

The background image shows a city skyline at sunset or sunrise, with various skyscrapers and a waterfront area with piers. A large, dark green, three-pointed star-like graphic is overlaid on the left side of the image, pointing towards the center. The text is positioned on a dark blue horizontal band across the middle of the image.

Managing Hazardous Wastes and Emergency Response

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Managing Hazardous Waste

- Does this apply to me?
 - Research or Manufacturing environment generating hazardous waste products
 - Could be 5 gallons annually or 5M+
 - The framework still applies!
- Hazardous waste is not the same as Hazardous Material!
 - Think about this in terms of potential for Emergency Response Needs
- Most Emergency Responses are not in Waste Areas!

What is Trash?

➤ Trash –
Unregulated materials used
in day-to-day operations
or personal consumption
items for disposal

- Regular Plant Trash - Food waste, face masks, booties, lab coats (uncontaminated), nitrile/latex gloves
- Recyclable Trash – flattened ("broken down") boxes, glass, etc.



RECYCLE RIGHT

✓ ALWAYS RECYCLE / RECICLE SIEMPRE



Plastic Bottles & Containers
Botellas y envases de plástico



Food & Beverage Cans
Latas de alimentos y bebidas



Paper
Papeles



Flattened Cardboard & Paperboard
Cartón y cartulina aplastados



Glass Bottles & Containers
Botellas y envases de vidrio

✗ DO NOT INCLUDE IN YOUR MIXED RECYCLING CONTAINER / NO INCLUIR EN SU CONTENEDOR DE RECICLAJE MIXTO



NO Food or Liquids
NO comida o líquidos



NO Foam Cups & Containers
NO vasos y recipientes de poliestireno



NO Loose Plastic Bags, Bagged Recyclables or Film
Empty recyclables directly into your bin.
NO bolsas y envolturas de plástico sueltas, o materiales reciclables emboados
Vací directamente los materiales reciclables en nuestro carrito



NO Batteries – check local drop-off programs for proper disposal.
NO baterías - Verifique los programas locales de entrega para su correcta eliminación



NO Green Waste
NO desechos verdes



NO Clothing, Furniture & Carpet
NO ropa, muebles y alfombras

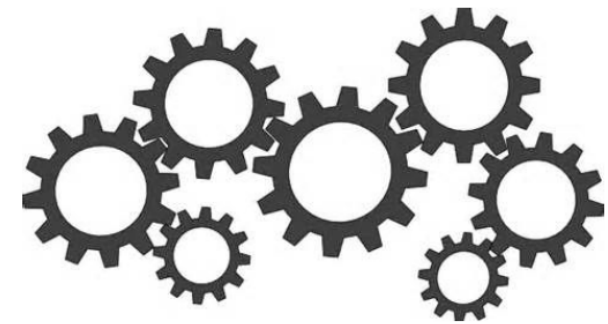
To learn more, visit:
Para más información, visite:
wm.com/recycleright

WM
WASTE MANAGEMENT

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Waste Processes: EPA Definition

- EPA Definition of a Solid Waste:
 - “any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, resulting from industrial, commercial, mining, and agricultural operations, and from community activities. Nearly everything we do leaves behind some kind of waste.”
 - **Waste** is the FINAL process in an industrial setting
 - Many processes yield waste:
 - ViCell Machine
 - GCMS → HPLC Fluid
 - Empty Bottles (Chemicals, Biological)



RCRA Summary

- The Environmental Protection Agency (EPA) has been given authority to regulate Hazardous Waste under the **Resource Conservation and Recovery Act of 1976 (RCRA)**
- Includes regulation of:
 - Generation
 - Transportation
 - Treatment/Storage/Disposal
- The **Generator** is ultimately responsible for the waste being disposed



Chemical and Biological Waste

- **Medical waste is:**

- contaminated by blood, body fluids or other potentially infectious materials and is often referred to as **regulated medical waste**;
 - Pathological
 - Chemotherapeutic
 - Sharps
- regulated at the state level, not Federal.

