



SAEMS

SOUTHERN ARIZONA ENVIRONMENTAL MANAGEMENT SOCIETY, INC

RCRA Basics

Presented by

Fred E. Brinker, P.E.

for the

Southern Arizona Environmental Management Society



RCRA History

1965 – Solid Waste Disposal Act (SWDA)

1970 – EPA created

1976 – Resource Conservation
and Recovery Act (RCRA)

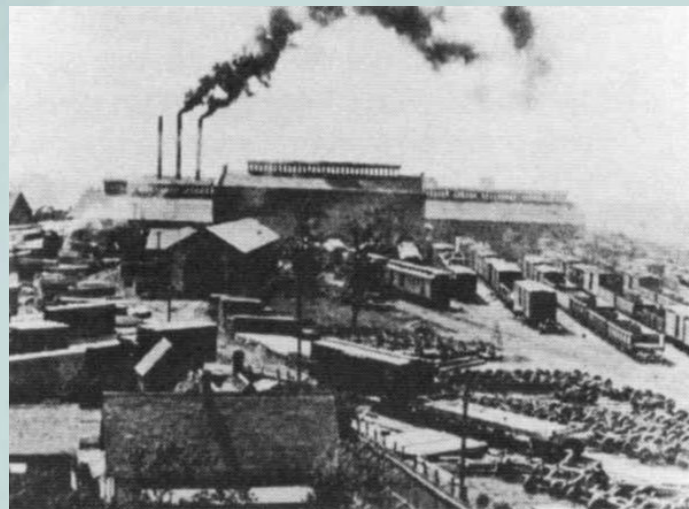
1981 – RCRA hazardous waste permitting

1982 – Design and performance requirements
for treatment, storage, and disposal
facilities (TSDFs)

1984 – Hazardous and Solid
Waste Amendments (HSWA)

- ✦ Created land disposal requirements (LDR)
- ✦ Expanded permitting for TSDFs
- ✦ Expanded authority to require cleanups at TSDFs
- ✦ Created corrective action program

1991 – New standards for municipal solid waste
landfills



RCRA Impacts

- ▲ 50,000 HW generators reduced to 16,000
- ▲ 30,000 TSDFs reduced to 527
- ▲ 6,500 landfills reduced to 1,023
- ▲ 1,000 waste lagoons reduced to < 50
- ▲ 1991 – 306 million tons / 23,426 generators
- ▲ 2007 – 47 million tons / 16,349 generators (LQG – 14,549)



RCRA Regulatory Overview

40 CFR 260 40 CFR 261

General & ID & Listing:

Definitions:

40 CFR 262

Generators

Cause to exist

Cause to be regulated

“Accumulate” [262.34]

40 CFR 263

Transporters

Move off site

40 CFR 264-265

TSDF's

Treat, Store, Dispose

Process Wastes:

261.31 General Processes

261.32 Specific Processes

“Non Process” Wastes:

261.33 (e) Acutely Hazardous

261.33 (f) Toxic & Other

Characteristic Wastes:

261.21 Ignitability

261.22 Corrosivity

261.23 Reactivity

261.24 Toxicity Characteristic

264 Permitted Facility Standards

265 Interim Status Facility Standards

266 Certain Wastes, Certain Facilities

270 TSDF Permits



268 Land Disposal Restrictions

273 Universal Wastes

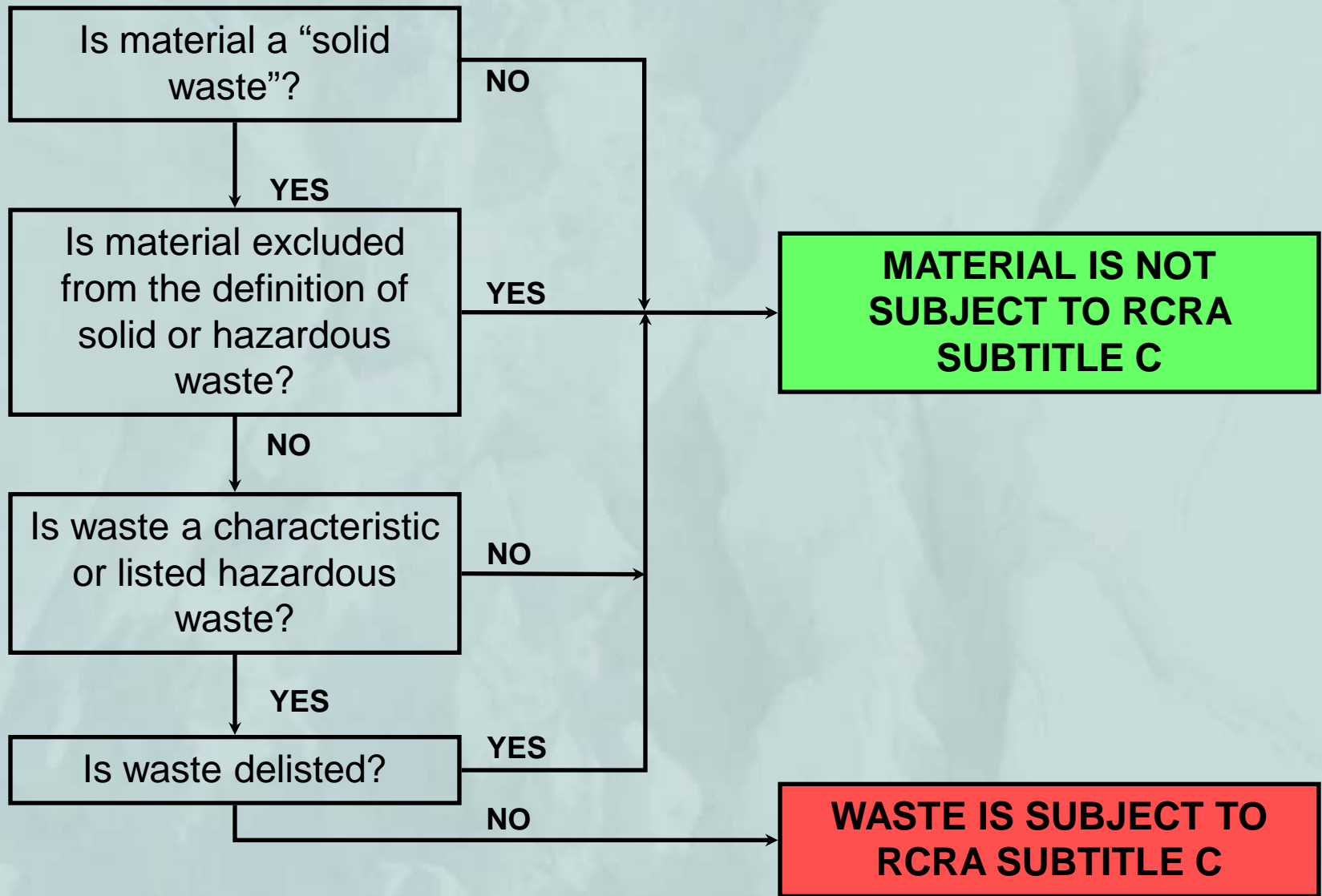
279 Used Oil

What Do I Need to Know?

- What is a hazardous waste?
- What do I have to do if I generate hazardous waste?
- How do I determine my generator status?
- How do I dispose of hazardous waste?
- What are the record keeping and reporting requirements?



What Is a Hazardous Waste?



Solid Waste

- ▲ To be a hazardous waste, the material must first meet the regulatory definition of a “solid waste” per 40 CFR 261.2.
 - ✦ Is it a solid, semi-solid, liquid, or contained gaseous material which is discarded or has served its intended purpose?
 - ✦ Is it abandoned?
 - ✦ Is it being recycled by being placed on the ground (and that is not the normal use), burned for energy recovery, reclaimed, or accumulated more than one year?
 - ✦ Is it “**inherently waste-like**” (e.g., dioxin wastes)?

- ▲ Waste must be identified by the generator at the time of generation.

