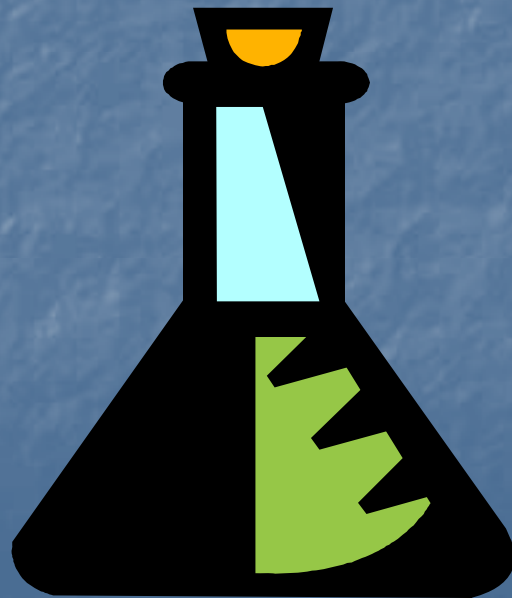




Chemical Safety Best Management Practices



Anne Meador
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District

Chemical Safety

Best Management Practices

- Inventory of Chemicals
- Material Safety Data Sheets
- Labels
- Storage
- Waste

Inventory of Chemicals

- Safety
- Some Chemicals pose a risk to students and faculty
 - Flammability
 - Corrosivity
 - Reactivity
 - Toxicity
- Everyone has the right to know what chemicals are being used in their schools



Inventory of Chemicals

- Lets you see what you already have
 - Periodically review and determine what is out of date or what you are no longer using
 - Some chemicals can become unstable and can become dangerous over time when their composition breaks down
 - Prevent purchase of chemicals you already have or don't need
 - Never purchase more than you need



Inventory of Chemicals

Location _____

Chemical Name	Risk	Storage Category	Hazards	Number and size of containers	Prepared/ Exp Date
Acetaldehyde	3	O-3 Flam Cabinet	Suspect carcinogen. Highly flammable. Peroxide former. Severe irritant to eyes	2-100 mL	4/2010 exp.
Acetamide	0	O-2	Non Hazardous	3-15 g	4/15/09 rec.
Acetic Acid > 6M	1	O-1 Organic Acid	Corrosive.	5-100 mL	7/11/53
Acetic Acid, Glacial	2	O-1 Flam Cabinet	Corrosive. Combustible		
Acetic Anhydride	2	O-1 Flam Cabinet	Corrosive, flammable		
Aceto Carmine	0	O-Misc	Non hazardous		
Acetone	2	O-4 Flam Cabinet	Highly flammable.		

Conducting an Inventory

- Done in pairs
- Wear correct Personal Protective Equipment (PPE)
 - Safety Glasses
 - Gloves (nitrile not latex)
 - Closed toe shoes
- Communication Device
 - In case of an emergency
- Fire Extinguisher



Conducting an Inventory

- Be Cautious Of
 - Bulging containers
 - Leaking containers
 - Crystals on/in containers



Conducting an Inventory

- You should have an Inventory that is current and up to date
- Inventories are primarily for chemicals in storage
- Not just for disposal purposes



Material Safety Data Sheets (MSDS)



Material Safety Data Sheets (MSDS)

- Supply specific information regarding chemicals that pose a health and safety risk to its users
 - Chemical Name
 - Manufacturer Name
 - Emergency Phone Numbers
 - Hazardous Components
 - First Aid Information

Material Safety Data Sheets (MSDS)

- Storage Requirements
- Incompatibilities
- Actions To Take In Case of a Spill or Leak
- Routes of Exposure
- PPE
- Physical Characteristics

* These are just some of the components of an MSDS

Material Safety Data Sheets (MSDS)

