable, shock sensitive explosive and call bomb squad





# Biological/Pathogenic Materials

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Human Medical Waste

Other Animal Specimens

Pathogenic Agents

Module 5

Case Studies:  
The Alchemist  
Strategic Sciences  
Pepper Street

# THE ALCHEMIST

## Star Mercury Gold Amalgamation

- A private individual conduct gold recovery using Mercury Amalgamation
- Contaminated four residential homes and five lockers at a ministorage
  - Home 1: Mission Beach, San Diego County, CA: Homeowner
  - Home 2: La Jolla, San Diego County, CA: Homeowner
  - Home 3: Escondido, San Diego County, CA: DTSC
  - Home 4: Escondido, San Diego County, CA: EPA
  - Mini-Storage: Sorrento Valley, San Diego County, CA: The Alchemist
- Approximately six additional homes surveyed for contamination in San Diego, Orange and San Bernardino Counties.
- Criminal Charges, Pled Guilty



# Home Contamination

- Home 1: Contamination inside the kitchen and the living room – Landowner funded cleanup
- Home 2: Contamination inside the kitchen and bathroom plumbing; bathrooms, bedrooms, garage, garden sheds and the side yard – Landowner funded cleanup
- Home 3: Contamination inside the garage, patio and gardens – DTSC funded cleanup
- Home 4: Contamination inside the garage, personal items and the back yard – EPA funded cleanup



# Ministorage

- Five lockers rented by the Alchemist
- Four lockers contained Mercury contamination and one locker contained a large quantity of other chemicals
- The chemicals in the locker were contaminated with Mercury
- Assessment jointly conducted by PRP's contractor, San Diego Co. Environmental Health, San Diego City and County Fire Department Hazmat and EPA
- 14 gallons of Mercury removed
- 52 lab packs of chemicals removed
- Five-20 cubic yard roll-of-bins of Mercury Contaminated Debris



# Criminal Case

- Charges: California Health and Safety Code (CAHSC) 25189.6
  - (a) Any person who knowingly, or with reckless disregard for the risk, treats, handles, transports, disposes, or stores any hazardous waste in a manner which causes any unreasonable risk of fire, explosion, serious injury, or death
  - (b) Any person who knowingly, at the time the person takes the actions specified in subdivision (a), places another person in imminent danger of death or serious bodily injury
- Pled guilty to CAHSC 25189.6(a).
- Sentence:
  - Three years probation
  - 365 days in custody (stayed)
  - \$5,000 fine
  - Paid San Diego County, EPA, DTSC and private landowner costs
  - 200 hours community service

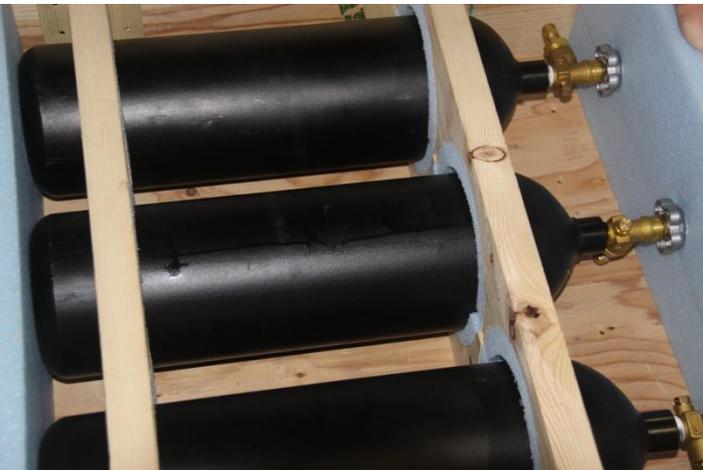


# Strategic Sciences, Inc.

**Alternative Fuel Ponzi Scheme Cylinder Render Safe Removal Action**

**Los Angeles Co., CA**

**Fall 2011**



## Statement of Problem

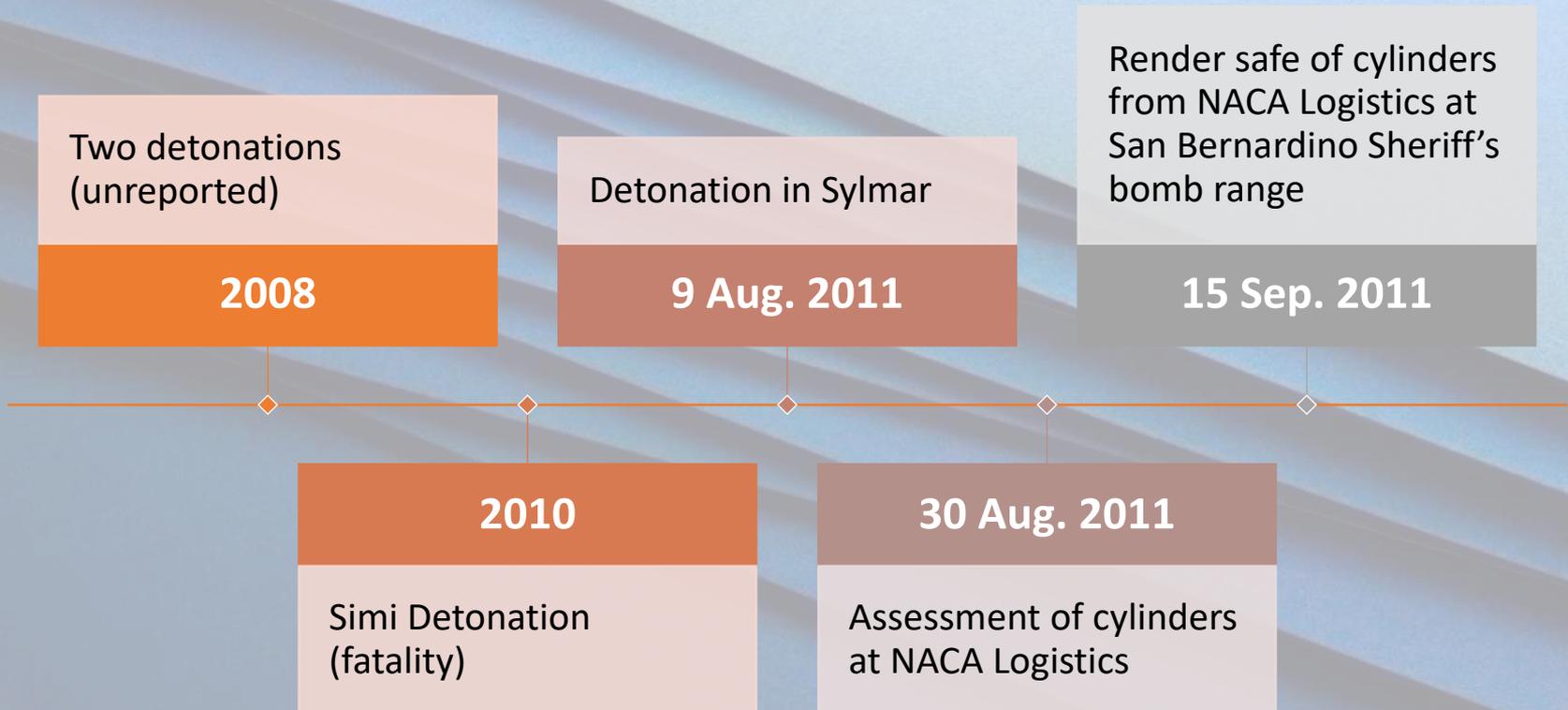
A self-proclaimed chemist produced oxy-hydrogen using an old method and claimed it to be a new form of high energy water.

