

ESTATES OPERATIONS

HEALTH & SAFETY DOCUMENT
DOCUMENT TITLE

CODE of PRACTICE
CONTROL OF SUBSTANCES
HAZARDOUS TO HEALTH
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Please Note – the guidance provided in this Code of Practice pertains only to the Estates Operations Group and its operations. For Imperial College’s Health & Safety policies and Codes of Practice please go to: <http://www.imperial.ac.uk/safety/>.

INTRODUCTION

This Code of Practice sets down the standards for the safe management and use of substances hazardous to health, including, biological agents, carcinogens, lead, mineral wools, metal working fluid, radiation, and respiratory sensitizers. It is intended to assist in meeting the requirements of current legislation and sets out procedures on how to achieve safe systems of work within the College.

Over and above the general duty of care owed by the College to its staff, students and others under the Health and Safety at Work etc. Act 1974, all work relating to substances hazardous to health is legislated by the Control of Substances Hazardous to Health Regulations 2002 (COSHH). Substances such as lead are legislated by their own Control of Lead at Work Regulations 2002.

This Code of Practice provides the following:

- A definition and the scope of the applicable Regulations
- The duties imposed on the employer / employees / other
- Responsibilities of duty holders and employees

1. Overview and Introduction to Occupational Health

Control of Substances Hazardous to Health Regulations 2002 (as amended) COSHH provides a legal framework to protect people against health risks from hazardous substances used at work. It applies wherever there is a risk at work of health effects from skin exposure to hazardous substances. Link to College’s COSHH Risk Assessment Form for the assessment and control of hazardous chemicals. (Word version available.)

Control of Lead at Work Regulations 2002 The Regulations apply to any type of work activity, e.g. handling, processing, repairing, maintenance, storage, disposal etc which is liable to expose employees and any other person to lead.

Personal Protective Equipment at Work Regulations 1992 These Regulations concern the design, construction, testing and certification of protective clothing and other types of PPE which may be required to be used when working with substances hazardous to health. They require PPE to be cleaned, maintained, used and stored properly. For further guidance please refer to the Estates Operations’ [Code of Practice on PPE](#).

The Control of Asbestos Regulations 2006 The Asbestos Regulations include the 'duty to manage asbestos' in non-domestic premises. These Regulations bring together the three previous sets of Regulations covering the prohibition of asbestos, the control of asbestos at work and asbestos licensing. For further guidance please refer to the [Estates Operations safety guidance web pages](#).

2. Duties Imposed on the Employer/Employees/Others

The Control of Substances Hazardous to Health Regulations 2002 (COSHH), the Control of Lead at Work Regulations 2002, and the Personal Protective Equipment at Work Regulations 1992, have requirements to protect the health and safety of everyone in the workplace. To this end Imperial College should appoint a suitably competent person to carry out the actions below.

Biological Agents / Blood-Bourne Viruses

Specific legislation on hazards that arise from working with biological agents such as Blood-Bourne Viruses (BBVs) is contained in the Control of Substances Hazardous to Health Regulations 2002 (as amended) (COSHH). Under COSHH you have a legal duty to assess the risk of infection for employees and others affected by your work. When the risk is known, you need to take suitable precautions to protect their health. You must also give employees adequate information, instruction and training on any risks to their health which they may face at work.

BBVs are viruses that some people carry in their blood and which may cause severe disease in certain people and few or no symptoms in others. The virus can spread to another person, whether the carrier of the virus is ill or not.

The main BBVs of concern are:

- Hepatitis B virus (HVB), hepatitis C virus and hepatitis D virus, which all cause hepatitis, a disease of the liver;
- human immunodeficiency virus (HIV) which causes acquired immune deficiency syndrome (AIDS), affecting the immune system of the body.

In occupations where there is a risk of exposure to BBVs, the following measures to prevent or control risks apply, but the College will adapt them, taking into account local circumstances in ensuring a safe system of work:

- prohibit eating, drinking, smoking and the application of cosmetics in working areas where there is a risk of contamination;
- prevent puncture wounds, cuts and abrasions, especially in the presence of blood and body fluids;
- when possible avoid use of, or exposure to, sharps such as needles, glass, metal etc, or if unavoidable take care in handling and disposal;
- consider the use of devices incorporating safety features, such as safer needle devices and blunt-ended scissors;
- cover all breaks in exposed skin by using waterproof dressings and suitable gloves;
- protect the eyes and mouth by using a visor/goggles/safety spectacles and a mask, where splashing is possible;
- avoid contamination by using water-resistant protective clothing;
- wear rubber boots or plastic disposable overshoes when the floor or ground is likely to be contaminated;
- use good basic hygiene practices, such as hand washing;
- control contamination of surfaces by containment and using appropriate decontamination procedures (see '[Decontamination procedures](#)' contained in *Appendix 1* to the rear of this Code of Practice)

Carcinogens

Using chemicals or other hazardous substances at work can put people's health at risk and can lead to a number of occupational diseases including cancer. Occupational cancer may occur as a result of work involving direct exposure to a carcinogen or exposure to a carcinogen produced as part of a work process. There is usually a considerable amount of time (usually more than 10 years) between exposure to a carcinogen and the onset of any ill-health symptoms. Carcinogens occur in many forms, they can be solids, liquids, vapours, gases, or dusts and can be breathed in, absorbed through the skin or swallowed.

