2011 RCRA Hazardous Waste Training

Chemical Storage Lockers

- Outside sign correct.
- No compressed gases.
- No expired chemicals.
- No rags or excess paper.
- All chemicals labeled.
- All lids secure.
- All chemicals upright.
- All compatible chemicals
- Three point closing.

Labeling Chemicals (Table Exercise 1)

- Name of Chemical
- Warning Words (Flammable, Corrosive, etc)
- If expiration dates are used, they must be current.

EPA Inspection November 16-17, 2010

- Fluorescent lamps must be kept in closed, labeled, and dated containers
- After cleaning paint guns in approved container, empty waste into a closed container.

RCRA

In 1976, Congress passed the Resource Conservation and Recovery Act or RCRA. This directed the Environmental Protection Agency (EPA) to develop and implement a program to protect human health and our environment from improper handling of hazardous waste and unsafe management practices.

Solid Waste

Any solid, liquid, or contained gaseous material
that is no longer used,
and is either recycled,
thrown away, or stored until sufficient quantities
are accumulated for treatment or disposal.

Hazardous wastes are currently regulated by both
Federal and state environmental laws.

Hazardous Waste

A waste is classified as "Hazardous" in one of two ways:

- It is specifically listed as hazardous waste in EPA regulations (e.g. F-List, P-List, etc.)

OR

- It exhibits any of the characteristics specified by EPA regulations as hazardous. (ignitable, corrosive, reactive, or toxic)

Characteristic Hazardous Waste

(Table Exercise 2)

D001 Ignitable (Flashpoint < 140F)

D002 Corrosive (pH ≥ 12.5, pH ≤ 2)

D003 Reactive (unstable, reacts violently with water, explosive)

D004 Arsenic

D005 Barium

D006 Cadmium (Nickel cadmium batteries)

Characteristic Hazardous Waste

D007 Chromium (Zinc chromate spray paint)

D008 Lead (Tin lead solder scraps)

D009 Mercury (Broken Thermometers)

D011 Silver (X-rays)

D018 Benzene (Gasoline Fuel filters)

D035 Methyl ethyl ketone (paint thinner)

D039 Tetrachloroethylene

Listed Hazardous Waste

Example -Hazardous waste from non-specific sources

F003 The following spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvents mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non- halogenated solvents, and a total of ten percent of F001, F002, F004, and F005.

Listed Hazardous Waste

Acute

- P001 – Warfarin (rat poison)
- P015 – Beryllium
- P042 - Epinephrine

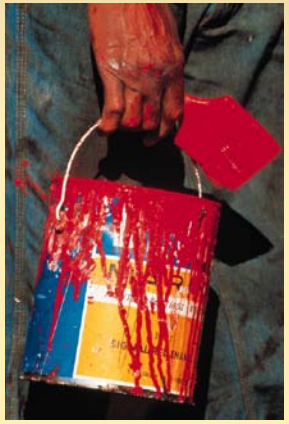
Commercial Chemical Products

- U165 - Naptha
- U220 – Toluene
- U080 – Methylene Chloride

Empty Containers

Hazardous waste containers or liners are empty when:

- all wastes have been removed which can be removed, <u>and</u>
- no more than 1 inch of residue remains on the bottom, <u>or</u>
- no more than 3% by weight of total capacity remains (containers <110 gal).



Empty Containers (Table Exercise 3)

- A hazardous waste compressed gas container is empty when the pressure in the container approaches atmospheric.
- A container or liner which contains an acute hazardous waste is empty when the container or liner has been triple rinsed or cleaned by another tested equivalent method (40 CFR 261.7).

Recycling at WFF

The following items are recycled at WFF:

- Cardboard
- White Paper
- Aluminum cans
- Lead acid batteries
- Used oil
- Scrap metal
- Toner Cartridges
- Plastic

Don’t Throw Away….