- **Hazardous waste is:**

- may cause injury, illness, or disease to humans;
- may cause damage or create toxicity in the environment;
 - Listed wastes are wastes from common manufacturing and industrial processes, specific industries, or can be generated from discarded commercial products.
 - Characteristic wastes are wastes that exhibit any one or more of the following characteristic properties: ignitability, corrosivity, reactivity or toxicity.

Hazardous Waste Characteristics

Why Is It Important?

- Helps waste be disposed of safely in a manner that keeps people & the environment safe
- Properly labeled waste informs others of hazards that the waste presents
- Noncompliance can result in findings by EPA/MDE
 - Fines up to \$32,500 per day for each violation until resolved
 - Findings documented as public record and can tarnish the reputation of the generator
- Reduces discrepancies with end facilities

Ignitable

- Liquid with a Flash point less than 140 F (60 C)
 - Can find in section 9 and 14 of SDS
 - Does not include combustible liquids (DMSO)
- Aqueous solution that contain at least 50% water, and less than 24% Alcohol (Alcohol Exclusion Rule) **Would make Non-Hazardous**
 - Can find in section 3 of SDS
- Flammable Solids (4.1s)-
- Is capable, under standard pressure of causing fire through friction, absorption of moisture or spontaneous chemical changes
 - If a flammable solid is in a solution it will not be classified as a flammable liquid

Corrosive

- An aqueous solution that has a pH less than or equal to 2, or greater than or equal to 12.5
- It is a liquid and corrodes steel at a rate greater than .25 inches per year
 - Examples: 1M Sodium Hydroxide, 1M Potassium Hydroxide, Hydrochloric Acid
 - Corrosive Solids DO NOT get the corrosive characteristic. These are RCRA Non-Hazardous- (Sodium Hydroxide Pallets)

Oxidizing

- Reagents/Solutions that release oxygen via electron transfer
- Can enhance the flammable potential of a fuel source
 - Keep separate away from ignitable
- Section 14 of SDS indicates if material is an oxidizer
- Examples:
 - Hydrogen Peroxide
 - Ammonium Persulfate
 - Potassium Nitrate

Toxic

- EPA determines specific chemicals as toxic. These chemicals are given (D004-D043), U, F, and P codes
- Some of these chemicals have a regulatory limit by the EPA. Limits are determined by a TCLP testing. No TCLP test = Hazardous
- F-Code Material: only applies to specific waste that is spent (has gone through a process)
- U-Code Material: applies to virgin material that has a singular active ingredient
- P-Coded Material- acutely toxic waste that is virgin and sole active ingredient
 - Example: Arsenic Trioxide, Sodium Azide

Reactive

- Are typically not used often on site, but it is good to understand the reactive characteristic
- A chemical that is unstable and readily undergoes violent change without detonating
 - Water Reactive, Air Reactive, Spontaneously Combustible, etc.
- When mixed with water it becomes potentially explosive, generates toxic gases, vapors or fumes
- It is a cyanide or sulfide bearing waste (when it is exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors, or fumes in quantity sufficient to present a danger to human health)
- It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement

Hazardous Waste Labeling Requirements

- SAA- 40 CFR 262.15
 - “Hazardous Waste”
 - Full Chemical name(s) with percentage(s)
 - Indicate hazard(s) by checking the boxes (ignitable, corrosive, etc.)
 - When the container reaches SAA volume limit (55g), the accumulation date must be written on the label and the container must be moved within three consecutive calendar days to the CAA
- CAA-40 CFR 262.17
 - “Hazardous Waste”
 - Full Chemical name(s) with percentage(s)
 - Indicate hazard(s) by checking the boxes (ignitable, corrosive, etc.) Accumulation Date

HAZARDOUS WASTE
Contents: (No Formulas or Abbreviations)
Isopropyl Alcohol 70%
Water 30%

HAZARDS (CHECK THE HAZARD THAT BEST DESCRIBES THE CONTENTS OF THE CONTAINER)
☒IGNITABLE ☐TOXIC ☐CORROSIVE ☐REACTIVE
☐OXIDIZER ☐OTHER: _____