Upwards of 5 detonations has been associated with this chemist resulting in 1 death and two catastrophic injuries.

EPA oversaw assessment and render safe operations to destroy this material in cooperation with FBI, LAPD, SBCoSD, DOT, CALOSHA, CHP, LACoFD and LAFD.

The material is DOT forbidden and required the use of DOT Special Permits to be transported. The material was friction and static sensitive.

# Chronology



# Chronology

2011: EPA removal  
assessment of SSI Sylmar  
Facility

**22 Sep. and 29 Sep.**

Render safe of electrolysis  
unit at SSI Sylmar facility

**16 Oct. 2011**

**14 Oct. 2011**

Render safe of cylinders  
from SSI Sylmar at Del Valle  
Regional Training Center

**27 Oct. 2011**

Render safe of remaining  
suspected Tylar gas  
cylinders at China Lake

**September  
15, 2011  
Render Safe  
Operation**

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3 cylinders transported under DOT Special Permit by EPA ERRS contractor to San Bernardino Co. Sheriffs Bomb Range in Glen Helen, CA

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Cylinders transported in EPA owned salvage cylinders (cylinder coffins)

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FBI Hazardous Device Team and SB Co Sheriff's Bomb Squad conducted the render safe operation.

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Two of the cylinders vented easily and one detonated



September 22 and  
29, 2011 Joint  
EPA/CALOSHA/FBI  
Assessment

Additional cylinders of potential Tylar Gas and other industrial gases discovered inside the Sylmar, Los Angeles Co., CA business location of Strategic Sciences

Building heavily damaged from the August 2011 detonation

Two employees severely injured

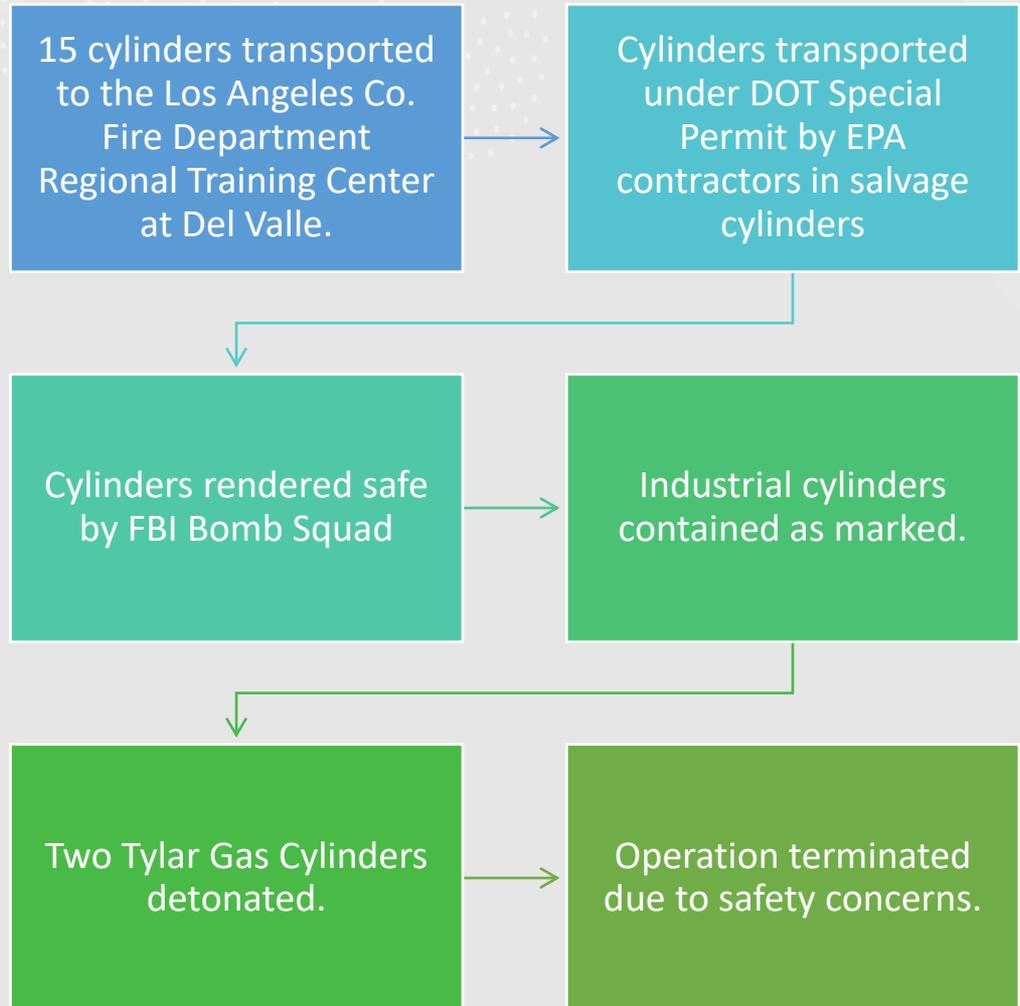
Carbon fiber hydrogen fuel cell cylinder with Tylar Gas detonated.

The “Contraption” used to make the Tylar Gas intact and contained a cylinder similar to the one that blew up.



