



On this number, the Useful Notes section is about the labeling of hazardous Chemicals products. Here we include: a group of basic norms that are the body of the theoretical part of the topic; a case study describing a work situation related with the topic, with graphics; a relation of causes that can generate risks in the case study; activities that could be done by the students based on the case study along with didactic tests for the teacher and a point regarding legislation. The activities work as a guidance are different, and can be done individually or in group. The purpose for this is to be used as help tools for the teacher when addressing preventive cases with the students.

## LABELS OF HAZARDOUS CHEMICAL PRODUCTS

The use and presence of hazardous Chemicals products in the work and domestic environment is currently very common; from big industries to small businesses, through specialized working areas like laboratories or hairdressing salons as examples. A key point about the prevention from hazardous chemical products is that everyone who uses the products should have the information to allow them to know its hazardousness and the precautions that need to be followed while working with it. Besides being a recommendable norm is a legal obligation, because the current regulation of Prevention of Working Risks obliges the employer to inform workers about the risks that employees are exposed to at the job (art. 18) as well as to train them to practice safety working measures (art. 19.)

The tags provide the basic information that identifies the product, as well as informing about its risks. There are also SDS Safety Data Sheets that provide more information about the product.

### ..... BASIC RULES .....

1. It is mandatory for the manufacturers, storekeepers or distributors of hazardous Chemicals products to place correct labels as established by the Decree 363/95.

2. The bottles with intermediate products or remaining from decanting remains, as well as all of those that might have residues must be tagged placing the key information about its composition and hazardousness.

3. Every label must have: name of the substance; name, complete address and telephone number of the commercialization company (manufacturer, distributors, or importers); pictogram and warning indications printed in black on a orange background; "phrases R" that

define the risks of the substances and work as a complement to what is stated in the pictograms; "S phrases" providing the appropriate warning recommendations in order to work with hazardous substances. The appearance of the National Institute of Toxicology telephone number is optional.

4. The label has to be placed in a visible area, it must not be erased or removed and have to be legible. The language used in the label must be the official language of the country.

5. The instructions must be included in the tag and should be firmly placed in one or several areas of the bottle or printed directly on it.

6. The size of the label should be appropriate for the shape and size of the bottle to allow a better reading.

7. The color and presentation of the label shall allow the pictograms, letters and background to be well differentiated.

8. Hazardous products should be stocked following the security instructions on the label ("S phrases").

9. As a compliment to the labels there are other means to provide information about the chemical risks such as the Safety Data Sheets (SDS); which are mandatory to provide them to the "professional user" when delivering the product for the first time. Besides, informing about the composition of the

product as well as its dangerousness. The SDS provide other data such as the handling of residues, first aid, limit values and physicochemical or toxicology data.

10. It is mandatory to inform and train the workers about the risks that their line of work may have and about the chemical products that they might use.

11. If indicated on the label, personal protection equipment (PPE) should be used while working with the product.

12. Flammable substances should be kept away from heat or any mean of spark or flame.

### ..... CASE OF STUDY .....

**Description:** Toni works at a beauty salon and needs to dilute ammoniac in order to bleach a client's hair. He goes to the hall's shelves where the products are kept and picks up a 5 l receptacle of ammoniac.

Because he can't find any of the recipients with the ammoniac label that he normally uses to pour the ammoniac label on it, he decides to use the empty recipient that Charo, the aesthetician, uses and that has an acetone label and some product characteristics on it. He pours half the amount

contained in the ammoniac receptacle into the new recipient. Then he takes the amount needed from that container and pours it in a jar.

Because he is in a hurry, Toni does update the acetone label with new one indicating the current content. However, he remembers that a colleague told him that it's important for every product container to have its name displayed on its label; he makes a mental note to do so when possible.

After a while, Charo heads to the shelves in the hall to look for acetone to "work on a client's hands". In order to pick up the recipient with the acetone label, Charo needs to move a dryer that prevents her from getting to the products.

Meanwhile, Toni pours the ammoniac into a container and mixes it with peroxide without using gloves. Although some areas of his hands are red he dismisses the phrase he always read ammoniac bottle "irritate eyes, skin and the respiratory tract", as an exaggeration.

Suddenly, Charo's client starts screaming and gets up from the chair holding her left hand in pain.

Surprised, Charo takes a look at the client's hand and notices that one of her fingers is red. Quickly, Toni explains what



happened with the receptacles and the first thing that Charo tells Toni is to go and take a look at the safety instructions on the ammoniac label. Toni replies that the label is old and worn out and that he can't read it. Charo decides to call the National Institute of Toxicology and the manufacturer to ask them what she should do.

Then Charo remembers that during a basic course that she attended, she was

informed about the existence of the Safety Data Sheet which contains information about the product. But the owner of the beauty salon said he didn't have it, so she decides to soak the lady's hand in water and advises her to visit her doctor.

