

Cancer Association of South Africa (CANSA)



Research • Educate • Support

Fact Sheet on Occupational Cancers in South Africa

Introduction

Cancer at work is a serious but preventable disease which is rapidly becoming the biggest killer at places of work in most countries. Previous global estimates on occupational cancers established that 32% of the deaths in the world related to work are associated with cancers.

[Picture Credit: Cancer]

However, research warns that occupational cancers are quite rapidly being globalised and in many industrialising countries, the percentage of occupational cancer deaths among all work-related deaths is approaching that of the high-income countries. For example, in the EU, occupational cancer deaths are already at 53% of all work-related deaths. (South African Institute of Occupational Health).



Occupational Cancers Defined

Occupational cancers are caused wholly or partly by exposure to a cancer causing agent (carcinogen) at work, or by a particular set of circumstances at work.

Carcinogens are agents that cause the development or increase the incidence of cancer. There are three different types of occupational carcinogens:

- Biological carcinogens – some micro-organisms such as viruses have been known to cause cancer, either by damaging cells directly or by decreasing the body's ability to control abnormal cells, for example Hepatitis B, HIV viruses and so on.
- Chemical carcinogens – a number of chemicals are known to be carcinogenic. These chemicals may occur naturally, such as asbestos, be manufactured like vinyl chloride, or be by-products of industrial processes, for example, polycyclic aromatic hydrocarbons.

- Physical carcinogens – agents such as ionising and ultraviolet (UV) radiation have the potential to cause cancer. Examples of ionising radiation include X-rays and alpha, beta and gamma radiation. UV radiation can be divided into a number of bands such as UV-B, UV-C etc, some of which are known to cause skin cancer.

The International Agency for Research on Cancer (IARC, 2002) has classified over 100 chemical or biological agents as known or probable human carcinogens, and exposures to many of these carcinogens (e.g. asbestos, cadmium and benzene) occur in occupational settings.



**WORKPLACE
CANCER**

[Picture Credit: Workplace Cancer]

Occupational exposure is defined as any contact between the human body and a potentially harmful agent or environment in the workplace. Specific exposures are related to the type of work that people do (i.e. occupation), where they do it and the measures that are taken to limit exposures.

The probability that a worker will develop cancer is influenced by the total dose of carcinogen received, the potency of the carcinogen, the presence of other exposures (notably tobacco smoking), and individual susceptibility.

Excess exposure to carcinogens can lead to changes at the cellular level, resulting in the uncontrolled growth of abnormal cells that invade and destroy normal tissues in the lung, blood system, etc.

Exposure to a carcinogen does not necessarily mean that one will develop cancer. The most common types of occupational cancers are lung cancer, bladder cancer and mesothelioma.

The Occupational Health and Safety Act, 1993 (Act No 181 of 1993) [as amended] does not contain a definition of an occupational disease. (Institution of Occupational Safety and Health; Wellnessconnect).

Incidence of Occupational Cancers in South Africa

The National Cancer Registry (2012) does not differentiate the cause or origin of cancers. It is, therefore, not possible to determine from the National Cancer Registry how many individuals have been diagnosed with an occupational cancer.

Statistics of occupational cancers are also not kept by:

- Statistics SA
- National Health Laboratory Service
- South African Institute of Occupational Health
- The South African Department of Labour
- The South African Department of Energy
- The South African Department of Transport
- The Chamber of Mines of South Africa
- The Compensation Commissioner

List of Recognised Occupational Carcinogens in South Africa

In South Africa, occupational cancers are recognised by the Department of Labour as cancer caused by any one the following agents:

- Asbestos
- Benzidine and its salts
- Bis chloromethyl ether (BCME)
- Chromium and chromium compounds
- Coal tars, coal tar pitches or soots
- Beta-naphthylamine
- Vinyl chloride
- Benzene or its toxic homologues
- Toxic nitro- and amino-derivatives of benzene or its homologues
- Ionizing radiations
- Tar, pitch, bitumen, mineral oil, anthracene, or the compounds, products or residues of these substances
- Coke oven emissions
- Compounds of nickel
- Wood dust
- Crystalline silica
- Mycotoxins

(Department of Labour).

Agents Responsible for Occupational Cancers

The following is a list of occupational carcinogens together with the types of occupational cancers they could be responsible for:

- Asbestos fibres - colorectum, larynx, lung, ovary, pharynx, stomach, mesothelioma
- Wood dusts - nasopharynx, sinonasal cancers
- UV radiation from sunlight - skin cancers
- Metalworking fluids and mineral oils - bladder, lung, sinonasal, skin cancers
- Silica dust - lung cancer
- Diesel engine exhaust - bladder, lung cancers
- Coal tars and pitches - non-melanoma skin cancer
- Arsenic - bladder, lung, skin cancers
- Dioxins - lung cancer
- Environmental tobacco smoke (passive smoke) - lung cancer
- Naturally occurring radon - lung cancer
- Tetrachloroethylene - cervix, non-Hodgkin's lymphoma, oesophagus cancers
- Work as a painter - bladder, lung
- Work as a welder - lung cancer, melanoma of the eye

(SHEilds).

