

RISKS AND PREVENTIVE MEASURES in the CHEMICAL LAB

The **general risks of chemical laboratory activities** are indicated below, as well as the preventive measures that must be respected, and if necessary, this must be completed with information on specific risks provided by the Centre, Department, Service or Unit. This information shall be completed with the **basic emergency regulations of the centre** where the activity is carried out.



In some sections of the description of the risk situation it is necessary to complete the information according to the specific activity carried out. This specific activity defines the preventive measures to be applied. In case you consider that any activity is not identified, please contact the OSSMA (ossma@ub.edu / 9340 31192).






Compliance with the legal framework

- Comply with the provisions of **RD 374/2001**, of April 6th, on the protection of the health and safety of workers against risks related to chemical agents at work.
- Comply with the provisions of **RD 379/2001**, of April 6th, approving the Regulation on the storage of chemical products and its complementary instructions, in particular ITC MIE-APQ-5 on the storage and use of cylinders and bottles of compressed, liquefied and dissolved gases under pressure.
- Comply with the provisions of **RD 2060/2008**, of December 12th, which approves the Pressure Equipment Regulation and its complementary technical instructions.
- Comply with the provisions of **RD 665/1997**, of May 12th, on the protection of workers against risks related to exposure to carcinogenic agents at work and its modifications (**RD 1124/2000**, of June 16th, and RD 349/2003, of March 21st).
- Comply with the provisions for the prevention of injuries caused by cutting and sharp instruments in the bio-health and/or hospital sector detailed in Order ESS/1451/2013, transposition of **Directive 2010/32/EU**.
- Comply with the provisions of article 26 of **Law 31/1995 on the Prevention of Occupational Risks** and **RD 298/2009**, of March 6th, for the improvement of the health and safety of pregnant or breastfeeding workers.

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YES/NO	OSSMA code / RISK FACTOR	DESCRIPTION OF THE RISK SITUATION	PREVENTIVE MEASURES
	<p>911101_ Generic Risk</p> <p>chemical safety:</p>	<p>Fire and/or explosion due to handling or presence of flammable, oxidising, explosive, spontaneously reactive materials; corrosive for metals, which in contact with water give off flammable gases.</p> 	<p>Comply with general prevention measures</p> <ul style="list-style-type: none"> - Have instructions / safety data sheet available before use. - Do not handle before all safety precautions have been read and understood. - Wear personal protective equipment (safety glasses/face shield, gloves). - Wear flame resistant / flame retardant / flame retardant clothing. - Handle under fume hood. Manage chemical waste according to UB procedures. <p>Comply with the specific measures for handling flammable, explosive and/or spontaneously reactive chemicals.</p> <ul style="list-style-type: none"> - Keep away from heat/sparks/exposed flames/hot surfaces. - Do not spray on an open flame or any other source of ignition. - Keep humidified with (manufacturer's instructions must be followed). - Avoid abrasions, shocks, frictions, etc. - Do not use tools that produce sparks. - Take precautionary measures against electrostatic discharge. - Keep/store away from combustible materials (paper, clothes...). - Keep the container hermetically sealed. - Keep only in the original container (essential only for spontaneous reactors).
	<p>911103- Handling flammable products</p>		<p>Specific measures for pyrophorics and products which in contact with water give off flammable gases.</p> <ul style="list-style-type: none"> - Avoid any contact with water, because of the risk of violent reactions and possible instantaneous inflammation. - Handle in an inert gas environment. Protect from moisture.