### Case of Study. Risk factors

Leave a receptacle with a label different from its content.

Basic rule 2 \_\_\_\_\_

Stock hazardous products in inappropriate places.

Basic rule 8 \_\_\_\_\_



Not using the protection equipment when working with hazardous substances.

Basic rule 11 \_\_\_\_\_

Worn out or illegible labels for the products.

Basic rules 4, 5, 6 and 7 \_\_\_\_\_



Not accounting with the complimentary information that has the safety date for Chemicals products.

Basic rule 9 \_\_\_\_\_



Lack of training on regards to training with hazardous chemical substances'.

Basic rule 10 \_\_\_\_\_

Ignore the safety recommendations established in the label ("S Phrases") for the handling of hazardous substances.

Basic rule 3 \_\_\_\_\_

Keeping flammable substances near a source of heat.

Basic rule 12 \_\_\_\_\_

### ACTIVITIES FOR THE TEACHER'S AID

1. Place in order, from the most to the least hazardous, the risks derivate from the usage of hazardous products that belong to a series of labels. What are the measures that should be taken in case of an accident, spillage, and fire with these substances or preparations?

**Proposal:** the teacher will hand in to every group a page with three or four labels from chemical products. The students should do a Phillips 66 with this activity (in case of not having 36 students, changes can be made). The groups will be composed of six people

during six minutes, in order for every member of the group to order from the highest hazardousness to the least, and explain the reason for that specific order. The group will choose one member that will have to take notes regarding the comments of the rest of the group. Afterward, each representative will have one minute to explain what was said by his/her group. To finish, all the groups must reach an agreement and make a final list. The same exercise can be done with labels for substances and preparations that the students know about and use regularly at the school lab.

2. Write In the practice there are mentioned several hazardous substances and chemical compositions. During this activity, the students will have to interpret all the information provided on the labels. The teacher should emphasize to the students that it is important to demand that all chemical products are labeled, even when bought at a mall.

**Proposal:** the students will form three groups and each one of them will analyze the labels of the following

products: ammoniac, acetone, and peroxide. The analysis will consist of knowing the characteristics, risks, handling conditions, personal protection clothing, etc. Afterward, there will be a student discussion with all the classmates and possible concerns and opinions will be addressed.

All the exercises can be solved through the group discussion and the student's comments.

**3.** Identify each pictogram along with its risk.

**Proposal:** The teacher will provide every student with some papers that will have the most common pictograms. Next, the students will indicate the hazardousness category of each pictogram. This exercise can be done in two different ways.

The following are the risk categories: hazardous for the environment, very toxic, toxic, irritant, combustible, easy to be flammable, harmful, explosive, extremely flammable, corrosive.

This exercise can be completed done in two ways. Individually, and returned to the teacher for its corrections. In groups, commenting the results of the

entire class. The exercise can be completed by making the students to look for products that carry these pictograms at home or at school.

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**All exercises can be solved based on the group discussion and with the students' comments.**

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**4.** Discuss about the need of labeling all substances and hazardous chemical preparations.

**Proposal:** There will be a debate in class, directed by the teacher or a teacher selected. The discussion will be about the need to label all hazardous chemical products, the new products (that must be labeled at the moment of purchase), intermediate products (that have to be identified with the label), as well as the residues.

In order to help the debate, the students will bring from home or look for at the school, receptacles of chemical products that have the labels and other that does not have them. Also, the students will explain a case that they might know in

which some accident was caused because of the absence of information on the product.

**5.** Create appropriate labels for intermediate products, following the points established by the legislation that will be explained by the teacher.

**Proposal:** Work in small groups (3 to 4 people). Each group has to choose a chemical product commonly generated during practice at their school lab. The teacher needs to make sure that all substances that will be used are different and able to cover the working processes. It is important for the students to work with products that stand out for their regular usage or because of their special characteristic. Followed by an in-class presentation identifying the risks described on every label and talking about the selected "R and S phrases". This activity can lead to a discussion identifying where in the process or at what stage of it the product can be generated as well as the safest ways to work with them.

## LEGISLATION AND RULES

Articles 18 and 19 of the Law 31/1995, November 8<sup>th</sup> regarding Safety and Health at Work. BOE n° 269, November.

Spanish Royal Decree 1078/1993 of July 2<sup>nd</sup>. Regulation about class, bottling, and labeling of hazardous preparations, reviewed by the Order 20.2.1995 and modified by R.D. 363/1995 on March 10th.

Royal Decree 363/1995 of March 10<sup>th</sup>. Regulation about the notification of new substances, class, bottling and labeling of hazardous substances, modified by Order 13.9.1995 and Order 21.2.1997

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