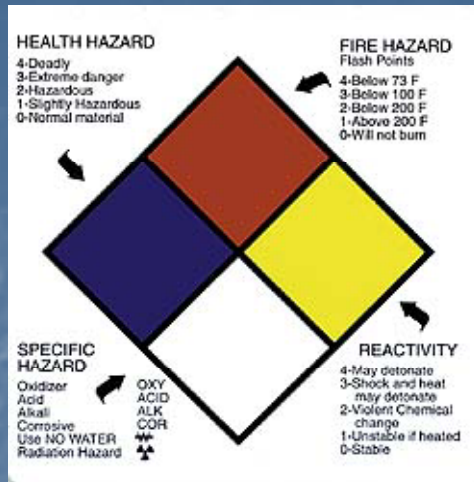
- For each chemical you have in storage
- For each chemical that has ever been used in the past
- Most recent version
- Use as part of your teaching curriculum

Labels

- Chemical supplier labels
 - Product Name
 - Amount
 - Concentration
 - Chemical Safety Information



Labels



■ Chemical Safety Information

■ National Fire Protection Association (NFPA) Diamond

- 0-4 (the higher the number the higher the risk)
- Red-Flammability
- Blue-Health
- Yellow-Reactivity
- White-Other

■ HMIS Label

- Same as NFPA

HEALTH	<input type="text"/>
FLAMMABILITY	<input type="text"/>
INSTABILITY	<input type="text"/>
TARGET ORGAN EFFECT	<input type="text"/>
PROTECTIVE EQUIPMENT	
PERSONAL PROTECTION SYMBOLS	
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

Labels

Flinn Scientific

Chemical Safety Guide

- 0-3 (0 least hazard, 3 radical hazard)
- PPE
- Engineering Controls
- Hazards
- First Aid
- Target Organ
- Storage
- Disposal
- Shelf Life
- Solubility
- CAS No.
- DOT ID Number
- NFPA
- Date Received

Labels

- School Labels
 - At a minimum
 - Chemical Name (spelled out if possible)
 - Concentration
 - Hazard (corrosive, flammable, oxidizer, toxic)
 - Date prepared or chemical originally purchased

Hydrochloric Acid

6M

Corrosive

2005

Labels

- School Labels
 - Additional Information (If space is available)
 - How the chemical can hurt you
 - Target organs affected

Hydrochloric Acid

6M Solution

Corrosive To All Body Tissue

Especially Skin and Eyes

Avoid All Body Contact

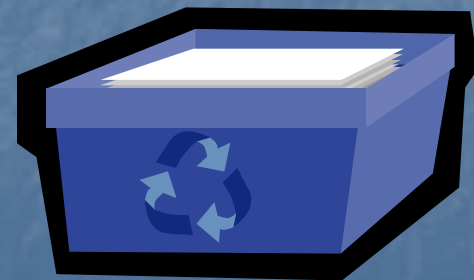
2005

Labels

- ALWAYS USE PERMANENT MARKER ON LABELS
- MAKE SURE THAT LABELS HAVE GOOD ADHESIVE
- REPLACE MISSING LABELS AS SOON AS POSSIBLE
- KEEP ALL ORIGINAL LABELS ON CONTAINERS

Storage

- Secondary Containment
 - All chemicals should be stored in secondary containment
 - Lips on shelves
 - Small tubs
 - Chemical storage cabinets with lips
- Segregation
 - Flammable
 - Corrosive
 - Reactive
 - Toxic



Storage

- Flammable Chemicals
 - Stored in flammable cabinet
 - Secured to wall
 - Closed at all times
 - Flammable Chemicals should be stored as far away as possible from oxidizing chemicals



Storage

- Corrosive Chemicals
 - Stored in corrosive cabinet if possible
 - Never store in a flammable cabinet or other metal cabinet
 - Stored separately from other chemicals
 - Separate Acids and bases
 - Oxidizing acids should not be stored with combustible organic acids

Storage

- Refrigerator
 - No flammable materials unless refrigerator is explosion proof
 - Do not store chemicals in refrigerators where food is being stored



Chemical Storage Systems

- Flinn Scientific System
 - Broken down into organic and inorganic chemicals
 - Broken down further into types
 - O1-O10
 - Example -O1 Acids, Amino Acids, Anhydrides, Peracids
 - I1-I11
 - Example -I1 Metals, Hydrides

Chemical Storage Systems

Flinn Scientific

INORGANIC #10

Sulfur, Phosphorus, Arsenic,
Phosphorus Pentoxide

INORGANIC #2

Halides, Sulfates, Sulfites,
Thiosulfates, Phosphates,
Halogens, Acetates,
Oxalates, Phthalates, Oleates

INORGANIC #3

Amides, Nitrates (not
Ammonium Nitrate),
Nitrites, Asides (Store
Ammonium Nitrate away
from all other substances-
ISOLATE IT!)