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		<p>911104- Handling oxidising products</p>  <p>911107 - Handling of corrosive products for metals</p> 	<p>Specific measures for oxidisers.</p> <ul style="list-style-type: none"> - Keep oxidising chemicals away from heat. - Take all necessary measures not to mix oxidising products with combustible materials. <p>Specific corrosive measures for metals</p> <p>Keep corrosive chemicals in the original containers which are suitable and corrosion resistant.</p>
	<p>911105 - Handling of pressurised gases</p> 	<p>Fire and/or explosion due to handling pressurised gases</p> <ul style="list-style-type: none"> <input type="checkbox"/> Bottles <input type="checkbox"/> Installation of line gases 	<p>Comply with generic prevention measures (chemical safety, pressurised gases)</p> <ul style="list-style-type: none"> - Have and know the instructions / safety data sheet of the gas cylinders. - Do not manipulate or intervene in the gas installation. Only authorised companies can ensure the suitability and safety of such installation. - Manage empty bottles according to the UB's internal chemical waste procedures.. - Separate documentary activities from gas container storage space.



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	911106 - Handling of refrigerated gases. Cryogenic burns	<ul style="list-style-type: none"><input type="checkbox"/> Cryogenic burns<input type="checkbox"/> Liquid nitrogen<input type="checkbox"/> Liquid helium<input type="checkbox"/> Large-volume Dewar<input type="checkbox"/> Small-volume Dewar<input type="checkbox"/> Container - desktop thermos<input type="checkbox"/> Supply from outside tank<input type="checkbox"/> Possibility of flash evaporation during loading of NMR equipment Only handling of small volumes	<p>Comply with generic preventive measures (chemical safety - refrigerated gases / cryogenic liquids)</p> <ul style="list-style-type: none">- Have instructions/safety data sheet available before use.- Do not handle until all safety precautions have been read and understood.- Wear personal protective equipment (safety glasses/face shield, cryogenic gloves).-Ensure adequate ventilation, especially when working in confined areas-Handle under fume hood whenever possible, and always with good general ventilation.-Avoid inhalation and splashing.-Examine any possible damage to the containers (thermos flasks or dewars).-Proceed slowly to avoid sudden boiling of the cryogenic liquid.-Use only cryogenic liquid transport equipment approved for use. Observe the pressure and temperature of use. In case of doubt, contact the supplier. Do not open the equipment until it is completely depressurised. Open valves slowly and close when not in use.- Manage chemical waste according to UB procedures.



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	911200_ Exposure to chemicals agents. <u>Damage to health.</u>	911202 - General risk damage to health: exposure by contact, inhalation or ingestion of chemicals. 911203- Damage to pregnant or breastfeeding workers	Comply with generic prevention measures (damage to health) -Have instructions/ safety data sheet available before use. - Do not handle any product until all safety precautions have been read and understood. - Wear gloves and safety glasses/face shield. - Do not breathe dust or mists. If necessary, wear gas and vapour mask. - Handle products under fume hood. - In case of insufficient ventilation, wear respiratory protective equipment. - Wash properly after handling. - Containers must be hermetically sealed. - Contaminated work clothes must not leave the workplace. - It is advisable to attend health examinations at the Occupational Medicine Unit. - Manage chemical waste according to UB procedures. - The space where administration, management or documentary research tasks are carried out must be separated from the space where laboratory work is carried out. Comply with the specific measures for pregnant and breastfeeding workers. - Do not handle these harmful chemicals under any circumstances, or be exposed. -The space where administration, management or documentary research tasks are carried out shall be separated from the space where laboratory tasks are carried out. -In case they detect such a situation of possible exposure to harmful products during daily work, the worker shall immediately stop her activity, in accordance with article 21.2 of the Law on the Prevention of Occupational Risks, and leave the workplace, informing the corresponding person in charge. Business stoppage -Given the particularly sensitive situation, under no circumstances shall the worker carry out activities involving handling or exposure to harmful chemicals.



