

Intro to Waste Management



Introduction to the Environmental Profession
Midwest Section – Air & Waste Management Association

September 26, 2017



Safety Moment



STOP & TALK: SEASONAL CHANGE

Health, Safety, Security and Environment

With summer coming to an end it is important to start planning for the upcoming fall and winter months. Review the tips below to get prepared:

- Shorter days means the sun could affect your visibility; when driving / walking, pay close attention
- With the leaves falling from the trees you cannot see the ground clearly. This could cause potential slips, trips and falls – walk with purpose and with no distractions
- Animals are getting ready for winter which means they are looking for food – respect their space
- Be aware of the change in speed limits around school zones
- Test out your furnace (have it cleaned if needed)
- Inspect and clean your gutters
- Check fireplaces, clean any buildup
- Seal any gaps and cracks around windows and doors
- Schedule an appointment to have winter tires put on your vehicle before the snow falls



If you have questions, please contact your supervisor, [Office Safety and Environment Coordinator \(OSEC\)](#), or local HSSE representative

*HSSE Stop & Talk are written for educational purposes and are not intended to replace safe work practices or procedures.
ver. September 2017*

Agenda

- 1 Background - RCRA
- 2 Waste Basics
- 3 Waste Determinations
- 4 Generator Requirements
- 5 Waste Management

1 Background

RCRA – Resource Conservation
and Recovery Act

RCRA

Background

- Enacted in 1976 (made into law)
- Promulgated in 1980 (put into effect)
- Citation: 40 CFR 260-282
- Hazardous Waste Generator Improvements Rule

Goals

- Protect human health and the environment from the potential hazards of waste disposal
- Conserve energy and natural resources
- Reduce the amount of waste generated
- Ensure wastes are managed in an environmentally sound manner

RCRA

Key Programs

- Solid Waste (Subtitle D)
- Hazardous Waste (Subtitle C)
- USTs (Subtitle I)

Key Citations (40 CFR...)

- 260 - Definitions
- 261 - Identification and listing of HW
- 262 - Generator standards
- 264 - Treatment, storage, disposal facility (TSDF) standards
- 268 - Land disposal restrictions
- 273 – Universal waste management
- 279 - Used oil management

2 Waste Basics

How do I know if my waste is hazardous??

Waste Basics

Is it a solid waste?

- RCRA regulates both solid and hazardous wastes
- Hazardous wastes are a subset of solid waste

Therefore, to determine if a material is a hazardous waste, we must first determine if it is a solid waste.

Waste Basics

Definition of Solid Waste

- A material is a solid waste if it is (40 CFR 261.2):
 - Abandoned
 - Disposed of
 - Burned or incinerated
 - Accumulated, stored, or treated before being abandoned
 - Recycled
 - Inherently waste-like
 - certain listed wastes
 - materials ordinarily disposed of, burned, or recycled
 - substantial hazard when recycled

Waste Basics

Recycled Materials

- In order to determine if a material is a solid waste when recycled, you must know both **what** the material is and **how** it is being recycled.
- Secondary materials, when recycled in certain ways, are solid wastes. Examples:
 - Spent materials
 - Sludges
 - By-products
 - Commercial chemicals (unused)
 - Scrap metal

Waste Basics

Recycled Materials

- Recycling activities that are solid wastes:
 - Used in a manner constituting disposal (i.e. direct placement of secondary materials onto the land)
 - Burned for energy recovery (i.e. burning secondary materials or using them to produce a fuel)
 - Reclaimed - regeneration or processing to recover materials from a secondary material
 - Speculatively accumulated - accumulation of secondary material such that less than 75% is recycled each year
- Not solid wastes:
 - Direct use as a feedstock or ingredient in production
 - Direct use as a substitute for a commercial product
 - Closed-loop recycling back into the original process

Waste Basics

Hazardous Waste

Now that we know we are dealing with a solid waste, how do we know if it's hazardous?

- All solid waste streams should be accompanied by a waste determination

3 Waste Determination

Document! Document!
Document!