Some unacceptable wastes:

- Hazardous waste (includes contaminated rags);
- Asbestos, and medical waste;
- Non food liquid;
- Closed drums;
- Improperly prepared containers such as paint cans and pesticide containers;
- Unapproved industrial process waste or sewage sludge;
- Damaged spray cans.

Identify Hazardous Waste

- Identification
- Hazardous Ingredients and Components
- Physical & Chemical Characteristics
- Fire & Explosion Hazards
- Reactivity Data

- Health Hazard Data
- Spill/Leak Procedures
- Special Protection
- Special Precautions

http://msdspro.gsfc.nasa.gov/

Is this a Hazardous Waste?

SHERWIN-WILLIAMS CO -- G2 AEROSOL SPRAY LINE-2 (PAINTS), G2A156 DARK GRAY -- 8010-00N070920

========== Fire Fighting Measures

Flash Point:<21F,<-6C

Lower Limits:0.5% Upper Limits:12.0% Extinguishing Media:USE CARBON DIOXIDE, DRY CHEMICAL, FOAM.

Fire Fighting Procedures:WEAR NIOSH/MSHA APPRVD SCBA & FULL PROT EQUIP .

WATER SPRAY MAY BE INEFFECTIVE. IF WATER IS USED, FOG NOZZ ARE PREF. WATER MAY BE USED TO COOL (SUP DAT)

Unusual Fire/Explosion Hazard:KEEP CONTRS TIGHTLY CLSD. ISOLATE FROM HEAT, ELEC EQUIP, SPARKS & OPEN FLAME. CLSD CONTRS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. APPLICATION TO HOT (SUP DAT)

Label Hazardous Waste (Table Exercie 4)

HW labels must:

- Identify or Name the Chemical,
- Include the words: "Hazardous Waste," and
- Not dated unless 55G or 1 qt acute hazardous waste.

Label Regulated Waste

Petroleum products

- Label with the words "Used Oil"

Universal waste

(fluorescent lamps, thermostats, batteries)

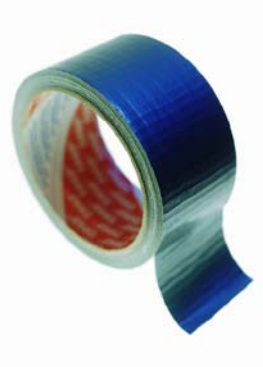
- Label with the words "Universal waste lamps, batteries, etc." and start date

Other nonhazardous waste

- Label with container contents

Universal Waste Batteries

Please TAPE contact ends of
9V Alkaline and all other types (Lead acid, Nickel cadmium, Nickel Metal hydride, Lithium, Silver, mercury, etc.)



Universal Waste Reminder Signs (Table Exercise 5)

- ✓ Date the label when the first battery is added to the container
- ✓ **Check the date**
- ✓ Call 1718 if the date is 9 months old
- ✓ Keep the container closed

SAA

The Satellite Accumulation Area (SAA) is:

- Designated HW storage point (Environmental Office),
- Near the point-of-generation (work area),
- A centralized storage area for one or many points-of-generation,
- Capable of being locked,
- In compliance with regulatory requirements, and
- Managed by a designated point-of-contact who is responsible for upholding and enforcing all requirements.

Control Hazardous Waste

- SAA is to be under the control of the operator of the process.
- POC is responsible for SAA.
- The SAA must be inspected at least monthly if it contains Hazardous Waste.

