



Guidance Document

Quick Guide to Assess Risk for Hazardous Chemicals

The following outline provides a summary of the steps that laboratory workers should use to assess the risks of handling toxic chemicals

Identify chemicals to be used and circumstances of use-

Identify the chemicals involved in the proposed experiment and determine the amounts that will be used. Is the experiment to be done in an enclosed apparatus or fume hood? Is it possible that new or unknown substances will be generated in the experiment? Are any of the workers involved pregnant or likely to become pregnant? Do any workers have known sensitivities to specific chemicals?

Consult sources of information-

Consult a current Material Safety Data Sheet (MSDS) or other sources of information. In cases where substances with significant or unusual potential hazards are involved, it may be advisable to consult more detailed references. Depending on the worker's level of experience and the degree of potential hazard associated with the proposed experiment, it may be necessary to obtain the assistance of supervisors, advisors or the Environmental Health and Safety (EHS) Department.

Evaluate type of toxicity-

Use sources of information to determine the type of toxicity associated with each chemical involved in the proposed work. Are any of the chemicals carcinogens or suspected carcinogens? Are any chemicals suspected to be reproductive or developmental toxins or neurotoxins?

Consider possible routes of exposure-

Determine the potential routes of exposure for each chemical. Are the chemicals gases, or are they volatile enough to present a risk of exposure by inhalation? Can substances be absorbed

through the skin? Is it possible that dusts or aerosols will be formed in the experiment? Does the experiment involve a risk of ingestion or injection of chemicals?

Evaluate quantitative information on toxicity-

Consult the sources to determine the LD50 for each chemical via the relevant routes of exposure. Determine the acute toxicity hazard level for each substance; classify each chemical as highly toxic, moderately toxic, slightly toxic, etc. For substances that pose inhalation hazards, note the threshold limit value (TLV), short-term exposure limit (STEL), and permissible exposure limit (PEL) values.

Select appropriate procedures to minimize exposure-

Use basic prudent practices for handling chemicals. Refer to applicable Chemical Hygiene Plan. Consider the total amount of substance that will be used, the expected frequency of use, routes of exposure, and the circumstances of use in the experiment. Determine whether it is appropriate to apply basic procedures for work and whether additional consultation with EHS is warranted.

Prepare for contingencies-

Note the signs and symptoms of exposure to the chemicals to be used. Note appropriate measure to be taken in the event of exposure or accidental release of any of the chemicals.

From Prudent Practices in the Laboratory, National Academy Press, 1995. Dispose of surplus and waste chemicals properly.