UNIVERSITY GUIDANCE ON THE USE OF CARCINOGENS

OCCUPATIONAL HEALTH AND SAFETY SERVICE

May 2014
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1. Introduction

Carcinogens may be encountered in a variety of locations at the University. For example, they can be produced by processes in workshops, be present in materials such as asbestos, samples taken from contaminated land and so on. However, the main focus of this document is to look at the intentional handling of known chemical carcinogens in laboratories, for example, carcinogens used as solvents, in chemical reactions, addition of DNA damaging agents to cell lines etc. This document does not cover radioactive materials. Advice for the use of radioactive materials can be obtained from the University Radiation Protection Advisor.

2. COSHH Definition of a Carcinogen

The Control of Substances Hazardous to Health (COSHH) 2002 regulations defines a carcinogen as ‘substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may induce cancer or increase its incidence.’

A carcinogen is defined by one or more of the following categories;

- a substance or preparation classified by the CHIP Regulations as carcinogenic category 1 or carcinogenic category 2 (see Table 1);
- a substance which has a Risk Phrase of R45 (may cause cancer) or R49 (may cause cancer by inhalation) assigned by the manufacturer;
- a substance, preparation or process listed in Schedule 1 of COSHH.

3. Carcinogen Classification

Worldwide there are different laws on how to classify the hazardous properties of chemicals and how information about these hazards is then passed to users (through labels, and safety data sheets for workers). This can be confusing because the same chemical can have different hazard descriptions in different countries. For example, a chemical could be labelled as carcinogenic category 2 in one country, but carcinogenic category 1 in another country.

3.1 CHIP Regulations

The UK currently follows the Chemicals Hazard Information and Packaging for Supply Regulations 2009 (CHIP) for chemical hazard classification. This system uses Risk phrases and Safety Phrases to identify chemical hazards. As indicated in section 2, the Risk Phrase of a substance is a key stage in determining if a compound is carcinogenic or not.
Table 1 - CHIP carcinogen classification system

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carc. Cat. 1</td>
<td>Substances <em>known</em> to be carcinogenic to man.</td>
</tr>
<tr>
<td>Carc. Cat. 2</td>
<td>Substances which <em>should</em> be regarded as if they are carcinogenic to man.</td>
</tr>
<tr>
<td>Carc. Cat. 3</td>
<td>Substances which cause concern for man owing to <em>possible</em> carcinogenic effects.</td>
</tr>
</tbody>
</table>

CHIP also assigns Indications of Danger to substances, some of which have subcategories such as carcinogenic category 1, 2 and 3 (Table 1). CHIP carcinogen categories are often written in Material Safety Data Sheets (MSDS) as "Carc. Cat." then followed by the rating of 1, 2 or 3. The Carc. Cat. rating will normally be in the same section as the Risk phrases (R phrases) e.g. R45 or R49. As described in the COSHH definition above, only substances in category 1 and 2 are classed as carcinogens. Category 3 substances are not classified as carcinogens under COSHH.

Please note substances classified as R40 (Limited evidence of carcinogenic effect) are not included in the COSHH definition of carcinogen. It is possible that different suppliers and companies outside of the UK may classify the same substance differently accordingly to their own laws/regulations. Please note, although not technically classed as carcinogenic, chemicals with a R40 phrase should still be handled with caution and in accordance with COSHH.

3.2 GHS/CLP Regulations

Due to worldwide differences in the classification and labelling of chemicals, The United Nations has developed a Globally Harmonised System (GHS). The European Regulation on Classification, Labelling and Packaging (CLP) adopts the GHS. All current chemical classification systems in all countries, including the CHIP system described above, will be phased out by 1st June 2015.