- ▲ The generator must determine if the material is subject to regulation as a hazardous waste 40 CFR 260-273.

Excluded Wastes

40 CFR 261.4

▲ **Materials that are not solid waste by definition (and therefore are NOT hazardous) include:**

- ✦ Domestic sewage
- ✦ Industrial wastewater discharges.
- ✦ Radioactive waste
- ✦ Spent wood preserving solutions that are reclaimed and reused in the wood preserving process
- ✦ Processed scrap metal
- ✦ Irrigation return flow
- ✦ In situ mining waste
- ✦ Secondary materials that are reclaimed and returned to the original process, if the reclamation and return process is totally enclosed.



Excluded Wastes

40 CFR 261.4

- ▲ **Solid wastes that are excluded from the definition of hazardous wastes:**
 - ✦ Household waste (pesticides, cleaners)
 - ✦ Some agricultural wastes that are returned to the soils as fertilizers
 - ✦ Fossil fuel combustion wastes
 - ✦ Cement kiln dust (unless the facility burns hazardous waste as fuel)
 - ✦ Wastes from arsenic wood treatment generated by a person using wood for its intended purpose
 - ✦ Petroleum-contaminated media that is subject to the UST corrective action program
 - ✦ Used oil filters that have been hot drained.
 - ✦ Used chlorofluorocarbon refrigerants that are being reclaimed for further use.



Excluded Wastes

40 CFR 261.4

- ▲ **In addition, some recycled materials are not classified as solid waste.**
 - ◆ Used as substitutes for commercial products
 - ◆ Returned to the original process without first being reclaimed or land disposed
 - ◆ Exemption is not valid if the materials are burned for energy recovery or used to make a product that will be applied to the land.
- ▲ **Samples collected for lab analysis until disposed of.**
- ▲ **Recycled used oil that exhibits hazardous characteristics.**
- ▲ **Universal Wastes including batteries, pesticides, and mercury-containing devices.**



Characteristic Hazardous Waste

40 CFR 261.20

▲ **Ignitability 261.21 (D001)**

Readily Catch on Fire and Sustain Combustion

- Liquid with flash point < 140°F
- Oxidizer per 49 CFR 173.151 or ignitable compressed gas per 49 CFR 173.300
- Not a liquid and capable of causing fire through friction, absorption of moisture or spontaneous chemical changes and burns vigorously and persistently



▲ **Corrosivity §261.22 (D002)**

Acidic or Alkaline Corrode or Dissolve Flesh, Metal

- Is a **liquid** and has a pH less than or equal to 2 or greater than or equal to 12.5

OR

- Corrodes steel at a rate greater than 6.35mm per year
- Corrosive solids are NOT D002 wastes



Characteristic Hazardous Waste

40 CFR 261.20

⤴ **Reactivity §261.23 (D003)**

Readily Explode or Undergo Violent Reaction

- Unstable and readily undergoes violent change without detonating
- Reacts violently with water or forms potentially explosive mixtures with water
- Cyanide or sulfide which, when exposed to pH 2 to 12.5, generates toxic vapors sufficient to present a danger
- Capable of detonation with strong initiating force or under ambient conditions



⤴ **Toxicity 261.24 (D004-D043)**

Likely to Leach Dangerous Concentrations

- Using Toxicity Characteristic Leaching Procedure (TCLP) produces a leachate which contains any one of 39 constituents in concentrations equal or greater than specified limits
- Designed to simulate landfill conditions
- Various metals: arsenic, cadmium, chromium, etc.
- Various organics: benzene, MEK, PCE, etc.



Listed Hazardous Wastes

40 CFR 261.30

“F” Listed 261.31

- ✦ Non-specific wastes from certain manufacturing processes
- ✦ Includes certain spent solvent wastes, electroplating wastes, dioxin-bearing wastes, chlorinated aliphatic hydrocarbon production wastes, wood preserving wastes, refinery wastewater treatment wastes, and landfill multisource leachate



“K” Listed 261.32

- ✦ Industry specific wastes from specific listed sources. For example, bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol.



