



Unit 4

Exposure to Carcinogens, Mutagens and Biological Agents

Learning Outcomes

By the end of this unit the learner will be able to:

- ✓ Understand the potential causes and effects of occupational cancer
- ✓ Determine if and when an illness or incident must be reported under RIDDOR
- ✓ Discuss the health and safety responsibilities of the employer and the obligations of the employee

Unit 4

Exposure to Carcinogens, Mutagens and Biological Agents

Regulation 9 requires employers and self-employed workers to report cases of occupational cancer, and any disease or acute illness caused by an occupational exposure to a biological agent.

Occupational Cancers

Cases of cancer must be reported where there is an established causal link between the type of cancer diagnosed, and the hazards to which the person has been exposed through work. These hazards include all known human carcinogens and mutagens, including ionising radiation. For example, the following diagnosed occupational cancers must be reported:

- Mesothelioma or lung cancer in a person who is occupationally exposed to asbestos fibres
- Cancer of the nasal cavity or sinuses in a person who is occupationally exposed to wood dust

Reports are only required when the person's work significantly increases the risk of developing the cancer. In some cases, the medical practitioner may indicate the significance of any work-related factors when communicating their diagnosis.

Cases of cancer are not reportable when they are not linked with work-related exposures to carcinogens or mutagens. As with other diseases, cancers are only reportable if the person's current job involves exposure to the relevant hazard.

Occupational Cancer

Cancer can be caused by substances, or mixtures of substances, called 'carcinogens'. Occupational cancer can be caused through prolonged exposure to carcinogens in the workplace.

Cancer and Carcinogens

Carcinogens

- 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

Biological Agents

All diseases and any acute illness needing medical treatment must be reported when it is attributable to a work-related exposure to a biological agent. The term biological agent is defined in the Control of Substances Hazardous to Health Regulations 2002 (COSHH) and means a micro-organism, cell culture, or human end parasite which may cause infection, allergy, toxicity or other hazard to human health. Work with hazardous biological agents is subject to specific provisions under COSHH.

Work-related exposures to biological agents may take place as a result of:

- An identifiable event, such as the accidental breakage of a laboratory flask, accidental injury with a contaminated syringe needle or an animal bite
- Unidentified events, where workers are exposed to the agent without their knowledge (eg where a worker is exposed to legionella bacteria while conducting routine maintenance on a hot water service system)

A report should be made whenever there is reasonable evidence suggesting that a work-related exposure was the likely cause of the disease. The doctor may indicate the significance of any work-related factors when communicating their diagnosis.

Minor infections common in the community such as colds, bronchitis or stomach upsets cannot generally be attributed to work-related exposures to biological agents, and so are generally not reportable. However, where there is reasonable evidence of a work-related cause, such as inadvertent contact with the infectious agent during laboratory work, you should make a report.

Acute illnesses requiring medical attention must be reported when they result from a work-related exposure to a biological agent, including its toxins or any infected material.

What is COSHH?

COSHH stands for '**Control of Substances Hazardous to Health**'.

COSHH is the law that requires employers to control substances that are hazardous to health. You can prevent or reduce workers exposure to hazardous substances by:

- Finding out what the health hazards are;
- Deciding how to prevent harm to health (risk assessment);
- Providing control measures to reduce harm to health;
- Making sure they are used ;
- Keeping all control measures in good working order;
- Providing information, instruction and training for employees and others;
- Providing monitoring and health surveillance in appropriate cases;
- Planning for emergencies.

Most businesses use substances, or products that are mixtures of substances. Some processes create substances. These could cause harm to employees, contractors and other people. Sometimes substances are easily recognised as harmful. Common substances such as paint, bleach or dust from natural materials may also be harmful.

Under the COSHH regulations, employers and employees have a number of important duties to protect their own and others health from work with hazardous substances. These COSHH responsibilities are a legal requirement; let's take a look at what employers and employees need to do.

