

Laboratory Safety

A practical approach.

SDS Management

- All SDS Material is filed in a central location
- An additional copy is placed in the room where the item is stored
- Central location files are permanent records and all files are kept here.
- In the room where the item is stored, the files are updated with superseded file removed.

New Inventory, What to Do

- New SDS is filed in Central Filing system and copy placed into appropriate room.
- SDS is presented and reviewed at weekly Staff Meeting. Then maintained in the previously mentioned manner.

What to look for on SDS Data Sheets

- First Aid (Section 4)- Basic first aid information is available on the product label, but the SDS will provide more detail on the symptoms of exposure, as well as greater detail for the initial treatment.
- Firefighting (Section 5)- Some chemicals require specific firefighting techniques or create special hazards when involved in a fire. The information in this section instructs firefighters on suitable fire extinguishing techniques.
- Spills (Section 6)- Spills necessitate the need for special handling procedures for PPE or those responding. Methods for containing and cleaning up a release are also described.
- Storage and Handling (Section 7)-The segregation of incompatible materials and other safe storage and handling procedures are detailed.
- Routes of Exposure (Section 8 and 11)-More in-depth information on how the chemical can affect you, including exposure limits and the effects of acute and chronic exposure.

Autoclaves Sterilizers: Types

- At Dayton we have two Autoclaves:
 - The Getinge Model 4/533LS E V6.02
 - Market Forge Sterilmatic

Getinge Autoclave Long and narrow



Inside Getinge
Autoclave
Hot, Long and narrow



Market Forge Small and Round



Market Forge Hot, Small Narrow Area



Appropriate PPE For Autoclave/ Sterilizer

- Must have Heat Resistant Gloves : They must fit well enough so that you can safely carry and transfer all items to and from the autoclave.

Chemical Fume Hoods: Need to know

- Nature of Chemical
- How to operate hood
- What to look for

Chemical Fume Hoods: Rules of Engagement

- Practice good hood safety



Electrical Hazards

• Avoid The Hazards

In case of Electrocution

- **DO NOT TOUCH THE PERSON**
- Turn off the power if possible (pull the plug or trip the circuit breaker).
- Use an item made of non-conductive material to pry victim away from the contact. Call 911.

Latex Allergy

- Alternatives to Latex Containing PPE
 - Glove liners
 - Powder free gloves
- Symptom of Latex Allergy

Proper Glassware Handling

- Use of Glassware
 - Never use glassware for other than intended use.
 - DO NOT use broken or chipped glassware under any circumstances.
 - DO NOT fire polish any broken glassware.
- Rinse
 - Always rinse all glassware thoroughly to prevent staining and residue.
 - If possible let glassware soak in warm water and Lab Detergent . Final rinse must be in D.I. water.
 - Sterilize all glassware that applies to Micro Prep.
- Plastic sample bottle
 - Never tighten caps to tightly so that bottles implode.
- Storage
 - Please store all glass items where they are accessible. Do not step on shelves or use items to help you snare other items.

Instrumentation

- Follow all electrical guidelines.
- Keep all spills cleaned up.
- Keep instrumentation wiped down.
- Keep all probes as clean as possible.
- Have all caution steps clearly marked.
- When done close all lids release all pump tubes and everything else that needs to be.
- Store the instrument properly