As part of their duties under the COSHH Regulations 2002, the College will undertake a COSHH risk assessment and must provide all relevant persons with the information about the hazards, risks and control measures, and instruction and training to use the control measures.

Lead

The duty the Control of Lead at Work Regulations 2002 place on every employer to prevent or adequately control the exposure of employees to lead applies irrespective of the source of that exposure. For example, the exposure to lead may result from work with lead or lead compounds being carried out by the employer's own employees, or incidental Control of lead at work arising from work nearby being carried out with lead or lead compounds by another employer's employees.

Inhalation is one of the main ways lead can enter the body. The Regulations therefore impose duties on employers (The College) to take steps to prevent employees inhaling lead dust, fume and vapour'

The College must:

- introduce control measures to ensure that the amount of lead in the air in the breathing zone of any employee does not exceed the appropriate occupational exposure limit (OEL); and
- carry out a regular programme of air monitoring if the assessment shows that the exposure to lead is liable to be significant, eg above the trigger level of half Control of lead at work the OEL, to check that the control measures are working effectively and the OEL is not exceeded

There may be some work activities, e.g. maintenance operations, when effective engineering controls are not reasonably practicable and so a high standard of personal protection is necessary. In these situations, if exposure to lead is also liable to exceed the OEL, the employer should issue employees with suitable respiratory protective equipment.

There is not necessarily a strong relationship between the amount of lead the body absorbs and the concentration of lead-in-air. Consequently, employees whose exposure to lead is significant must be placed under medical surveillance. Regular biological monitoring of the level of the lead in their blood or urine (for work with lead alkyls) can detect any absorption of lead before clinical effects become evident. The Regulations contain biological monitoring indicators to help employers evaluate the effectiveness of their control measures in keeping lead in blood or urine levels at acceptable concentrations:

1. *Action levels.* These are concentrations of lead in blood set below the appropriate suspension limit (see next paragraph). If these are reached or exceeded, the employer must:
 - (i) carry out an urgent investigation to find out why;
 - (ii) review control measures; and
 - (iii) take steps to reduce the employee's blood-lead concentration below the action level, so far as is reasonably practicable.

2. *Suspension levels.* These are concentrations of lead in blood or urine at which employees are normally taken off work which exposes them to lead, to prevent the risk of lead poisoning.

Mineral Wools

Mineral wools are insulation materials that belong to a generic group of materials often called 'man-made mineral fibres' (MMMF). Mineral wools are often used for fire protection and acoustic insulation. They can also be used as lightweight or load-bearing products.

The objective of COSHH, for which MMMF falls under is to prevent, or to adequately control, exposure to substances hazardous to health, so as to prevent ill health.

The College can do this by:

- using control equipment, e.g. total enclosure, partial enclosure, LEV;
- controlling procedures, e.g. ways of working, supervision and training to reduce exposure, maintenance, examination and testing of control measures;
- worker behaviour, making sure employees follow the control measures.

Changing how often a task is undertaken, or when, or reducing the number of employees nearby, can make an improvement to exposure control.

Metal Working Fluid

Exposure to metalworking fluids can cause; irritation of the skin/dermatitis, occupational asthma, bronchitis, irritation of the upper respiratory tract, breathing difficulties or, rarely, a more serious lung disease called extrinsic allergic alveolitis (EAA), which can cause increasingly severe breathing difficulties in recurrent episodes, following repeated exposure. The College have responsibilities to make sure the risks to employees' health from metalworking fluids are properly controlled. Metalworking fluids are mostly applied by continuous jet, spray, or hand dispenser. Affects occur:

- through inhaling the mist, aerosol or vapour generated during machining operations. Exposure will depend on the type of machining being undertaken and how well the machine is enclosed and ventilated. Exposure is likely to be highest:
 - near the metalworking machine;
 - in operations involving high-speed tools or deep cuts;
 - at machines where the process is not enclosed;
 - where there are inadequate ventilation arrangements.
- through contact with the skin, particularly hands and forearms, if appropriate precautions (e.g. the use of gloves, overalls or face shields) are not taken. Skin contact can occur during the preparation or draining of fluids, handling of work pieces, changing and setting of tools, and during maintenance and cleaning operations. Fluids can also splash onto persons during machining, e.g. if there are no splashguards or if they are inadequate;
- by entering the body through cuts and abrasions or other broken skin; or
- by entering the body through the mouth if eating or drinking in work areas, or through poor hygiene before eating or smoking.

