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Environmental Health and Safety Department



Lab Safety Training



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1. Value –
2. Safety Challenge –
3. Lab Safety Review –

Safety is a Value



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Everyone must go home safely. Our goal is Zero Incidents.



Safety Challenge



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Campus challenge

All large meeting should begin with a safety moment.

* 2-3 minutes

new info

local safety issues

reminders

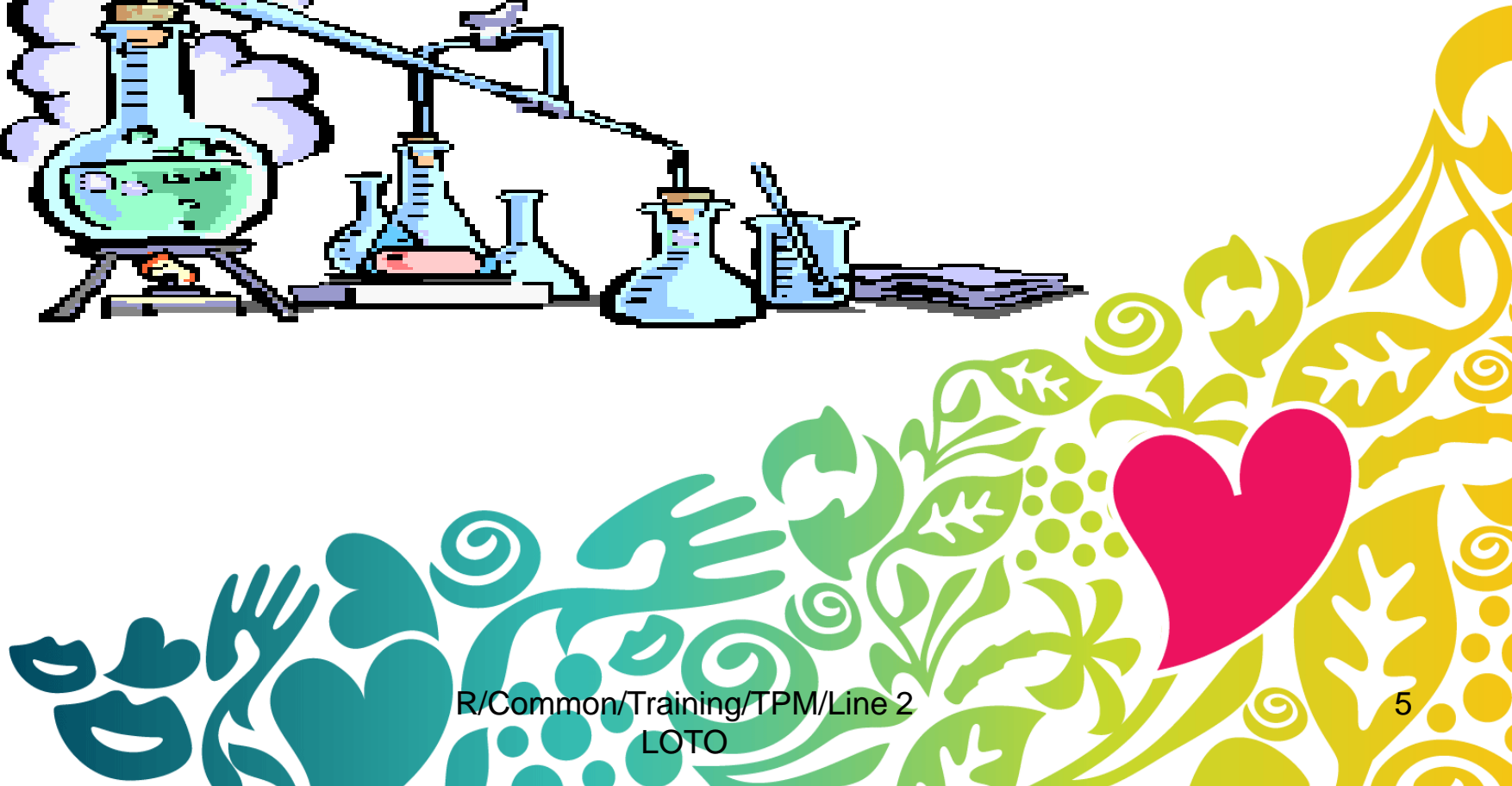
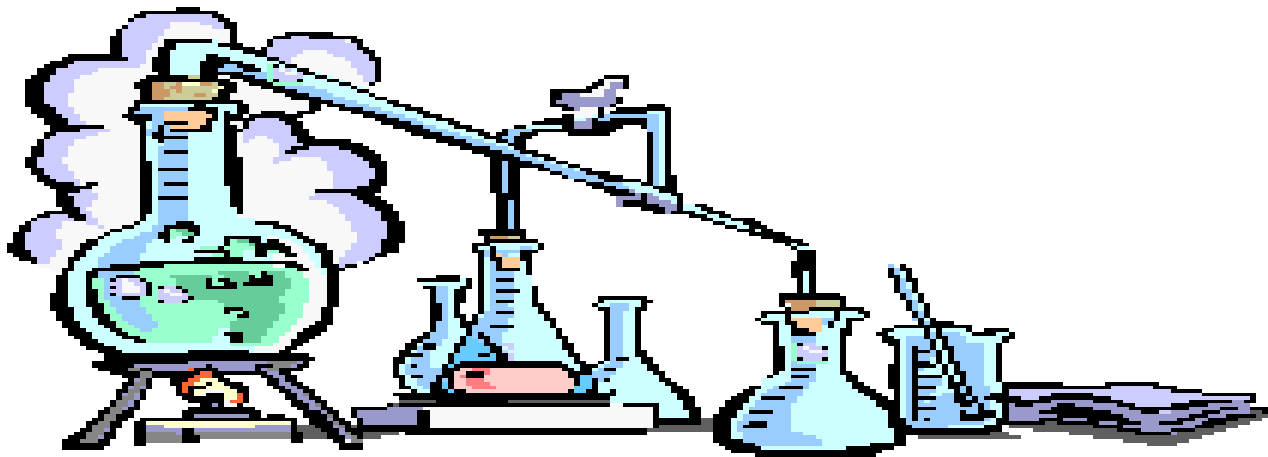
any pertinent safety topic

