

Introduction

An incident occurred in a laboratory when the contents of an NMR tube was transferred back into the reaction vessel in a condenser leading to an inadvertent reaction. No risk assessment of the process had been undertaken.

The scope of this bulletin is to remind staff and students to ensure that an appropriate risk assessment has been undertaken prior to a task being commenced and that potentially contaminated reagents must not be recycled.

Key Regulatory Requirements

The Occupational Health and Safety Act 2004 (Vic) requires employers, so far as reasonably practicable, to provide a safe workplace. The Australian Standard AS 2243.2 (Safety in laboratories, Part 2: Chemical aspects, Section 3.3.1.2) provides information on hazard identification, risk assessment and control processes. When developing and reviewing a risk assessment, staff and students should review all resources. Detailed guidance can be found in the University [Chemical Management Guidelines](#). For the University's general Risk Management framework, refer to [Risk Management](#). The Dangerous Goods (Storage and Handling) Regulations 2012 (Vic) prescribe the storage arrangements for all dangerous goods. Also refer to [Dangerous Goods](#) for additional information.

Induction

All staff and students in the workplace may require a specific local induction in addition to their broader University induction. Operation and use of Nuclear Magnetic Resonance (NMR) Spectrophotometers will require specific training and competency assessment. Further training on specific instruments may be required.

Chemical Risk Assessment

A Chemical Risk Assessment (CRA) ([Risk Assessment](#)) is a record of the identification of hazards and risks associated with a chemical, and the risk controls that have been implemented to mitigate those risks.

A process chemical risk assessment is a risk assessment of a chemical process in which multiple activities and/or multiple chemicals may interact. In these cases, it may not be valid or reasonably practicable to complete a separate risk assessment for each chemical involved. Instead, complete a risk assessment setting out the process steps of the activity. The process CRA form is available in the [Sample laboratory notebook](#) on the Safety website (www.safety.unimelb.edu.au).



The manager/supervisor must ensure that all chemicals located in their area of responsibility have chemical risk assessments completed prior to use. The depth/complexity of the chemical risk assessment, including generic or individual assessments or process assessments will be determined by the:

- properties and the associated risks of the chemical;
- environment in which the chemical will be used; and
- activities in which the chemical will be applied.

NMR Sample Protocol

All samples run on an NMR Spectrophotometer must comply with local guidelines as per the local Induction information. Under no circumstances should residual samples to which additional reagents have been added for analysis, be put back into any reaction vessel without a risk assessment of the potential impact of the introduction of the reagent as a contaminant.

When using the NMR, the operator must ensure that the CRA encompasses the processes that the chemical will undergo, the possible interaction with other chemicals, and if there is significant change, any further appropriate controls must be identified and implemented.

PLEASE NOTE:

The following types of samples must NOT be run on any NMR:

- bio-hazardous materials
- radio-active materials
- volatile organometallics
- volatile sulphur containing cpds
e.g. thiols, thiophenols
- volatile selenium containing cpds
- trifluoroacetic acid as solvent or
major co-solvent

If in doubt, ask the facility manager