

Security Manual

ICV - CSIC










General principles of safety and health in laboratories

- The laboratory, including passageways, exits, roads, equipment and facilities must be neat and clean.
- Waste, stains and residues of hazardous or dangerous substances will be eliminated quickly.
- It is forbidden to carry out different jobs not authorized directly by the responsible, and use devices and equipment without prior knowledge of its operation.
- The lab coat must be buttoned. Wide sleeves should be avoided.
- Hair must be collected.
- Closed shoes must be worn (flip flops or cloth shoes must not be worn).
- Laboratory clothing (gown) should not be worn outside of it, avoiding its use in common areas of the ICV.
- It is prohibited to eat, smoke and / or store food and drink in laboratories.
- The use of Personal Protective Equipment (safety glasses, gloves ...) is mandatory.
- All chemicals must be properly labeled and in good condition.
- Once the laboratory task is finished, it must be completely cleaned and collected. Also ensure the disconnection of appliances, water, gas, etc..

Classification of chemical substances

Depending on how dangerous chemicals are classified as:

Explosives	
Oxidants	
Flammable	
Toxic	
Corrosive	
Irritants, Carcinogenic, Teratogenic, Mutagenic, Allergenic	
Dangerous for the environment	

MORE INFORMATION IN:

<https://www.mscbs.gob.es/ciudadanos/saludAmbLaboral/prodQuimicos/sustPreparatorias/ReglamentoCLP/home.htm>

Chemical Handling

- Read the Safety Data Sheet (SDS) carefully.
- SDS must be available in the laboratory.
- The reactivity of the products must be known.
- Appropriate personal protective equipment (PPE) should always be used (see SDS).
- Use the gas showcase.
- When a liquid is poured from a bottle into a glass, it should be done slowly avoiding splashing.
- To take solid substances, spoons or spatulas will be used.
- Safety pipettes will be used to collect liquids.
- Pipetting with the mouth is strictly forbidden, rubber or automatic “pears” must be used.
- Flammable substances must be far from the heat source
- Funnels or dispensers must be used for transfers
- They will be done in small quantities.
- All products must be properly labeled and registered.
- Food containers should not be used.
- Label:

Pictogramas de peligro

Identificador de producto (nº CAS y denominación IUPAC o comercial).

Cantidad nominal de la sustancia o mezcla.

Nombre de proveedor:

Dirección:

Teléfono:

PELIGRO

Palabras de advertencia

H225: Líquido y vapores muy inflamables.

H319: Provoca irritación ocular grave.

H336: Puede provocar somnolencia o vértigo.

EUH066: La exposición repetida puede provocar sequedad o formación de grietas en la piel.

P210: Mantener alejado de fuentes de calor, chispas, llama abierta o superficies calientes-no fumar.

P305 + P351 + P338: EN CASO DE CONTACTO CON LOS OJOS aclarar cuidadosamente con agua durante varios minutos. Quitar las lentes de contacto, si lleva y resulta fácil. Seguir aclarando.

P501: Eliminar el recipiente a través de un gestor autorizado.

Información suplementaria.

Identificación de peligro

Consejos de prudencia prevención

Consejos de prudencia respuesta

Consejos de prudencia eliminación

H Phrases

P Phrases

- Chemicals that do not have any label and / or safety data sheet must be discarded.
- Chemicals with similar characteristics must be grouped, separating incompatible ones and isolating those of special characteristics (carcinogenic, very toxic, explosive, flammable, etc.)
- Aggressive products should be stored in specific cabinets and never higher than 165 cm.
- Refrigerators must be specials of increased safety and not have an internal electrical installation.
- Chemicals must be stored in different materials depending on their features
 - a. **Substances that attack glass:** Containers of synthetic or metallic materials.
 - b. **Substances that decompose in light:** Opaque glass or dark glass containers.
 - c. **Alkaline metals:** With a high boiling solvent protective layer.
 - d. **White phosphorus:** Under a layer of water.
 - e. **Mercury (> 3kg):** Steel containers with screw closure

Glassware handling

- Its good condition must be verified or discarded.
- After a violent blow, hit or knock, dispose it immediately even if there is no visible anomaly or damage.
- It must be heated by interposing a metal mesh between the glass and the flame.

Glass assemblies:

- Prevent the materials used from being stressed.
- Always use brackets and clamps.

- Use grease on all fixings and plastic plugs (whenever possible).
- Glass balls should be slowly introduced into the bathrooms
- To unclog glassware, the appropriate PPE must be used and the operation carried out behind the door of laboratory hood.

Electrical equipment handling

- Know the location of the electrical differentials.
- Do not make continuous use of extensions and/or multiconnectors.

Flame devices

- They must have a safety system that allows the gas supply to be cut in case of an emergency.
- Always work under a laboratory hood.
- Appropriate PPE should be used to work with flame/heat.

Heating devices

- If working with volatile substances, a localized extraction system or a condensation system should be used to retain them.
- Always use a temperature controller.
- Use the appropriate PPE: protective glasses, tweezers and gloves resistant to high temperatures.
- If fire occurs, cut off the power immediately. Use a CO₂ extinguisher.

Hot baths:

- They should not be filled to the edge.
- Use supports that ensure the stability of the bath.
- Specific glass that withstands high temperatures must be used.
- Whenever possible, work under a localized extraction system.

Heater/Stove:

- If working with flammable vapors, specific safety stoves must be used.

Furnaces:

- If gases are used, ensure the good condition of the installation.
- Do not open working ovens (retinal burns, skin, refractory tears, etc.).

Liquid Nitrogen

- Liquid N₂ with exposed body parts will never be handled.
- Use personal protective equipment (face mask and gloves)
- Clothing must be clean and dry, and not tight to the body.
- Containers must always be placed in a well ventilated area.
- Containers must be far from any source of heat and heavy objects should never be placed on top of the lids of these containers.

Gas Instalations

- Containers must be fixed to a support by a chain.
- They must be closed if they are not in use.
- They will be away from heat sources.
- When handling bullets, appropriate PPE should be used.

Lab Equipment

- The laboratory must have a specific safety manual for each equipment in that laboratory.
- PPE appropriate to each device should be used.

Laser work

- Rooms or labs with laser devices will be protected and marked, as well as the laser equipment itself.
- Install a flashing light outside in the area of access to the room or lab where the 3b or 4 laser device is located, which is activated when the equipment is in operation.
- Place specific screens or separate rooms for cutting, welding or drilling operations with laser devices.
- Remove any explosive, flammable product or solvents from the work area with laser equipment.
- The beam path must finish at the end of its path on a material with diffuse reflection and appropriate technical properties.
- Class 3B and 4 lasers must have a protective housing, confinement and interlocking system.
- Do not allow the presence of beams in passing areas.
- Limit the duration and level of exposure.
- Use appropriate personal protective equipment.

Inform the ICV prevention service of the incident / accident

MORE INFORMATION IN:

www.icv.csic.es/prevención