



## Living with chemicals: chemicals in the **lab** and in our **homes**

### Chemicals in the lab

#### Incompatible chemicals:

**Strong ACIDS** - strong BASES

**Oxidizers** - ORGANIC solvents

**Oxidizers** - strong ACIDS

**ORGANIC solvents** - strong, concentrated ACIDS

**Chemicals producing exothermic reactions**



#### What are the common chemicals that should be segregated?

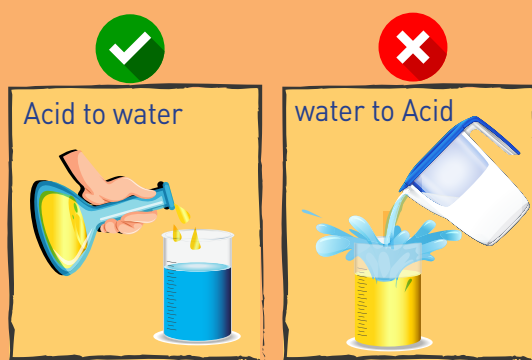
- ▶ **Nitric Acid** - a strong corrosive acid.
- ▶ **Sulfuric acid** - The acid in pure form is highly corrosive towards other materials, as it is an oxidant and has a strong acidic nature.
- ▶ **HF - Hydrofluoric acid** - poses a physiologic hazard. Any work with this compound requires consultation with the safety unit.
- ▶ **Piranha solution** - highly corrosive and a powerful oxidizer. Should be allowed to cool and oxygen gas should be allowed to dissipate prior to disposal.
- ▶ **Cyanides** - The acidic compound HCN is extremely poisonous and flammable.
- ▶ **Unknown material** - must be segregated and marked as 'unknown'.

#### How to mix acid and water safely?

##### AAA - Always Add Acid (to water)

- ▶ Acid and water produce a vigorous exothermic reaction, thus when adding water to acid, the water boils and the acid may splatter.
- ▶ Extra caution should be taken when using strong acids.
- ▶ Any involvement of sulfuric acid could be corrosive, resulting in burnt skin and clothing.

Always Add  
Acid to water



### Chemicals in our homes

#### Tips for Passover cleanings:

- ▶ **Vinegar**, (Acetic acid - חומץ) in water can dissolve scale (אבנית, CaCO<sub>3</sub>) and has antibacterial effect.
- ▶ **Mixing vinegar with hydrogen peroxide** (H<sub>2</sub>O<sub>2</sub>, מי חמצן) creates **peracetic acid**. It can create an irritant that, in high concentrations, can harm the skin, eyes, throat, nose, and lungs.



**Bleach** or Sodium hypochlorite (אקונומיקה), NaOCl, is useful and common for cleaning and disinfection. It also has a bleaching effect. The antibacterial effect of Sodium hypochlorite can be achieved at a conc. 0.5% while the concentration in the commercial container is 3.5%-5%.



#### Bleach mixing with other cleaning detergents is very dangerous!

- ▶ Mixing **bleach** with **vinegar** or **other cleaning products** - for example: **dishwashing detergents**, furniture polishes, glass cleaning products, **toilet bowl cleaners**, cause the **release of the toxic gas, Cl<sub>2</sub>**.



- ▶ Mixing **Bleach** with **Ammonia** releases **Chloramine fumes** and Chlorine gas. Inhaling such fumes can harm the respiratory system.



- ▶ Mixing **Bleach** with **hydrogen peroxide** (H<sub>2</sub>O<sub>2</sub>, מי חמצן) creates flammable **oxygen gas**.



- ▶ Mixing **Bleach** and **Alcohol** produces **chloroform**. Inhalation results in unpleasant symptoms as dizziness and even fainting.



**Remember!** In most cases the best treatment in the event of contact with chemicals is by washing with running water (for at least 15 minutes) as soon as possible. This helps prevent damage to the tissue.