Inside of the Sylmar SSI facility after the August 9, 2011 detonation.

# October 14, 2011 Render Safe Operation







# Operation Render Safe

Joint EPA/FBI/LAPD/LAFD  
Unified Command render  
safe operation

Explosive opening of three  
compressed gas cylinders on  
the Tylar Gas Manufacturing  
Device

- Joint LAPD and FBI Bomb Squad  
Operation

October 16, 2011

10,000 people evacuated

- EPA handled community relations
- LAPD handled evacuation

210 Freeway adjacent to site  
closed

- CHP
- CALTRANS
- LAPD

Environmental monitoring  
by EPA, LACoFD HHMD and  
LAPD Hazmat

EPA and its contractors  
constructed shock walls  
around doors and windows  
of the adjacent building to  
minimize damage.



Left: The ping chamber son the contraption after the October 16, 2011 render safe.



Right: The Tylar gas storage tank on the contraption after the October 16, 2011 render safe.

# October 27, 2011 Navy EOD Render Safe

4 suspected Tylar Gas cylinders transported by EPA contractors under DOT Special Permit in salvage cylinders to the China Lake Naval Weapons Station SNORT Test Area for detonation

Render safe conducted by U.S. Navy EOD.

One cylinder contained Tylar Gas and detonated.

Remaining industrial cylinders left on-site.

Sylmar location jurisdiction transferred to LACoFD HHMD for the remaining cleanup.



Above: EPA Contractor & FBI unloading cylinders  
Below: Cylinder after render safe



Navy EOD setting charges.



# Summary

- **Agencies Involved:**
  - U.S. EPA
  - CALOSHA
  - DOT PHMSA
  - DTSC
  - FBI
  - LAPD
  - CHP
  - CALTRANS
  - LACoFD
  - LAFD
  - U.S. Attorneys Office
  - U.S. Navy EOD
- Amount of Tylar Gas Cylinders Destroyed: 9
- EPA Costs: \$75,000



Pepper Street Mad Chemist, Chula Vista, San Diego Co., CA

# Module 6: Radioactive Material Issues

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Type of Radiation

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Isotope Identity

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Quantity of Radiation

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Health and Safety Issues

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Waste Disposal Issues

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Community Safety Issues

# Isotopes Commonly Found

Carbon 14

Tritium

Thorium

Cesium

Uranium

Radium

Cobalt

Cerium

# Radiation Safety

## Contaminant Detection

- Gamma Primarily
  - Scintillator
  - GM
  - Other

## Personal Protective Equipment

- Respiratory Protection

## Contaminant Containment

- Site Control
- Decontamination
- Personnel Management

## Action Levels

- Dose Rate: 2 mR/hr
- Contamination: 2 x background

**Syntnum, Inc.**  
**USEPA ERS Removal Assessment**

**A Radioactive Mad Chemist**

**Gardena, Los Angeles Co., CA**



# Module 7: Explosives

# Types of Explosives



- Initiating Explosives
  - Lead Azide
  - Tetrazene
  - Lead Styphnate
- Commercial Explosives
  - Det. Cord
  - Plastic Explosives
  - Dynamite
  - Booster
  - Blasting Agent
  - PETN
  - Black/Smokeless Powder
- Fireworks
- Munitions
  - Military
  - Civilian
- Homemade Explosives
  - ANFO
  - TATP



## TATP

- Tri-acetone, Tri-Peroxide
- Easy to make with products from drug store
- Shock, friction and heat sensitive
- Common among hobby explosive makers
- Favorite of terrorists
- Inherently unstable
- Do not transport – **Render Safe In Place**



# ANFO

- Ammonium Nitrate –Fuel Oil based tertiary explosive
- Requires a cap sensitive booster or secondary explosive to detonate
- Used at Oklahoma City
- Easy to make
- 94% Ammonium Nitrate
- 6% Fuel Oil
- Powdered Aluminum makes it more sensitive to detonation
- If Ammonium Nitrate present and there is no agriculture use, suspect explosives manufacture
- If you suspect malicious manufacture of ANFO, contact the local bomb squad or the FBI Hazardous Device Team

# Ingomar Ammunition Site CERCLA Removal Action



Reseda Ranch, Los Angeles Co., CA

# Site Location

- **Residential neighborhood in Reseda Ranch, City of Los Angeles, CA**
- **Property is the size of football field with a house, garage, barn, underground bunker, and 4 conex boxes**
- **The property was occupied by three adults and seven children**



# Site Summary

- May 31, 2009: Fire of undermined cause;
- June 1, 2009: EPA referred site by LACoFD HHMD;
- 7 bomb squad operations to render safe fire damaged military ordinance on-scene;
- Wastes include: fire damaged small arms munitions, RCRA hazardous wastes; fire damaged and degraded gunpowder and HHW;
- On-site destruction of approximately 300 pounds of smokeless, black and flash gunpowder;
- Chemicals from a bankrupt plating shop were disposed of.
- Off-site render safe of fire damaged ammunition at Camp Pendleton
- Budget: 800,000+
- Time Frame: 47 days
- Website: [www.epaosc.net/ingomar](http://www.epaosc.net/ingomar)