DATE CONTAINER WHEN FULL OR READY TO PICK UP
25 AUG 22

BLD. _____ DEPT. _____ RM. _____
MANAGER: _____ TEL. _____

SAA Container Requirements



- Containers must:
 - Be in good condition (leaking or damage containers must be changed immediately)
 - Be Accessible
 - Be compatible with the waste containers
 - Kept closed except when being filled
 - Incompatible wastes must be separated
 - Be properly labeled

Central Accumulation Areas (CAAs)



- Central accumulation point for wastes from contiguous properties
- Required signage on door
- Restricted access
- Require RCRA Training to be Authorized personal
- Sufficient aisle space
- 24" space
- Spill Cleanup Equipment available
- Labeling requirements
- Dates
- Storage limits defined by generator status
- SQG=180 Days

Biowaste Storage/Disposal

- **Guidelines for Storage/ Disposal:**
- **Biowaste not Leaking through the secondary container (i.e. Bio Bag)**
- **No sharps in Bio bags (anything that can diminish the integrity of the bag and cause to not be a closed system)**
- **Ex: micropipette tips, serological pipets, syringes, broken glass etc.**
- **These should be collected in sharps containers for disposal**
- **Avoid disposal of hazardous waste in this method**
- **Ex: Bottles of IPA/ IPA Wipes**
- **Avoid overfilling Bins**
- **if bin is full, contact TEI for assistance with Disposal**
- **If moving for disposal, confirm bio bags/ sharps containers are tied off/ sealed respectively before transport and don appropriate PPE.**



Record Keeping

- Why we do it?
 - Access to good records helps us plan how to respond to spills
 - EPA Audits
 - 40 CFR 262.20(a)(1)
 - “Mandates the use of a manifest (EPA form 8700-22) for a generator who transports or offers for transport a hazardous waste for offsite treatment, storage, or disposal. §262.40(a) requires a generator to keep a copy of the signed manifest as a record for three (3) years.”

Types of Records

- CAA/SAA Inspections
 - Required for SQG and LQG (CAA)
 - BMP for VSQG
 - CAA inspections must be done every 7 calendar days
 - Record must be kept for 3 years
- Chemical Inventory/SDS Binder
- Manifests
 - Required for SQG and LQG
 - BMP for VSQG
 - Hazardous Manifest (Returned) and LDR must be kept onsite for 3 years
- Waste Determinations / Safety Data Sheets
 - Must be onsite for 3 years (Profiles and Packing slips are acceptable)

Onsite Manifest Binder

- Hazardous Waste Manifests (Own Binder)
 - Signed-Original-LDR
 - Chronologically by date (Newest in front)
- Separate Binder (EPA Suggested)
 - Non-Hazardous
 - MWT or BOL
 - Packing Slips



Emergency Response vs Spill Response

How to be prepared for an environmental emergency

- What can we do to prepare for a release or spill?
 - Emergency Action Plan
 - Subplan specific to Emergency Response for environmental release
 - Understand risk points (tanks, large bulk material storage, consistent transfer operations)
 - Tabletop exercises - Have a Partner!
- Risk Mitigation
 - Secondary containment – Holding tanks
 - Technology is our friend
 - Proper Segregation at all times

