"Where's the Waste?, and Where are you Storing It?"

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Container Management.



What is a container?

Definition of a Container:

• 40 CFR 260.10 Subpart B:

A <u>container</u> mean any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled.

Can you show me some examples????

Other Containers Include:

- Boxes (various sizes and materials)
- One cubic yard heavy duty cardboard boxes with a plastic liner (gaylord boxes)

But what "kind" of container do you have?!?

- What the Department's inspector means, is your hazardous waste container:
- a) Satellite Accumulation Area? OR
- b) Central Accumulation Area?

Satellite Accumulation Area





Satellite Accumulation Area

 Typically the beginning of the hazardous waste container management cycle.
 (Logical place to start)

 Most generators will have at least one SAA, but may have more satellite accumulation areas (containers) accumulating waste onsite, before a storage drum is ever created. Once an inspector sees a hazardous waste satellite accumulation area...
What are we (the inspector) going to look for?

Satellite Accumulation Area (SAA) Requirements:

- 40 CFR 262.15(a) The generator does not accumulate more than **55 gallons** of hazardous waste or **one quart** of acutely hazardous waste (listed in §261.33(e) in SAA.
- The SAA is at or near any point of generation where wastes initially accumulate, AND is under the control of the operator of the process generating the waste.

40 CFR 262.15(a) continued:

If these requirements are met, then there is <u>no limit</u> on the amount of time waste can be stored in SAA.

(Excerpts from the Revised Satellite Accumulation Policy)

- The goal is that this temporary accumulation is performed responsibly and **safely**, with adequate oversight and control.
- The applicability of the satellite accumulation provision will always depend upon a generator's particular set of circumstances, which are site-specific.
- Therefore, any questions regarding specific wastes at specific facilities are best answered by the agency implementing the RCRA program for that particular facility

However.....

If a generator accumulates waste in <u>excess of</u> the amounts listed in 40 CFR 262.15(a), at or near any point of generation must (55 gallons), with respect to that amount of excess waste, within three calendar days:

a) Comply with the applicable Central Accumulation Area (CAA) requirements in 40 CFR 262.16(b) (SQG) or 40 CFR 262.17(a) (LQG)

OR

b) Remove the excess from SAA (within 3 days) to an onsite CAA, onsite interim status or permitted TSDF, or offsite designated facility

Having said that.....

• The generator can continue to store the container or containers, containing the excess amounts of hazardous waste, at the SAA for those additional three days.

Most Common Satellite Accumulation Area (SAA) Requirements:

- 40 CFR 262.15(a)5 Mark and/or label containers with the words "Hazardous Waste" and an indication of the hazards of the contents. (NEW as of 5/31/17)
- A label, tag, etc... on the container is acceptable.
- The key is that the label or mark must indicate that the material is a hazardous waste and not a raw material or product
- Indicate the hazards of the contents.

Several options available to generators: USDOT Hazard Markings (most common)

Nine Classes of Hazardous Materials Class 1: Explosives Class 2: Gases Class 3: Flammable Class 4: Flammable Class 5: Oxidizer and Divisions: 1.1, 1.2, 1.3, 1.4, Divisions: 2.1, 2.2, 2.3 Liquid and Solid, Spontaneously Organic Peroxide **Combustible Liquid** Combustible, and 1.5. 1.6 Divisions 5.1, 5.2 **Dangerous When Wet** Divisions 4.1, 4.2, 4.3 GASOLINE **EXPLOSIVES OXYGEN** COMBUSTIBLE **OXIDIZER FUEL OIL** EXPLOSIVES INHALATION RADIOACTIVE **CORROSIVE** DANGEROUS Class 7: Radioactive Class 8: Corrosive Class 6: Poison (Toxic) and Class 9: Dangerous Poison Inhalation Hazard Miscellaneous Revised 06/05 **Federal Motor Carrier** U.S. Department of Transportation

Safety Administration

www.fmcsa.dot.gov

Hazardous Material Identification System (HMIS)





National Fire Protection Association (NFPA) "Fire Diamond"



Safety
Data
Sheet
Pictograms

Simply mark and/or label the container with characteristics found in the hazardous waste:

- + Ignitable / Flammable
- + Corrosive
- + Reactive
- + Toxic

How it should/can be done:



Secondary Containment

- The Department recommends Secondary Containment for the following containers in order to minimize the potential for breakage and to minimize the consequences in the event of breakage
 - Glass containers holding liquid hazardous waste kept on the floor.
 - Containers with capacity of less than 4 Liters, of liquid hazardous waste, regardless of storage location

NOTE: In general, secondary containment is also to be used as a means of preventing incompatibles from interacting in the event of breakage and/or spillage. Hazardous waste are to be segregated by hazard class and stored in separate cabinets, trays, or pans.

