

Carcinogens

Policy

HKU is committed to ensuring that the working environment is safe and without risk to health, so far as is reasonably practicable, and employees are required to co-operate in achieving this end.

This document is written to assist those responsible for the use of and users of carcinogenic substances to meet their obligations under the University Safety Policy.

Responsibilities

The Head of Department must:

- be aware of all work in the department involving the use of carcinogens;
- ensure that no work proceeds until a safety assessment has been prepared, approved and signed by the person immediately in charge of the work and countersigned by the Head of Department ([Appendix I](#));
- ensure that each person involved in the work is adequately trained in the appropriate techniques and possesses the skill and knowledge required and that such persons be registered as users;
- ensure that adequate records are kept in the department.

The User of Carcinogens must:

- be fully aware of the requirements of the policy and risk assessment;
- take special care and pay detailed attention to all work involving carcinogens.

The Supervisor or Principle Investigator must:

- Make a safety assessment, gain approval from the Safety Office or biosafety committee for the assessment and any standard operating procedures.
- Obtain the Material Safety Data Sheet for the carcinogen being used and give a copy to all who work on the project.
- Ensure all who work with the carcinogen are aware of its properties, any potential health issues and are trained appropriately.
- Ensure staff are familiar with procedures in the event of an accident or emergency.
- Ensure full consultation and liaison with the LAU if animal work is to be undertaken.

The Safety Office will:

- assist with the safety assessment and if uncertainty arises either refer the issue to the biosafety committee or to an external expert.

Prepared by: Safety Office	Approved by: Safety, Health & Environment Committee	Issue Date: Oct. 2006
Carcinogens v. 1.1	Page 1 of 6	Review Date: Oct. 2008

Guidance

Quotation from Medical Research Council

"What must be clearly understood is that precautions appropriate for work, day-by-day, with substantial amounts of a potent carcinogen could be ridiculously restrictive for occasional use of one of the many known but extremely weak carcinogen (unless the chemical in question had hazardous properties of some other kind). That is one reason why it is impossible to set out a single detailed code of practice to cover all work with chemical carcinogens"

1. Record keeping

Safety assessments and other records must be kept in the Department for at least 30 years. If the department is closed down, or transferred to another place, the records should be handed over to a suitable archive, by negotiation.

The files should be protected against fire and theft. The records should be prepared on the assumption that they may be required as evidence in some future claim against the employer for negligence in Civil Law.

The records should include:

- (i) A list of registered users, with their name, I.D. or Passport No., date of birth, sex, status, number, and previous exposure of each registered worker.
- (ii) A register of all carcinogens in stock and of all accessions and issues from stock.
- (iii) Details of each issue with the name(s) of the person(s) who will use the compound and the quantity supplied. NB. Only

approved users may be issued with carcinogens.

- (iv) Copies of safety assessments and any written departmental rules.
- (v) records of any enquiries into mishaps.

The records should be reviewed annually and copies sent to the Safety Office for safe keeping.

2. Basic rules for using carcinogens

2.1 Carcinogenic chemicals should not be used for purposes for which a satisfactory non-carcinogenic substitute is available. The higher cost of substitutes is not a justifiable reason to continue using carcinogens.

2.2 All work using known carcinogens should be justified by the importance of the experiments or procedure. When the use is justified then the scale of use should also be justified. Any novel compound with a molecular structure closely related to that of a human carcinogen should be treated, in the absence of any information to the contrary, with the same caution that would be employed with the known carcinogen.

2.3 Work with carcinogens should be done only by persons who:

- (i) are aware of the hazardous properties of the substance(s);
- (ii) are suitably experienced;
- (iii) have been instructed in appropriate techniques; and
- (iv) are aware of the necessary precautions.

Prepared by: Safety Office	Approved by: Safety, Health & Environment Committee	Issue Date: Oct. 2006
Carcinogens v. 1.1	Page 2 of 6	Review Date: Oct. 2008

2.4 New or unfamiliar techniques should be practised using a non-carcinogen before commencing work with the carcinogen(s), with due regard to any rules or regulations on work with animals.