COSHH Employer Responsibilities

Employer's responsibilities include:

Exposure - Employers must prevent or control exposure to hazardous substances. This can include the provision of appropriate personal protective equipment (PPE) where necessary

Control measures - Implement control measures around hazardous substances and ensure these are maintained and kept up to date, in full working order and clean where appropriate

Instruction - Provide employees with information, instruction and training around working with hazardous substances

Procedures - Having procedures in place to deal with accidents and emergencies relating to hazardous substances

Surveillance - Ensure employees exposed to hazardous substances are under adequate surveillance

Risk assessments - Carry out COSHH risk assessments.

Limits - Ensure the use of hazardous substances doesn't exceed the Workplace Exposure Limit (WEL).

Supervision - Check employees are carrying out tasks as they are supposed to.

Employee Responsibilities

Employees have the responsibility to ensure that tasks are carried out safely to ensure no harm comes to themselves or others.

These include:

Safety - Assist their fellow employees in creating a safe working environment. This can include supporting colleagues to abide by the regulations specific to their workplace

Procedures - Follow the procedures put in place to stop accidents and overexposure

PPE (personal protective equipment) - Wear the correct PPE including eye and noise protection. This includes ensuring all PPE is stored correctly in the appropriate place

Reporting - Report and record all accident, spillages and breakages

Check-ups - Attend medical check-ups when required to

Cleaning - Use cleaning and showering facilities provided by employers in line with official procedures

Training - Keep up to date with training provided by employers.

What are The COSHH Symbols and their Meanings?

There are nine primary hazard symbols relating to COSHH and this section will explain the COSHH signs.



Explosive (Symbol: exploding bomb)



Flammable (Symbol: flame)



Oxidising (Symbol: flame over circle)



Corrosive (Symbol: corrosion)



Acute toxicity (Symbol: skull and crossbones)



Hazardous to the environment (Symbol: environment)



Health hazard/Hazardous to the ozone layer (Symbol: exclamation mark)



Serious health hazard (Symbol: health hazard)



Gas under pressure (Symbol: gas cylinder)

Dangerous to the Environment - Chemicals that may present an immediate or delayed danger to aspects of the environment – wildlife, plant life, people, weather systems.

Toxic - Chemicals that at low levels cause damage to health. When the sign includes a T+ in the top left-hand corner, it means chemicals that can cause damage to health at very low levels.

Oxidising - Chemicals and preparations that react exothermically with other chemicals – often resulting in combustion. Common oxidizing agents are oxygen, hydrogen peroxide and the halogens.

Corrosive - Substances that can damage or destroy other substances with which it comes into contact by means of a chemical reaction. These can exist as any state of matter, including liquids, solids, gases, mists and vapours.

Longer-term health hazards - This sign indicates the presence of a cancer-causing (carcinogenic) agent or substance with respiratory, reproductive or organ toxicity that causes damage over time (a chronic, or long-term, health hazard).

Caution - Caution relates to slightly less hazardous substances that may not pose an immediate or severe threat to health but should be handled carefully within the workplace.

What is a 'Substance Hazardous to Health'?

COSHH Covers

COSHH covers substances that are hazardous to health. Substances can take many forms and include:

- Chemicals
- Products containing chemicals

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- Fumes
- Dusts
- Vapours
- Mists
- Nanotechnology
- Gases and asphyxiating gases and
- Biological agents (germs). If the packaging has any of the hazard symbols then it is classed as a hazardous substance.
- Germs that cause diseases such as leptospirosis or legionnaires disease and germs used in laboratories.
- Read more about COSHH and what you need to do and COSHH assessments.

COSHH does not cover

- Lead,
- Asbestos or
- Radioactive substances because these have their own specific regulations.

Further Reading:

- ✓ Biomarkers of Environmental Toxicants Hardcover – October 2, 2020 by Kun Lu (Editor), Robert J Turesky (Editor)
- ✓ Genome Stability: From Virus to Human Application (Translational Epigenetics) 1st Edition, Kindle Edition by Igor Kovalchuk (Editor), Olga Kovalchuk (Editor) ,2016