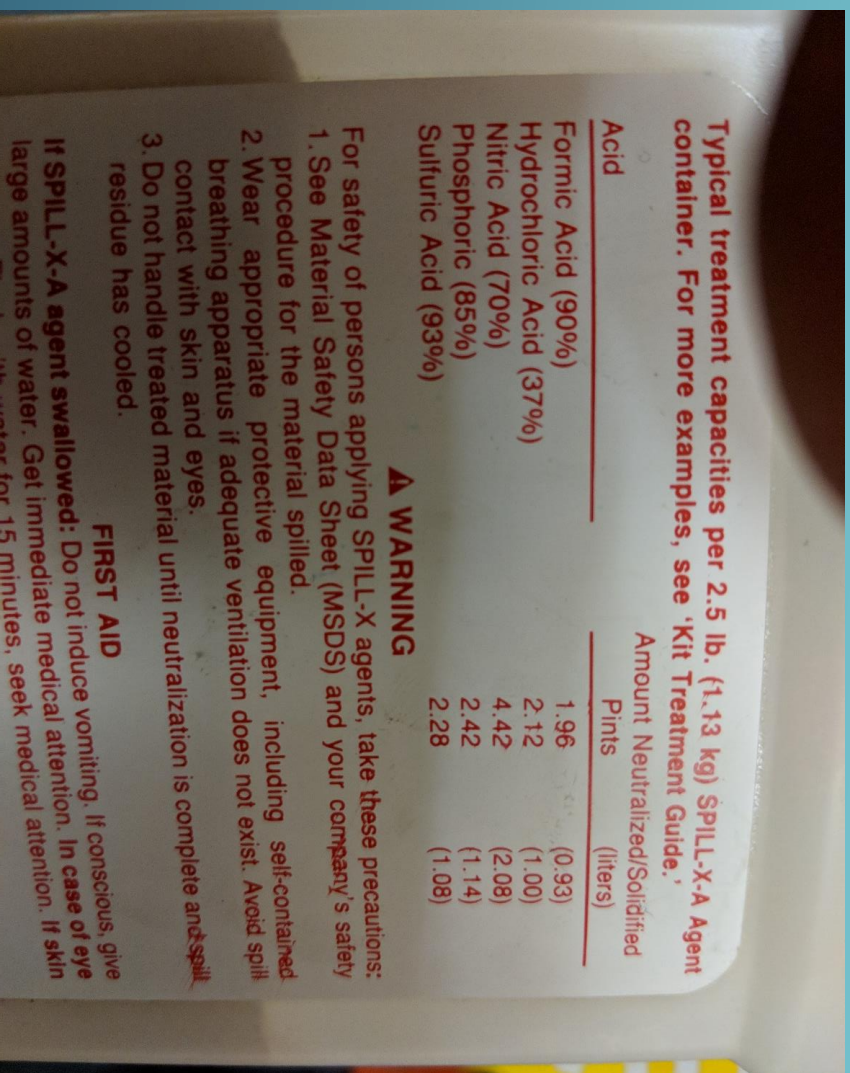
Spills: Cleaning up

- Location of kits
 - Know where they are, you can't use them if you can't find.
 - Make sure you know how to use them
 - What do I do with the waste?
 - Check all expiration dates
 - Order new kits as needed