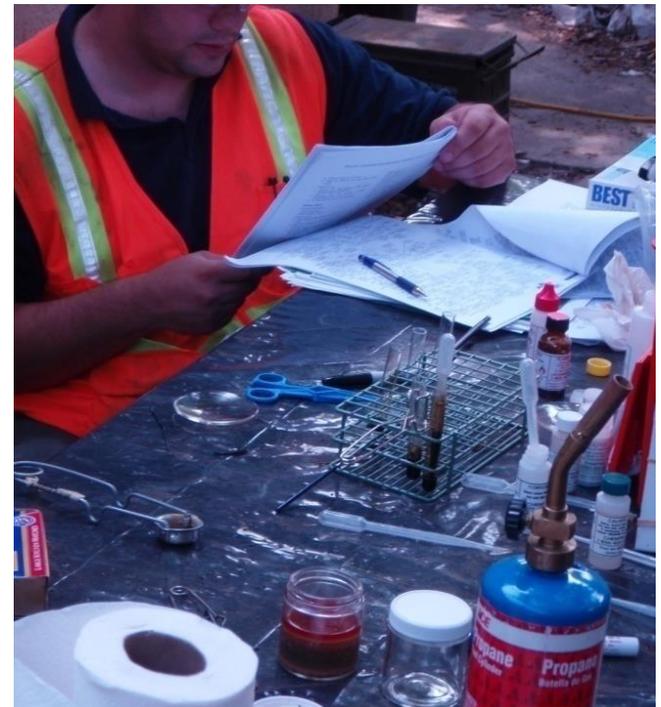
## Participating Agencies

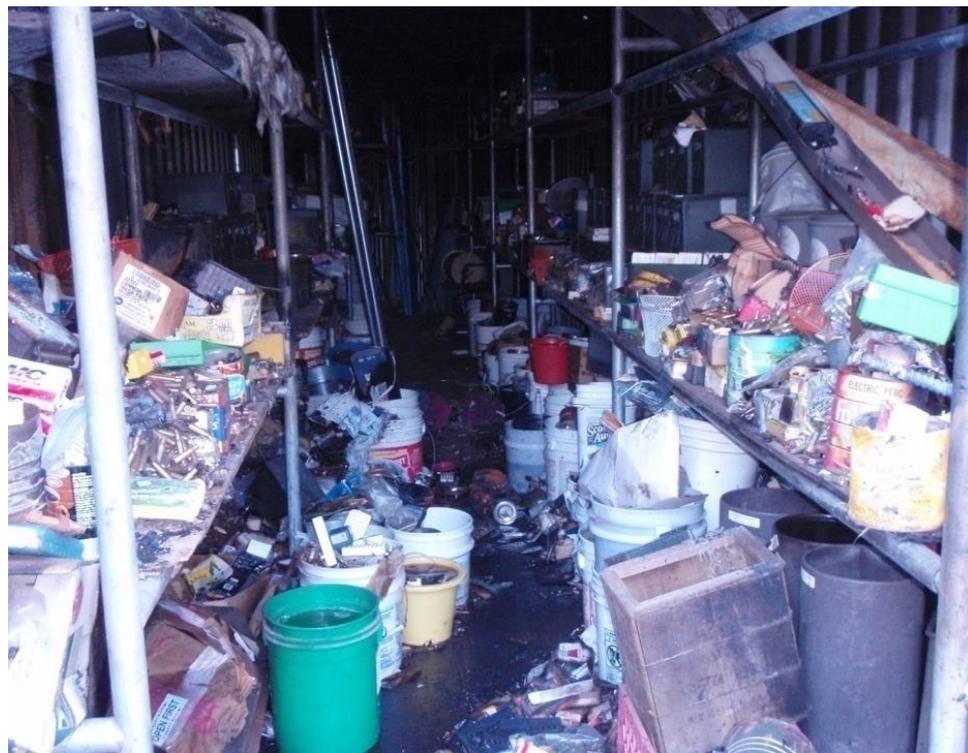
- EPA Emergency Response Section
  - EPA START Contractor
  - EPA ERRS Contractor
- EPA CID
- FBI Bomb Squad
- DTSC
- ATF
- USMC EOD Camp Pendleton
- DTSC
- LAPD
  - Valley Division
  - Bomb Squad/Hazmat
  - Gun Detail
- LAFD
- LACoFD HHMD
- LAPW
- LACoDA
- USAO



# Assessment

- UXO evaluation by START;
- Samples field characterized by START;
  - Gun range waste (D008-Lead and D003-Reactive)
  - Sulfuric Acid
  - PCE/TCE
  - Caustics
  - Mixed Solvents
- Retrograde ammo and explosives assessed by FBI, ATF and LAPD
- Illegal weapons and ammunition evaluated by FBI and LAPD







# THE BUNKER

# Separation and Staging

- UXO segregated for disposal;
  - On-site destruction by LAPD bomb squad;
  - Off-site destruction by USMC;
  - Off-site disposal at permitted TSDF;
- Waste ammo separated from brass;
- Industrial chemicals segregated from HHW





# Segregation of Live Ammo and Brass

- Live ammo was hand sorted from brass with live primers and brass with no primers
- During sorting calibers from .22 to 20 mm identified.
- Non-live brass was left behind for homeowner to recycle.
- N95 dust masks used instead of APRs due to cartridges constantly clogging



# Disposal

- On-Site Destruction
  - 300 pounds of gun powder
  - Military ordinance
- Off-Site Destruction at Camp Pendleton, USMC
  - 25,000 pounds of fire and water damaged ammo
- Off-site Disposal to TSDF
  - Solvents
  - Gun range waste
  - Biscuits
  - Corrosives



# Gun Powder On-Site Destruction

- Gun powder on-site consisted of black powder and smokeless powder;
- Approximately 300 pounds destroyed on-site due to instability
  - Instability caused by chemical changes due to exposure to elements, custom mixes of unknown contents and manufacture; fire exposure makes powder more sensitive; exposure to water degrades chemical composition of powders
- Destruction requested by LAPD
- Destruction conducted by LAPD and FBI Bomb Squads



## USMC Destruction of Ammo

Set up through Regional  
Response Team

25,000 pounds of ammo trans-  
ported to USMC Camp  
Pendleton by LACo Sheriffs  
Bomb Squad and USCG Pacific  
Strike Team

Ammo destroyed by burning  
and detonation render safe  
operations

EPA sampled burn pit before  
and after for contamination

Ammo not burned in initial  
thermal destruction, sorted out  
by EPA and then detonated by  
USMC.



# Safety Hazards

- Live Ammo
- Fire and water damaged live ammo
- Improperly stored and
- degraded gun powders
- Plating chemicals
- Unstable buildings
- Fire damaged structures
- Military munitions
- Weapons
- Hazardous Waste



Interesting  
Stuff









# State Charges

- LAPD led investigation
- LACoDA conducts prosecution
- Possession of an assault weapon
  - Multiple Counts
  - Convicted and sentenced to 2 years
- Possession of destructive devices
  - Multiple Counts
- Convicted and sentenced to 4 years



# Federal Charges

- EPA CID conducts investigation
- USAO conducts prosecution
- Storing hazardous wastes without a permit in violation of the Resource Conservation and Recovery Act (“RCRA”), 42 U.S.C. § 6928(d)(2)(A),
- Knowingly endangering others in violation of 42 U.S.C. § 6928(e). Illegal Storage of Hazardous Waste
- Convicted on all counts
- Sentence to 60 months and lost appeal



# Working with Bomb Squads

- Plan ahead
- Set up a Unified Command
  - Especially important if multiple agencies.
  - Bomb Squad controls the scene
- Depending on the size and sophistication of bomb squad, hazmat team may have to aid with chemical safety
- The Bomb Squad Commander has the final say on whether a render safe is conducted not a regulatory agency!