“P” & “U” Listed Discarded Chemical Products 261.33

- ✦ Chemical products & formulations that EPA has designated as hazardous waste when discarded or intended for discard. For example, acetone which is past its usable shelf-life.
- ✦ “P” listed wastes are designated as “acutely hazardous”.
- ✦ “U” listed wastes are listed due to chronic toxicity or other reasons indicated per chemical.



Mixture and Derived-From Rules

40 CFR 261.30

▲ Mixture Rule

- A mixture of any amount of nonhazardous waste and any amount of listed hazardous waste is considered a listed hazardous waste.
- A mixture of nonhazardous waste and a characteristic hazardous waste is not considered a characteristic hazardous waste if the resulting mixture does not exhibit those characteristics which caused the listing.



▲ Derived-From Rule

- Any solid waste derived from the treatment, storage, or disposal of a listed hazardous waste is considered hazardous, such as sludges, spill residue, ash, emission control dust, or leachate.
- Any waste derived from the treatment, storage, or disposal of a characteristic hazardous waste which no longer exhibits those characteristics, it is no a hazardous waste.

ONCE A LISTED WASTE – ALWAYS A LISTED WASTE!

Types of Generators

- ⤴ Conditionally exempt small quantity generators (CESQG's)

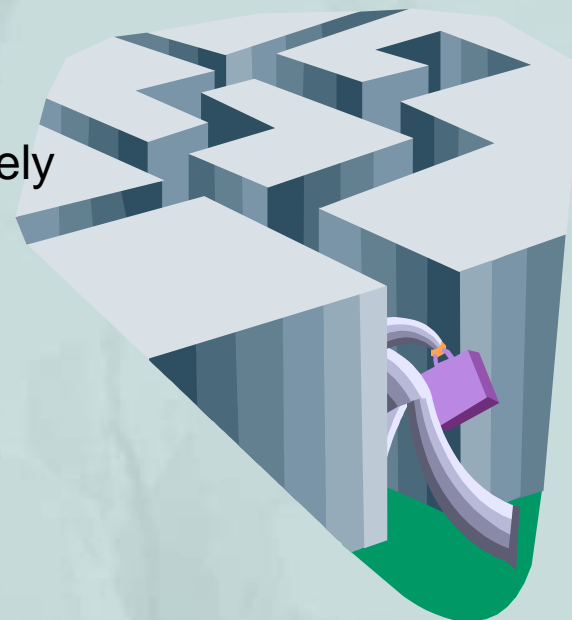
Generate < 100 kilograms and < 1 kg acutely hazardous per month.

- ⤴ Small Quantity Generators (SQG's)

Generate 100 to 1000 kg and < 1 kg. of acutely hazardous per month.

- ⤴ Large Quantity Generators (LQG's)

Generate > 1,000 kg (or >1 kg acutely hazardous) waste per month.



Applicable Requirements

	CESQG	SQG	LQG
Obtain an EPA ID number		X	X
Identify your hazardous waste	X	X	X
Count the quantity of waste generated each month	X	X	X
Comply with storage limits	≤ 1000 kg at any time	≤ 6000 kg up to 180 days	Accumulate for ≤ 90 days
Ensure proper treatment and disposal	X	X	X
Follow storage and handling procedures		Basic	Full
Ship with UHWM and apply LDRs		X	X
Be prepared to respond to emergencies		X	Plan
Written contingency and training plans		X	Plan
Control air emissions			X
File biennial reports			X
DOT registration and Hazmat Security Plan		TBD	X

EPA ID Number

- ▶ ID number is used to monitor and track hazardous waste activities, is “site” specific, and stays with the property when ownership changes.
- ▶ Submit EPA Form 8700-12 “Notification of Regulated Waste Activity” to ADEQ prior to generating hazardous waste.
- ▶ Use the ID number when shipping hazardous waste offsite and on Facility Annual Reports.
- ▶ Submit amended 8700-12 if any change in ownership, generator status, or contact person.



