

Chapter 1 Safety Tips in Chemistry Experiments and Practical Exercises

1. Basics of experiments using chemical substances

Experiments using chemical substances (chemistry experiments) are conducted not only by chemistry-related faculties and divisions but also in education and research in various areas and fields of natural and life sciences. In chemistry experiments, various types of chemical substances or experiment devices, etc. are handled. Most of them are hazardous and toxic in one way or another. Individuals who handle chemical substances must be responsible for the entire process, including acquisition, storage, use, and disposal. Remember that safety can only be achieved by awareness and care of each individual. The hard-and-fast rule is “ensure safety by yourself.”

The first goal is to understand the basic information about chemistry experiments and chemical substances and acquire the ability to handle even hazardous substances safely.

2. Safety tips in chemistry experiments and practical exercises

Experiments and practical exercises start from the preparation phase. Careful preparation leads to safe and successful experiments.

(1) Understand the environment of your laboratory

Before conducting an experiment, check the table layout, the position of the draft chamber, emergency exit, and fire extinguisher. If an emergency shower, eye washer, etc. are available, check how to use them. Also monitor the position of other experimenters. Understanding the environment of your experiment helps avoid the impact on other experimenters and ensure safety of yourself and other individuals.

(2) Do not eat or drink in a laboratory

In a laboratory where chemical substances, etc. are handled, invisible chemical substances, etc. waft around. Eating and drinking in this environment result in ingestion of chemical substances, etc. with the food and beverages. Oral exposure adversely affects the human body. Do not eat or drink in a laboratory. This also applies to pharmaceuticals and gums. In areas where chemical substances are handled, the following sign is displayed. Make sure to follow the rule.



Fig. 1-1 Sign to prohibit smoking, eating, and drinking

After handling chemical substances, make sure to wash hands and gargle. Avoid chemical burns and oral exposure to chemical substances.

(3) Clothes and use of protective equipment

Minimize skin exposure during a chemistry experiment. Chemical substances are absorbed by the human body through oral, percutaneous, and respiratory exposure. Because chemical substances evaporate and scatter, vapors can enter the body without your knowledge. Some substances require the use of protective clothes, etc. At Kumamoto University, information is provided on the Safety Data Sheets (simplified version) issued when chemical substances are acquired. Make preparations