

# SAFETY GUIDELINES FOR WORKING WITH CHEMICALS

- Always point the container opening away from your colleagues and yourself when working with chemicals in open tubes, beakers etc.
- Spilled caustic chemicals **must be diluted with water and neutralized** (acids with diluted sodium carbonate, bases with diluted acetic acid) before being wiped up.
- Chemicals whose dilution releases heat (hydroxides etc.) **must be diluted in successive steps** while being stirred constantly and eventually cooled.
- Use boiling chips while heating liquids to avoid flash boiling.
- If you need to smell a chemical, do so from a distance using your hand to bring the vapors closer.
- Only use a clean laboratory spoon to scoop chemicals.
- Never mouth-pipette liquid chemicals.
- When diluting acids, slowly pour the **acid to distilled water** – never the opposite way around – to avoid exothermic reaction. The same goes for diluting bases.
- Always **check glassware for cracks** and other damage before heating it. Glassware for heating **must be dry** on the outside.
- Follow the provided guidelines when disposing of used chemicals. **Do not** pour water-immiscible solvents in a sink – these compounds are to be stored in a designated container. Acids and hydroxides are to be poured in a sink only after being sufficiently diluted with water.
- Close a container immediately after taking a sample. It is necessary to avoid mixing up lids and labels.
- **Do not** store caustic materials anywhere above the height of the average person's shoulders.
- **Always check the labeling** right before use to make sure you have the right chemical. Mind the safety symbols on the packaging.
- When working with flammable materials, it is necessary to **avoid generation of static electricity**. **Do not** wipe up spilled flammables by rubbing the table or floor with fabric, especially synthetic fiber one. Instead, carefully dry the spill by putting an absorbent fabric, preferably cotton, over it, and then moving it in another room with lower risk of fire.
- Vapors of flammable materials **must not** leak into the laboratory's open space.
- Flammable materials **must not** come in contact with open flame or electric spark. **Never use open flame to heat up flammable chemicals** – only electrical stoves and heaters which are regularly checked for malfunctions may be used. When using a water bath to heat up flammable compounds, it is necessary to use a bath medium which is miscible with the flammable.
- Flammable materials must not be stored together with oxidizing agents, explosives, and oils.