SAA Requirements

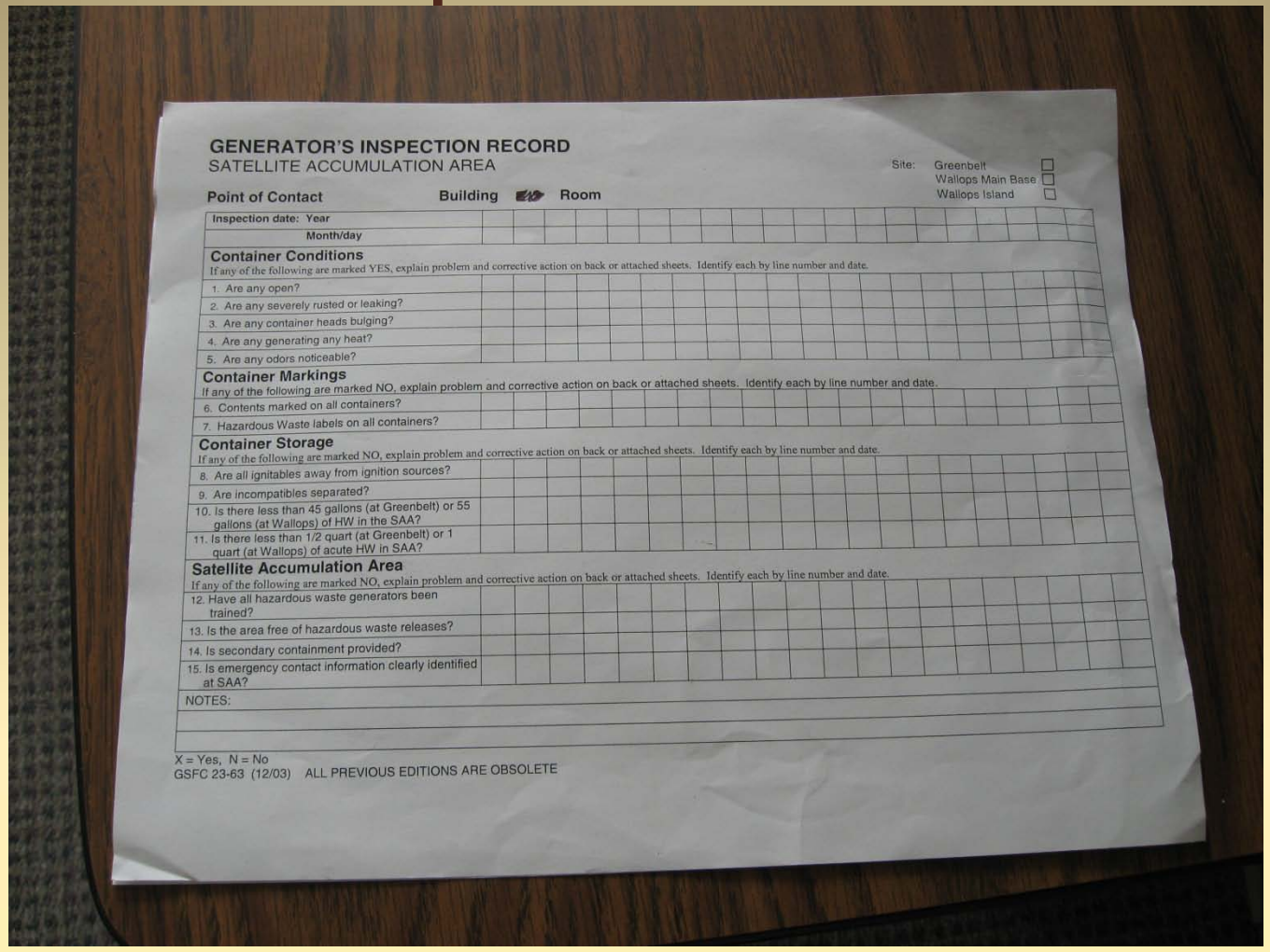
- Spill kit
- Emergency Communication
- Secondary Containment (liquids)
- Storage aids
- Sign with contact numbers
- Inspection sheet
- MSDS

Store Hazardous Waste

Containers must be :

- In good condition (no holes, dents),
- Within secondary containment (liquids)
- Compatible,
- Closed wrench tight, Upright,
- Sturdy, and with
- 3-5 inches of headspace