The GHS/CLP system replaces Indications of Danger with Hazard Classes. Hazard classes for carcinogens are described in Table 2

Table 2 - GHS/CLP carcinogen classification system

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1A</td>
<td>Chemicals <em>known</em> to have carcinogenic potential for humans</td>
</tr>
<tr>
<td>Category 1B</td>
<td>Chemicals <em>presumed</em> to have carcinogenic potential for humans</td>
</tr>
<tr>
<td>Category 2</td>
<td>Chemicals <em>suspected</em> to be human carcinogens</td>
</tr>
</tbody>
</table>
In addition, the risk phrases R45 and R49 will be replaced by the following hazard statements;
H350 – May cause cancer
H350i – May cause cancer by inhalation

It is now very common to see CHIP and CLP/GHS classifications in the same MSDS (which may cause confusion). If the MSDS you have been supplied with contains both the CHIP and GHS/CLP carcinogen classification system then the CLP/GHS classification should be used where possible.

If you cannot find any classification on the MSDS or are unsure enter the chemical name of the compound into the European Chemicals Agency Database (ECAD). ECAD will provide the GHS/CLP carcinogen category.

Table 3 outlines the key differences between CHIP (current system) and GHS/CLP (incoming system). A full side by side comparison of the two systems can be found in section 11 of the document Comparison of CHIP and CLP chemical hazard classification systems.

<table>
<thead>
<tr>
<th>Known Carcinogen</th>
<th>Presumed Carcinogen</th>
<th>Suspected Carcinogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHIP</td>
<td>Cat 1(R45, R49)</td>
<td>Cat 2 (R45, R49)</td>
</tr>
<tr>
<td>CLP/GHS</td>
<td>Cat 1A</td>
<td>Cat 1B</td>
</tr>
</tbody>
</table>

Care must be taken when determining carcinogen class using these two systems. **Category 2 under CHIP is classed as a carcinogen under COSHH whereas Category 2 under CLP is not.**

### 3.3 Schedule 1 of COSHH

Schedule 1 of COSHH lists other substances and processes to which the definition of ‘carcinogen’ relates but which cannot easily be categorised by the above systems. Specifically these are;

- Aflatoxins
- Arsenic
- Auramine manufacture
- Calcining, sintering or smelting of nickel copper matte or acid leaching or electorefining of roasted matte
- Coal soots, coal tar, pitch and coal tar fumes
Hardwood dusts
Isopropyl alcohol manufacture (strong acid process)
Leather dust in boot and shoe manufacture, arising during preparation and finishing
Magenta manufacture
Mustard gas (β, β’-dichlorodiethyl sulphide)
Rubber manufacturing and processing giving rise to rubber process dust and rubber fume
Used engine oils.

3.4 International Agency for Research on Cancer (IARC)

The International Agency for Research on Cancer (IARC) provides information on the carcinogenic risk of chemicals and classifies carcinogenic substances according to their own definitions. The IARC classification of substance does not necessarily align with the CHIP of GHS/CLP classification. Substances classified as group 1 (carcinogenic to humans) or group 2A (probably carcinogenic to humans) are, for the purposes of health surveillance (see later), also considered by the Occupational Health and Safety Service (OHSS) as carcinogens, even if they do not meet the criteria described in sections 3.1 to 3.3 (i.e. are not classified as carcinogens under COSHH).

4. Registration of Carcinogens

Staff or students that wish to use any of the following must first register these materials with OHSS;

- carcinogenic category 1 or 2 substances (CHIP system);
- category 1A and 1B carcinogens (GHS/CLP system);
- a substance listed under schedule 1 of COSHH;
- IARC group 1 and group 2A carcinogens that do not already fall into one of the above categories;

You do not need to register CHIP system category 3 or CLP/GHS system category 2 substances.

The registration of carcinogens may be performed by laboratory staff but registration is the ultimate responsibility of the Principal Investigator or the laboratory manager prior to use of these substances. The collection of this information is necessary to enable Occupational Health to assess the need for health surveillance. Should health surveillance be required, you will be contacted directly by occupational health, otherwise assume that the assessment has indicated that health surveillance is not required. The forms for carcinogen registration and health surveillance can be found at:

http://safety.ncl.ac.uk/carcinogenregistration.aspx
A full COSHH risk assessment is required for the handling of carcinogens and this must be attached to the registration form.