# Render Safe Operations

- The choice of last resort!
- The final decision rest with the bomb squad!
- Chemicals must not be safe or able to be shipped over the highways of the United States
- Chemicals that are shock sensitive or otherwise inherently unstable
- Requires a lot of planning
- Try avoid doing in residential neighborhoods
- May require evacuations
- May require air monitoring
- Use a TCU if possible!
- If local or state agencies give you crap about permits, call our Regional OSC. We don't need any stinkin permits!



# Module 8: Special Circumstances

Brokers and TSDFs  
and  
the Wonderful World of Musical Waste



## Brokers

- Hazardous waste brokers are only to facilitate the movement of waste from the generator to the TSDF or to a legal end-user in the case of recycling.
- Not supposed to actually take possession of the waste!
- Recycling: 75% of the material must be used within one year.
- May be a permitted TSDF
- Must use a manifest for shipment of haz-waste

# Transporter/Brokers

- Transporters must be licensed to haul hazardous materials and hazardous waste Federally and all states in which they operate
- Transporter can only hold the waste 10 days total
- If more than one transporter used both must sign manifests
- Rejected loads must go back to the generator



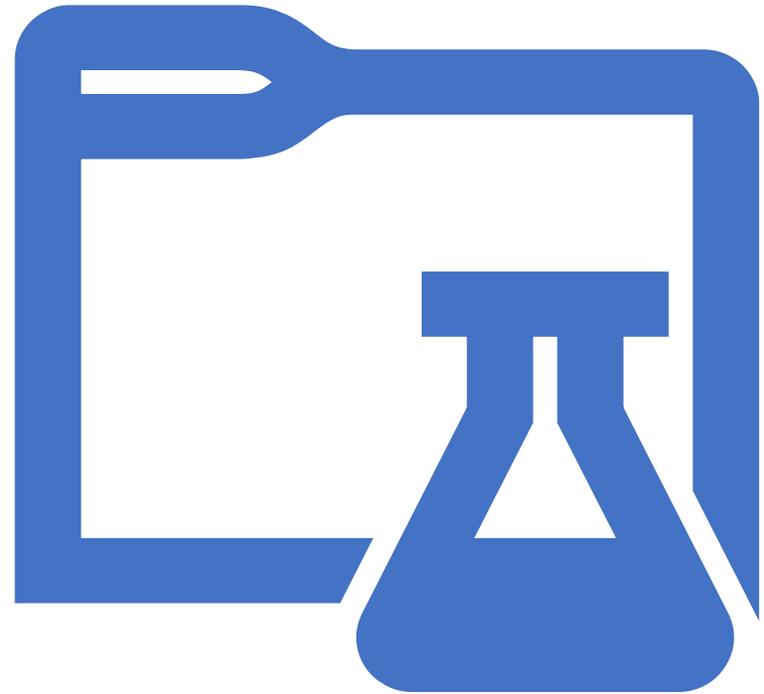
Residential Chemical Hoarding

Bellflower, CA

Aug. 2018 – June 2019



# Alondra Chemicals



# Summary

- The Responsible Party (RP) was a 94 YO man who had previously run a used chemical business at the location.
- The RP had previously run this business at another location at a site in Anaheim, CA that was the scene of another EPA Removal Action in the mid 1990s (“Anaheim House of Horrors Removal Site”)
- Thousands of labeled and unlabeled chemicals stored in Garage
- City of Bellflower had a code enforcement warrant on the property
- City contractor started cleanup experienced an explosion and called KVAC for assistance
- KVAC contacted DTSC (Department of Toxic Substance Control) who then contacted USEPA for assistance





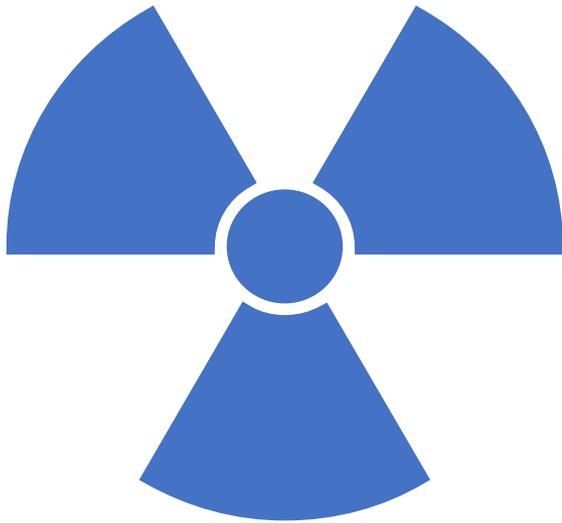
# Summary

- Level B entry conducted by START(Superfund Technical Assessment and Response Team) personnel to monitor for O<sub>2</sub>, VOCs, LEL, CO, H<sub>2</sub>S, Mercury and Radiation
- USEPA and DTSC assume responsibility for the site
- USEPA conducts removal action pursuant to Superfund
- START performs Hazcatting on 562 unknown chemicals

# SITE ASSESSMENT

- Monitoring with real-time instruments
  - Area Rae Pro
  - Multi Rae Pro
  - Ludlum Model 192
  - PDR
  - Lumex Mercury Meter
- Inventory of all chemical containers (2000)
- Sampling and hazcatting of all unknowns





# RADIATION DETECTED

- Fourteen containers with radioactive chemicals were found.
- Cerium nitrate, thorium nitrate, uranium nitrate, thorium oxide, uranyl nitrate, and uranyl sulfide.
- Exposure rates ranged from 10 to 4,000 microRoegten per hour.

# Unknown Chemical Hazcatting

- Identify hazard class
  - pH
  - Oxidizer
  - Flammability
  - Sulfide, Cyanide, Chloride, PCB
- Air monitor chemical while collecting sample.
- Unknown chemical placed in proper waste stream



# Waste Streams

- Flammable liquids
- Flammable solids
- Oxidizing liquids
- Oxidizing solids
- Corrosive liquids
- Corrosive solids
- Water reactive
- Peroxides
- Mercury
- Cyanide
- Etc.



# DTSC Activities

DTSC Emergency Response and EPA conducted a joint removal action

DTSC utilized the Off-Highway Account

DTSC's contractor worked with EPA's START contractor to conduct the inventory.