ACCEPTABLE SECONDARY CONTAINMENT OPTIONS





Conveyance Containers

- The Department "No Longer Condones" the use of a conveyance container (i.e. a laboratory safety can) to move or convey waste from an initial generation point (i.e. lab work station) to a container at a SAA.
- Conveyance container itself is subject to SAA requirements.
- Containers that are connected to laboratory apparatus or a piece of equipment, are not considered part of the process and are therefore subject to SAA requirements.

Other SAC requirements

- **262.15(a)1** Conditions of Containers. (If a container holding a hazardous waste is not in good condition or if it begins to leak, the generator must transfer the hazardous waste from this SAA to a container that is in good condition, OR immediately transfer and manage waste in a CAA....)
- **265.15(a)2** Compatibility of Waste with Containers. (Container used must be made of or lined with materials which will not react with and are otherwise compatible with the hazardous waste to be accumulated. This is so the ability of the container to contain the waste is not impaired.)
- **265.15(a)**4 Management of Containers. (Container holding hazardous waste must always be closed during accumulation, except when it is necessary to add or remove waste, consolidate waste, or when temporary venting of a container is necessary IN AN EMERGENCY!!!)

Requirements for both Satellite Accumulation Areas, <u>AND</u> Hazardous Waste Storage Containers...to be discussed later as well !!!

Central Accumulation Area



Why were Container Management / Storage Regulations originally created?

May 19, 1980 preamble

- to minimize emissions of volatile wastes;
- help protect ignitable or reactive waste(s) from sources of ignition or reaction;
- Help prevent spills; and
- Reduce the potential from the mixing of incompatible waste and direct contact of facility personnel with waste(s)

Suggests that containers are closed with lids or some other closure device when adding or removing the waste from the container.

When an inspector visits a hazardous waste storage area, what are we going to look for?

Well, that depends on the type of generator that you are:

- + Large Quantity Generator (LQG)
- + Small Quantity Generator (SQG)
- + Very Small Quantity Generator (VSQG)

However, <u>ALL</u> Generators <u>MUST</u> comply with 262 Subpart C

Before transporting hazardous waste or offering hazardous waste for transportation offsite, a generator must package the waste in accordance with ALL applicable USDOT regulations, on packaging, under 49 CFR parts 173, 178, and 179.

49 CFR 173 – Covers the General requirements for Shipments & Packaging of Hazardous Materials / Wastes.

- 49 CFR 178 Covers the "Specifications for the Packaging" that the hazardous material/waste will be shipped in.
- 49 CFR 179 Covers the "Specifications for Tank Cars"

A Central Accumulation Area is considered:

An area where waste accumulation container(s) are of such distance from the process generating the waste, or in such a location, that it is **NOT** routinely within the control and cognizance of the operator of the process.

Examples:

- a) Location of the accumulation container in another room where intervening walls or partitions block it from the view of the process operator for significant periods of time.
- b) Place the container in areas subject to other plant activities not under the control of the process operator where the risks of release or mismanagement may be greater.
- c) Location of the waste storage container outside a building in which the waste is generated may be regarded as placing it beyond the routine attention of the process operator, and therefore not legitimate satellite accumulation.

Accumulation Time Limitations

VSQG's – NONE, as long as Hazardous Waste in storage does not exceed 999Kg, and maintain VSQG waste generation rates (<100 Kg/220 lbs/@30 gal. per mo.)

A VSQG that accumulates >1,000Kg / 2,200 lbs. can only accumulate hazardous waste for 180-days from the day it exceeded the limit. 40 CFR 262.14(a)4(i-iii) & 40 CFR 262.14(a)5

Accumulation Time Limitations

SQG's – must manifest/ship Hazardous Waste offsite within 180-days of being accumulated onsite (40 CFR 262.16(b))

LQG's – must manifest/ship Hazardous Waste offsite within 90-days of being accumulated onsite (40 CFR 262.17(a))

Exceptions to Accumulation Time Limitations:

• 40 CFR 262.16(c) -

If you are a SQG of hazardous waste, who must transport his waste, or offer his waste for transportation, over a distance of greater than 200 miles for off-site treatment, storage or disposal may accumulate waste on-site for 270 days or less without a permit, or without having interim status provided that compliance with the requirements of 40 CFR 262.16(b).