Categories of kits Notice how they are labeled



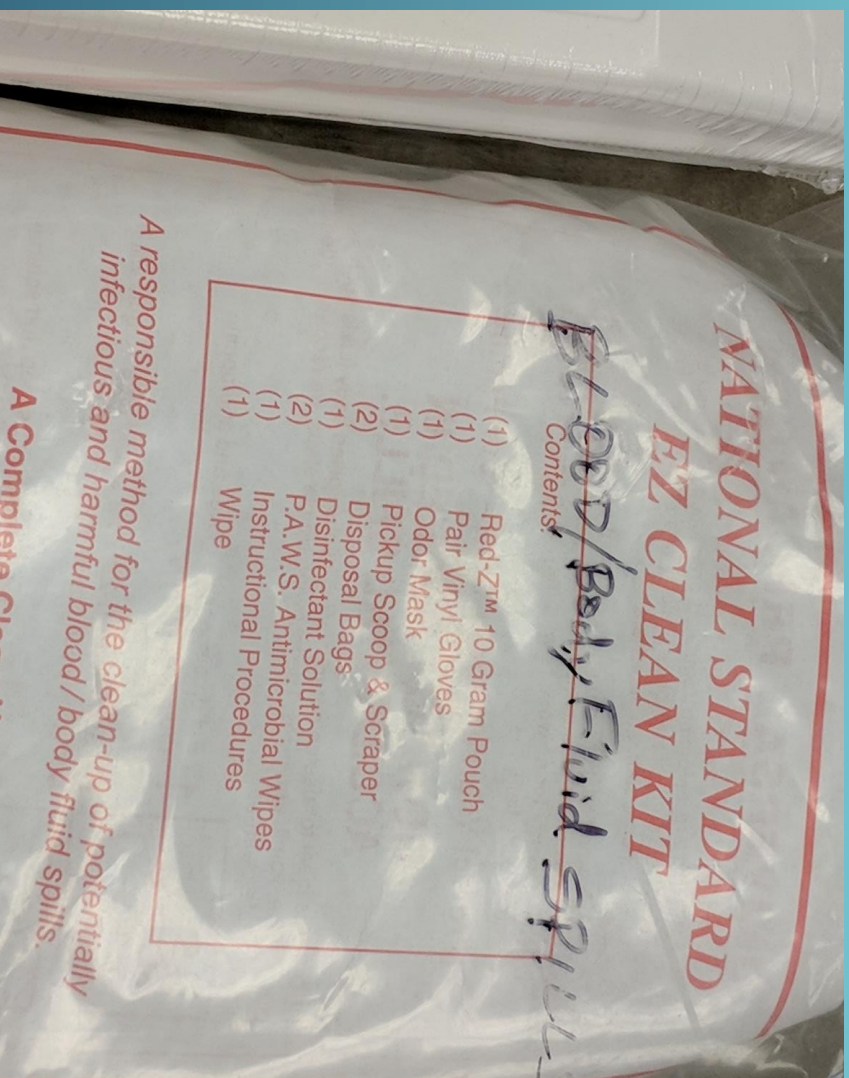
Back of label



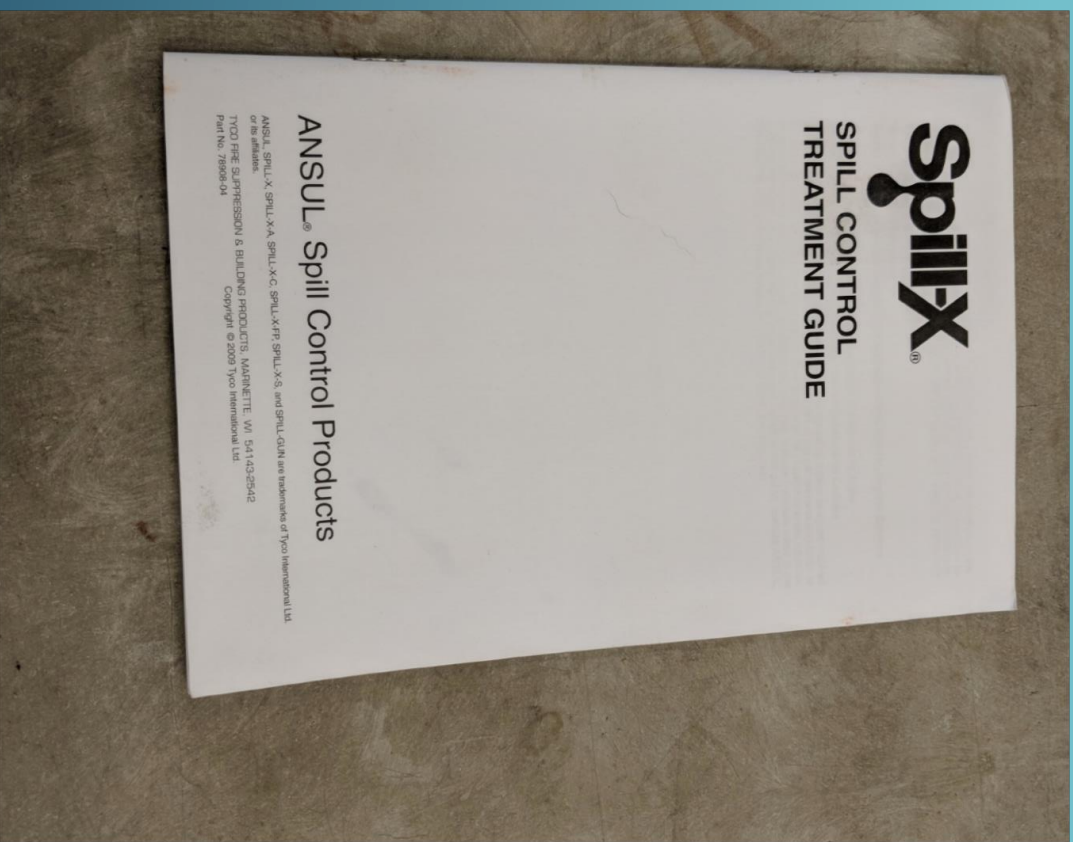
Bloodborne Pathogens Kit Easy to identify