5. Carcinogen Risk Assessment

Where a substance is a known or suspected carcinogen, there is a requirement under COSHH for the employer to substitute the carcinogen for a non-carcinogenic alternative. If substitution is not possible, the risk assessment must explain why an alternative is not reasonably practicable. The COSHH risk assessment must be completed and discussed with the PI and, where necessary, with the school safety officer. The carcinogen COSHH risk assessment should outline all required COSHH controls and containment measures which must be discussed with the PI and, if required, the school safety team. HSE outline the following criteria as a minimum requirement for a carcinogen COSHH risk assessment.

5.1 HSE Minimum Requirements For Carcinogen COSHH Risk Assessment

Taken from Page 110, Appendix 1 Control Of Carcinogenic and Mutagenic Substances (COSHH ACOP version 5).

**The importance of the assessment**

The COSHH ACOP gives guidance on carrying out the assessment. The development of the clinical effects of cancer may take place many years after first exposure and there may not be any early warnings of adverse effects. Risk assessment, therefore, has an especially vital role to play.

The employer’s risk assessment should;

(a) identify whether any carcinogenic substances covered by COSHH are present in the workplace and if so;
(b) identify the likely level of exposure and the extent of the risk and;
(c) Use the information obtained to plan effective control measures and other precautions.

**What the risk assessment should cover**

The assessment for exposure to any carcinogenic or mutagenic substance should **at least** include details of;

- 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;
- the type of hazard (gas, fume, dust etc);
6. Control of Exposure

Control measures should be selected that are suitable to reduce exposure to a carcinogenic material to as low a level as reasonably practicable. This is often dependent on the quantity of material handled. There are four ‘carcinogen containment levels’ which describe these control measures.

6.1 Carcinogen containment levels

Table 4 - containment of carcinogen levels

<table>
<thead>
<tr>
<th>Containment of Carcinogens</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Open bench</td>
</tr>
<tr>
<td>Level 2</td>
<td>Local ventilation (a ventilated enclosure, or recirculating biosafety cabinet)</td>
</tr>
<tr>
<td>Level 3</td>
<td>Containment (A fume hood, chemical safety hood or Class I/II biosafety cabinet which is externally exhausted or specially designed for the containment of chemicals)</td>
</tr>
<tr>
<td>Level 4</td>
<td>Isolation (A totally contained system, isolator or Class III biosafety cabinet)</td>
</tr>
</tbody>
</table>

6.2 Potency

Carcinogen potency is a complex parameter and calculation involves the incidence of carcinogenic effect (dependant on concentration) and persistence of the chemical (or active metabolite) at the site of action. This in turn depends on the balance between the
rate of appearance of the chemical (or active metabolite) at the site of action, and its metabolic transformation and excretion. Metabolism usually depends on a range of enzyme systems and some of these may be subject to overload or inhibition above threshold concentrations of substrate.

Many centres are currently establishing potent carcinogen databases (e.g. Berkley University) but these are not yet complete or validated. Such databases use $TD_{50}$ as a measure of potency, $TD_{50}$ is the dose-rate in mg/kg body wt/day which, if administered chronically for the standard lifespan of the species, will halve the probability of remaining tumourless throughout that period. However, such studies are complex and require considerable resources to maintain and continually update. Therefore, as potency cannot be readily determined for many substances/compounds, this will not be used as a parameter for determining containment of carcinogens at the-University.

### 6.3 Adequate control

The following guidance indicates when the residual risk is such that health surveillance would be justified and is based on the quantity of material handled and the control measures used.

No national limits currently exist with regards to amounts of carcinogens handled in a set time frame. Indeed the Royal Society of Chemistry conclude, ‘In general the view taken by UK regulators hitherto has been that there is, theoretically, no threshold level of exposure to genotoxic carcinogens below which the majority of the population can be exposed day to day without risk to health. By contrast, regulators have accepted that a threshold level can exist for at least some nongenotoxic carcinogens.’ Therefore, frequency of carcinogen use should always be reduced to as low as possible and exposure must be controlled to as low a level as is reasonable practicable and certainly below the Workplace Exposure Limit (WEL) (if this has been assigned).