NOTE: The quantity of waste accumulated on-site may never exceed 6000 kilograms during time period.

Exceptions to Accumulation Time Limitations:

NOTE:

• If you are a SQG of hazardous waste, and has accumulated greater than 6000 Kg of hazardous waste onsite, or has stored hazardous waste onsite for greater than 180-days, the generator is considered an operator of a storage facility and is subject to the requirements of 40 CFR parts 264 & 265 (TSDF), and permit requirements of 40 CFR part 270 (TSDF), UNLESS the generator has been granted an extension to the 180-day period.

NOTE: An extension of up to 30-days may be granted by the Department, on a case-by-case basis.

Exceptions to Accumulation Time Limitations:

NOTE:

• If you are a LQG of hazardous waste, and accumulate hazardous waste onsite for more than 90-days, the generator is considered an operator of a storage facility and is subject to the requirements of 40 CFR parts 264 & 265 (TSDF), and permit requirements of 40 CFR part 270 (TSDF), UNLESS the generator has been granted an extension to the 90-day period.

NOTE: An extension of up to 30-days may be granted by the Department, on a case-by-case basis.

Common Container Accumulation Area Requirement:

• While being accumulated on-site, each hazardous waste storage container...must be clearly marked, and/or labeled with the words "Hazardous Waste" and an indication of the hazards of the contents. (NEW as of 5/31/17) Exactly the same as Satellite Accumulation Area containers.

Inspector looking for:

- A label, tag, etc... on the container is acceptable.
- The key is that the label or mark must indicate that the material is a hazardous waste and not a raw material or product and indicates the hazards of the contents. (USDOT marking, HMIS & NFPA labels, SDS pictograms, etc.)
- 40 CFR 262.17(a)(5)(i)(A)-(B) Large Quantity Generator
- 40 CFR 262.16(b)(6)(i)(A)-(B) Small Quantity Generator
- Very Small Quantity Generator ENCOURAGED

Common Container Accumulation Area Requirement:

• "The date upon which each period of accumulation begins is <u>clearly marked</u> and <u>visible</u> for inspection on <u>each</u> container.

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(40 CFR 262.16(b)(6)(i)(C) for SQG)
(40 CFR 262.17(a)(5)(i)(C) for LQG)
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Reason:

- + SQG has 180-day storage limit (40 CFR 262.16(b))
- + LQG has 90-day storage limit (40 CFR 262.17(a))

Common Container Accumulation Area Requirement:

- A container holding hazardous waste must always be closed during storage, except when it is necessary to add or remove waste, consolidate waste, or when temporary venting of a container is necessary
- Reason: To prevent the release of hazardous waste, and/or its vapors. Again, to prevent a spill from occurring, and protect workers from hazardous vapors, fumes, etc...
- 40 CFR 262.16(b)(2)(iii)(A) (SQG)
- 40 CFR 262.17(a)(1)(iv)(A) (LQG)

(Satellite Accumulation Area Requirement)

 A container holding hazardous waste must not be opened, handled, or stored in a manner which may rupture the container or cause it to leak its contents

- 40 CFR 262.16(b)(2)(iii)(B) SQG
- 40 CFR 262.17(a)(1)(iv)(B) LQG

In addition to 40 CFR 262.16(b)(2)(iii)(B) and 40 CFR 262.17(a)(1)(iv)(B)....

If a generator's containers, holding hazardous waste are not in good condition, or if they begin to leak, the owner or operator (generator) must transfer the hazardous waste from this "bad" container to container that is in good condition; or manage the waste in some other way that complies with this requirement.

- +40 CFR 262.16(b)(2)(i) SQG
- + 40 CFR 262.17(a)(1)(ii) LQG

(Satellite Accumulation Area Requirement)

Required Aisle Space - An owner or operator (generator) must maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency (Example – DEP requires 18" for single-stacked 55-gallon drums)

- +40 CFR 262.16(b)(8)(v) SQG
- + 40 CFR 262.255 LQG

Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation must have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee.

- + 40 CFR 262.16(b)8(iv) SQG
- + 40 CFR 262.254(a)-(b) LQG

REMEMBER!!!

Hazardous Waste Central Accumulation Area (CAA) description, is:

An area where waste accumulation container(s) are of such distance from the process generating the waste, or in such a location, that is not routinely within the control and cognizance of the operator of the process.