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	<p>911204_ Exposure to chemicals C.M.T., of acute toxicity 1 or 2 and/or STOT 1</p> <p>911205_ Exposure to chemicals of acute toxicity 3 i/o STOT 2</p>		<p>Comply with generic preventive measures (damage to health)</p> <ul style="list-style-type: none">-Assess the possibility of substituting chemicals used in the laboratory with other products of a lower hazard category.- Have the instructions/safety data sheet available before use.- Do not handle any product until all safety precautions have been read and understood.- Wear gloves and safety glasses/face shield.- Do not breathe dust or mists. If necessary, wear gas and vapour mask.- Handle products under fume hood.- In case of insufficient ventilation, wear respiratory protective equipment.- Wash properly after handling.- Containers must be hermetically sealed.- Contaminated work clothes must not leave the workplace.- It is advisable to attend health examinations at the Occupational Medicine Unit.- Manage chemical waste according to UB procedures.- The space where administration, management or documentary research tasks are carried out must be separated from the space where laboratory tasks are carried out.



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	<p>911206 - Exposure to sensitising, irritant, acutely toxic 4 and/or STOT 3 chemicals</p>		<p>Comply with specific measures in case of an accident (for CMT, toxic 1, 2 or 3 and/or STOT 1 or 2).</p> <ul style="list-style-type: none">- In case of proven or suspected exposure: medical advice is required.- Avoid contact with the substance during pregnancy and lactation.- After swallowing: Call a poison control centre or doctor immediately.- Rinse mouth with water.- Do not induce vomiting.- It is advisable to attend the regular health check-ups offered by the Unidad de Medicina del Treball. <p>Comply with specific measures in case of an accident (for sensitising, irritant, corrosive, toxic 4 and/or STOT 3).</p> <ul style="list-style-type: none">- In case of skin contact, wash the affected area with plenty of soap and water.- Remove contaminated clothing and wash it before reuse.- In case of skin irritation: consult a doctor.- In case of contact with eyes: rinse them thoroughly with water for a few minutes. If necessary, remove contact lenses when this can be done easily. Continue rinsing.- If eye irritation persists, a doctor should be consulted.- In case of inhalation: transport the victim to fresh air and keep him at rest in a position that facilitates breathing.- Call a poison control centre or doctor if the person is unwell.- Rinse mouth with water.- Do not induce vomiting.- It is advisable to attend regular health examinations offered by the Occupational Medicine Unit. <p>Pregnancy or breastfeeding:</p> <ul style="list-style-type: none">- If you are pregnant or breastfeeding, request a specific assessment from the Prevention Service.

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	<p>911207 - Exposure to corrosive chemicals</p>		<p>Comply with general prevention measures (damage to health).</p> <ul style="list-style-type: none"> - Assess the possibility of substituting chemicals used in the laboratory with other products of a lower hazard category. - Have the instructions/safety data sheet available before use. - Do not handle any product until all safety precautions have been read and understood. - Wear gloves and safety goggles/face shield. - Do not breathe dust or mists. If necessary, use gas and vapour mask. - Handle products under the fume hood. - In case of insufficient ventilation, wear respiratory protective equipment. - Wash properly after handling. - Containers must be hermetically sealed.. - Contaminated work clothes must not leave the workplace. - It is advisable to attend health examinations at the Occupational Medicine Unit. - Manage chemical waste according to UB procedures. - The space where administration, management or documentary research tasks are carried out shall be separated from the space where laboratory tasks are carried out. <p>Comply with specific measures in case of accident (for corrosives)</p> <ul style="list-style-type: none"> - In case of skin contact, wash the affected area with plenty of soap and water. - Remove contaminated clothing and wash it before reuse. - In case of skin irritation: consult a doctor. - In case of contact with the eyes: rinse them adequately with water for a few minutes. If necessary, remove contact lenses when this can be done easily. Continue rinsing. - If eye irritation persists, a doctor should be consulted. - In case of inhalation: transport the victim to fresh air and keep him at rest in a position that facilitates breathing. - Call a poison control centre or doctor if the person is unwell. - Rinse mouth with water. - Do not induce vomiting. - It is advisable to attend regular health examinations offered by the Occupational Medicine Unit.

The obligation of workers to comply with the prevention measures indicated in terms of risk prevention is set out in article 29 of the Law on the Prevention of Occupational Risks.