Waste Determination

Waste Determination Basics

A HW determination is required for all solid waste streams generated (40 CFR 262.11)

- Steps for Waste Determination
 - Is the material a solid waste?
 - Is the solid waste excluded?
 - Determination must be made at point of generation
 - Have you generated a listed waste?
 - Process knowledge
 - Have you generated a characteristically HW
 - Process knowledge and/or testing
 - Document the waste determination
 - Identifying RCRA waste codes
- Maintain HW determination records for 3 years after last sent to Treatment, Storage, or Disposal Facility (TSDF)

Waste Determination

Point of Generation

“The hazardous waste determination for each solid waste must be made at the point of waste generation, before any dilution, mixing, or other alteration of the waste occurs, and at any time in the course of its management that it has, or may have, changed its properties as a result of exposure to the environment or other factors that may change the properties of the waste such that the RCRA classification of the waste may change.”

40 CFR 262.11(a)

Waste Determination

Waste Characteristics

- Listed Waste
 - F-list
 - K-list
 - P-list
 - U-list
- Characteristic Waste
 - D-list
 - **I Can Remember That!**
 - D001 - Ignitable (flash point <140 F)
 - D002 - Corrosive ($2.0 \geq \text{pH} \geq 12.5$)
 - D003 - Reactive (oxidizers, etc.)
 - D004 - D043 Toxic
 - Measured by "toxicity characteristic leachate procedure" or TCLP

Waste Determination

F-Listed Wastes

- Non-specific sources such as:
 - Spent halogenated degreasers (F001)
 - Spent halogenated solvents (F002)
 - Spent non-halogenated solvents (F003-F005)
 - Wastewaters and sludges (F006-F019)
 - Certain processing wastes (F020-F027)
 - Wood preservative wastes (F032, F034, F035)
 - Petroleum refinery wastes (F037 & F038)
 - Leachate wastes (F039)

Waste Determination

K-Listed Wastes

- Specific sources such as:
 - Wood preservation wastes (K001)
 - Inorganic pigment wastes (K002-K008)
 - Organic chemical wastes (K009...K159)
 - Inorganic chemical wastes (K079...K106)
 - Pesticide wastes (K031...K132)
 - Explosive wastes (K044 - K047)
 - Petroleum refinery wastes (K048 & K052)
 - Iron and steel wastes (K061 - K062)
 - Other primary metal wastes (K064...K100)
 - Others

Waste Determination

P-Listed Wastes

- **Acute** hazardous wastes - Special requirements for acute waste management
- Discarded commercial chemical products, off-specification products, container residues, and spill residues thereof.
- List of chemical wastes
- Fatal to humans in low doses

Waste Determination

U-Listed Wastes

- Discarded commercial chemical products, off-specification products, container residues, and spill residues thereof.
- List of chemical wastes
- Ignitable, corrosive, reactive or toxic

Similar to P-listed wastes except P-listed wastes are fatal to humans in small doses. U-listed are ICRT.

P & U-listed wastes are pure, waste chemicals; not wastes that contain these chemicals.

Waste Determination

Now What?

- Now that the waste has been characterized and the waste determination has been documented, the generator is obligated to follow specific requirements for managing the waste.

4 Generator Requirements

What do I need to do to comply?

Generator Requirements

HW Generator Requirements

- EPA ID
- Generator Status
- Labeling
- On-Site Accumulation
- Manifesting
- Recordkeeping

Generator Requirements

Duty to Obtain EPA ID

- 40 CFR 262.18(a) – “A generator must not treat, store, dispose of, transport, or offer for transportation, hazardous waste without having received an EPA identification number from the Administrator”

Generator Requirements

Generator Category Based on Quantity of Waste Generated in a Calendar Month (40 CFR 262.13)

Quantity of acute hazardous waste generated in a calendar month	Quantity of non-acute hazardous waste generated in a calendar month	Quantity of residues from a cleanup of acute hazardous waste generated in a calendar month	Generator category
> 1 kg	Any amount	Any amount	Large quantity generator.
Any amount	≥ 1,000 kg	Any amount	Large quantity generator.
Any amount	Any amount	> 100 kg	Large quantity generator.
≤ 1 kg	> 100 kg and < 1,000 kg	≤ 100 kg	Small quantity generator.
≤ 1 kg	≤ 100 kg	≤ 100 kg	Very small quantity generator.