Managing Hazardous Waste

- ▲ Count the quantity of hazardous waste generated each month in order to determine generator classification, except for wastes treated on-site or immediately recycled.
- ▲ Label containers with the words HAZARDOUS WASTE, date holding period (90/180 days) began, and contents.
- ▲ Container must be compatible with the waste (corrosion, vapor pressure, etc.)
- ▲ Keep all containers closed except when adding or removing waste.
- ▲ Store containers in controlled area and provide secondary containment. Ignitable and reactive wastes must be at least 50-ft. from property line.
- ▲ Inspect storage areas weekly for leaks and proper management.
- ▲ Do not mix incompatible materials, e.g. oxidizers with flammables.



HAZARDOUS WASTE
FEDERAL LAW PROHIBITS IMPROPER DISPOSAL
IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY
OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY

Generator's Name _____
Generator's Address _____
City _____ State _____ Zip _____
EPA ID No. _____
Date of Manifest Generation/Completion _____ EPA Waste No. _____
DOT Proper Shipping Name _____
Quantity () _____
Net Weight _____

**HANDLE WITH CARE -- THIS CONTAINER IS DANGEROUS AND CONTAINS
HAZARDOUS OR TOXIC WASTE**

In the event of a spill or release of this hazardous waste, contact the
U.S. Coast Guard National Response Center at (800) 424-9303
for information and assistance.

Satellite Accumulation

40 CFR 261.33

▲ At or near any point of generation ... which is under the control of the operator of the process generating the waste” [40 CFR 262.34(c)]

- ✦ ≤ 55 gallons per single HW stream
- ✦ ≤ 1 quart per single acute HW stream

▲ Containers:

- ✦ Marked and labeled
- ✦ In good condition and compatible with waste
- ✦ Closed except when necessary to add or remove waste
- ✦ Local agencies may require secondary containment

▲ When quantity or time exceeded, 3 days to move to 90 day storage area



© MCMXCVI, Brigade Communications Ltd

WORKPLACE ACCUMULATION CONTAINER		
Proper D.O.T. Shipping Name: _____	HAZARDOUS WASTE	Workplace Accumulation Item Date: _____
UN or HMTA _____		
Manufacturer Information: _____	FEDERAL LAW PROHIBITS IMPROPER DISPOSAL.	Waste Accumulation Area: _____
Name: _____		
Facility: _____	IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY, OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY.	
Address: _____		
Phone: _____	HANDLE WITH CARE!	
City: _____ State: _____ Zip: _____		
EPA / Manifest ID No. / Document No. _____		
State Manifest Document No. _____		
EPA Waste No. _____		

Preparedness & Prevention

- ▲ Facility must be maintained to minimize possibility of fires, explosions or releases.
- ▲ Internal communications or alarm system, telephone , portable fire extinguishers, fire control equipment, adequate volume and pressure of water.
- ▲ Arrangements with local agencies.
- ▲ Owner/operator must test and maintain equipment.
- ▲ All employees involved in operations where HW is handled must have access to communication systems.
- ▲ Generator must maintain aisle space to allow unobstructed movement.



Contingency Plans

- ▲ Contingency Plans must include:
 - ✦ Emergency Coordinator on the facility or on call and list names addresses and phone numbers
 - ✦ Specific Emergency procedures to include:
 - ★ Alarm systems
 - ★ Notification requirements
 - ★ Hazard assessment on-site and off-site

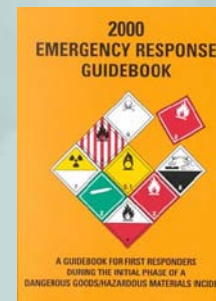
- ▲ Must provide copies to local agencies

- ▲ Must be revised whenever there is:
 - ✦ A change in facility permits or regulations
 - ✦ A failure in the plan
 - ✦ A change in Emergency Coordinator or response equipment



Preparation for Shipment

- ▶ Characterize the waste (MSDS, generator knowledge, analytical data).
- ▶ Select an appropriate treatment, storage, or disposal facility (TSDF) and obtain a waste profile.
- ▶ Package waste per 49 CFR 173, 178, & 179.
- ▶ Label and mark containers per 49 CFR 172.
- ▶ Prepare uniform hazardous waste manifest (UHWM).
- ▶ Offer DOT placards per 40 CFR 172, subpart F, if required.
- ▶ Provide copies of relevant ERG Guides.



