



# **UNIVERSITY OF EAST ANGLIA**

## **RULES FOR WORK WITH CARCINOGENS IN LABORATORIES**

These rules were approved  
by the UEA Safety Advisory Committee  
in October 2003

# UNIVERSITY OF EAST ANGLIA

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## RULES FOR WORK WITH CARCINOGENS

### 1. INTRODUCTION

The Health and Safety at Work etc. Act 1974 requires employers to ensure 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.

The Control of Substances Hazardous to Health Regulations 2002 (COSHH 2002) and the associated Approved Code of Practice issued by the Health and Safety Commission amplify and make explicit certain of the duties under the main Act. The Regulations require the preparation of safety assessments (regulation 6) for specified groups of substances hazardous to health.

### 2. MANAGERIAL CONTROLS

2.1 The Dean of the School is, ex officio, responsible to the University for safety in his/her School.

The Dean, through the School's Safety Committee, must:

- (i) be aware of all work in the School involving the use of known carcinogens;
- (ii) ensure that no work proceeds until a safety assessment has been prepared, approved and signed by the person immediately in charge of the work (see Appendix B);
- (iii) ensure that each person involved in the work is adequately trained in the appropriate techniques and possesses the skill and knowledge required and that persons who regularly work with carcinogens are registered as users;
- (iv) ensure that adequate records are kept in the School.

### 3. RECORD KEEPING

Safety assessments and other records should be kept in the School for at least 30 years.

The files should be reasonably well 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, as well as to comply with the COSHH Regulations (see Appendix B).

The records should include:

- (i) A list of regular users, with their name, date of birth, sex, status, National Insurance number, and previous exposure.
- (ii) A register of all carcinogens in stock (see Appendix A) 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.
- (iv) Copies of safety assessments and any written departmental rules etc.
- (v) Records of any enquiries into mishaps.

The records should be reviewed annually.

Where the assessment reveals the need for a health record, this must comply with COSHH Regulations 11.

#### **4. BASIC RULES FOR USING CARCINOGENS**

- 4.1 Carcinogenic chemicals should not be used for purposes for which a satisfactory non-carcinogenic substitute is available.
- 4.2 All work using known carcinogens should be justified by the importance of the experiments or procedures. 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 which would be employed with the known carcinogen.
- 4.3 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 personnel, or are undergoing training under the supervision of suitably experienced personnel
  - (iii) have been instructed in appropriate techniques, and
  - (iv) are aware of the necessary precautions.
- 4.4 New or unfamiliar techniques should be practised using a non-carcinogen before commencing work with the carcinogen(s), with due regard to Home Office regulations for work with animals.
- 4.5 The use of carcinogens for teaching purposes should if possible be avoided. If it is considered that their use in a teaching procedure is unavoidable, the need and conditions of use must be reviewed annually by the Dean of the School.

- 4.6 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 must be identified with a sign indicating that carcinogens are in use and these areas must be thoroughly cleaned when the work with carcinogens terminates.

The cleaning of floors, walls and other surfaces in the designated areas should occur at regular intervals. Such cleaning must only be undertaken by trained (as in 4.3 above) individuals.

- 4.7 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.
- 4.8 Work with carcinogens, including the disposal of wastes must be conducted according to WRITTEN operating procedures in accord with the safety assessment.
- 4.9 Carcinogenic chemicals should be kept, in closed and suitably labelled containers, segregated from other chemicals in a locked cupboard clearly labelled "Chemical Carcinogens". Keys should be held only by designated persons.
- 4.10 Work with laboratory animals should be conducted under total containment conditions, and appropriately licensed.

## **5. CONTROL MEASURES**

### **5.1 Exposure**

It is particularly important that exposure be 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.

### **5.2 Protective Clothing**

- (a) Suitable and sufficient protective clothing should be specified and worn at all times. 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.**

### 5.3 Personal Hygiene

- (a) No eating, drinking, smoking, or applying of cosmetics is permitted in any laboratory.
- (b) The use of mouth operated equipment is strictly forbidden.
- (c) Any exposed cut or abrasion of the skin must be sealed 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.

### 5.4 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 chemical conversion of carcinogenic contaminants into non-carcinogenic substances.
- (c) Contaminated combustible material should be placed in sealed plastic bags, labelled appropriately, and disposed of by an approved method.
- (d) Strict control of the disposal of sharps, e.g. needles, broken glass, must be exercised.

### 5.5 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.

### 5.6 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.

## **6. 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) Synthesis of carcinogens using, e.g. distillation, crystallization, filtration, electrophoresis, chromatography.
- (iii) Manipulations 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.
- (vi) Recovery of carcinogens from TLC plates.
- (vii) Changing traps and exhaust filters.

## APPENDIX A

### 1. PROHIBITED SUBSTANCES UNDER COSHH REGULATIONS

Under regulation 4, the manufacture and use for any purposes or the importation into the UK of the following substances and articles is prohibited:

2-naphthylamine, benzidine, 4-aminodiphenyl, 4-nitrodiphenyl, their salts and any substance containing any of those compounds at a concentration equal to or exceeding 0.1 per cent by mass.

Under Regulation 15 the Health and Safety Executive can grant exemptions from these prohibitions, only where it can be satisfied that the health of persons will not be prejudiced as a consequence. **No exemption has been sought for work at UEA.**

### 2. INTERPRETATION OF THE TERM "CARCINOGEN"

The COSHH 2002 Approved Code of Practice defines a carcinogen as a substance or preparation which either:

- (a) is classified for labelling purposes as carcinogenic category 1 or 2 carrying the risk phrases R45 'May cause cancer' or R49 'May cause cancer by inhalation'

or

- (b) would be so classified if the European system for classifying substances and preparations dangerous for supply was applied (even if the law does not require this).

## **APPENDIX B**

### **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.

According to the Approved Code of Practice, the results of the safety assessment should at least include details of:

- (a) whether the work can be done in some other way so that it is not necessary to use a substance hazardous to health, or whether substitution by a non-hazardous or less hazardous substance is reasonably practicable;
- (b) the type of hazard (gas, fume, dust etc);
- (c) the type and level of exposure;
- (d) the identification of any workers who may be at particular risk;
- (e) the control measures to be applied to prevent or reduce exposure, and evidence that the employer has considered not employing workers at particular risk in areas where they may be exposed to carcinogenic substances, e.g. pregnant women working with a transplacental carcinogen;
- (f) operating or maintenance instructions and procedures, where relevant, to ensure that exposure is reduced to as low as is reasonably practicable;
- (g) precautions when conditions are not routine, e.g. maintenance activities and emergencies;
- (h) use of personal protective equipment;
- (i) monitoring procedures;
- (j) health surveillance procedures;
- (k) 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.