

Hazards in the Lab

6th November 2011

How to Recognize and Avoid Them

Working in a laboratory involves risks and dangers through a variety of hazardous substances or situations. The types of danger can be divided into four classes: chemical hazards, electrical hazards, biological hazards and physical hazards. To be prepared for the dangers and be able to prevent them, you must first have knowledge of the risks.

Chemical Hazards: Wear protective clothing during lab work

Some of the chemical substances that are used in a laboratory can cause skin irritation or other serious injuries. Therefore, it is always necessary to wear protective clothing during laboratory work. This includes wearing gloves, eye protection and a mask over the mouth. It is not only direct contact with some substances can be a danger.

Contact between substances can in some cases trigger a chemical reaction. Ensuring ventilation equipment is correctly adjusted and in full working order is also important. Malfunctioning ventilation systems could lead to an explosion risk in the course of a chemical reaction.

It is easy to avoid hazards with chemical substances as long as you observe a few things. Even if gloves are worn in a lab, regular hand washing is required. In addition, chemicals should be stored separately from each other. This minimizes the risk of chemical reactions.

Electrical Hazards: Check your electrical devices regularly

Electrical devices should be checked regularly to ensure that they cannot cause a short circuit. It is important that the devices are properly connected and cables are well routed. Electrical hazards can result in life-threatening situations – it is important not to underestimate such dangers.

Biological Hazards: Pay attention to proper storage

A laboratory may not only work with chemical substances, but also with substances of biological origin. These include bacteria, viruses or even blood. Biological substances can carry diseases and pose a danger to laboratory technicians. These diseases can spread in a laboratory with laboratory staff themselves becoming carriers. To prevent a biological emergency, proper storage and protection is required. This includes wearing protective clothing and the safe storage of biological agents. Hygiene regulations must be followed at all times. In order to respond properly in an emergency, it is important to prepare in advance for such situations.

Physical Hazards: Regular training helps to prevent physical risks

Physical hazards are a risk. These can be present not only in the lab, but also on construction sites, in the office or at home. In a laboratory there is often a lot of technical equipment and other materials. It is very easy to stumble over something or slip on something wet.

Therefore, care must be taken that equipment is properly stowed and, in cases where liquid substances are spilled, the floor is quickly cleaned. Some laboratories work with glass tubes which have a tendency to break very easily. Glass equipment should be checked for damage in advance before being used. Another danger is the incorrect handling or use of equipment. Often, heavy objects are carried incorrectly which can lead to health consequences. In order to avoid such physical risks, it is important to point out potential dangers. This can be done through regular training in which employees learn how to handle laboratory equipment correctly. Emergency first aid training should be provided by a trained team member.

Chemical Hazard Symbols

18th July 2018

Chemical hazard symbols are not only found in the lab, they can also be found on some home products. Therefore it is necessary to know the meaning of each symbol. Some chemical hazard symbols are self-explanatory, some are not. The following overview covers common European hazard symbols and explains the dangers that they warn of.

Toxic: Chemicals that are labelled with the toxic symbol need to be treated with great care. Chemicals that are toxic contain substances that can damage an organism. Therefore it is necessary to wear gloves and eye protection as well as a mask over the mouth and nose when handling toxic chemicals.



Harmful: This symbol warns against substances that are similar to toxic substances but not as dangerous. It is recommended to wear eye protection when using harmful substances such as Copper(II) sulphate. Any spills that have been in contact with skin should be washed off immediately.

Irritant: Chemicals that are labelled with this symbol are not corrosive but will make the skin red or blister. Therefore it is important to wear eye protection and gloves.



Corrosive: This symbol warns against concentrated solutions of strong acids that can cause burns to skin or damage to eyes. To avoid skin and eye contact it is necessary to wear protective clothes such as gloves and eye protection.

Explosive: Some chemicals are explosive and may explode as a consequence of heat, fire, shock or friction. Safe storage is required and ignition sources should be avoided.



Highly flammable: Common chemicals that are labelled with the highly flammable symbol are ethanol and propane. Those chemicals are flammable when they are exposed to heat, fire or sparks. It is important to keep those chemicals away from potential ignition sources.

Oxidising: Oxidising substances provide oxygen for flammable substances to burn more fiercely. Like flammable or explosive substances, oxidizing substances should be kept away from ignition sources.



Nature polluting: Chemicals that are labelled with the nature polluting or so called environmental hazard symbol should be disposed of responsibly. Those chemicals contain substances that are toxic to aquatic organisms and can cause long lasting environmental effects.