Hazardous Waste Manifest

- Prepare a Uniform Hazardous Waste Manifest for all hazardous waste shipments per 40 CFR 262.20. Only EPA Manifest (EPA Form 8700-22) may be used.
- Designate a single TSDF to receive waste
- Provide identification number, DOT proper shipping name, hazard class, (subsidiary hazard), packing group, number and type of containers, total quantity, and EPA waste code(s) for each waste.
- Include emergency information required by DOT 49 CFR 172.602, 604.
- Generator and initial transporter must both sign.
- Generator retains one copy, gives the rest to initial transporter.

Please print or type. (Form designed for use on white (12-pitch) typewriter.) Form Approved. OMB No. 2050-0050

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number 2. Page 1 of 3. Emergency Response Phone 4. Manifest Tracking Number

5. Generator's Name and Mailing Address Generator's Site Address (if different than mailing address)

Generator's Phone

6. Transporter 1 Company Name U.S. EPA ID Number

7. Transporter 2 Company Name U.S. EPA ID Number

8. Designated Facility Name and Site Address U.S. EPA ID Number

Facility's Phone

No. and Date	16. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group if any)	18. Containers		19. Total Quantity	22. Unit M/M/pt	23. Waste Codes
		No.	Type			
1.						
2.						
3.						
4.						

14. Special Handling Instructions and Additional Information

15. GENERATOR/SUPPLIER'S CERTIFICATION: I hereby declare that the contents of this assignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/identified, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this assignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste destination statement identified in 40 CFR 263.21(a) (2) is a large quantity generator or (3) (2) is a small quantity generator in true.

Generator/Owner's Printed Name Signature Month Day Year

16. International Shipments Import to U.S. Export from U.S. Port of entry/exit: Date leaving U.S.:

Transporter signature (for exports only)

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed Name Signature Month Day Year

Transporter 2 Printed Name Signature Month Day Year

18. Discrepancy

18a. Discrepancy Indication Space Quantity Type Residue Partial Rejection Full Rejection

18b. Alternate Facility (or Generator) Manifest Reference Number: U.S. EPA ID Number

Facility's Phone

18c. Signature of Alternate Facility (or Generator) Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
----	----	----	----

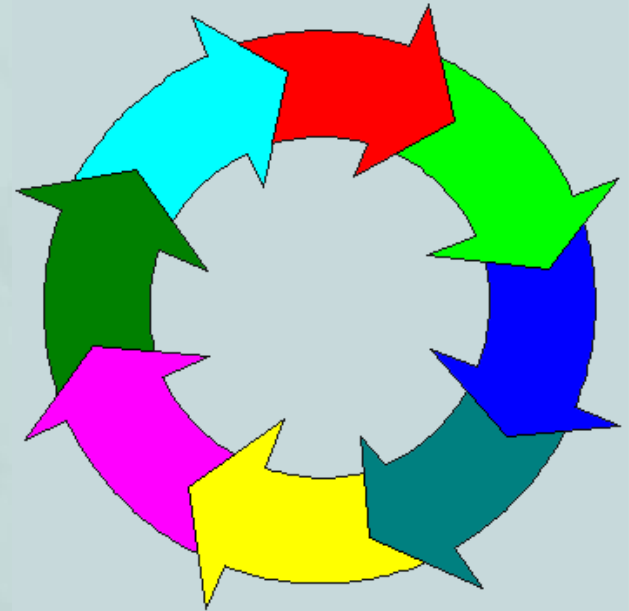
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in item 18a

Printed Name Signature Month Day Year

EPA Form 8700-22 (Rev. 3-85) Previous editions are obsolete. DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Hazardous Waste Manifest