DTSC's contractor began the packaging of the waste.

EPA took over when DTSC reached their financial ceiling.

## Other Jurisdictional Involvement

---

EPA identified two other potential locations in Orange County

---

Orange County Health Care Agency inspected one location and determined that no hazardous substances were present.

---

Anaheim Fire Department (AFD) inspected the other location and identified several compressed gas cylinders as well as other containers of hazardous substance present.

---

EPA work with AFD and the executor of the responsible party's estate to insure a timely cleanup of these items.

# Building Radiation Survey

- Gamma Survey using a Ludlum Model 192 Ratemeter
- Alpha Survey with a Ludlum 2241-2 Ratemeter with a Ludlum Model 43-90 Alpha Scintillator
- Nine 100 cm<sup>2</sup> Swipe Samples were collected and counted using a Ludlum Model 3030 Wipe Counter
- Action Levels
  - Swipes: 20 disintegrations per minute (dpm) Alpha and 200 dpm Beta
  - Alpha Scintillator: 100 dpm/100 cm<sup>2</sup> for a 1-minute static count or 300 dpm/ 100 cm<sup>2</sup> for a hotspot
  - Gamma Survey: twice background
- Action Level from the Department of Energy Order 458.1, Radiation Protection of the Public and the Environment, February 11, 2011.
- The number of samples were determined using MARSSIM.
- All samples were below the action level.

# Soil Chemical Assessment

- The soil was assessed for hazardous substances using a sample plan designed in Visual Sampling Plan.
  - VOCs
  - Semi-VOCs
  - California Metals
  - PCBs
- PCB soil contamination and heavy metals above the EPA Regional Screening Level.



150

PREPARED BY: **WESTON**  
Region 9, START  
Weston Solutions, Inc.  
2300 Clayton Rd, Ste 900  
Concord, CA 94520

PREPARED FOR:  
EPA Region 9  
Emergency  
Response  
Section



**FIGURE 6**  
**DECISION UNIT MAP**  
Alondra Chemicals ER  
9548 Alondra Blvd.  
Bellflower, Los Angeles County, CA

# Soil Radiation Survey

- The soil on-site was surveyed using a Ludlum Model 2241 with a Gamma Scintillator and the VIPER Telemetry system.
- Background Survey





# Module 9: Health and Safety



# Safety Issues



## The Chemist



## Chemical Issues

Compatibility

Unknowns

Reactives

HAZWOPER Issues



## Physical Hazard

Unstable Structures

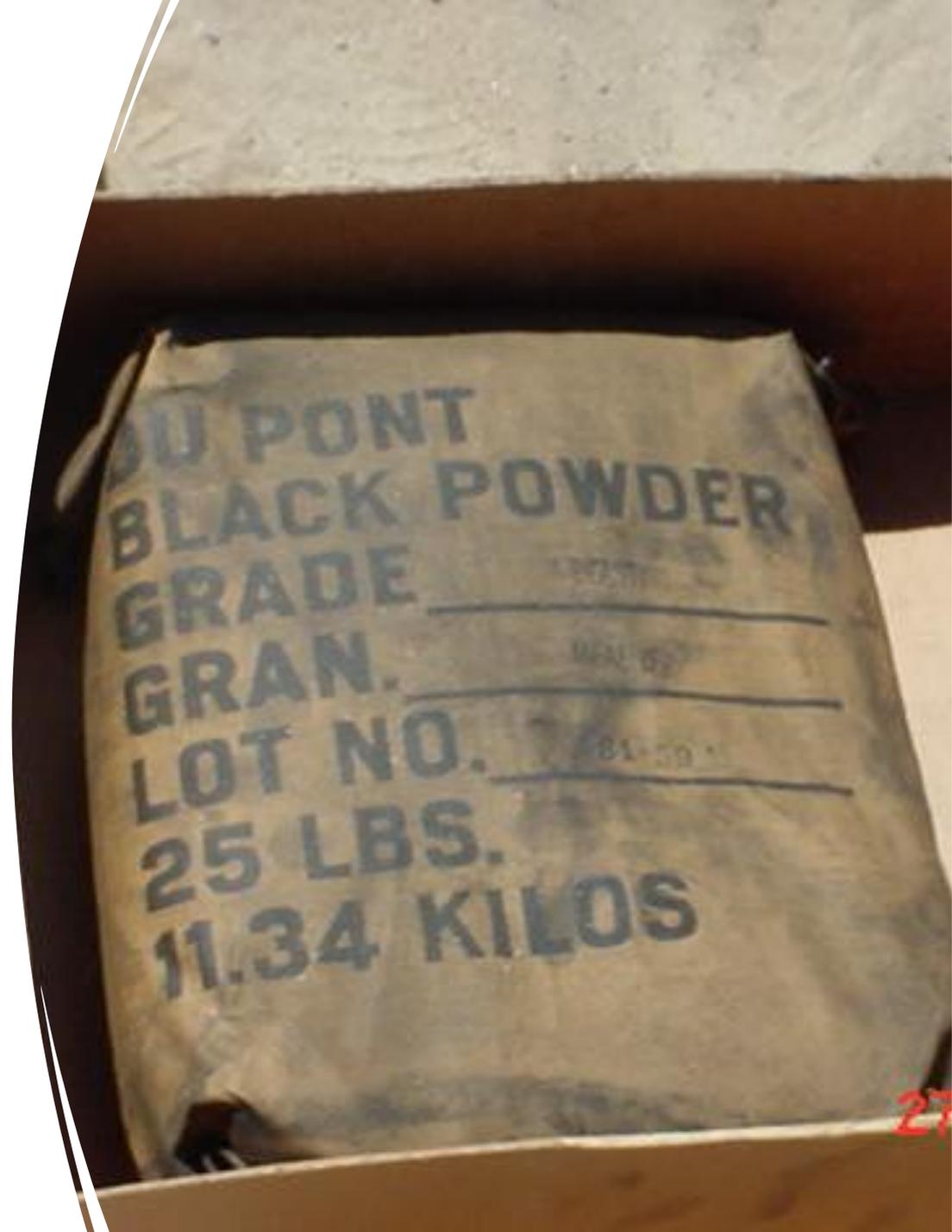
Trip/Fall

Below Grade/Basements

# Unstable Chemicals

---

- Picric Acid
- Ethers
- Explosives
- Other peroxide forming chemicals
- Raw explosives and explosive widgets