Contents of kit Easy to see



Spill control Guide More information



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Reduction in Mercury-filled Thermometers

- Alternative thermometers equilibrate ten times faster than Hg thermometers.
- High liabilities in case of a spill.
- Laws and regulations vary from place to place.
- The non Hg liquid thermometers are not that expensive. (Incubator)
- City of Dayton must notify Haz- Mat in the event a Hg Spill occurs.

Maximum Registry Thermometers

- City of Dayton obtained there most recent Maximum Registering Thermometer with assistance from the EPA.
- **Nobody wants to ship Hg,** can't ship out of state.
- Remember you are required to have one spare maximum registering thermometer .
- Data logger is an option

What's Available

- Hg Thermometers would cover a range of temperature from -38 to 400 °c.
- Glass filled organic liquid analog thermometers have a range from -196 to 150 °c.
- Digital Thermometers have a range of -196 to 550 °c.
- Alternatives to Hg thermometers extend the range of the temperatures that can be taken.
- These are much safer to use.

Personal Protective Equipment

Appropriate to the Hazard

- *Corrosives*
- *Solvents*
- *Temperature*
- *Splashes*
- *Falling objects*



PPE

Employees required to use PPE must be trained to know at least the following:

- *When PPE is necessary*
- *What type of PPE is necessary*
- *How to properly wear*
- *Limitations of the PPE*
- *Proper care and maintenance*

Lab Coat



- *Protect from spills and splashes*
- *Worn when handling hazardous materials*
- *Worn only in lab*
- *Flame retardant*

Gloves

- *Latex*
- *Microbiological*
- *Weak and Dilute Acids*
- *Bases*



Gloves



- *Nitrile*
- *Microbiological*
- *Weak and Dilute Acids*
- *Bases*

Gloves

- *Neoprene*
- *Concentrated Acids*
- *Methanol*



Gloves



- *Heat Resistant*
- *Leather*
- *Aluminized*

Safety Glasses

- *Impact Resistant*
- *Side Shields*
- *Limited Splash Protection*



Goggles

- *Ventilated to reduce fogging*
- *More protection than Safety Glasses*



Face Shield

- *Full Face Protection*
- *Wear with Safety Glasses*



Particulate Respirator

- N95
 - Filters 95% of particulates
 - Not resistant to oils



Shoes



- *No Open Toe*
- *Steel Toe*
- *If working around heavy equipment*
- *Lifting heavy objects*

Hearing Protection

- *Ear Plugs and Ear Muffs*
 - *Noise Reduction Rating NRR*
 - *Reduction in dB*
 - *Use together for increased protection*



Hard Hat

- *Protection from falling objects*
- *Low clearance*
- *Electrical protection*



Classes of Hard Hats

Class A

- *General service (e.g., mining, building construction, shipbuilding, lumbering, and manufacturing)*
- *Good impact protection but limited voltage protection*

Class B

- *Electrical work*
- *Protect against falling objects and high-voltage shock and burns*

Class C

- *Designed for comfort, offer limited protection*
- *Protects heads that may bump against fixed objects, but do not protect against falling objects or electrical shock*

Class III Traffic Vest



- *Class I*
 - <25 mph
- *Class II*
 - >25 but < 50 mph
- *Class III*
 - >50 mph

Check Before Use

- *Look for:*
 - *Cracks*
 - *Tears*
 - *Holes*
- *Expiration Date*

Remember,

PPE is the

Last

level of control!

Clean Lab/Safe Lab

- Clean lab will prevent injuries (Slip)
- Equipment will last longer
- Pleasant work Place: keep equipment organized, everybody knows where everything is. Things won't get broken as often, less sharp glass to get cut on. People catch on. Everybody contributes.
- Always be aware of what is going on in the Lab