Satellite Accumulation Area Inspection Sheet



GENERATOR'S INSPECTION RECORD
SATELLITE ACCUMULATION AREA

Site: Greenbelt ☐ Wallops Main Base ☐ Wallops Island ☐

Point of Contact **Building** **Room**

Inspection date: Year	
Month/day	
Container Conditions If any of the following are marked YES, explain problem and corrective action on back or attached sheets. Identify each by line number and date.	
1. Are any open?	
2. Are any severely rusted or leaking?	
3. Are any container heads bulging?	
4. Are any generating any heat?	
5. Are any odors noticeable?	
Container Markings If any of the following are marked NO, explain problem and corrective action on back or attached sheets. Identify each by line number and date.	
6. Contents marked on all containers?	
7. Hazardous Waste labels on all containers?	
Container Storage If any of the following are marked NO, explain problem and corrective action on back or attached sheets. Identify each by line number and date.	
8. Are all ignitables away from ignition sources?	
9. Are incompatibles separated?	
10. Is there less than 45 gallons (at Greenbelt) or 55 gallons (at Wallops) of HW in the SAA?	
11. Is there less than 1/2 quart (at Greenbelt) or 1 quart (at Wallops) of acute HW in SAA?	
Satellite Accumulation Area If any of the following are marked NO, explain problem and corrective action on back or attached sheets. Identify each by line number and date.	
12. Have all hazardous waste generators been trained?	
13. Is the area free of hazardous waste releases?	
14. Is secondary containment provided?	
15. Is emergency contact information clearly identified at SAA?	
NOTES:	

X = Yes, N = No
GSFC 23-63 (12/03) ALL PREVIOUS EDITIONS ARE OBSOLETE

Hazardous Waste Quantity

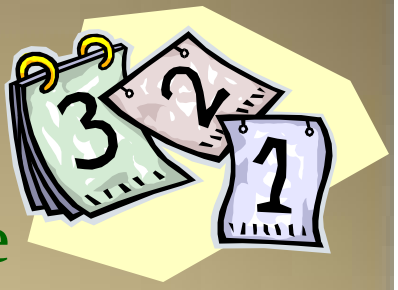
Maximum Quantity

- 55 Gallons of HW or 1 Quart of Acute HW (**P-list example P042 epinephrine**)
- 55 gallon limit includes all points of generation within the SAA and
- All types of HW in the SAA.

Hazardous Waste Reminder Signs (Table Exercise 6)

- ✓ Add gallons in each waste container together
- ✓ Total waste in all containers must be less than 55G
- ✓ Check the line on the drum
- ✓ When waste reaches the line on the drum, total waste in SAA may equal 55G
- ✓ Call 1718 when waste reaches line on drum or before waste exceeds 55G

Time Limits (Table Exercise 7)



- 3 days for 55 total gallons of Hazardous Waste
- 1 year from date first Universal Waste item placed in the container

- No time limit for nonhazardous waste, but full containers should be removed

Inspecting the SAA

- All containers closed
- Containers not leaking or bulging
- All containers labeled
- Less than 55 gallons hazardous waste
- SAA sign and inspection sheet updated
- Liquids stored on secondary containment
- All people trained
- Good Housekeeping

HW Flow

HW Generator → **SAA** → **Pickup Envir.** → **AA** → **Disposal**

Only HW in process of being generated shall be at the point of generation.