Central Accumulation Areas are usually well removed from the active parts of a facility, and the only means of communications is through some type of communications device – phone, alarm, 2-way radio, etc...

- The owner or operator (generator) must inspect area where containers are stored, at least weekly, looking for leaks and for deterioration caused by corrosion or other factors.
- 40 CFR 262.16(b)2(iv) SQG
- 40 CFR 262.17(a)1(v) LQG

Things to remember about inspections:

- Container Management and weekly inspections go hand-in-hand.
- Ensures hazardous waste storage containers are being properly managed.
- Ensures any problems that are found, are/can be addressed in a prompt manner before any serious injury or property damage can occur.
- Written inspection log not required for SQG/LQG, but highly recommended to show that the required inspections are being conducted.

WEEKLY CONTAINER STORAGE AREA INSPECTION LOG

ITEM/WEEK	WEEK OF	WEEK OF	WEEK OF	WEEK OF	WEEK OF
Containers in good condition, not leaking?					
Containers closed when not in use?					
Containers properly marked?					
Container markings visible?	65.00	Maria Seria	The Property		
Containers stored longer than allowed?					
Containers segregated by waste type?		9.74.9675E3			
gnitable or eactive waste stored >50' from property line?		a Stational Control	CO Administra		
dequate aisle pace?	Mary Salarana				
pill control, ommunication, afety, & fire quipment resent?	MANY ASSESSED	Maria de la companya	200000		
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Commonly Overlooked Central Accumulation Area Requirements:

Storage of Incompatible Hazardous Wastes

as per 40 CFR 260.10 – an incompatible waste is a hazardous waste which is unsuitable for placement in a particular device because it may cause corrosion or decay of containment materials (i.e., container inner liners), OR commingling with another waste or material under un-controlled conditions because the commingling might produce heat or pressure, fire or explosion, violent reaction, toxic dusts, mists, fumes, or gases, or flammable fumes or gases.

Storage of Incompatible Hazardous Waste

"Incompatible waste, or incompatible wastes and materials must not be placed in the same container... hazardous waste must not be placed in an unwashed container that previously held incompatible waste or material... or a storage container holding hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, must be separated from the other materials or protected from them by means of dike, berm, wall, or other device.

SQG - 40 CFR 262.16(b)(2)(v)

LQG - 40 CFR 262.17(a)(1)(vii)

NOTE: Appendix V shows examples of incompatible waste, and materials.

Environmental Protection Agency

Formulae for calculation of the t-statistic and tables for t-test of significance can be found in most introductory statistics texts.

APPENDIX V TO PART 265—EXAMPLES OF POTENTIALLY INCOMPATIBLE WASTE

Many hazardous wastes, when mixed with other waste or materials at a hazardous waste facility, can produce effects which are harmful to human bealth and the environment, such as (1) heat or pressure, (2) fire or explosion, (3) violent reaction, (4) toxic dusts, mists, fumes, or gases, or (5) flammable fumes or gases.

Balow are examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences which result from mixing materials in one group with materials in another group. The list is intended as a guide to owners or operators of treatment, storage, and disposal facilities, and to enforcement and permit granting officials, to indicate the need for special precautions when managing these potentially incompatible waste materials or components.

This list is not intended to be exhaustive. An owner or operator must, as the regulations require, adequately analyze his wastes so that he can avoid creating uncontrolled substances or reactions of the type listed below, whether they are listed below or not.

It is possible for potentially incompatible wastes to be mixed in a way that precludes a reaction (e.g., adding acid to water rather than water to acid) or that neutratires the next acid may be a strong acid mixed with a strong hase), or that controls substances produced (e.g., by generating flammable gases in access tank equipped so that ignition cannot occur, and burning the gases in an incineratori.

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequence as noted.

Group 1-A	Group 1–B
Acetylane sludge	Acid sludge
Alkaline caustic liquids	Acid and water
Alkalina diganer	Battery acid
Alkaline corrosive liquids	Chemical clean- ers
Alkaline corrosive battery fluid	Electrolyte, acid
Caustic wastowater	Eighing acid liq- uid or solvent
Lime sludge and other corrosive alkalies	
Lime wastowater	Pickling liquor and other cor- rosive axids
Lime and water	Spent acid
Sport causic	Spent mixed acid Spent sulfurio acid

Potential consequences: Heat generation; violent reaction.