The following guidance is based on standard procedures that are carried out within a laboratory. If the correct containment measures are used (see table 5) for the quantities indicated (see table 6 or table 7) then exposure is regarded as adequately controlled. Otherwise additional control measures should be put in place such as the use of PPE or limitation of the frequency of the operation. Where additional control measures are required and there is still **reasonable likelihood of an identifiable disease or adverse health effect resulting from exposure**, a statutory health record under COSHH is required.
6.4 Powders

Adequate control is based on controlling exposure to a carcinogen to at least one tenth of the Workplace Exposure Limit (WEL) where the material has an exposure limit or, if no WEL is available, to a time weighted average of at least 1 µg/m³. This is based on the lowest level considered to be reasonably practicable in a laboratory environment.

Weighing out of carcinogens in powder form cannot be done on the open bench and must always be performed in appropriate containment as outlined in table 5.

Table 5 – Containment required for weighing of carcinogenic powders

<table>
<thead>
<tr>
<th>Containment of Carcinogens</th>
<th>Control Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 2</td>
<td>Locally ventilated hood</td>
</tr>
<tr>
<td>Level 3</td>
<td>A designated fume hood*, chemical safety hood or a designated Class I/II biosafety cabinet*, such cabinets must be externally exhausted or specially designed for the containment of chemicals e.g. carbon filters.</td>
</tr>
<tr>
<td>Level 4</td>
<td>A totally contained system, isolator or Class III externally exhausted biosafety cabinet</td>
</tr>
</tbody>
</table>

*Designated refers to hoods which will be clearly labelled and designated for carcinogen use.

Table 6 outlines quantities of powders permitted, the specified limits and containment applied that are regarded as adequate control where neither monitoring nor health surveillance is required.

Table 6 – Handling Limits Of Carcinogenic Powders

<table>
<thead>
<tr>
<th>Containment of Carcinogens</th>
<th>Maximum Quantity (per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 2</td>
<td>100 µg</td>
</tr>
<tr>
<td>Level 3</td>
<td>100 mg</td>
</tr>
<tr>
<td>Level 4</td>
<td>100 g</td>
</tr>
</tbody>
</table>

Should staff need to exceed these limits then this should be discussed with the school safety team and head of school approval should be obtained. OHSS must also be informed as monitoring and health surveillance may be required.
6.5 Volatile liquids

For volatile liquids, containment should be sufficient to prevent exposure and care must be taken to ensure the appropriate containment is used at all stages. For example recirculating microbiological safety cabinets will return air into the room and should not be used.

Although the workplace exposure limit could be determined from the MSDS, without adequate monitoring it is not possible to determine if these limits have been exceeded. Therefore, volatile compounds which are carcinogenic or organic solvents containing carcinogenic compounds should be contained where possible. Containment should be sufficient to keep exposure to at least below 10% of the WEL. If the substance has no exposure limit then exposure should be controlled to at least 0.1 ppm, which is considered to be the lowest level reasonably practicable.

Table 7 outlines the maximum quantities of volatile carcinogenic liquids permitted to be used per day. The specified limits at the containment level indicated are regarded as adequate control where neither monitoring nor health surveillance is required.

### Table 7 Handling Limits Of Carcinogenic Volatile Liquids

<table>
<thead>
<tr>
<th>Containment of Carcinogens</th>
<th>Maximum Quantity (per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>0.1 ml</td>
</tr>
<tr>
<td>Level 2</td>
<td>0.1 ml</td>
</tr>
<tr>
<td>Level 3</td>
<td>100 ml</td>
</tr>
<tr>
<td>Level 4</td>
<td>1000 ml</td>
</tr>
</tbody>
</table>

Should staff need to exceed these limits then this should be discussed with the school safety team and head of school approval should be obtained. OHSS must also be informed as monitoring and health surveillance may be required.