Generator Requirements

Generator Status

- VSQG \leq 100 kg/mo. (220 lb/mo.)
 - 40 CFR 262.14
- SQG $>$ 100 & $<$ 1,000 kg/mo.
 - 40 CFR 262.16
- LQG \geq 1,000 kg/mo. (2,200 lb/mo.)
 - 40 CFR 262.17

Generator Requirements

Requirements for SQGs

- Maintain aisle space between and around waste containers in case of emergency
- SQGs may accumulate waste for no more than 180 days (270 days if shipping >200 mi)
- Inspect HW storage area at least weekly
- HW shipments documented using Uniform Hazardous Waste Manifest (EPA Form 8700-22)
 - Starting in 2021, by September 21 of every 4th year, re-notify EPA
- Land Disposal Restrictions (LDRs) – Waste-specific treatment standards met prior to disposal

Generator Requirements

Requirements for LQGs

- Maintain aisle space between and around waste containers in case of emergency
- LQGs may accumulate waste for no more than 90 days
- Inspect HW storage area at least weekly
- Initial and annual training required for all employees for work with HW (keep records!).
- Must submit biennial HW report
 - Re-notify EPA of generator status as part of biennial report
 - Applies even if LQG only 1 month of the year
- Subject to LDRs

Generator Requirements

Requirements for LQGs

- Contingency Plan (§262.261, Subpart M)
 - “Minimize the possibility of fire, explosion, or any unplanned sudden or non-sudden release of HW or HW constituents to air, soil, or surface water...”
 - Arrangements with local first responders
 - Name and contact info for “Emergency Coordinator”
 - List of emergency response equip. at the facility
 - Evacuation Plan

Generator Requirements

Consolidation of HW from VSQGs

- LQGs may accumulate HW from VSQGs under control of the same person without a storage permit
 - Must notify EPA at least 30 days prior to receiving first shipment
 - Maintain records of shipment for at least 3 years from date received

Generator Requirements

Requirements for VSQGs

- Not required to obtain an EPA ID (8700-12 NORWA Form)
- No accumulation limits
- Not required to use Uniform HW Manifest
- Not subject to LDRs

While not required to follow many of the LQG/SQG requirements, it's still a good idea to implement some of them (e.g. labeling, inspections, manifests, 180 day disposal, etc.)

Generator Requirements

Episodic Generation

- New under the Hazardous Waste Generator Improvements Rule
- Applicable to SQGs and VSQGs
- May temporarily change status due to an episodic event
- Does not count toward generator status
- Sites allowed one planned and one unplanned event per year

Generator Requirements

Episodic Generation

- **Episodic event** means an activity or activities, either planned or unplanned, that does not normally occur during generator operations, resulting in an increase in the generation of hazardous wastes that exceeds the calendar month quantity limits for the generator's usual category.
- **Planned episodic event** means an episodic event that the generator planned and prepared for, including regular maintenance, tank cleanouts, short-term projects, and removal of excess chemical inventory
- **Unplanned episodic event** means an episodic event that the generator did not plan or reasonably did not expect to occur, including production process upsets, product recalls, accidental spills, or "acts of nature," such as tornado, hurricane, or flood.

Generator Requirements

Episodic Generation

- First day event is the first day of generation of waste for the event (e.g. first day of the storm, spill, other unexpected event)
- Event can last 60 days
- HW must be shipped off site within 60 days or the waste counts toward generator status
- Time frame should allow waste from unplanned events to be characterized and disposed of

Generator Requirements

Episodic Generation

- VSQGs and SQGs must notify about episodic events using the 8700-12 (NORWA) Form
 - VSQG must get EPA ID
- Planned event - notify 30 or more days prior to the episodic event
- Unplanned event - notify within 72 hours of the event by phone or email and follow up with Form
- Notification Includes:
 - Start and end dates of the episodic event (no more than 60 calendar days)
 - Reason for the event
 - Types of hazardous waste
 - Estimated quantities of hazardous waste
 - Emergency coordinator contact information

Generator Requirements

Episodic Generation

- Label HW as “Episodic Hazardous Waste”
- Indicate hazard(s)
- Waste must be shipped by HW transporter under the Uniform HW Manifest to a RCRA-designated TSDF

Generator Requirements

Why all of these requirements?