# Module 10: Assessment of the Mad Chemist Site

- Collect Site Background
- Site Entry and Scene Documentation
- Chemical Inventory
  - Identification of Strange Chemicals
- Sample Collection, Field Identification of Unknown Chemicals and Sample Laboratory Analysis
- Segregation



# Site Background

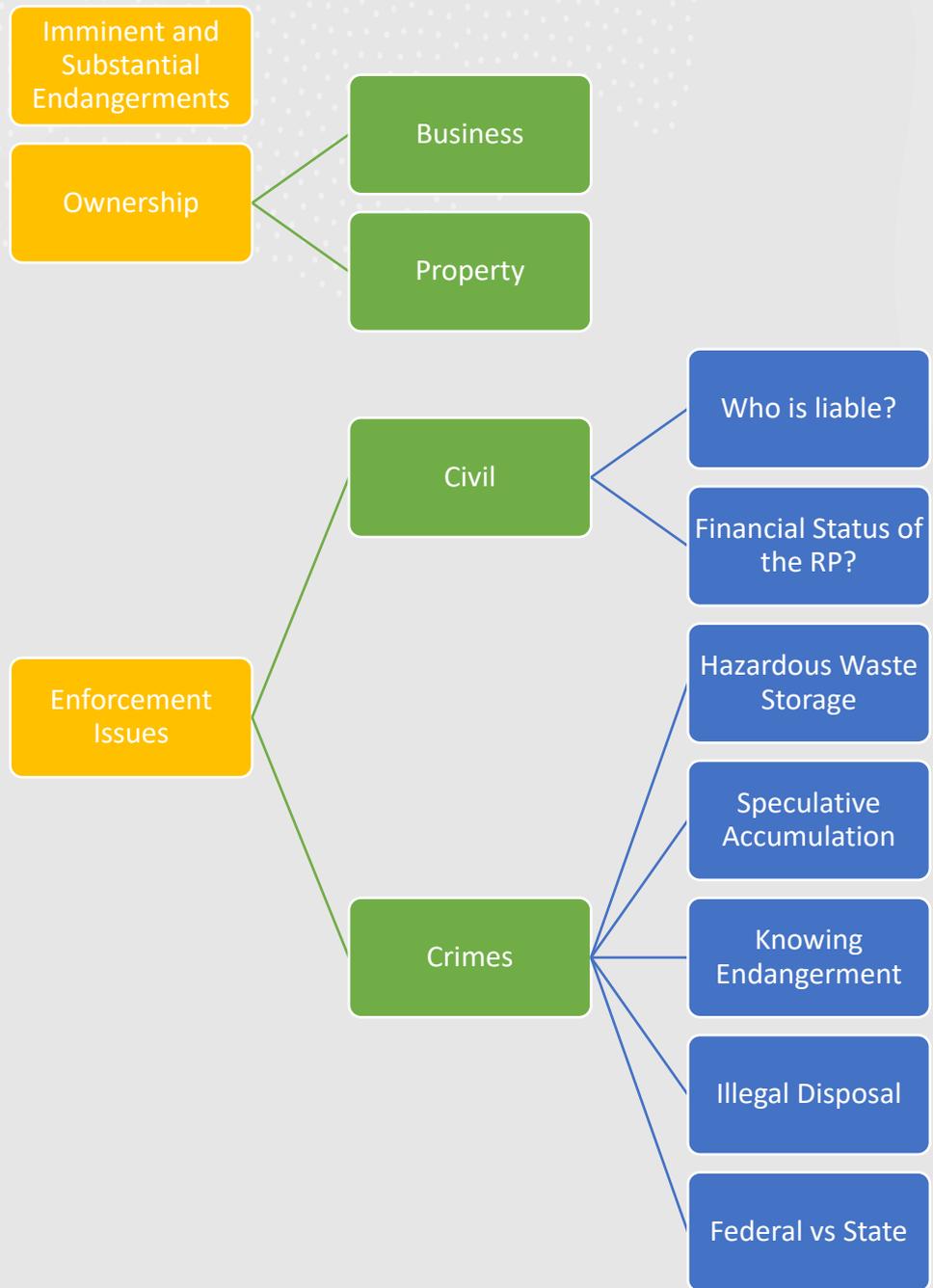
History of  
the Site or  
Chemist

Where did  
the stuff  
come  
from?

How old is  
the  
material  
present?

What is  
present?

# Site Background



# Interviews

WHO?

WHAT?

WHEN?

WHY?

WHERE?

# Document Analysis

- Ownership information
  - Business
  - Land
- Hazardous waste manifests
- Other shipping papers
- Regulatory files
- Purchase records
- Material Safety Data Sheets (MSDS)

# Site Entry



**Conduct  
Perimeter  
Survey &  
Generate  
HASP**



**Use Level B**



**Air  
Monitoring**

%Oxygen

LEL

VOCs

CO

Other Toxic  
Gases

Mercury

Radiation



**Use initial  
entry as  
site recon  
only.**



**Identify  
imminent  
hazards**

Unstable  
chemicals

Unstable  
structures

Need for  
render safe  
operations  
necessitating  
evacuations



**Document  
scene/Photo/  
Video/Map**

# Scene Documentation

## Map Scene

- Take room measurements
- Take outside measurements
- Compare

## Photo document

## Video Document

## Notes

## Don't use your personal phone

- Anything on your phone is subject to discovery!

# Chemical Inventory

## Monitor

- Radiation, Toxic Gases, LEL, %O<sub>2</sub>, VOCs, Hg

## Inventory

- Number each container, Chemical Names, Size and Type, Location, Container Condition

## Assess and Address

- Assess and address imminent hazards

## Record

- Record information into searchable database

## Segregate

- Segregate by hazard class and compatibility

# Examples of Chemical Segregation Groups

## Hazard Class Groups

- Flammable Liquid (Fl. Pt. <140F)
- Flammable Solid (Fl. Pt. <140F)
- Acid Liquid/Solid (pH<2)
- Base Liquid (pH>12.5)
- Toxic Liquid/Solid (Fails TCLP)
- Acid, Oxidizing Liquid/Solid
- Base, Oxidizing Liquid/Solid
- Cyanide Liquid/Solid
- Oxidizing Liquid/Solid

## Generic Name Groups

- Alkane Gases (methane, butane...)
- BTEX
- TPH
- HHW
- Non-RCRA Solids



Inventory of chemicals from  
lab packs at a hazardous  
waste collector

# Chemical Identification

## Literature

49 CFR HAZMAT Table

## Software

CAMEO

## Internet

NIOSH Pocket Guide

EPA OSC Website

## Other Resources

- The Mad Chemist
- Trade Organizations
- Chemical Companion 
- PUBCHEM 

Click on blue boxes to go to websites.