6.6 Specific Materials

Many carcinogens commonly used in laboratories have Work Place Exposure Limits (WEL) (see HSE document EH40). It is possible to establish higher handling limits for these materials taking the WEL into account.

For example:

#### 6.6.1 Acrylamide

Acrylamide has a workplace exposure limit of 0.3 mg/m³. Control is adequate if exposure is controlled to one tenth of this – 30 µg/m³.
The quantity limits to achieve this are

<table>
<thead>
<tr>
<th>Containment</th>
<th>Maximum Quantity (per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>3 mg</td>
</tr>
<tr>
<td>Level 2</td>
<td>3 mg</td>
</tr>
<tr>
<td>Level 3</td>
<td>3 gm</td>
</tr>
<tr>
<td>Level 4</td>
<td>100 gm</td>
</tr>
</tbody>
</table>

6.6.2 Nickel salts
Nickel salts have a workplace exposure limit of 0.1 mg/m³. A health record should not be necessary if exposure is controlled to one tenth of this – 10 µg/m³.

The quantity limits are therefore:

<table>
<thead>
<tr>
<th>Containment</th>
<th>Maximum Quantity (per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>1 mg</td>
</tr>
<tr>
<td>Level 2</td>
<td>1 mg</td>
</tr>
<tr>
<td>Level 3</td>
<td>1 gm</td>
</tr>
<tr>
<td>Level 4</td>
<td>100 gm</td>
</tr>
</tbody>
</table>

7. Prohibitions relating to certain substances (COSHH regulation 4)
The following are prohibited;
1. The manufacture and use, including any process resulting in the formation of;
   • 2-naphthylamine;
   • Benzidine;
   • 4-aminodiphenyl;
   • 4-nitrodiphenyl;
   including their salts and any substance containing any of these compounds in a total concentration equal to or greater than 0.1 per cent by mass;
2. The import of the above substances
3. The use of benzene for all purposes, except in industrial processes and for the purposes of research, development and analysis. The prohibition extends to use of any other substance containing benzene in a concentration equal to or greater than 0.1 per cent by mass, except for motor fuels (covered by EC Directive 85/210/EEC) and waste (covered by EC Directive 75/442/EEC as amended by 91/156/EEC and 91/689/EEC). The Health and Safety Executive may grant exemption certificates under certain conditions (see COSHH regulation 16).
Any member of staff wishing to use a prohibited carcinogen are required to contact OHSS.

8. Disposal of carcinogens

Careful consideration should be given to the disposal of carcinogenic compounds. Carcinogen waste is required to be disposed of through specialist contractor collection. Details of such can be obtained from the school safety officer. The carcinogen supplier will also be able to advise on the safe disposal of carcinogens. Disposal procedures for carcinogens should be included in the COSHH risk assessment.

If the carcinogen has been dissolved in a solvent or formulated as part of a mixture then the user should identify if hazard data exists for the mixture.

- **If hazard data exists**: The data should be used to identify hazard(s) and appropriate disposal of the mixture may be required.

- **If NO hazard data exists**: The mixture should be assumed to present the same hazard as the individual carcinogen presents.

8.1 Limited Quantity

If a mixture contains a carcinogen at very low concentrations then the mixture can be classed as if it did not contain the carcinogen. The limits set by the European Chemicals Agency (EU regulatory body) are:

- Carcinogenic category 1 and 2 substances (CHIP) (GHS/CLP category 1A and 1B) should be <0.1% of the total mixture.
- Carcinogenic category 3 substances (CHIP) (GHS/CLP category 3) should be <1% of the total mixture.

However, even at these levels, if the release of the mixture results in the Workplace Exposure Limit (refer to HSE document EH40) of the individual components being exceeded then the mixture should not be released.

