

## Risk control guidelines and procedures - Applied Mathematics, RSPHysSE, ANU

**NOTE: \* A COPY OF THIS DOCUMENT MUST BE PLACED IN THE FRONT OF ALL 'LAB BOOKS'**

Most **Applied Maths chemical work** will fall into **category B2** and below, and therefore the requirements should be easily met.

'LAB BOOKS' entries should make reference to the following:

- **MSDS** – for all chemical procedures refer to the MSDS for the chemicals involved, noting toxicity, etc.
- **RISK CATEGORY** – Using MSDS information and the document below, assign a risk category to the work. For categories **A, B1 AND B2** it is sufficient to **note the category in your lab book and adopt the precautions described below.**
- **FOR RESEARCH WORK JUDGED A SIGNIFICANT RISK** – A protocol containing details in category **C1** or **C2** must be completed and approved by the research group leader or equivalent before work commences. A copy must be placed in the lab book.

### Specific Work Protocol and Risk Assessment

Source: [ANU Risk Management for Chemicals](#)

The specific work protocol must be documented and a risk assessment undertaken (see ANU's Chemical Safety manual).

A chemical handling protocol including risk assessment, safety instructions and approval, may apply to a range of procedural variations, providing this range is clearly defined and does not alter the controls required.

The risk assessment will allocate one of four increasing levels (with sub-levels) of risk to the work protocol, as follows:

Low risk	category A
Moderate risk	category B1 (lower moderate risk) or category B2 (higher moderate risk)
Significant risk	category C1 (lower significant risk) or category C2 (higher significant risk)
High risk	category D <b>NOTE:</b> that any work judged as high risk will require detailed research and planning and must not be undertaken without OHS Unit input and senior management approval.

The assignment of a risk category will be influenced by the nature of the work, the quantities involved, the laboratory facilities available, and the training and experience of both the individuals undertaking the work and their supervisors.

For risk assignments of category A, category B1, and category B2, the risk assessment category shall be entered into the individual's workbook. As a minimum the control requirements given below for the relevant category must then be used when undertaking the work.

For risk assignments of **category C1 and category C2**, a brief description of the special control procedures, precautions, locations, etc. used to control the specific hazard(s) shall be recorded in the protocol and attached to the individual's workbook before the work commences. It is mandatory that the proposed system of work be approved by the research group leader or equivalent before work commences.

### Risk Control Procedures

**Category A (low risk) control procedures:** Examples of category A (low risk) work - the use of non-hazardous chemicals, the undertaking of spectroscopic or other physical measurements on small volumes of chemicals, preparation of non-hazardous biological buffers.

- EYE PROTECTION MUST BE WORN AT ALL TIMES where chemicals are being used.
- A laboratory coat or gown must be worn.
- Suitable footwear must be worn.

- Gloves are routinely recommended.
- Appropriate general ventilation or a fume cupboard (or other local exhaust ventilation) is considered beneficial in reducing exposure to gases, vapours and aerosols.
- Mouth pipetting is prohibited.
- Good housekeeping is critical.
- Consumption or storage of food and/or beverages in the laboratory is forbidden.

ANU staff and post-graduate students must have a competent understanding of the relevant sections of ANU's Chemical Safety series of manuals and any laboratory safety regulations of their Budget Unit before commencing laboratory work. (<http://info.anu.edu.au/hr/OHS/index.asp>)

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**Category B1 (lower moderate risk) control procedures:** Examples of category B1 (lower moderate risk) work - the small-scale use of low-risk chemicals in solvent transfers, storage, drying, extraction, chromatography, cleaning, and small-scale non-hazardous reactions.

- Category A requirements **MUST BE IN PLACE AT ALL TIMES**.
  - Use work practices that minimise the generation of gases, vapours and aerosols.
  - Use of a fume cupboard is advisable.
  - Use of gloves is advisable.
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**Category B2 (higher moderate risk) control procedures:** Examples of category B2 (higher moderate risk) work - the small-scale use of chemicals that are known to be mildly toxic, irritant, or corrosive, the use of chemicals where no toxicological data are available but which are judged to be of low risk on the basis of a generic assessment.

- Category A requirements **MUST BE IN PLACE AT ALL TIMES**.
  - Fume cupboard or Schlenk line must be used.
  - Gloves of appropriate chemical resistance (and other physical attributes) must be worn.
  - Goggles or face shield may need to be worn to provide improved eye or face protection.
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**Category C1 (lower significant risk) control procedures:** Examples of category C1 (lower significant risk) work - the use of chemicals known to be significantly oxidising, pyrophoric, flammable, corrosive, toxic, irritant, pungent, sensitising, mutagenic, teratogenic, carcinogenic, violently reactive with water or chemicals, or where no toxicological data are available but which are judged to be of moderate risk on the basis of a generic or comparative assessment.

- Category A and category B2 requirements **MUST BE IN PLACE AT ALL TIMES**.
  - Special personal protection such as goggles, face shield, respirator or clothing may be required.
  - Safety shield may be required.
  - **Special fume cupboard with appropriate scrubber** may be required.
  - Appropriate administrative restrictions must be put in place including such things as work to be done during standard hours, experienced colleague to be in attendance.
  - Other health and safety aspects may need to be considered.
  - Specific waste disposal methods must be documented.
  - Protocols must be approved by the supervisor or delegate.
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**Category C2 (higher significant risk) control procedures:** Examples of category C2 (higher significant risk) work - chemicals and procedures that require a special facility or location, such as some potential explosives (including sealed tubes), high pressure reactions, some large scale reactions, and category C1 chemicals considered of higher significant risk. The category would also include chemicals where no toxicological data are available but which are judged to be of significant risk on the basis of a generic or comparative assessment.

- Category A, category B2 and category C1 requirements **MUST BE IN PLACE AT ALL TIMES**.
  - Appropriate special facilities or locations must be provided.
  - Other health and safety aspects may need to be considered.
  - Specific waste disposal methods must be documented.
  - Protocols must be approved by the supervisor or delegate.
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**Category D (high risk) control procedures:**

Category D is judged as high or extreme risk, and requires detailed research and planning. Category D work must not be undertaken without OHS Unit input and explicit senior management approval. Examples include - some large scale extremely dangerous reactions, work involving or synthesizing explosives, larger scale super-toxic materials/reactions.