CSHEMA

Campus Safety Health and
Environmental Management Association

Chemical Storage

Contact Chapman University EH&S
with any questions on university-specific practices

SAFETY
FIRST

Objectives

- Separating incompatible materials
- Special hazards
- Flammable storage cabinets
- Corrosives cabinets
- Special versus general storage
- Securing gas cylinders
- Controlling quantities

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Why Safe Storage is Important…

- Reduces the risk of:
  - Accident
  - Spill
  - Exposure
  - Fire
- Provides effective chemical management:
  - Use older items first
  - Deplete existing stock before ordering more
  - Identify expired materials or damaged containers and labels

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Separate Incompatible Materials

- Acids from bases
- Oxidizers from flammables
- Reactives from water and air, as appropriate
- NEVER store materials alphabetically, except within hazard categories

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Separate Incompatible Materials *(Continued…)*

- Manufacturers often have helpful color coding, to aid in segregation of hazard categories, e.g.:
  - Inorganic acids
  - Inorganic bases
  - Flammables
  - Oxidizers
  - Reactives

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Special Hazards

- There are additional requirements for certain specific hazards
  - High toxic items
  - Particularly Hazardous Substances
  - DEA chemicals
  - Pyrophorics
- Specifications for each special hazard may be found on Safety Data Sheets, including:
  - Separate storage
  - Protection from incompatible conditions
  - Special security measures

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Flammable Cabinets

- To be used for all but minimum quantities of flammable materials
- Consider venting of the cabinet for higher hazard items or odiferous ones
- Remember: Acetic acid is flammable and belongs in a flammable cabinet, not a corrosive one

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Corrosive Cabinets

- If you will not have separate cabinets for acids and bases (due to costs or space limitations), separate these materials by secondary containment within the cabinet

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Special storage

- Materials requiring refrigeration should be in flammable-safe units designed for chemicals and marked solely for that use.
- Consider back up power if electricity loss may create a hazardous situation.

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General Storage

- Never store materials above eye level
- Put heavier containers on lower shelves, though NEVER on the floor
- Turn labels outward
- Be sure labels are readable
- Watch expiration dates

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General Storage *(Continued…)*

- Mark date of receipt or opening on the label, as appropriate
- Identify a place for all materials—this will help maintain order and safety
- Store only small quantities of currently-used items in the fume hood

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Gas Cylinder Storage

- Issues of incompatibility are present here as well, most notably flammables and oxidizers
- This two items must be stored at least 20 feet apart or be separated by a fire wall
- All tanks should be secured to a solid surface when in use and storage
- Segregate empty tanks from full tanks
- With large, self-venting tanks, consider the room size, to prevent asphyxiation during venting of gases

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Chemical Quantity Limits

- There are building code restrictions applicable to laboratories in most jurisdictions
- Check with local authorities to determine the applicable code
- Look at storerooms especially, as exceeding maximum quantities is common

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Chemical Quantity Limits *(Continued…)*

- Chemical limits are established for:
  - Different hazard classes
  - Whether the building or area has sprinklers
  - Whether there are flammable cabinets present
  - Elevation of lab above or below ground level
  - Occupancy status of the room

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