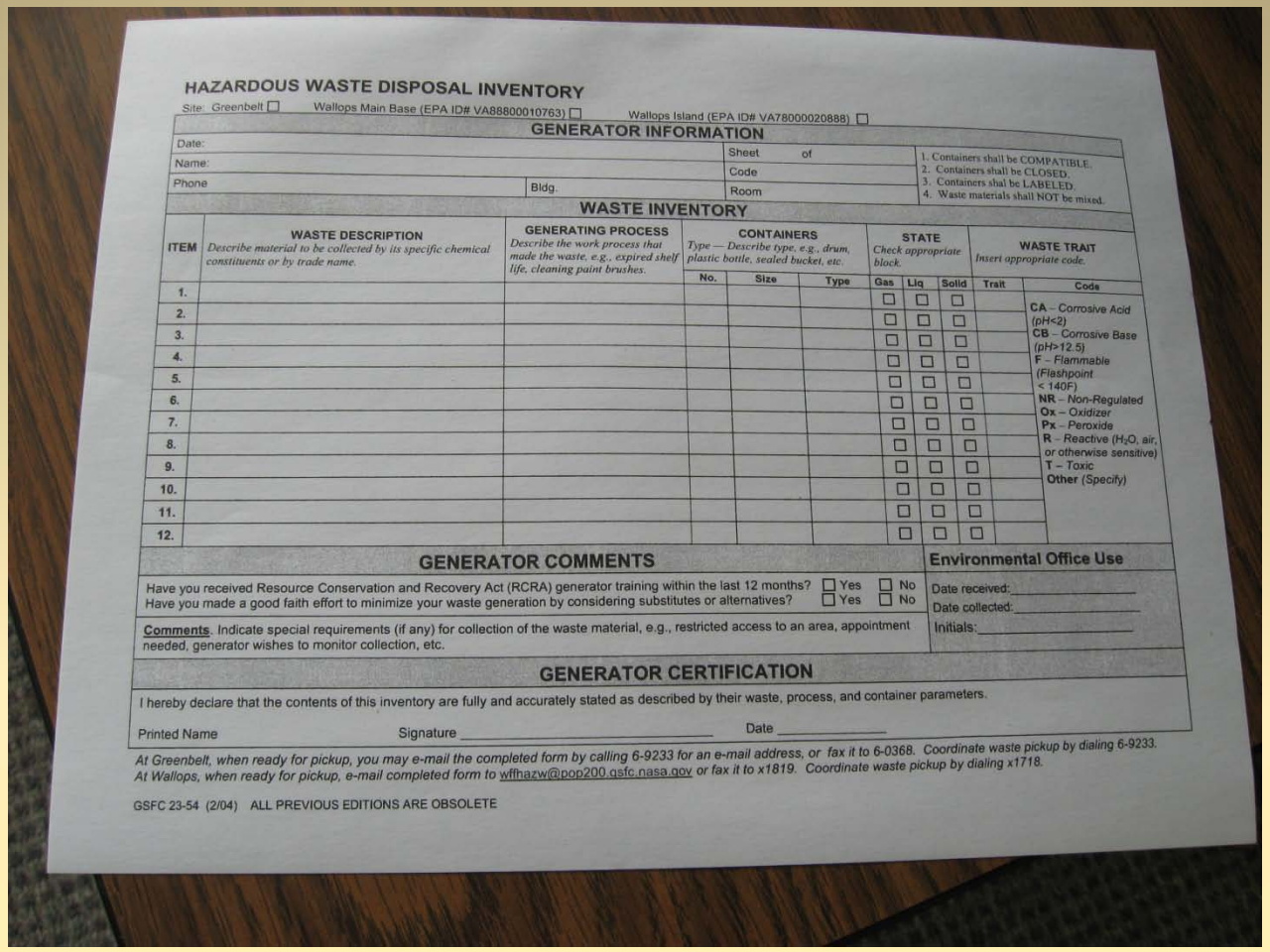
At the end of the shift or when a process is complete, waste containers should be returned to the SAA.

Chemicals which have been declared a waste should be kept in the SAA.

Turn-In Procedures

- Fill out Hazardous Waste Disposal Inventory Form (GSFC 23-54)
- Call the HW Line at x1718
- While awaiting pickup, keep chemicals:
  - Segregated,
  - Packaged to avoid breakage,
  - Contained, and
  - Do not date the label unless 55G.

Hazardous Waste Disposal Inventory Form



HAZARDOUS WASTE DISPOSAL INVENTORY

Site: Greenbelt ☐ Wallops Main Base (EPA ID# VA88800010763) ☐ Wallops Island (EPA ID# VA78000020888) ☐

GENERATOR INFORMATION

Date:	Sheet of	1. Containers shall be COMPATIBLE.
Name:	Code	2. Containers shall be CLOSED.
Phone / Bldg.	Room	3. Containers shal be LABELED.
		4. Waste materials shall NOT be mixed.