# Sample Collection & Field ID of Unknown Chemicals

---

- Sample all unknowns if safe
- Do not attempt to sample cylinders
- Conduct field chemical identification to identify unknowns
- Collate data with inventory and pictures
- If it is growing crystals, check for peroxides, pH, metals using strips. Do not open.



# Sample Collection Issues

Prepare a Sample Plan

Maintain sample integrity by using dedicated equipment for each sample

Use the appropriate equipment and container

Collect separate criminal/laboratory and field identification samples

Maintain Chain of Custody

Photo document samples, not action

Sampling strategy depends on the end use

Field QA/QC

Maintain Logbook

## Sample Analysis

- State Certified Labs
- Use only approved methods (EPA, NIOSH...)
- Proper Sample Containers
- Proper Sample Volume
- Required Detection Limits
- Holding Times
- Preservatives
- QA/QC
- Data Validation

## Module 10: Cleanup Issues

- Bulk chemicals into bulk loads if possible
- Lab pack small chemical containers in accordance with 49 CFR
- Chemicals may be able to be reused
- TSDF assistance
- Evaluate on-site detonation of unstable chemicals
- Get assistance on cylinders

# Recycling Chemicals

- Chemicals must have useful life
- Check with manufacturer
- Confirm recipient has use for them
- Confirm recipient is in full compliance with all applicable regulations and is not subject to any enforcement actions
- Confirm recipient has adequate and proper storage space
- Confirm transfer is ok with local regulatory agency
- No international shipments
- No shipments to used chemical brokers
- Recipient has 1 year to use 75% of materials transferred.



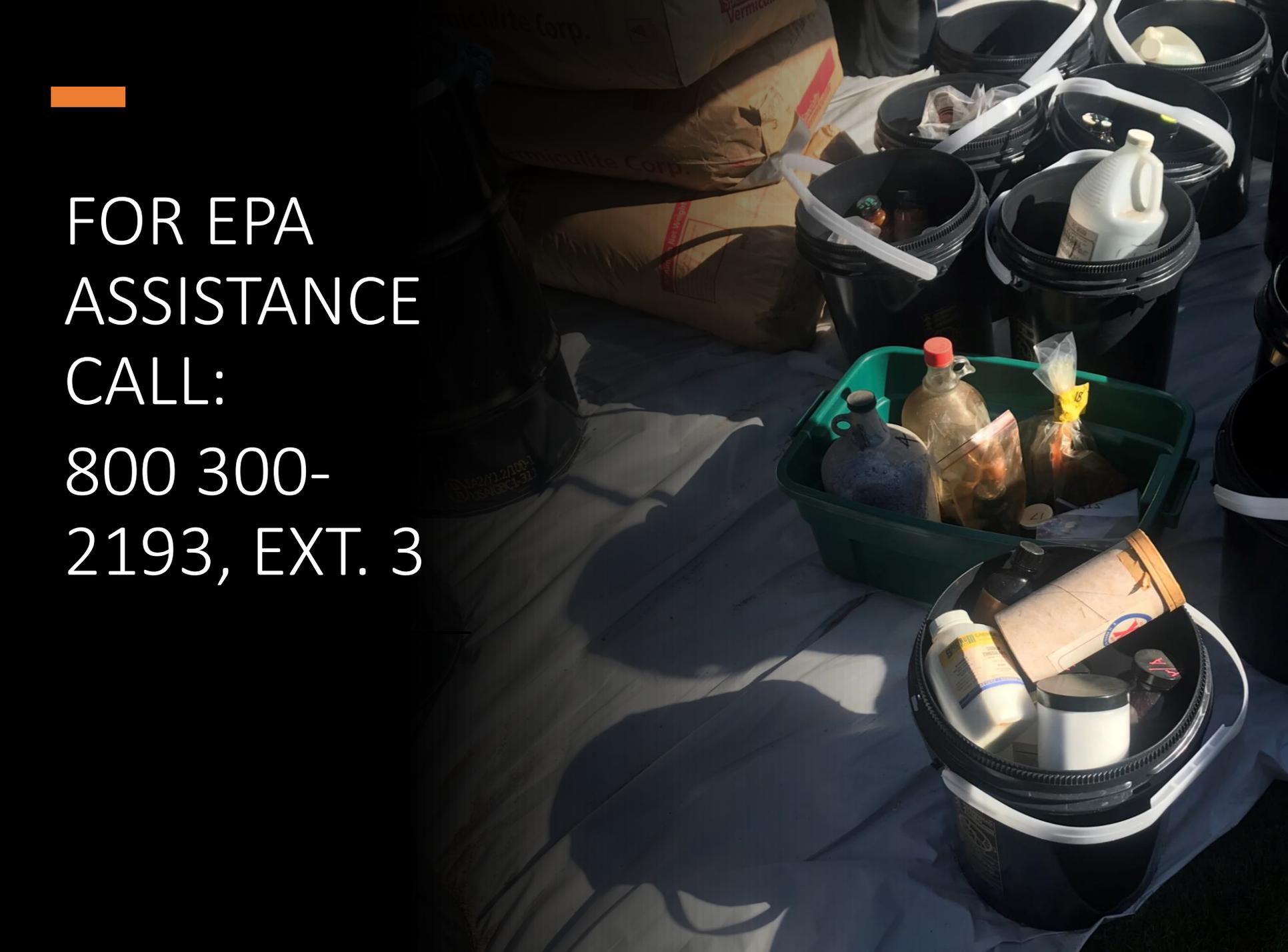
# Module 11: Cost Recovery Methods

Direct Bill

Property Lien

Ability to Pay

Court Order



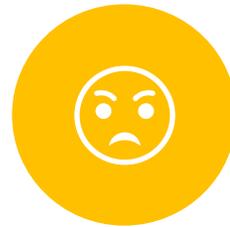
FOR EPA  
ASSISTANCE  
CALL:  
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2193, EXT. 3



QUESTIONS



COMMENTS



COMPLAINTS



CONFESSIONS