Key Facts Regarding Occupational Cancers According to the World Health Organization

According to the World Health Organization:

- Cancer is one of the leading causes of morbidity and mortality worldwide, with approximately 14 million new cases in 2012¹. The number of new cases is expected to rise by about 70% over the next 2 decades. Cancer is the second leading cause of death globally, and was responsible for 8.8 million deaths in 2015.
- Globally, 19% of all cancers are attributable to the environment, including work setting resulting in 1.3 million deaths each year
- WHO has classified 107 agents, mixtures, and exposure situations as carcinogenic to humans
- External environmental causes of cancer are factors in the environment that increase risk of cancer such as air pollution, UV radiation and indoor radon
- Every tenth lung cancer death is closely related to risks in the workplace
- Lung cancer, mesothelioma, and bladder cancer are among the most common types of occupational cancers.

(World Health Organization, 2011; Cancer Fact Sheet, 2017)

Control Over Occupational Health and Safety in South Africa

In South Africa occupational health and safety is regulated by legislation which includes:

Occupational Health and Safety and Compensation Legislation in South Africa		
Act	Function	Enforcement Agency
Occupational Health & Safety Act (OHSA), 1993 (Act No 181 of 1993) [as amended]	Ensures a healthy and safe environment in factories and offices	National Department of Labour
Mine Health & Safety Act (MHSA), 1996 (Act No 29 of 1996) [as amended]	Ensures a healthy and safe environment in mines/quarries	National Department of Energy
Merchant Shipping Act, 1951 (Act No 57 of 1951) [as amended]	Ensures a healthy and safe environment for fishermen on trawlers at sea	National Department of Transport
Compensation for Occupational Injuries & Diseases Act (COIDA), 1993 (Act No 130 of 1993) [as amended]	Provides for medical cover and compensation of occupational injuries or diseases in most workplaces	National Department of Labour
Occupational Diseases in Mines & Works Act (ODMWA), 1973 (Act No 78 of 1973) [as amended]	Provides for compensation of occupational lung diseases in mines and quarries	National Department of Health

The Main Purpose of Occupational Health and Safety Legislation in South Africa is to provide for protection of the health and safety of employees and other persons at mines and workplaces inclusive, but not limited to the following:

- To promote a culture of health and safety
- To provide for the enforcement of health and safety measures
- To provide appropriate systems of employee, employer and State participation of health and safety matters
- To establish representative tripartite institutions to review legislation, promote health and enhance properly targeted research
- To provide for effective monitoring systems and inspections, investigations and inquiries to improve health and safety
- To promote training and human resources development
- To regulate employers' and employees' duties to identify hazards and eliminate, control and minimise the risk to health and safety
- To entrench the right to refuse to work in dangerous conditions
- To give effect to the public international law obligations of the Republic of South Africa relating to health and safety
- To provide for matters connected therewith.

(Acts of Parliament).

Tools Developed by the World Health Organization

The World Health Organization (WHO) developed a number of tools for prevention of cancer arising from environmental exposures, including:

- WHO Framework Convention on Tobacco Control
- Policy on elimination of asbestos-related diseases
- Guidelines for air quality and drinking water quality
- Policy options for prevention and mitigation of radon
- Practical advice and information on health effects of UV exposure
- Safety standards for chemicals and food, including cancer-causing contaminants like dioxins and aflatoxins
- The International Programme on Chemical Safety, including *Ten chemicals of major public health concern*
- WHO global plan of action on workers' health
- Furthermore, WHO developed a guide to effective programmes on cancer prevention (*Cancer control: knowledge into action - prevention*) which deals with all risk factors, including environmental and occupational risks and radiation. The module aims to assist national managers of cancer control to develop effective plans for cancer prevention according to the realities in their countries. It provides directions on how to assess the magnitude of the problem, and devise core, recommended and extended sets of preventive actions, and how to monitor the effects of cancer prevention programmes.

(World Health Organization (WHO) 2011).

Occupational Cancers

The following are the types of cancers that are often associated with hazards or chemicals found in the workplace. Although over the years the numbers of incidences of occupational cancers have decreased due to an increased understanding of these agents, there is still a very real risk of the development of occupational cancers, especially in low- and middle-income countries.