WASTE INVENTORY

ITEM	WASTE DESCRIPTION *Describe material to be collected by its specific chemical constituents or by trade name.*	GENERATING PROCESS *Describe the work process that made the waste, e.g., expired shelf life, cleaning paint brushes.*	CONTAINERS *Type — Describe type, e.g., drum, plastic bottle, sealed bucket, etc.*			STATE *Check appropriate block.*			WASTE TRAIT *Insert appropriate code.*	
			No.	Size	Type	Gas	Liq	Solid	Trait	Code
1.						☐	☐	☐		
2.						☐	☐	☐		
3.						☐	☐	☐		
4.						☐	☐	☐		
5.						☐	☐	☐		
6.						☐	☐	☐		
7.						☐	☐	☐		
8.						☐	☐	☐		
9.						☐	☐	☐		
10.						☐	☐	☐		
11.						☐	☐	☐		
12.						☐	☐	☐		

CA – Corrosive Acid (pH<2)
CB – Corrosive Base (pH>12.5)
F – Flammable (Flashpoint < 140F)
NR – Non-Regulated
Ox – Oxidizer
Px – Peroxide
R – Reactive (H_2O, air, or otherwise sensitive)
T – Toxic
Other (Specify)

GENERATOR COMMENTS

Have you received Resource Conservation and Recovery Act (RCRA) generator training within the last 12 months? ☐ Yes ☐ No
Have you made a good faith effort to minimize your waste generation by considering substitutes or alternatives? ☐ Yes ☐ No

Comments. Indicate special requirements (if any) for collection of the waste material, e.g., restricted access to an area, appointment needed, generator wishes to monitor collection, etc.

Environmental Office Use

Date received: _____
Date collected: _____
Initials: _____

GENERATOR CERTIFICATION

I hereby declare that the contents of this inventory are fully and accurately stated as described by their waste, process, and container parameters.

Printed Name Signature _____ Date _____

At Greenbelt, when ready for pickup, you may e-mail the completed form by calling 6-9233 for an e-mail address, or fax it to 6-0368. Coordinate waste pickup by dialing 6-9233.
At Wallops, when ready for pickup, e-mail completed form to wffhazw@pop200.gsfc.nasa.gov or fax it to x1819. Coordinate waste pickup by dialing x1718.

GSFC 23-54 (2/04) ALL PREVIOUS EDITIONS ARE OBSOLETE

Pollution Prevention Tips

- Reduce, Reuse, Recycle
- Pursue environmentally friendly alternatives
- Perform regular maintenance and housekeeping
- Order what you need - avoid surplus inventory
  - Turn-in unexpired chemicals for reuse
- Purchase recycled products

Phase Out These Chemicals

- Benzene
- Cadmium
- Carbon Tetrachloride
- Chloroform
- Chromium
- Cyanide
- Dichloromethane
- Lead
- Mercury

- MEK
- MIBK
- Nickel
- Tetrachloroethylene
- Toluene
- 1,1,1 Trichloroethane
- Trichloroethylene
- Xylene
- Methylene Chloride –

Affirmative Procurement

Federal agencies or their contractors that buy any of the EPA designated products, must buy them with recycled content.

A complete list of designated products, recovered material content levels, and vendors can be found at www.epa.gov/cpg/

Biobased Procurement

USDA Designated Products as part of the Farm Act of 2002 http://www.biopreferred.gov/Default.aspx