Keep everyone's head Focused on Safety

Health and Safety in the Laboratory



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Objectives



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- How to identify health and safety hazards of laboratory work
- Health and safety measures your lab must have in place
- How best to protect yourself from hazardous exposures
- The requirements of OSHA Lab Standards

OSHA Lab Standard



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- Protects staff who use and handle hazardous chemicals in the laboratories
- Requires PI:
 - Determine the exposure to any substances used.
 - Conduct Initial training and additional training if a new hazard is introduced into the lab
 - Develop a Chemical Hygiene Plan (by Lab or by PI)
 - Develop a Spill Contingency Plan (by Building)

Actions



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- Chemical Hygiene Plans
 - SOPs and locations of the SDS
 - Lab equipment training
 - Personal Protective Equipment Use
 - Proper Gloves
 - Lab Coat
 - Waste Handling and Spill Response
 - Chemical waste handline and disposal procedures
- Location of spill kits and eye wash and fire extinguishers

Chemical Hygiene Plan



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- Must Include:

- Standard Operating Procedures
- Exposure control measures
- Staff training on hazard awareness & measures available to protect themselves
- Where to go for medical consultation & examination
- Respiratory protection program
- Recordkeeping procedure
- Hazard identification system



Chemical Inventory



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- 1) Conduct a yearly inventory of chemicals and update the file of material safety data sheets (MSDS) to prevent the accumulation of orphaned chemicals
- 2) Some of these chemicals become unstable, react with the container, slowly degrade or evaporate

Right to Know



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OSHA's Hazard Communication

Standard requires that

ALL Containers Must be Labeled With:

Chemical
Name &
Physical/
Health
Hazards

SODIUM HYDROXIDE 50 %

CAS NO. 1310-73-2

WARNING! CAUSES SEVERE BURNS AVOID BREATHING VAPOR-USE WITH ADEQUATE VENTILATION
Avoid contact with skin or eyes. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes: for eyes, get medical attention. Wash clothing before re-use.

DO NOT LOAD WITH EXPLOSIVES OR HEAR ARTICLES BEARING OXIDIZER LABELS

CONTAINER HANDLING AND STORAGE:
Before moving container be sure closure is securely fastened. Keep out of sun and away from heat. Completely drain container before returning. Never use pressure to empty. In case of spillage, flush with plenty of water.