Cancers associated with occupational exposure to carcinogens include:

- Bladder cancer: (arsenic; aromatic amines; coal tars and pitched, diesel engine exhaust; work as a hairdresser or barber; metalworking fluids and mineral oils; work as a painter; work in the rubber industry)
- Bone cancer: (ionising radiation)
- Brain and other central nervous system cancers: (ionising radiation)
- Breast cancer: (ionising radiation; ethylene oxide; shift (night) work)
- Colon and rectal cancer: (asbestos, ionising radiation)
- Kidney cancer: (arsenic, cadmium; coke production; trichloroethylene)
- Laryngeal cancer: (asbestos; work in the rubber industry: strong inorganic acid mists including sulphuric acids)
- Leukaemia: (benzene, ethylene oxide, formaldehyde, ionising radiation, non-arsenical insecticides)
- Liver and biliary cancer: (ionising radiation; trichloroethylene, vinyl chloride)
- Lung cancer: (arsenic; asbestos; beryllium; cadmium; chromium; coal gasification, coal tar and pitches, cobalt; coke production, diesel engine exhaust, dioxins; inorganic lead; iron and steel foundry work, mineral oils; nickel; work as a painter; natural radon in workplaces, ; ionising radiation, rubber production; silica; strong inorganic acid mists; work as a welder)
- Melanoma of the eye: (welding)
- Mesothelioma: (asbestos)
- Nasal and sinus cancer: (chromium, formaldehyde, leather dust, nickel, textile industry, wood dust)
- Non-Hodgkin's disease: (work as a hairdresser or barber, non-arsenical insecticides, work as a painter, tetrachloroethylene, trichloroethylene)
- Non-melanoma skin cancer: (coal tars and pitches, mineral oils, solar radiation)
- Oesophageal cancer (soots; tetrachloroethylene)
- Pharyngeal cancer (asbestos)
- Stomach cancer (asbestos).

(SHEields).

A Safe and Unsafe Working Environment

According to the Occupational Health and Safety Act, 1993 (Act No 181 of 1993) [as amended], the following definitions are of importance:

'accident' – means an accident arising out of and in the course of an employee's employment and resulting in a personal injury, illness or the death of the employee

'building' – includes:

- any structure attached to the soil
- any building or such structure or part thereof which is in the process of being erected; or
- any prefabricated building or structure not attached to the soil

'chief executive officer' – in relation to a body corporate or an enterprise conducted by the State, means the person who is responsible for the overall management and control of the business of such body corporate or enterprise

'danger' – means anything which may cause injury or damage to persons or property

'employee' – means, subject to the provisions of subsection (2), any person who is employed by or works for an employer and who receives or is entitled to receive any remuneration or who works under the direction or supervision of an employer or any other person

'employer' – means, subject to the provisions of subsection (2), any person who employs or provides work for any person and remunerates that person or expressly or tacitly undertakes to remunerate him, but excludes a labour broker as defined in section 1(1) of the Labour Relations Act, 1956 (Act No 23 of 1956)

'hazard' – means a source of or exposure to danger

'health and safety committee' – means a committee established under section 19

'incident' – means an incident as contemplated in section 24(1)

'major incident' – means an occurrence of catastrophic proportions, resulting from the use of plant or machinery, or from activities at a workplace

'occupational health' – includes occupational hygiene, occupational medicine and biological monitoring

'organism' – means any biological entity which is capable of causing illness to person

'premises' – includes any building, vehicle, vessel, train or aircraft

'reasonably practicable' – means practicable having regard to:

- the severity and scope of the hazard or risk concerned
- the state of knowledge reasonably available concerning that hazard or risk and of any means of removing or mitigating that hazard or risk
- the availability and suitability of means to remove or mitigate that hazard or risk
- the cost of removing or mitigating that hazard or risk in relation to the benefits deriving therefore

'risk' – means the probability that injury or damage will occur

'safe' – means free from any hazard

'work' – means work as an employee or as a self-employed person, and for such purpose an employee is deemed to be at work during the time that he is in the course of his employment, and a self-employed person is deemed to be at work during such time as he devotes to work as a self-employed person

'workplace' – means any premises or place where a person performs work in the course of his employment

General Duties of an Employer

Every employer shall provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of his employees.

Every employer shall conduct his undertaking in such a manner as to ensure, as far as is reasonably practicable, that persons other than those in his employment who may be directly affected by his activities are not thereby exposed to hazards to their health or safety

General Duties of Employees at Work

Every employee shall at work –

- take reasonable care for the health and safety of himself and of other persons who may be affected by his acts or omissions
- as regards any duty or requirement imposed on his employer or any other person by this Act, co-operate with such employer or person to enable that duty or requirement to be performed or complied with
- carry out any lawful order given to him, and obey the health and safety rules and procedures laid down by his employer or by anyone authorised thereto by his employer, in the interest of health or safety

- if any situation which is unsafe or unhealthy comes to his attention, as soon as practicable report such situation to his employer or to the health and safety representative for his workplace or section thereof, as the case may be, who shall report it to the employer
- if he is involved in any incident which may affect his health or which has caused an injury to himself, report such incident to his employer or to anyone authorised thereto by the employer, or to his health and safety representative, as soon as practicable but not later than the end of the particular shift during which the incident occurred, unless the circumstances were such that the reporting of the incident was not possible, in which case he shall report the incident as soon as practicable thereafter.

In the event of any employer failing his duties towards ensuring a safe and healthy working environment, and not responding to any complaint lodged by an employee, such employee has the right to report the matter to the local office of the Department of Labour. (Occupational Health and Safety Act, 1993).

Disclaimer

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