INORGANIC #1

Metals & Hydrides
(Store away from any water)
Store flammable solids in
flammable cabinet

INORGANIC #4

Hydroxides, Oxides, Silicates,
Carbonates, Carbon

Inorganic #7

Arsenates, Cyanides, Cyanates
(store away from water)

INORGANIC #5

Sulfides, Selenides,
Phosphides, Carbides, Nitrides

INORGANIC #8

Borates, Chromates,
Manganates, Permanganates,
Molybdates, Vanadates

INORGANIC #6

Chlorates, Bromates, Iodates,
Chlorites, Hypochlorites,
Perchlorates, Perchloric Acid,
Peroxides, Hydrogen Peroxide

MISCELLANEOUS

Organic #2

Alcohols, Glycols, Sugars,
Amines, Amides, Imines,
Imides (store flammables in a
dedicated cabinet)

ORGANIC #3

Hydrocarbons, Oils, Esters,
Aldehydes (store flammables
in a dedicated cabinet)

Organic #4

Ethers, Ketenes, Ketenes,
Halogenated Hydrocarbons,
Ethylene Oxide
(Store flammables in a
dedicated cabinet)

ORGANIC #5

Epoxy Compounds,
Isocyanates

ORGANIC #7

Sulfides, Polysulfides etc.

ORGANIC #8

Phenols, Cresols

ORGANIC #6

Peroxides, Azides,
Hydroperoxides

ORGANIC #1

Acids, Amino Acids, Anhydrides
rides, Peracids (store certain
organic acids in acid cabinet)

ORGANIC #9

Dyes, Stains, Indicators
(Store alcohol-based solutions
in flammable cabinet)

MISCELLANEOUS

Wastes

- “You May Have a Waste If.....”
 - It has outlived its shelf life
 - Definitely a waste
 - You no longer use the chemical
 - Maybe a waste, maybe not
 - Someone else may want to use it
 - It’s dangerous to have around
 - More than likely it’s a waste
 - It’s not labeled
 - Definitely a waste

HAZARDOUS WASTE

FEDERAL LAWS PROHIBIT IMPROPER DISPOSAL.
IF FOUND, CONTACT THE NEAREST POLICE OR
FIRE DEPARTMENT SAFETY AUTHORITY OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERATOR INFORMATION:

NAME ANDOX PHARMACEUTICALS, INC.
ADDRESS 4251 SW 100th Ave STATE FL ZIP 33314
CITY FT. LAUDERDALE
EPA ID NO. FLR000071787 WASTE NO.
ACCUMULATION START DATE 9/24/02 MANIFEST DOCUMENT NO.

[IPA, Acetone, Ethanol]

D.O.T. PROPER SHIPPING NAME AND UN OR NA NO. WITH PREFIX

HANDLE WITH CARE!

Waste

- One Man's Trash Is Another Man's Treasure



Waste

- Once you determine that something is a waste
 - A lot of unused chemicals are hazardous wastes and are highly regulated
 - No unused chemicals should be poured down the sink or thrown out in the trash unless you're sure you are allowed to do so.

Wastes

- Should never be poured down the sink (even after elemental neutralization) or thrown in the trash
 - Flammables
 - Heavy Metal Waste
 - Oxidizers
 - Oils
 - Corrosive materials with a pH of < 5 or > 9
 - Toxic wastes
 - Halogenated solvents

Laboratory Disposal Procedures

- Flinn Scientific
 - “Chemical Disposal Procedures”
 - Read complete instructions before proceeding
 - Follow procedures
 - Don't do it if you're not comfortable
 - Wear recommended PPE
 - If the instructions say to check with local authorities before proceeding please contact the ECO

Contact Information

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