8.2 Tissue culture media

Consideration should also be given to disposal of carcinogenic drugs (and cytotoxic drugs) added to tissue culture media which is aspirated from cells. In such cases there are risks from exposure to the carcinogen as well as biological agents. If cells have been genetically modified then there is a requirement for the cells to undergo 100% kill prior to disposal and such solutions may therefore require autoclaving/inactivation.
Autoclaving will NOT inactivate many carcinogens (see table 8). If the solution contains less than 0.1% of carcinogenic category 1 and 2 substances (CHIP), then it can be treated as if it did not contain the carcinogen. In higher concentrations carcinogens may require inactivation first by either chemical or heat treatment methods and these should be identified through risk assessment.

8.3 Heat Inactivation

Carcinogens may be inactivated through heat treatment and manufacturers may be able to provide precise conditions. Heat inactivation is usually by incineration due to the high temperatures required (see table 8).

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Risk Phrase</th>
<th>Inactivation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doxorubicin</td>
<td>R45</td>
<td>10% sodium hyperchlorite for 24hours or 700°C incineration</td>
</tr>
<tr>
<td>Etoposide</td>
<td>R45</td>
<td>10% sodium hyperchlorite for 24hours or 1000°C incineration</td>
</tr>
<tr>
<td>Cisplatin</td>
<td>R45</td>
<td>10% sodium hyperchlorite for 24hours or 800°C incineration</td>
</tr>
</tbody>
</table>

9. Incidents involving Carcinogens

Where an incident occurs resulting in the potential or actual exposure of any individual to a carcinogen it must be reported to the Occupational Health and Safety service via the online reporting system. The occurrence may be reportable to the HSE. The individual should be referred to Occupational Health who will ensure an appropriate entry is made on the individual’s health record.

10. Health Surveillance

10.1 Requirements for health surveillance

Under COSHH, ‘health surveillance is appropriate where employees are exposed to carcinogenic substances, unless the employer assesses that exposure is so adequately controlled that there is no reasonable likelihood of an identifiable disease or adverse health effect resulting from the exposure.’

The risk assessment should identify any situation where exposure to a carcinogen is not adequately controlled and there is therefore a reasonable likelihood of disease occurring.
In such situations the requirement under COSHH is to keep a Health Record. This identifies the person and records the possible exposure to carcinogens (identification data, the nature of the exposure and a historical record of jobs involving exposure). It is not a personal clinical record and is not medically confidential.

Health surveillance will be considered under the following circumstances:

1. Where adequate control of exposure relies on the use of personal protective equipment
2. Where we can not be certain that exposure is adequately controlled for example;
   - when using large volumes;
   - when containment is not available;
   - when the substance is manipulated in ways that produce a high level of exposure.

### 10.2 Responsibility for Identification of Individuals Requiring Health Surveillance

The university must ensure that there are robust systems in place to capture all individuals requiring health surveillance. Generally, whoever undertakes the risk assessment for the work is responsible for identifying the need for health surveillance. In research work this may mean the Principal Investigator (PI), the laboratory manager or other manager. They must ensure they have sufficient knowledge of the risks generated by their work or should seek specialist advice from the OHSS. The requirement for health surveillance and a health record must be stated clearly in the risk assessment or code of practice for the work. Departmental Heads must ensure that anyone undertaking risk assessments understands this responsibility.

### 10.3 The Contents and Storage of a Health (Exposure) Record

Where prohibited carcinogens or compounds of relatively high potency are being handled, the health record needs to be retained and stored securely for a period of 40 years after the work with the substance has ceased. This record should be kept with details of any assessments of control measures such as air sampling results (see Appendix 1).

Occupational health surveillance outcome reports to the Health Record holder should contain only the name of the occupational health provider, the hazard for which surveillance was undertaken, the date of the surveillance and the outcome in terms of fitness for work or restrictions from work (see Appendix 2).
10.4 **Procedures for Recall and Attendance**

Once an individual has registered on a health surveillance programme the Occupational Health Service must ensure that it has robust arrangements for recalling employees for appointments within the appropriate timescales. Within Higher Education this can be a complex procedure owing to the diverse and flexible nature of the workforce. The responsibility for ensuring attendance lies with the employing department.