- ⤴ LQG's must determine status of waste shipments. If manifest not received from designated facility in 35 days, LQG's must file exception report with ADEQ after 45 days, 262.42(a)(1),(2)
- ⤴ A legible copy of the signed manifest must be forwarded to ADEQ within 45 days from the end of the month of shipment.
- ⤴ SQG must submit legible copy of the manifest indicating confirmation of delivery not received to ADEQ after 60 days, 262.42(b).
- ⤴ Generator must keep a signed copy of each manifest for at least three years, 262.40(a)



Record Keeping & Reporting

- ▲ (All) EPA Identification Number / Notice of Hazardous Waste Activity (40 CFR 262.11)
- ▲ (All) Annual ADEQ Hazardous Waste Generation Fee (A.R.S. 49-929)
- ▲ (SQG & LQG) Hazardous Waste Storage and Accumulation (40 CFR 262.34)
 - ✦ Employee training on proper waste handling and emergency procedures
 - ✦ Documentation on waste handling procedures, including designated emergency response personnel
 - ✦ Documentation on monthly waste generation, duration and date of waste storage and a written storage time compliance procedure
 - ✦ No specified record retention period
- ▲ (SQG & LQG) Manifests, Land Disposal Notification (40 CFR 262.40) and Exception Reports (40 CFR 262.42)
 - ✦ The facility's manifests or the signed manifests from the TSDF receiving the hazardous waste and all exception reports are to be retained for 3 years.
 - ✦ Records of test results, waste analyses, or other determinations that the waste is hazardous must be kept for 3 years.



Record Keeping & Reporting

▲ (LQG) Biennial Report (40 CFR 262.41)

- ✦ A Biennial Report (each even numbered year) must be submitted to the USEPA no later than March 1st.
- ✦ Copies of the Biennial Report and Exception Report must be kept for 3 years.

▲ Hazardous Waste Minimization/Pollution

Prevention Requirements (40 CFR 262 App)

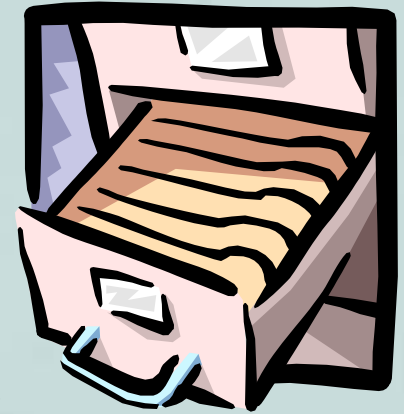
- ✦ LQGs - program in place to reduce the volume and toxicity of waste generated to the degree determined to be economically practicable. Written waste minimization and pollution prevention plan developed and retained on-site.
- ✦ SQGs - good faith effort to minimize waste generation and select the best, affordable waste management method that is available.

▲ Training, Contingency and Emergency Plans (40 CFR 262.34)

- ✦ LQGs – full written plans required.
- ✦ SQGs – written plans not required, but must comply with substantive requirements and ensure at least one person is available at all times.

▲ DOT Hazmat Security Plan (49 CFR 172.800)

- ✦ Site Security Plan providing assessment and measures to control personnel security, unauthorized access, and en route security.



Record Keeping & Reporting

- ▲ Hazardous Waste Storage Area Inspection (40 CFR 265.1101)
 - ✦ Weekly inspection of hazardous waste storage area(s) to monitor leak detection equipment and detect signs of releases of hazardous waste in or around the containment area.
 - ✦ Records of weekly inspections must be maintained for at least 3 years.

- ▲ Recyclable Materials (40 CFR 266.70)
 - ✦ Generators must maintain manifests when material is being transported for reclamation.
 - ✦ Persons who store these materials (non-speculatively) must keep records showing the volume of these materials stored at the beginning of the calendar year; the amount generated or received during the calendar year; and the amount of materials remaining at the end of the calendar year.
 - ✦ No specified retention period for the documents.

- ▲ Used Oil Generators (40 CFR 279.74)
 - ✦ Record of each used oil shipment, in the form of a log, invoice, manifest, bill of lading, or other shipping documents.
 - ✦ Records are to be retained for 3 years.