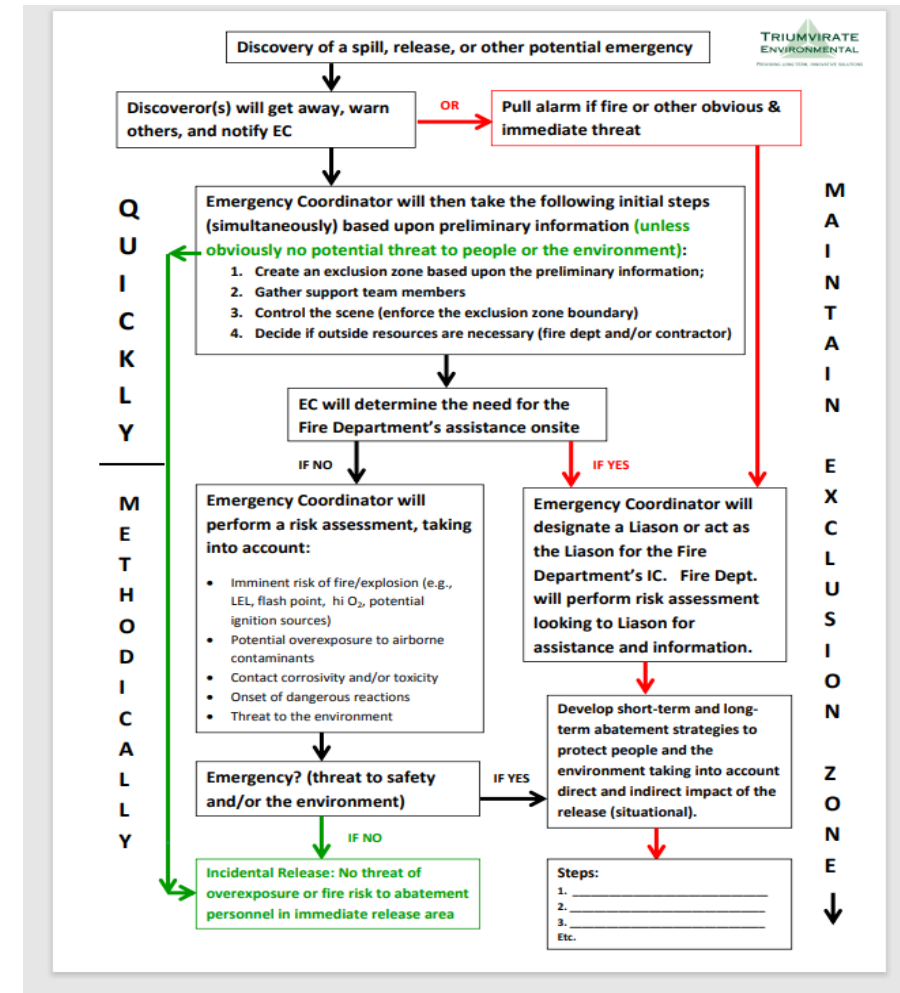
Emergency Response Plan

- An emergency response plan must be developed and implemented to handle anticipated emergencies prior to the commencement of emergency response operations. The plan must be in writing and available for inspection and copying by employees, their representatives and OSHA personnel.
 - *Employers who will evacuate their employees from the danger area when an emergency occurs, and who do not permit any of their employees to assist in handling the emergency, are exempt from the requirements of 29 CFR 1910.120(q)(1)-(2) if they provide an emergency action plan in accordance with 29 CFR 1910.38.*

Emergency Response Plan

Emergency Criteria:

1. Potential fires from flammable gas, or liquid vapor
2. Potential overexposure to toxic air contaminants
3. Potential exposure to asphyxiant gases
4. Potential fires from oxygen enriched atmospheres
5. Potential harm from contact (oral, dermal) to chemicals
6. Potential for dangerous chemical interactions
7. Potential for harm to the environment



Emergency Response Plans

- **Required elements of an emergency response plan.**

1. Pre-emergency planning and coordination with outside parties.
2. Personnel roles, lines of authority, training, and communication.
3. Emergency recognition and prevention.
4. Safe distances and places of refuge.
5. Site security and control.
6. Evacuation routes and procedures.
7. Decontamination.
8. Emergency medical treatment and first aid.
9. Emergency alerting and response procedures.
10. Critique of response and follow-up
11. PPE and emergency equipment.

Emergency Action Plan

- An employer with 10 or more employees must have an emergency action plan whenever an applicable OSHA standard requires one.
- **Required elements of an emergency action plan.**
 1. Procedures for reporting a fire or other emergency;
 2. Procedures for emergency evacuation, including type of evacuation and exit route assignments;
 3. Procedures to be followed by employees who remain to operate critical plant operations before they evacuate;
 4. Procedures to account for all employees after evacuation;
 5. Procedures to be followed by employees performing rescue or medical duties; and
 6. The name or job title of every employee who may be contacted by employees who need more information about the plan or an explanation of their duties under the plan.