2.5 The use of carcinogens for teaching purposes should be avoided. If their use in a teaching procedure is unavoidable, the need and conditions of use must be reviewed annually by the Head of Department.

Before using carcinogens in undergraduate teaching the written agreement of the Chairman of the EHS committee must be obtained, through the Safety Office by the Head of Department.

2.6 Carcinogens should be handled only in suitable, designated areas with adequate equipment for their containment. A designated area for handling a significant amount of a carcinogen may be either:

- a) an appropriately equipped laboratory designated for this purpose;
- b) a fume cupboard or ventilated enclosure of approved design designated for the purpose and appropriately labelled. Designated areas may be marked as either, a "controlled area", or a "supervised area" in consultation with the Safety Officer. This marking will be made by analogy with the Radiation Safety Policy of HKU with a view to restricting access to the areas concerned.

2.7 If it is inevitable that **small** samples of carcinogenic materials are taken to non-designated areas, e.g. for specialised

analysis, the same stringent precautions should be observed in respect of labelling, handling, containment, decontamination and waste disposal as are required in designated areas.

2.8 **Work with carcinogens, including the disposal of wastes must be conducted according to WRITTEN operating procedures in accordance with the safety assessment.**

2.9 Carcinogenic chemicals should be kept segregated from other chemicals in a locked cupboard clearly labelled "Chemical Carcinogens". Keys should be held only by designated persons.

2.10 Work with laboratory animals should be conducted under total containment conditions, and appropriately licensed (see 4(viii) below). If total containment is impossible, the work cannot proceed without the written agreement of the Chairman of the Safety, Health & Environment Committee obtained through the Safety Office.

3. Control measures

3.1 Exposure

It is particularly important that exposure is kept to as low a level as is reasonably practicable, bearing in mind that the level of exposure affects only the probability of cancers occurring.

Entry of carcinogens into the body can take place by inhalation, ingestion, penetration of the skin, mucosal surfaces or by contamination of the eyes.

Prepared by: Safety Office	Approved by: Safety, Health & Environment Committee	Issue Date: Oct. 2006
Carcinogens v. 1.1	Page 3 of 6	Review Date: Oct. 2008

3.2 Protective clothing.

- (a) Suitable and sufficient protective clothing should be specified and worn at all times. Protective clothing must be disposable. Items which have become contaminated and are not disposable must be decontaminated by approved workers before being removed from the designated area. Contaminated clothing **must not** be sent for laundering.
- (b) **ANY PROCEDURE WHICH CAUSES CONTAMINATION OF PROTECTIVE CLOTHING IS UNSATISFACTORY AND MUST BE IMPROVED.**
- (c) Protective clothing which has been worn whilst working in a designated area is potentially contaminated and **must not leave the designated area except for disposal.**

3.3 Personal hygiene

- (a) No eating, drinking, smoking or application of cosmetics is permitted in any laboratory.
- (b) The use of mouth operated equipment is strictly forbidden.
- (c) Workers must seal any exposed cut or abrasion of the skin with an appropriate surgical dressing before commencing work or donning protective clothing.
- (d) Hands should be washed with lukewarm rather than hot water and dried with disposable towels on the completion of work.

3.4 Waste disposal

- (a) Methods of waste disposal and decontamination must be determined

before work commences and be set out in the safety assessment.

- (b) Decontamination methods used for experimental residues and glassware should ensure complete chemical conversion into non-carcinogenic substances.
- (c) Contaminated combustible material should be placed in sealed plastic bags, labelled appropriately, and disposed of by high temperature incineration or other approved method.
- (d) Strict control of the disposal of sharps (e.g. needles, broken glass) must be exercised.

3.5 Equipment

So far as is practicable, equipment which may become contaminated with a carcinogen should be restricted to this use only and should be appropriately labelled. Written instructions for cleaning and decontamination must be prepared. Decontamination must be the responsibility of the user.

3.6 Washing-up

Written instructions must be prepared setting out procedures to be followed for washing-up. Only named persons trained for the task may be employed in washing-up potentially contaminated equipment. The training must ensure that proper information and instruction has been given and understood. Employing someone other than the user to wash up is highly undesirable.