Further guidance on the procedures to follow to minimise exposure to metalworking fluids can be found in [Appendix 1](#) to the rear of this Code of Practice.

Radiation

The main difference between ionising and non-ionising radiation is in the amount of energy the radiation carries. Ionising radiation carries more energy than non-ionising radiation.

Ionising radiation includes: X-rays, gamma rays, radiation from radioactive sources and sources of naturally occurring radiation, such as radon gas. Ionising radiation has many uses in industry, such as energy production, manufacturing, medicine and research and produces many benefits to society. However, it is important that the risks of ionising radiation are managed sensibly to protect College staff, students and members of the public.

Non-ionising radiation includes: visible light, ultra-violet light, infra-red radiation, and electromagnetic fields. Sources of electromagnetic fields are used extensively in telecommunications and manufacturing with little evidence of related long-term health problems. Ultra-violet light is part of natural sunlight and also forms part of some man-made light sources. It can cause a number of health problems, including skin cancer.

Ionising Radiation

The main legal requirements enforced by HSE are the Ionising Radiations Regulations 1999 (IRR99). IRR99 apply to a large range of workplaces where radioactive substances and electrical equipment emitting ionising radiation are used. They also apply to work with natural radiation, including work in which people are exposed to naturally occurring radon gas and its decay products. Any employer who undertakes work with ionising radiation must comply with IRR99. Under IRR99 employers who work with ionising radiation are called radiation employers.

IRR99 requires employers (The College) to keep exposure to ionising radiations as low as reasonably practicable. Exposures must not exceed specified dose limits. Restriction of exposure should be achieved first by means of engineering control and design features. Where this is not reasonably practicable employers should introduce safe systems of work and only rely on the provision of personal protective equipment as a last resort.

Further guidance on what types of activities need to be notified to the HSE can be found in [Appendix 1](#) to the rear of this Code of Practice.

Non-Ionising Radiation

Non-ionising radiation (NIR) is the term used to describe the part of the electromagnetic spectrum covering two main regions, namely optical radiation (ultraviolet (UV), visible and infrared) and electromagnetic fields (EMFs) (power frequencies, microwaves and radio frequencies).

Optical radiation is another term for light, covering ultraviolet (UV) radiation, visible light, and infrared radiation. The greatest risks to health are probably posed by:

- UV radiation from the sun. Exposure of the eyes to UV radiation can damage the cornea and produce pain and symptoms similar to that of sand in the eye. The effects on the skin range from redness, burning and accelerated ageing through to various types of skin cancer.
- the misuse of powerful lasers. High-power lasers can cause serious damage to the eye (including blindness) as well as producing skin burns.

A link to further guidance can be found in [Appendix 2](#) to the rear of this Code of Practice.

Asbestos

When work with asbestos or work which may disturb asbestos is being carried out, the Asbestos Regulations require employers (The College) to prevent exposure to asbestos fibres. Where this is not reasonably practicable, they must make sure that exposure is kept as low as reasonably practicable by measures other than the use of respiratory protective

equipment. The spread of asbestos must be prevented. The Regulations specify the work methods and controls that should be used to prevent exposure and spread. For further guidance on asbestos please refer to the [Estates Operations safety guidance web pages](#).

Legionella

Under general health and safety law, the College have to consider the risks from legionella that may affect staff, students or members of the public and take suitable precautions. Cooling towers, evaporative condensers and hot and cold water systems have been associated with outbreaks of legionella. Other potential sources where precautions might be needed include humidifiers and spa baths. If, following the risk assessment process, the College decides that the risks are insignificant, no further action other than to review the assessment periodically in case anything changes in your system is required. For further guidance please refer to the [College's Code of Practice on Legionella](#).

3. Responsibilities of Duty Holders and Employees

The College has a responsibility to protect the health and safety of everyone in the workplace. To this end the College should appoint a suitably competent person to carry out the actions below.

- Ensure the risks to exposure from hazardous substances are assessed and control measures implemented;
- using control equipment, e.g. total enclosure, partial enclosure, Local Exhaust Ventilation;
- controlling procedures, e.g. ways of working, supervision and training to reduce exposure, maintenance, examination and testing of control measures;
- worker behaviour, making sure employees follow the control measures.

Changing how often a task is undertaken, or when, or reducing the number of employees nearby, can make an improvement to exposure control.

Employees and students have a responsibility not to undertake any activities within the workplace that may cause themselves or others harm and adhere to the information, instruction and training provided. They must immediately bring instances having the potential to cause harm to the attention of their immediate line manager.