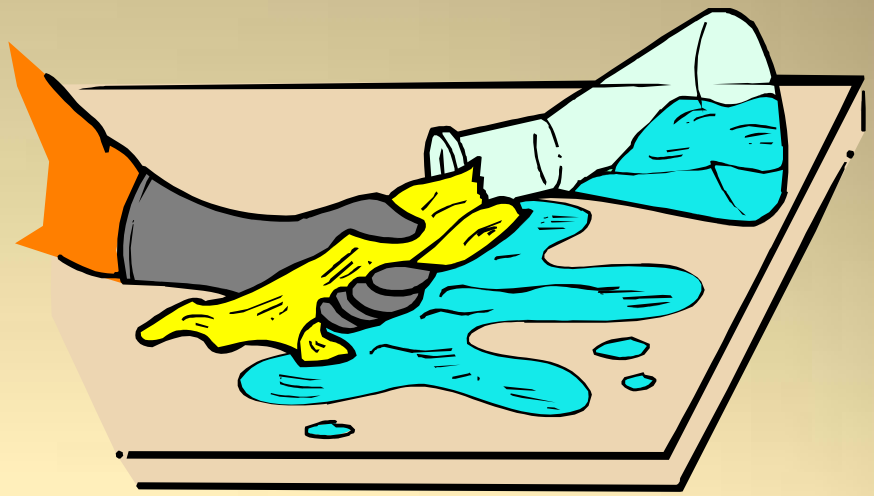
- Mobile equipment hydraulic fluids
- Urethane roof coatings
- Water tank coatings
- Diesel fuel additives
- Penetrating lubricants
- Bedding, bed linens, and towels

Waivers

Any time a product must be purchased and it is not available with recovered or biobased content, a waiver must be signed by the Environmental Office

Spill Procedures

WFF has established procedures to ensure protection of human health and the environment.



- WFF's Integrated Contingency Plan (ICP)
- WFF ICP Training

Emergency Procedures

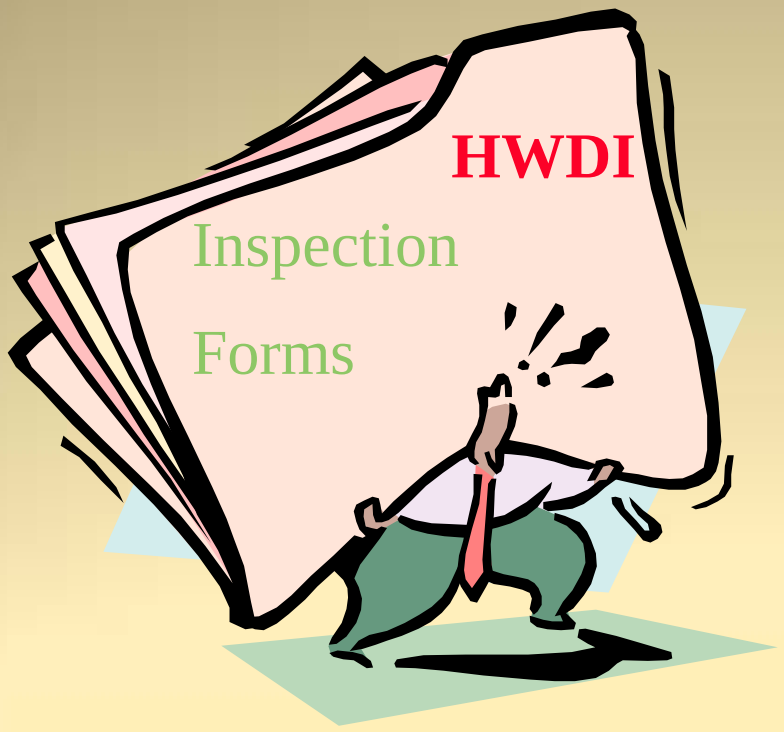
Emergency Number: 911

- Name and code of reporting party
- Type/name of material spilled
- Location of spill
- Cause of spill
- Estimated quantity and flow rate of spill
- Time of spill

Hurricane Procedures

- WE WILL CHECK/CALL ALL SAA.
- WE WILL PICK UP HW.
- DO NOT BRING HW TO US.
- DO NOT DROP OFF HW OUTSIDE OF N-223, U-81, or B-29.
- DO NOT LEAVE A CONTAINER UNLABELED.