Prepared by: Safety Office	Approved by: Safety, Health & Environment Committee	Issue Date: Oct. 2006
Carcinogens v. 1.1	Page 4 of 6	Review Date: Oct. 2008

4. Operations considered to involve higher than average risks.

This list is **NOT** to be regarded as definitive and may be extended in the light of individual experience and knowledge.

- (i) Any process which can produce aerosols or vapour containing a carcinogen.
- (ii) Procedures such as distillation, crystallization, filtration, electrophoresis, chromatography using carcinogens or in their synthesis.
- (iii) Manipulation of solid carcinogens likely to result in dust formation, e.g. preparation of animal diets containing carcinogens (see para. 4.10).
- (iv) Storage and manipulation of carcinogenic gases, volatile carcinogens and compounds

that decompose spontaneously evolving carcinogens.

- (v) Weighing of carcinogens and the preparation of solutions containing them.
- (vi) Static electricity particularly during dispensing.
- (vii) Recovery of carcinogens from TLC plates.
- (viii) Changing traps and exhaust filters.
- (ix) Husbandry of animals treated with carcinogens.

NB. Concern over the long term hazards of carcinogens must not be allowed to divert attention from the precautions essential for protecting against the immediate hazards of acute toxicity, fire, etc.

Prepared by: Safety Office	Approved by: Safety, Health & Environment Committee	Issue Date: Oct. 2006
Carcinogens v. 1.1	Page 5 of 6	Review Date: Oct. 2008

Appendix I

The preparation of a Safety Assessment for work with carcinogenic substances

The assessment of the control measures required will clearly depend on both the quantity and potency of the carcinogen.

The results of the safety assessment should at least include details of:

- (a) the nature of the hazard and the nature and extent of the exposure;
- (b) whether or not the substitution by less hazardous substances is reasonably practicable;
- (c) measures to be taken to prevent or reduce exposure;
- (d) operating or maintenance instructions and procedures, where relevant, to ensure that exposure is minimised;
- (e) precautions for non-routine conditions, including emergencies;
- (f) use of personal protective equipment;
- (g) monitoring procedures;
- (h) health surveillance procedures;
- (i) arrangements for consultation with employees and their representatives, including procedures for reporting defects in plant or precautions, and details of essential information and training requirements.
- (j) determination of appropriate responses in the event of a spill or other emergency.

The following proforma may be of assistance in preparing the safety assessment.

Prepared by: Safety Office	Approved by: Safety, Health & Environment Committee	Issue Date: Oct. 2006
Carcinogens v. 1.1	Page 6 of 6	Review Date: Oct. 2008



Date of Request _____

Principal Investigator: _____

Head of Department: _____

Department: _____

Building - Room: _____

Phone: _____

CARCINOGEN TO BE USED

Name: _____ CAS No.: _____

Synonyms: _____

Location of Use: _____

Use Condition: _____

Location of Storage: _____

Period/Frequency of Use: _____

Quantity to be Procured: _____

PERSONNEL PROPOSED FOR THIS PROJECT

EXPERIMENTAL PROCEDURES

Briefly describe the procedures that will involve the use of this carcinogen.



CONTROL PROCEDURES

Describe any additional controls not specified in the HKU Code of Practice for the Laboratory Use of Chemical Carcinogens that will be employed to protect the individuals participating in this research.

DECONTAMINATION AND DISPOSAL

Decontamination Procedures (surfaces, materials, instruments, equipment etc.):

Disposal Procedures (wastes and unused stock):

EMERGENCY PROCEDURES

In the event of overt personnel exposure (inhalation, ingestion, inoculation):

ANIMAL EXPERIMENTATION

If animals are to be used in this research activity provide the following information concerning the safe-guards that will be employed in conjunction with their use:

Personal Protective Equipment (gloves, respirator, approved clothing, booties, goggles etc.):

Animal Care and Housing Requirements (containment cages, exposure procedures, bedding change, dose preparation, cage cleaning, waste handling methods):

Facility Operational Procedures (access control, traffic patterns, decontamination procedures, waste management, species isolation requirements):