Appendix 1 – Further Guidance

Biological Agents / Blood-Bourne Viruses

Immunisation

Immunisation (vaccination) is available against HVB but not other BBVs. The need for a worker to be immunised should be determined by the risk assessment. It should only be seen as a supplement to reinforce other control measures. As an employer, the College should make vaccines available free of charge to employees, if they are needed. It is recommended that a vaccination record is kept.

Decontamination procedures

Under ideal laboratory conditions HIV can remain infectious in dried blood and liquid blood for several weeks and HVB stays active for even longer. If materials become contaminated with blood or other body fluids, there are several methods available for decontamination. These procedures are designed to inactivate BBVs, mainly by using heat or chemical disinfection. The College should have a local code of practice for dealing with spillages and other forms of contamination and workers should be familiar with it.

Metalworking Fluids Procedures to Follow

- Follow the instructions and training given by your employer (The College) on safe systems of work when working with metalworking fluids.
- Use splash guards, where provided, to control splashing and misting.
- Minimise the production of mist and vapour by controlling the volume and rate of delivery of the fluid to the cutting edge of the tool.
- Use any enclosures or ventilation provided to remove or control any mist or vapour produced.
- Allow a time delay before opening the doors on machine enclosures to ensure that all mist and vapour have been removed by the ventilation.
- Report any damaged or defective splash guards, ventilation hoods or other control equipment.
- Open workroom doors and windows to improve natural ventilation.
- Don't use compressed air to remove excess metalworking fluids from machined parts or plant or equipment.

Skin protection

- Reduce contact with wet work pieces and surfaces.
- Don't put bare hands into fluid sumps or use oily rags to wipe them clean.
- Wear suitable gloves, overalls, aprons, goggles or face shields if needed (NB: Gloves can be hazardous if worn near rotating machinery or parts).

Ionising Radiation

Notification

Employers planning to carry out work with ionising radiation are required to notify HSE at least 28 days before they start work.

The HSE must be notified if there are any material changes to the work details that were previously notified.

The College are required to notify the HSE at least seven days in advance of each proposed site radiography job.

If the College import electrical equipment that produces ionising radiation (e.g. equipment that produces X-rays), and intend to use this on site, they must notify the HSE at least 28 days before starting the work.

If the College import equipment that produces ionising radiation for resale or supply, then there is a duty to ensure that they supply customers with sufficient information to enable them to comply with the Ionising Radiation Regulations 1999.

If the College are planning to import radioactive substances (either as a sealed source or in an unsealed form), they will need to notify the HSE 28 days in advance of the substances arriving at the College. A special permit / licence from an environment agency for holding radioactive substances (as required under environmental legislation) will be required.

Doses

Dose limits are intended to reduce the risk of serious effects occurring, such as cancer, and are in place to protect the eyes, skin and extremities against other forms of damage. Dose limits are defined in UK legislation and can be found in schedule 4 of the Ionising Radiations Regulations 1999.

Dose limits

Dose limits are set to protect workers and members of the public from the effects of ionising radiation. They are set at a level that balances the risk from exposure with the benefits that use of ionising radiation brings.

There are different dose limits for different classes of people, as follows:

- adult employees aged 18 or over
- trainees aged 16 to 18
- any other person, such as a member of the public
- There are also additional dose limits for women of reproductive capacity and those who are pregnant or breast-feeding.

Pregnancy

Female employees are to inform the College as soon as they know they are pregnant. The College needs to know this so they can make any necessary changes to protection measures and apply the additional dose limits. Employees are not legally required to inform the College and can choose to keep this private. However, if the College is unaware that an employee is pregnant they may not be able to take any further action.

Appendix 2 – Guidance Documents

COSHH

For further guidance on COSHH please use the below link to the HSE website:

<http://www.hse.gov.uk/coshh/index.htm>

Chemicals

This part of the HSE website aims to guide you to the information you need to help you identify and manage the risks from chemicals.

<http://www.hse.gov.uk/chemicals/index.htm>

Blood Borne Viruses in the Workplace

Guidance relating to bio-safety in the workplace can be accessed via the below link:

<http://www.hse.gov.uk/pubns/indg342.pdf>

Lead

Guidance relating to the control of exposure to lead in the workplace can be accessed via the following link:

<http://www.hse.gov.uk/pubns/l132.pdf>

Working Safely with Metalworking Fluids

Further guidance can be accessed via the following link:

<http://www.hse.gov.uk/indg365.pdf>

Working with Ionising Radiation

Further guidance can be found at the below link:

<http://www.hse.gov.uk/pubns/l121.pdf>

Non-Ionising Radiation

Further guidance can be found by accessing the following link:

<http://www.hse.gov.uk/radiation/nonionising/employers-aor.pdf>

New labels for chemical products

The Chemical Hazards Communication Society has published a new website to help people understand the United Nations' new Global Harmonisation System ('GHS') chemical hazard labels:

<http://www.understandthelabel.org.uk/>