HW Forms



- Environmental Office (x1718)
- GDMS (Forms 23-54 and 23-63)

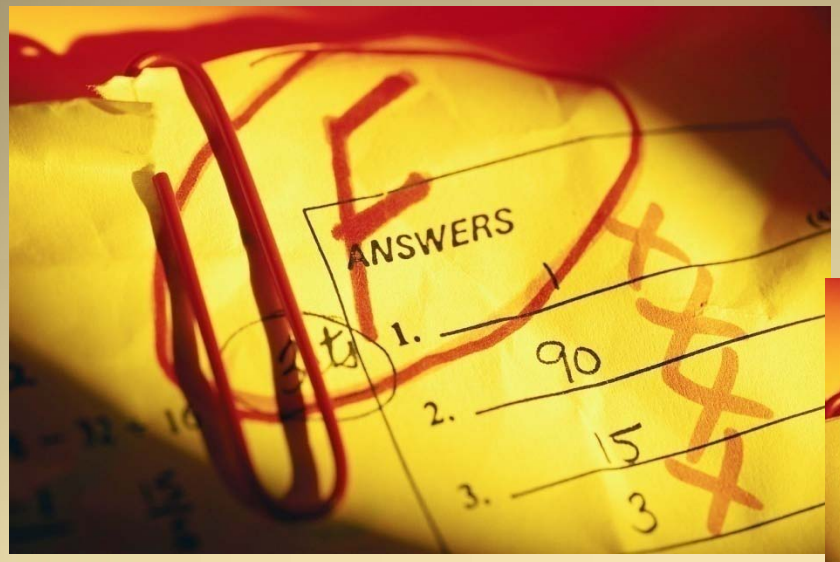
  http://gdms.gsfc.nasa.gov/gdmsnew/home.jsp
- Code 250 website

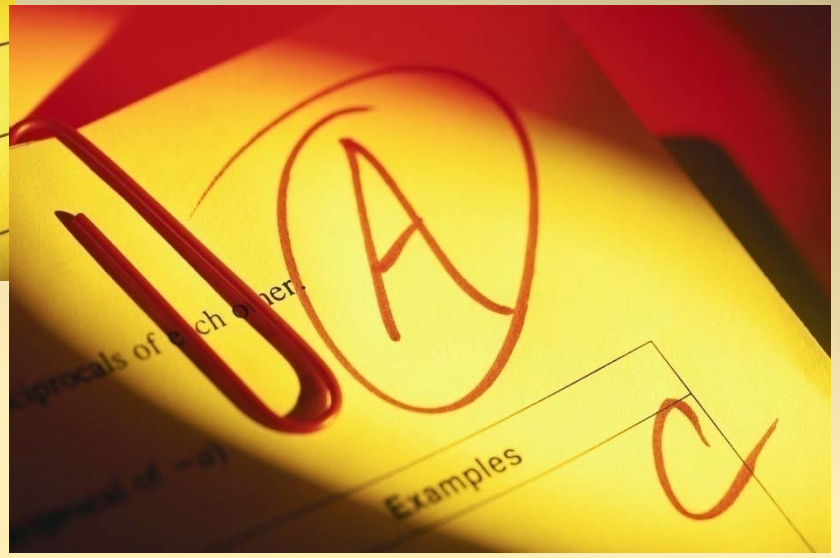
  http://sites.wff.nasa.gov/code250/forms.html

Follow-up

- Inspect SAA container integrity *monthly*.
- Think about areas where processes or chemicals can be changed to reduce waste.
- Call the Environmental Office to dispose of items which are no longer used or have expired (x1718).

Final Exercise





Review Questions

1. How much headspace should be left in a container?
2. What is the maximum amount of hazardous waste that can be stored in a SAA?
3. What words should appear on the label of an oil collection container?
4. What two things should be on all chemical labels?

Review Questions

5. When is a container empty?
6. If a waste container has a flashpoint less than 100 degrees, should it have a hazardous waste label?
7. If after filling a hazardous waste container, a preprinted label is unavailable, what should you do?
8. What is the emergency number at WFF?

Review Questions

9. What are two places to look for information to determine if a waste container is a hazardous waste?
10. What is the maximum amount of time that batteries can be accumulated?