CHEMICALS & BIOLOGICAL SAMPLE STORAGE

Zahra Saad Tahseen

Zahra.saad@tiu.edu.iq

Lab Safety & Operating System (PHAR 315)

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Outline

- ✓ Chemicals Storage
- ✓ Biological Sample Storage

Objectives

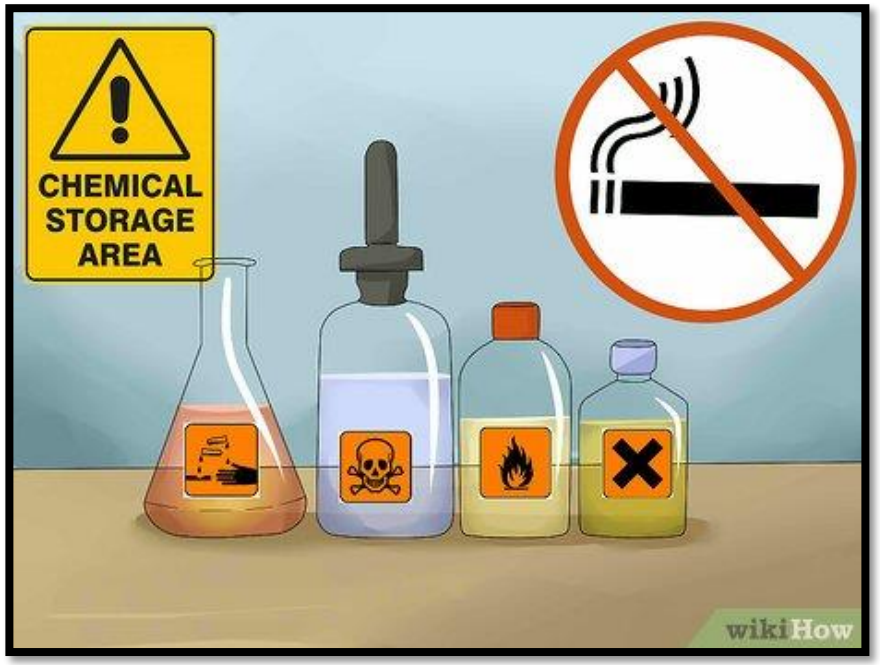
- Implement Proper Storage Techniques for Chemicals and Biological Samples.

Chemical Storage

- **Chemical storage** is the storage of controlled substances or hazardous materials in chemical stores, chemical storage cabinets, or similar devices.
- Chemical storage devices are usually present where a workplace requires the use of non-hazardous and/or hazardous chemicals.
- Chemicals should be stored in accordance with the manufacturer's recommended temperature and humidity level. Chemicals should not be stored near heat sources, such as steam pipes or laboratory ovens. Chemicals should never be stored in direct sunlight.

Importance of Storage

- All the items stored in the laboratory need proper protection and need to be stored in an orderly fashion. This prevents loss due to damaging of items (such as reagents, records, etc.) but also improves work and cost efficiency.



Rules of Storage

- Label all chemical containers fully.
- Provide a specific storage space for each chemical and ensure return after each use.
- Store volatile toxics and odoriferous chemicals in ventilated cabinets. Please check with your environmental health and safety personnel for specific guidance.
- Store flammable liquids in approved flammable liquid storage cabinets. Small amounts of flammable liquids may be stored in the open room.
- Separate all chemicals, especially liquids, according to compatible groups.

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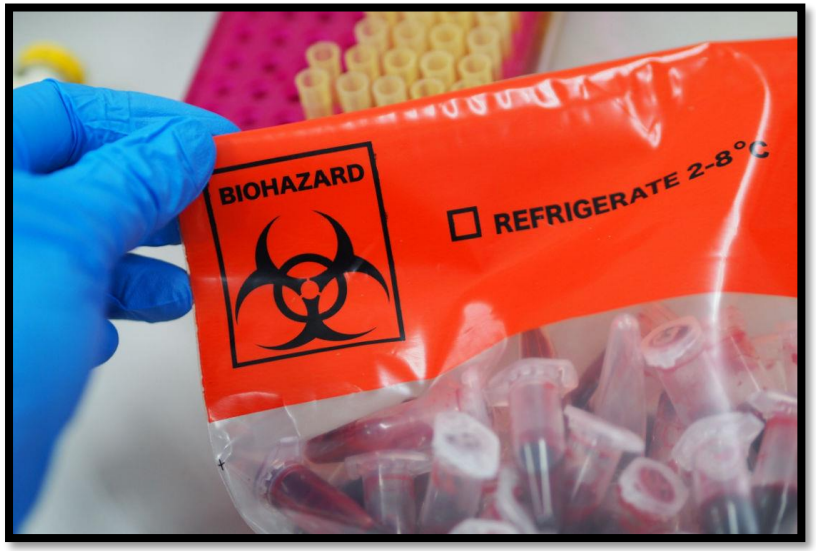
- Use appropriate resistant secondary containers for corrosive materials. This protects the cabinets and will catch any leaks or spills due to breakage.
- Seal containers tightly to prevent the escape of vapors.
- Use designated refrigerators for storing chemicals. Label these refrigerators CHEMICAL STORAGE ONLY—NO FOOD. Never store flammable liquids in a refrigerator unless it is specifically designed and approved for such storage. Use only explosion-proof (spark-free) refrigerators for storing flammables.

And AVOID Doing the Following:

- Storing large, heavy containers or liquids on high shelves or in high cabinets. Instead store these at shoulder level or below.
- Storing bottles on the floor unless they are in some type of secondary containment.
- Storing chemicals near heat sources or in direct sunlight.
- Storing chemicals in fume hoods. Only chemicals in actual use should be in the hood.
- Storing anything on top of cabinets.
- Using bench tops for storage. These workspaces should contain only chemicals currently in use.

Biological Sample Storage

- Biological sample storage is essential for several industries including pharmaceuticals, healthcare, research and forensics. Correct sample storage ensures the viability of samples by slowing or stopping degradation of biological materials so that they can be used or investigated for some time after collection, without compromising the sample integrity.



Storing Biological Specimens

- Ultra-low temperature (ULT) freezers provide the necessary conditions for storing biological specimens.
- Storage at -80 °C preserves biological specimens by slowing or stopping natural functions. The optimal storage conditions depend on the type of tissue sample, for example proteins can be stored for only six years at -80 °C but adrenal tissue can be stored for up to 27 years.
- To prepare samples for ULT storage, they must be frozen, either in a blast freezer or with liquid nitrogen. When the sample is ready to be used, it should be warmed quickly, for example in a water bath.
- It is important to note that the number of freeze-thaw cycles a sample undergoes can affect its quality. If a number of experiments will be carried out on a sample at different times, it may be pertinent to aliquot the sample before freezing.

References

Sveinbjornsson, B. R., & Gizurarson, S. (2022). Handbook for Laboratory Safety. 1st. Elsevier.