10.5 **Data protection and record keeping**

Both the Health (Exposure) Record and the Health Surveillance records contain confidential personal information and must be kept securely and processed in accordance with the tenets of the UK Data Protection Act. Individuals must understand that the data is to be stored for 40 years after they have finished work. Arrangements must ensure that data is not kept beyond the appropriate time.

11. **LINKS**

11.1 **Chemical hazard labelling**

1. [HSE Chemicals (Hazard Information and Packaging for Supply) Regulations 2009](#)
2. [HSE website on Global Harmonisation System (GHS) for chemical hazard classification](#)
3. [European Chemical Agency guidance on GHS](#)
4. [Comprehensive GHS information from UNECE](#)
5. [Official UN document on GHS 4th Ed. 2011](#)
6. [Sigma GHS document](#)

11.2 **Carcinogens**

1. [Royal Society of Chemistry – potency of chemical carcinogens](#)
2. [European Chemicals Agency Database (ECAD)](#) - compiled list as defined in the REACH and HSE guidelines, covering the CLP / GHS classification system.
3. [HSE EH40 Work Place exposure document](#) - carcinogens also listed
4. [COSHH Schedule 1 "other substances and processes to which the definition of carcinogen relates"](#)
## Appendix 1: Example Health Surveillance record

### EXAMPLE: HEALTH SURVEILLANCE RECORD
(to be sent to Health Record keeper and form part of Health Record)

<table>
<thead>
<tr>
<th>To: Department / Safety Office</th>
<th>From: Occupational Health Service: ‘x’</th>
<th>Re: work with Hazard : ‘X’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee’s Name:</td>
<td>NI Number:</td>
<td>Address:</td>
</tr>
<tr>
<td>Health Surveillance Date:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome of surveillance:</td>
<td>FIT</td>
<td>UNFIT</td>
</tr>
<tr>
<td>Next attendance due:</td>
<td></td>
<td>FIT WITH THESE RESTRICTIONS:</td>
</tr>
</tbody>
</table>

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### Appendix 2: Responsibilities for Health Surveillance in HEI’s

<table>
<thead>
<tr>
<th>Title</th>
<th>Health Surveillance (HS) Responsibilities</th>
</tr>
</thead>
</table>
| **Vice Chancellor/ Dean** | Overall responsibility for:  
• Health and safety management system  
• Policy |
| **Heads of Department / Director of Institute (+ Departmental safety officer)** | Ensure local arrangements in place for:  
• Assessing risks  
• Identifying work requiring HS  
• Informing OH of work requiring HS  
• Ensure compliance with Exposure Record requirements  
• Sanctions for non-attendance  
• Responding to HS outcomes |
| **Research programme leader/Risk Assessor/ Principal Investigator/ manager of work** | Ensuring arrangements for:  
• Risk assessment & consider need for HS, where health risks from exposure cannot be reliably prevented through use of safety controls + state in code of practice  
• Registration + attendance at HS, support sanctions for non-attendance  
• Ensure exposure record is completed by all employees exposed |
| Employees, Researchers, PhD, undergrad Students |  
• Attend training  
• Follow the safe system of work  
• Attend HS specified as a control measure for their work  
• Complete exposure record  
• Report symptoms/ exposure incidents |
| Safety Officers |  
• Assist in monitoring compliance with HS programmes.  
• Reviewing risk assessments & use of controls in the light of HS findings  
• Assist in identifying work requiring HS  
• Advising on exposure controls |
<table>
<thead>
<tr>
<th>Occupational Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Advise on Policy development</td>
</tr>
<tr>
<td>• Advise on need for + provide appropriate <em>generic &amp; project-specific</em> HS programmes</td>
</tr>
<tr>
<td>• Provide periodic recall of those enrolled in active HS</td>
</tr>
<tr>
<td>• Report individual outcomes of HS to the health record holder</td>
</tr>
<tr>
<td>• Reporting defaults to PIs / risk assessor</td>
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<tr>
<td>• Reporting outcomes and trends</td>
</tr>
<tr>
<td>• Reports RIDOOR/ GP</td>
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</tbody>
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