Glossary:

Avoid (verb) - to prevent something from happening. Unikać

Biological hazards (phrase) - Biohazard is defined as organisms or substances of organic origin that are associated with a threat to human health. zagrożenia biologiczne

Cause (verb) - to make something happen. Powodować

Chemical hazard symbols-. Pictures informing about the danger placed on packaging with chemical substances. piktogramy

Chemical hazards (phrase) -Threat caused by chemical agents. zagrożenia chemiczne

Circuit (noun) - a complete circle that an electric current travels around. Obwód

Corrosive - (adjective) containing chemicals that can cause damage. żrący

Electrical hazards (phrase) -Danger caused by the risk of electric shock. zagrożenia elektryczne

Ensure (verb) - to make certain that something is done or happens. Zapewniać

Equipment (noun) - the things that are used for a particular activity or purpose. Wyposażenie, sprzęt

Glove (noun) - a piece of clothing that covers your fingers and hand. Rękawiczka

Harmful- (adjective) One that harms someone or something. szkodliwy

Hazard (noun) - something that is dangerous. Zagrożenie

Injury (noun) - damage to someone's body in an accident or attack. Obrażenia, uraz, rana

Irritant- (adjective) making a part of your body painful, red, or swollen drażniący

Irritate (verb) - to make a part of your body hurt. Drażnić

Knowledge - (noun) The innate or acquired ability to deal efficiently with something. wiedza, umiejętności

Life-threatening (adjective) - likely to cause death. Groźny dla życia

Malfunction (verb) - to fail to work or operate correctly. Nieprawidłowo działać

Necessary (adjective) - needed in order to achieve something. Konieczny

Physical hazards (phrase) - These are factors that are troublesome for people, such as noise or vibrations. zagrożenia fizyczne

Prevent (verb) Do not allow anything bad happen. zapobiec

Protective clothing (phrase) - garment designed to protect the user. odzież ochronna

Recognize (verb) - to know someone or something because you have seen or experienced them before. Rozpoznawać

Require - (verb) to need something. wymagać

Risk (noun) - the possibility of something bad happening. Ryzyko

Toxic - (adjective) having poisonous properties. toksyczny

Trigger (verb) - to make something begin to happen. Wywoływać

Comprehension check:

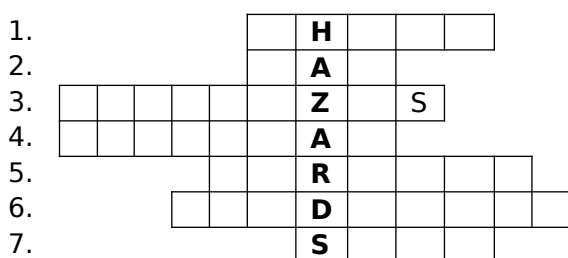
Exercise 1. True or false?

1. This symbol warns us against concentrated solutions of strong acids that can cause burns to skin or damage to eyes. →
2. The types of danger in the Lab can be divided into five classes.
3. Biological hazards include bacteria, viruses and chemical substances.
4. Protective clothing includes among others gloves, eye protection and a mask over the mouth.
5. Glass equipment should be checked for damage before being used.



Vocabulary revision:

Exercise 1. Do the crossword:



1. Something you have to do with the laboratory glass, before you use it.
2. Chemical analysts work there
3. To reduce something harmful or unpleasant to the smallest amount or degree
4. Regular training helps to prevent this type of risks.
5. They are similar to toxic substances but not as dangerous.
6. Such substances provide oxygen for flammable substances to burn more fiercely
7. Irritant substances can make your red.

Exercise 2. Complete by translating into English:

1. To (*być przygotowanym*) for the dangers and be able to prevent them, you must first have knowledge of the risks.
2. (*Zapewnienie*) ventilation equipment is correctly adjusted and in full working order is also important.
3. Biological substances can carry (*choroby*) and pose a danger to laboratory technicians.
4. Therefore, care must be taken that equipment is properly (*schowane, rozłożone*) and, in cases where liquid substances are spilled, the floor is quickly cleaned.
5. Often, heavy objects are carried incorrectly which can lead to
..... (*konsekwencje zdrowotne*).
6. Some chemical hazard symbols are (*oczywiste*), some are not.
7. Some chemicals are explosive and may explode as a consequence of heat, fire, shock or (*tarcia*).
8. Chemicals that are labeled with the nature polluting or so called environmental hazard symbol should be (*unieszkodliwiane*) of responsibly.
9. Those chemicals contain substances that are toxic to aquatic organisms and can cause (*długotrwałe*) environmental effects.

Exercise 3. Unscramble the words

- MALMBALEF
- GOSRATE
- SOTUNIOLS
- CEIVETROPT
- BALLE
- LACTILEECR
- VESGLO
- ADNGSUERO

Now make sentences of your own using all the unscrambled words, minimum 4 sentences (maximum 8)!

Discuss the questions.

1. Why is protective clothing necessary while working in the Lab?
2. Do you think that chemical hazard symbols are self-explanatory and easy to understand?