OSHA HAZWOPER

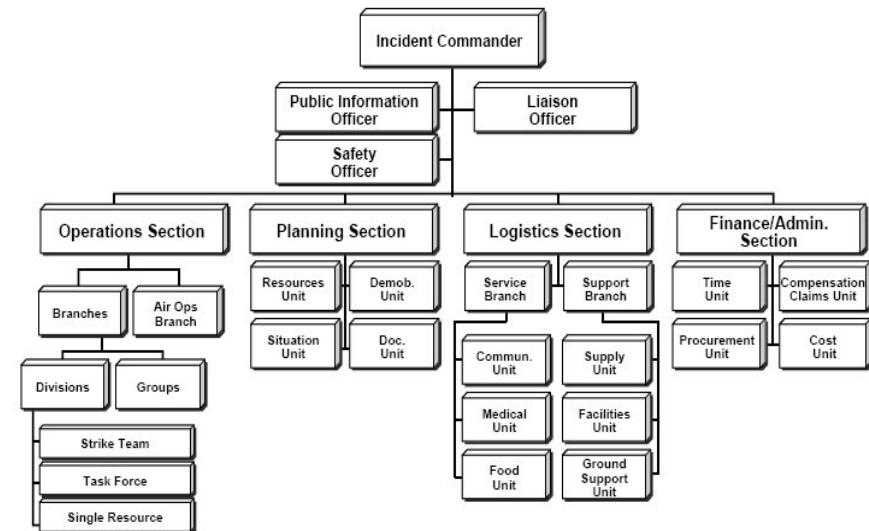
- Emergency Response falls under the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) standard- 29 CFR 1910.120.
- Specifically, 1910.120 (q) which includes-
 - a written emergency plan,
 - procedures for handling emergencies,
 - Training requirements for responders, and
 - provisions for on-scene incident commanders, skilled support personnel and specialists with particular skills to aid the emergency coordinator (incident commander).
- *Note: Other elements of HAZWOPER, such as 40-Hr. training under 120 (e) only apply to employees work on “uncontrolled hazardous waste sites” and permitted hazardous waste facilities (TSDFs), not to employees responding to emergencies at their own facilities.*

HAZWOPER Response

- Trigger for calling in a partner versus handling onsite
- Trigger for calling in the local authorities
- Incident Command Structure

Incident Command Structure

- In an incident command structure, a senior official of the employer responsible for all site operations is the Incident Commander. In a hazardous substances incident, responsibilities are delegated to an individual commonly referred to as an Emergency Coordinator, who is known in a traditional ICS as the “Safety Officer”. Emergency Coordinators should be given the authority and resources by their employer to take all measures to protect human health from the effects of the release.



General Process

ID – Identify the material using client information and team observations.

Plan – Using the SDS and your surroundings investigation, plan the process out.

Don – Gather and put on all necessary PPE to complete the cleaning.

Contain – Start the cleaning from the perimeter working in. Stop leak if necessary.

Clean - Complete the cleaning process until all material has been picked up.

Doff – Take off all PPE in the appropriate zone in a manner that minimizes exposure.

Dispose – Prepare all cleaning materials and PPE for disposal

Clean Up Operations (1910.120(a)(3))

- Emergency Response:
 - A response effort by employees from outside the immediate release area
 - Occurrence which is likely to result in an uncontrolled release of hazardous substances
 - Responses to release poses a potential safety or health hazard to responder
- Spill Response:
 - Response where the substance can be absorbed, neutralized or controlled at the time of release by employees in the immediate release area

Keys for Preparedness

- Understanding the risks at your site
- Gameplan “What if?” Scenarios
- Create partnerships BEFORE you need them!
- Determine Onsite Capabilities
- Periodically inspect your spill supplies
 - They get used for all sorts of things!
- Risk Analyze potential for spill when starting a new project

Elements of a Table Top Exercise

- Realistic Scenario that involves multiple moving parts
- Potential for environmental impact
- Involve the necessary partners
- Act it out!
 - Make phone calls
 - Pull tangible information
- Take notes during, do not stop and correct
- Assess Gaps and create follow up training

Questions?





THANK YOU!

CONTACT US!

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