IMPORTANT: All products are sold without warranty of any kind and purchasers will, by their own tests, determine suitability of such products for their own use.

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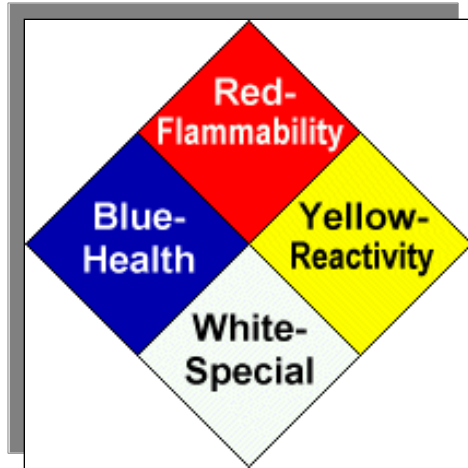
_____ LBS. NET WT.

ABC Chemical Company

WHEN HANDLING WEAR GOGGLES OR FACE SHIELD. DO NOT ADD WATER TO CONTENTS WHILE IN A CONTAINER BECAUSE OF VIOLENT REACTION. WHEN DILUTING, ADD CONTENTS TO WATER SLOWLY.

Name &
Address of
the
Manufacturer
& Emergency
Contact
Numbers

Types of Labels



NFPA Diamonds and **HMIS** Bars are Color & Number Coded with Hazard Information



DOT Symbols Are Usually Found on Shipping Cartons

Safety Data Sheets (SDS)

- An SDS Must Be on File & Available for Each Chemical in the Lab.
- An SDS lists:
 - **Product Identity**
 - **Hazardous Ingredients**
 - **Physical Data**
 - **Fire & Explosion Hazard Data**
 - **Reactivity Data**
 - **Health Hazard Data**
 - **Precautions for Safe Handling & Use**
 - **Control Measures**



What Should the Ideal Laboratory Look Like?

- Practices
- Equipment & Ventilation



Ventilation

Local Ventilation

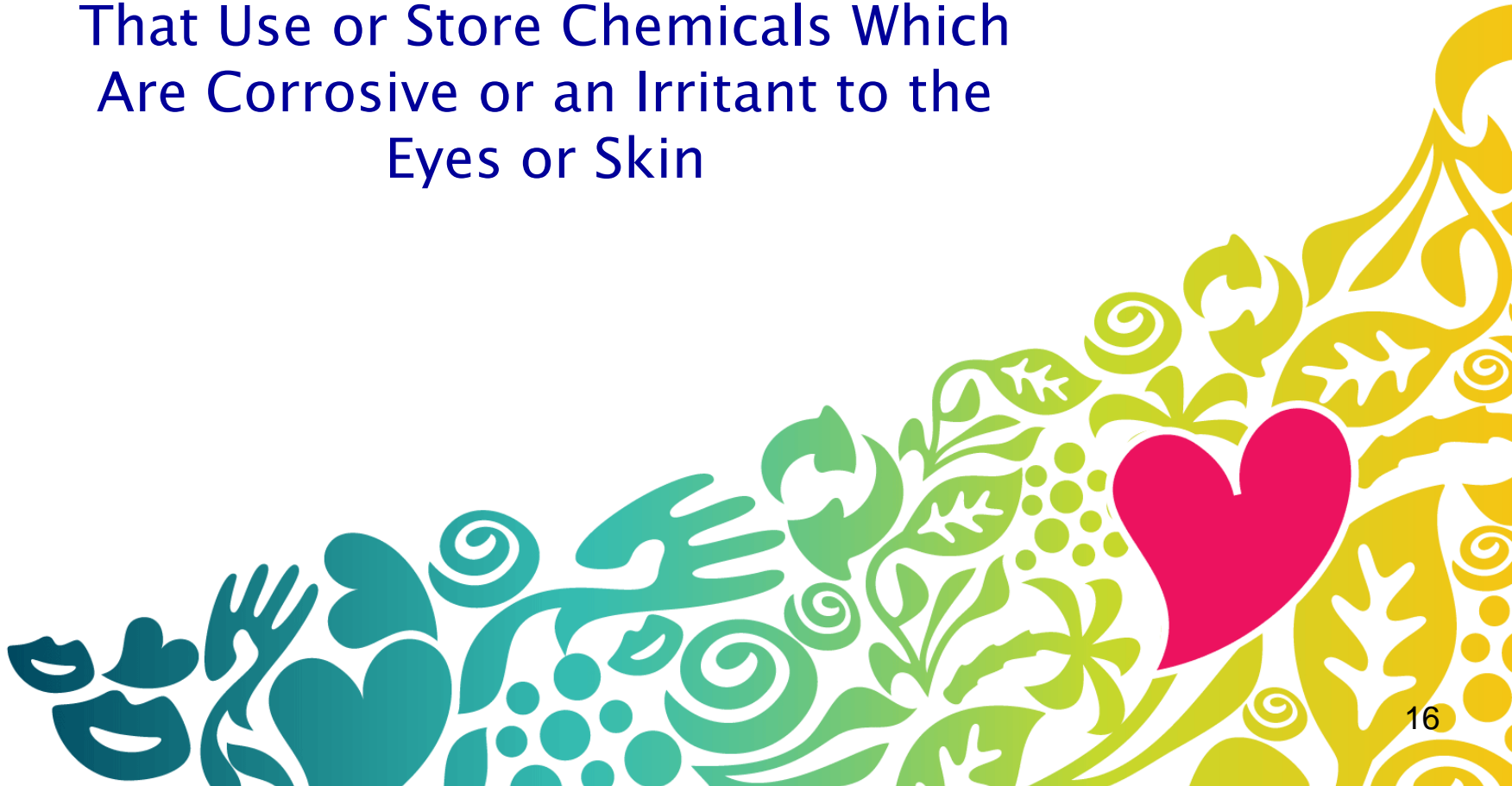
Fume Hoods Used For Operations that Give Off:

- Noxious Odors
- Flammable or Poisonous Vapors

HOW DOES YOUR VENTILATION MEASURE UP?

Safety Showers and Eyewashes

Must Be Available in All Lab Areas
That Use or Store Chemicals Which
Are Corrosive or an Irritant to the
Eyes or Skin



Match the Extinguisher to the Risk!

Fire Extinguishers Must Be:

- ❖ Clearly labeled to indicate the types of fire they are designed to extinguish.
- ❖ Visibly **inspected** monthly and maintained annually.

❖ **Class ABC** Extinguishers Should Be Located:

- At the Laboratory Exit
- Within 50 Feet of Any Point in the Lab.

❖ **Class D** Extinguishers Are Required for Combustible Metals.

Means of Egress/Exit

Two or more well- marked
& unobstructed evacuation
exits are recommended in
a lab.



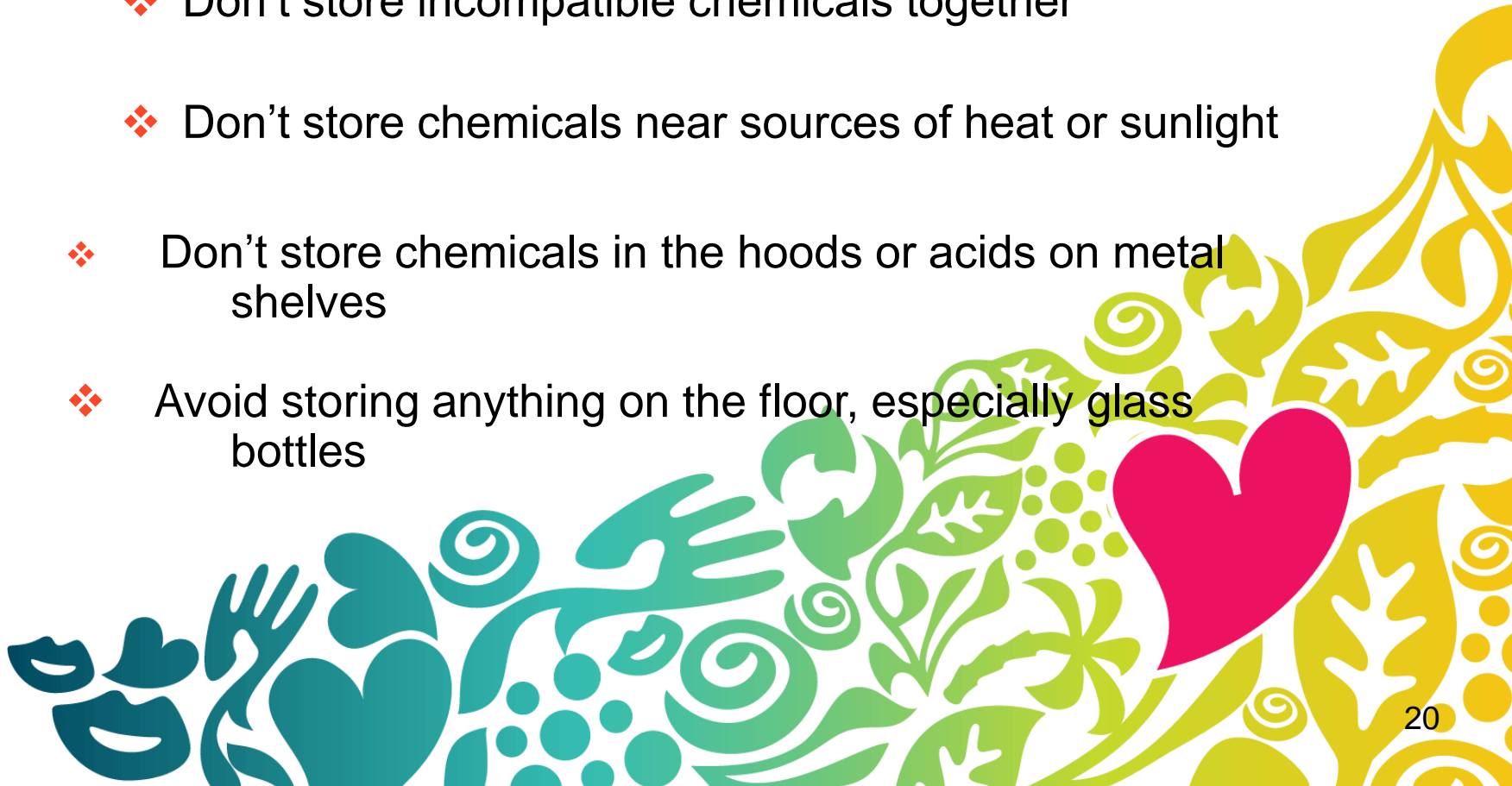
Chemical Storage

Safe Storage of Chemicals is a Necessity in Every Laboratory!

- ❖ Minimizes Exposure to Students and Staff to Corrosive and Toxic Chemicals
- ❖ Lessens the Risk of Fire
- ❖ Prevents the Mixing of Incompatibles & the Creation of an Emergency Situation

The “Don’ts” of Chemical Storage!

- ❖ Avoid storing any chemical above eye level
- ❖ Don’t store incompatible chemicals together
- ❖ Don’t store chemicals near sources of heat or sunlight
- ❖ Don’t store chemicals in the hoods or acids on metal shelves
- ❖ Avoid storing anything on the floor, especially glass bottles



So, You're in Charge!

- How would you organize and store chemicals in your perfect lab?



Ideal Storage Area Set-Up

NA, LI

Acids

Bases

Oxidizers

Room Should Have:

- Eye Wash
- Safety Shower
- Emergency Phone
- Fire Extinguisher

Dry
Chemicals

Spill
Materials

Metal Salts
Nitrates

Flammables
Cabinet

Be Prepared for Small Incidental Spills

Chemical Categories Found in Most Secondary Schools Include:

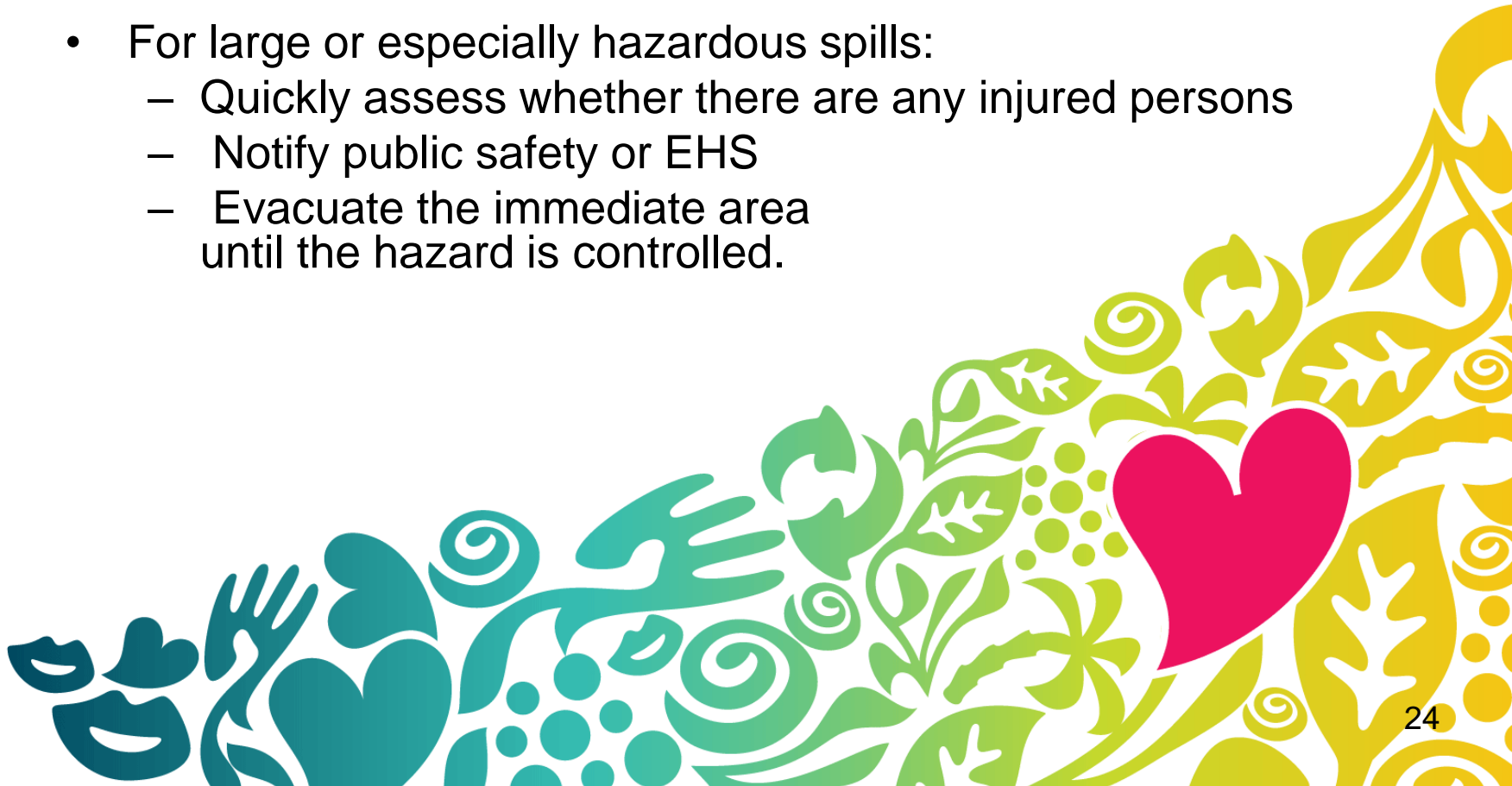
- Organic Solvents
- Acids
- Alkalis (Bases)
- Mercury

Proper Incidental Spill Control Equipment Includes:

- ❖ Spill Control Materials Such As Spill Control Pillows, Pads, Booms, etc.
- ❖ Scoops, Brooms, Pails & Bags
- ❖ Absorbent – such as Diatomaceous Earth
- ❖ Neutralizers – for Acids & Alkalis
- ❖ Mercury Spill Control Kit