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Group 2-A	Group 2–B
Aluminum	Any waste in Group 1-A or 1-8
Beryllum	
Caldium	
Lithium	
Magnesium	l
Polassium	
Sodium	
Zino powder	
Other reactive metals and metal hydrides	l

Potential consequences: Fire or explosion; generation of flammable hydrogen gas.

Group 3—A	Group 3–B
Alcohols Water	Any concentrated waste in Groups 1-A or 1-B Calcium Water Indicate Potential Metal hydrides Potential So. Cl., SO.Cl., SO.Cl., Other water-reactive waste

Potential consequences: Fire, explosion, or heat generation; generation of flammable or toxic gases.

Group 4—A	Group 4–B
Alcohols	Concentrated Group 1-A or 1-B wastes
Aldahydas	Group 2-A wastes
Halogenated hydrocarbons	
Nitrated hydrocarbons	
Unsaturated hydrocarbons	
Other reactivé organic compounds and solvenis	

Potential consequences: Fire, explosion, or violent reaction.

Group 5-A	Group 6–B
Spent cyanide and suffide solutions	Group 1-B westes

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulfide

Group 6-A	Group 6–8
Chlorates	Acetic acid and other organic acids
Chlorine	Concentrated
Chlorites	rrineral acids Group 2-A
Chromic acid	weistes Group 4-A
	wastes

Appendix V 40 CFR 265

су	Pt. 265, App. VI		
oup 4-B	Group 6–A	Group 6–B	
ntrated up 1–A or	Chlorates	Acetic acid and other organic acids	
wastes 2-A	Chlorine	Concentrated mineral acids	
es	Chlorites advantable & Bloom donok	Group 2–A wastes	
	Chromic acid	Group 4–A wastes	
	Hyphochlorites	Other flammable and combus- tible wastes	
sion, or	Nitrates Nitric acid, fuming Perchlorates	Oreset indired bondes	
p 5–B	Permanganates Peroxides	&Convidence	
В	Other strong oxidizers	Coennor elayl nerri pale	
on of	Potential consequences: Fire, explosio 03/20/2011 violent reaction.		
sulfide	Source: "Law, Regulations, and Guidelines		



neither when it is known that the mixture of contents would not cause a fire or a dangerous evolution of heat or gas.

Easier Approach to Determining what Hazardous Wastes/Materials are Incompatible:

USDOT Hazardous Materials Load & Segregation Chart

Commonly Overlooked Central Accumulation Area requirements:

- 40 CFR 262.17(a)(1)(vi) Special requirements for ignitable or reactive waste(s). (LQG)
- Containers holding ignitable or reactive waste must be located at least 15 meters (50 feet) from the facility's property line unless a written approval is obtained from the authority having jurisdiction over the local fire code allowing hazardous waste accumulation to occur within this restricted area. A record of the written approval must be maintained as long as ignitable or reactive hazardous waste is accumulated in this area.

Commonly Overlooked Central Accumulation Area requirements:

40 CFR 262.16(b)(2)(v) – Special requirements for incompatible waste(s). (SQG)

A container accumulating hazardous waste that is incompatible with any waste or other materials accumulated or stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials or protected from them by means of a dike, berm, wall, or other device.

Additional LQG requirement:

As per 40 CFR 262.17(f)1-2, an LQG must notify the Department that they are receiving hazardous waste from VSQG (from same company) including description & quantity of waste received and date waste received at.

As per 40 CFR 262.17(f)3 – the LQG must mark or label hazardous waste container/unit with the date received from the VSQG.

Episodic Generation for VSQG of hazardous waste:

- VSQG must mark or label containers with the words "Episodic Hazardous Waste" AND indication of the hazards of the contents, as per 40 CFR 262.232(a)4(i)(A-B)
- VSQG must mark or label containers with the with the episodic event start date, clearly visible for inspection on each container, as per 40 CFR 262.232(a)4(i)(C)
- Ensuring containers are in good condition, compatible with hazardous waste being accumulated within, and kept closed as per 40 CFR 262.232(a)4(iii)(A)

Episodic Generation for SQG of hazardous waste:

- SQG must mark or label containers with the words "Episodic Hazardous Waste" AND indication of the hazards of the contents, as per 40 CFR 262.232(b)4(i)(A-B)
- SQG must mark or label containers with the with the episodic event start date, clearly visible for inspection on each container, as per 40 CFR 262.232(b)4(i)(C)
- Ensuring containers are in good condition, compatible with hazardous waste being accumulated within, and kept closed as per 40 CFR 262.232(b)4(iii)(A)