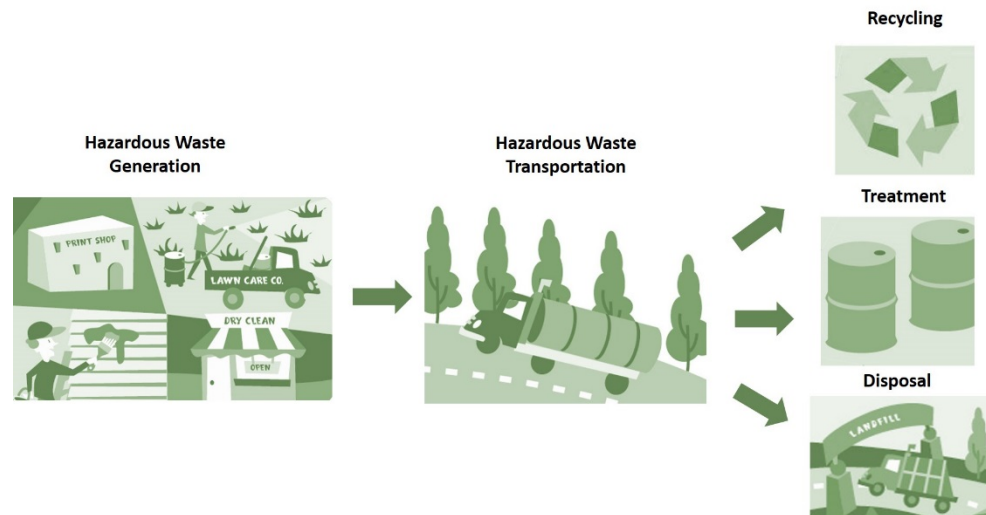
These HW management requirements are exemptions from permitting that keep waste generators from being categorized as a treatment, storage, or disposal facility (TSDF) operating without a permit.

That would be bad.

Cradle to Grave

What does that mean?

“Cradle to grave” is the proper management of HW from the point of generation through storage, transport, and disposal. Each stage of the HW’s lifecycle is subject to stringent, specific regulations managed by reporting and recordkeeping.



5 Waste Management

Ongoing management of HW

Waste Management

Labeling

- “Hazardous Waste”
- Indication of the hazard (e.g. NFPA, DOT, GHS pictograms)
- Label at point of generation
- Date accumulation begins
- Must include RCRA waste codes prior to shipping

HAZARDOUS WASTE

ACCUMULATION START DATE:



TOXIC



Waste Management

Satellite Accumulation Areas

- ≤ 55 gals (1 drum) or 1 qt. or kg acute HW
- "At or near the point of generation"
- Under control of the operator
- Container maintained in good condition and not leaking
- Container must be compatible with contents
- Must be closed at all times unless adding, removing, or venting
- Marked with "Hazardous Waste"
- Hazard(s) must be indicated (NFPA, GHS, etc.)
- Must be moved to HW storage within 3 consecutive calendar days of becoming full

Waste Management

Universal Waste

- Universal Wastes (40 CFR Part 273)
 - Spent lamps (light bulbs)
 - Spent batteries
 - Pesticides
 - Mercury-containing equipment
- State-run programs can have expanded Universal Waste programs
 - One case where state can be less stringent than Feds
- Universal Wastes are still HW
- Regulations were loosened to promote collection and proper disposal

Waste Management

Empty Drums/Containers

- If “empty” = not a hazardous waste (40 CFR 261.7)
- “Empty” means
 - Everything removed using common practices
 - Nothing can be poured or drained out
 - No more than 1 inch of material or 3% by weight of total container capacity whichever is less
 - Pressurized containers (e.g. aerosol cans) are empty and de-pressurized (if destined for recycling)
 - Triple rinsed if acutely hazardous
- Once “empty”, container may be managed as a solid waste

Waste Management

Particular Wastes

- PCB wastes
 - Regulated under TSCA not RCRA
 - Except in certain states, e.g. California
 - 40 CFR Part 761
- Asbestos wastes
 - Regulated under NESHAPs not RCRA
 - Except in certain states, e.g. California
 - 40 CFR Part 61 Subpart M

A close-up photograph of a weathered metal barrel. The barrel has a prominent warning label with the word "WARNING" in large, bold, white letters on a dark background. Below this, the words "NO HAZARDOUS WASTE" are visible in large, bold, black letters on a light background. The barrel shows signs of age and wear, with some rust and peeling paint. The lighting is bright, creating strong highlights and shadows.

4 lbs.

Household hazardous waste
produced per person per year in
the U.S.

Questions?

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