Certain Spills Aren't for Quick Clean-up

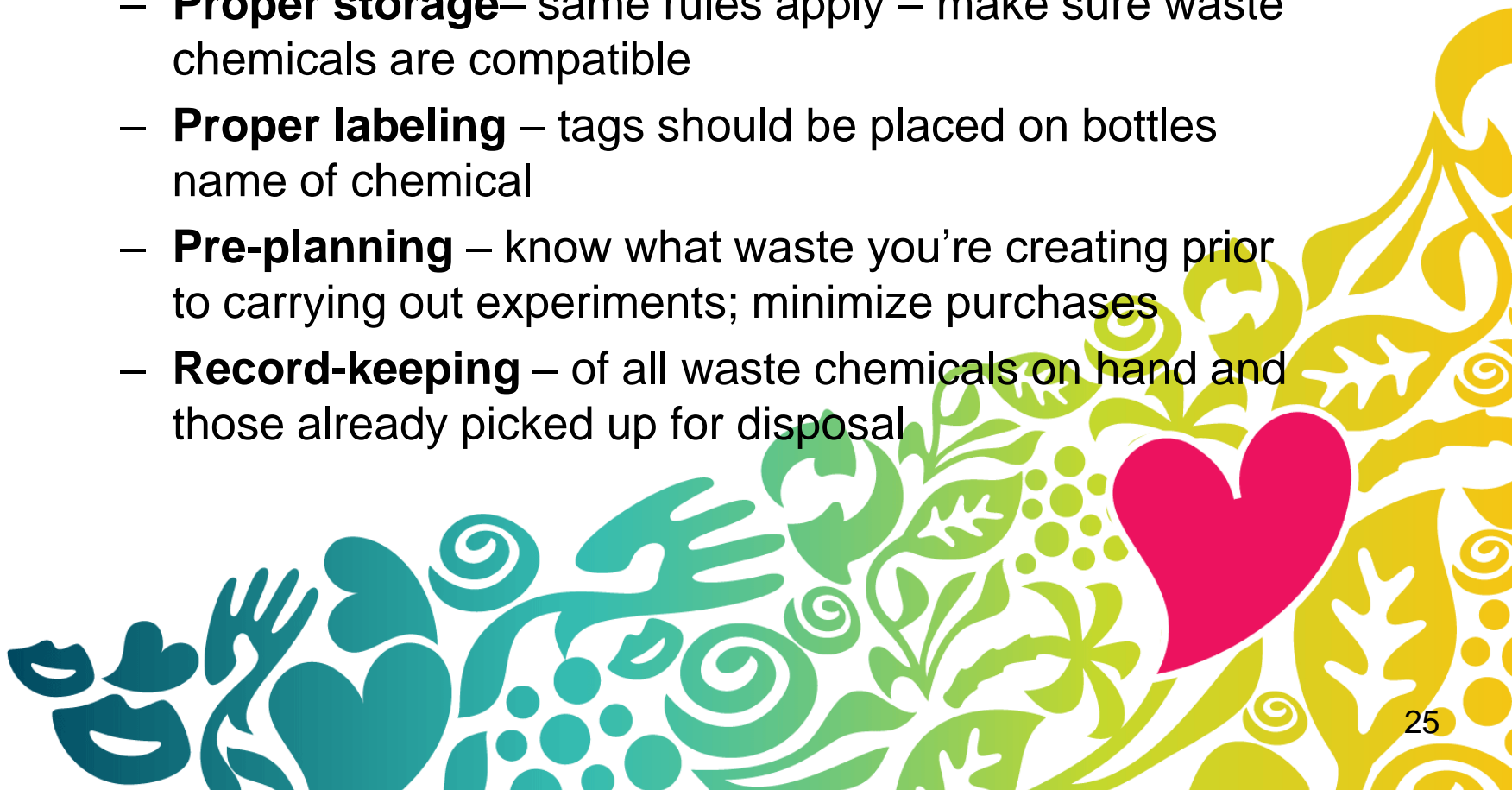
- As a lab specialist, you should **only** respond to incidental chemical releases, or small spills.
- For large or especially hazardous spills:
 - Quickly assess whether there are any injured persons
 - Notify public safety or EHS
 - Evacuate the immediate area until the hazard is controlled.



Waste Chemical Disposal

- Requires:

- **Proper storage** – same rules apply – make sure waste chemicals are compatible
- **Proper labeling** – tags should be placed on bottles name of chemical
- **Pre-planning** – know what waste you're creating prior to carrying out experiments; minimize purchases
- **Record-keeping** – of all waste chemicals on hand and those already picked up for disposal



Lab Inspections

- Monthly Inspected by Users
- Quarterly Audited by EHS



