European Code Against Cancer, 5th Edition

14 ways you can help prevent cancer

Fact Sheet

Recommendation 9 for Individuals on Cancer-causing factors at work

Inform yourself about cancer-causing factors at work, and call on your employer to protect you against them. Always follow health and safety instructions at your workplace.

Key summary

- Exposure to cancer-causing factors (carcinogens) at work contributes to a large proportion of work-related deaths in the European Union (EU).
- The 10 most important occupational carcinogens contribute to about 85% of all occupational deaths.
- Following the hierarchy of control to eliminate hazardous agents and improving working conditions are the most effective ways to reduce the risk of occupational cancer.
- Call on your employer to protect you and your colleagues from cancer-causing factors.
- Workers should follow health and safety instructions in the workplace to lower their exposure to occupational carcinogens and their risk of occupational cancer.

Occupational exposures and cancer

Exposure to cancer-causing factors at work is a considerable public health concern in the EU. However, accurate information on the prevalence of these cancer-causing factors is lacking.

In 2023, the European Agency for Safety and Health at Work (EU-OSHA) reported that in six EU Member States (Finland, France, Germany, Hungary, Ireland, and Spain) the most prevalent carcinogens were solar ultraviolet (UV) radiation, diesel engine exhaust, benzene, respirable crystalline silica, formaldehyde, hexavalent chromium, and its inorganic compounds, and wood dust. This study found that in the previous working week 47% of workers had been occupationally exposed to at least one of the 24 cancer risk factors included in the survey.

Exposures to carcinogens in the workplace are prevalent and are often process generated, for example, diesel motor emissions and welding fumes. Workers are often exposed to more than one carcinogen. For example, exposures to solar UV radiation, crystalline silica, and welding fumes are widespread in various sectors across the EU.

Lung cancer is of most concern because many lung carcinogens are present in the workplace (e.g. asbestos, crystalline silica, welding fumes, arsenic, hexavalent chromium, nickel, cadmium, beryllium, second-hand tobacco smoke, radon, diesel engine exhaust, and polycyclic aromatic hydrocarbons).

Employers should be aware of cancer-causing agents and circumstances in the workplace and should implement control measures by following the hierarchy of control. This strategy dictates that eliminating and substituting hazardous agents should be considered before engineering and administrative controls. Personal protective equipment should only be used as a last resort.

Actions to reduce your cancer risk

Call on your employer to protect you against cancer-causing factors at work. Inform yourself of the risk of exposure to physical and chemical agents that increase your risk of cancer and other health issues. Your employer is responsible for controlling these agents and their risks. Workers should call on their employers to prevent or reduce the risk from exposure to cancer-causing agents at work by applying the hierarchy of control.

Always follow effective health and safety instructions in the workplace to lower your exposure to occupational carcinogens and the risk of occupational cancer.

For employers: implement the hierarchy of control in your workplace. The most effective control measure is elimination, that is removing the hazard from the workplace (e.g. not using asbestos), followed by substitution of a carcinogenic chemical agent with a less-hazardous chemical agent. Examples of engineering controls include measures such as enclosing the source, use of air extraction close to the source, use of barriers, and increasing the distance between worker and the source. Administrative controls can include reducing the time workers are exposed and improving shift work schedules. These types of controls are less effective than elimination and substitution as they generally require careful maintenance and sufficient budget maintain their effectiveness. Personal protective equipment should only be used as a last resort and requires adequate fitting to the worker, training and instruction, and the cooperation of workers. Many occupational carcinogens have no recognized safe exposure limits; therefore, exposure should be reduced as much as reasonably possible.

...

International Agency for Research on Cancer

World Health Organization

Check out the **Exposure to other people's tobacco smoke, Sun exposure** and **Indoor radon gas Fact Sheets** to learn more.

Robust risk assessments and health surveillance measures should be put in place.

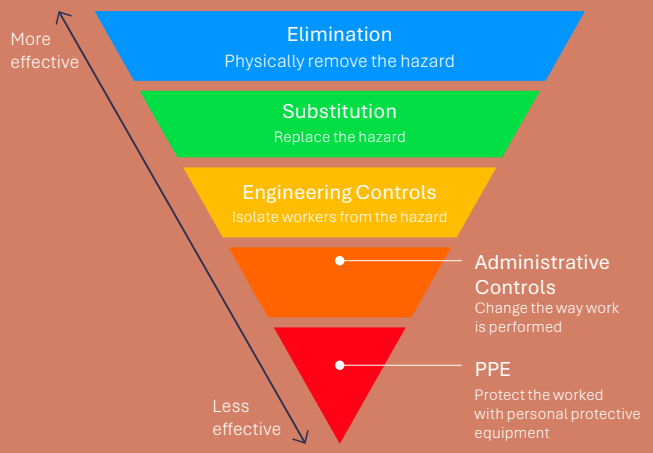

Figure 1: Hierarchy of control. *Hierachy of controls should be followed from top to bottom. Adapted from dizain/AdobeStock.com*

For occupational health services (e.g. occupational hygienists, occupational physicians): Support employers and workers to prevent occupational cancers. Occupational health services should be involved in the development, implementation and testing of all control measures, including fit-testing personal protective devices to ensure that workers have selected respirators of the correct size and that the face seal is adequate to provide the expected protection. This may increase the physical burden on workers, and therefore the use of such devices should be a last resort.

Co-benefits for the prevention of noncommunicable diseases (NCDs) with similar risk factors and opportunities for health promotion

Many carcinogens found in workplaces also contribute to other NCDs. For instance, exposure to some lung carcinogens (e.g. crystalline silica and welding fumes) can also cause other respiratory diseases, such as fibrosis of the lung or chronic obstructive pulmonary disease, and possibly increase the risk of cardiovascular diseases.

The short-term effects of exposure to some occupational carcinogens may include various dermatological conditions, such as skin irritation, allergic reactions, or dermatitis. Avoiding hazardous exposures and implementing safe workplace practices will reduce the risk of injuries, accidents, and musculoskeletal disorders.

Find out more about the various cancer-causing factors in the workplace

Industry	Agents	Tumour sites or type
Agriculture, forestry, and fishing	Solar UV radiation, respirable crystalline silica, welding fumes, diesel engine exhaust, aflatoxins, lindane	Lung cancer, skin cancer, liver cancer, non-Hodgkin lymphoma
Mining and quarrying	Asbestos, respirable crystalline silica, welding fumes, arsenic, hexavalent chromium, nickel, cadmium, beryllium, second-hand smoke, radon, diesel engine exhaust, polycyclic aromatic hydrocarbons, benzene, solar UV radiation	Lung cancer, mesothelioma*, acute myeloid leukaemia
Manufacturing	Asbestos, respirable crystalline silica, welding fumes, arsenic, hexavalent chromium, nickel, cadmium, beryllium, second-hand smoke, radon, diesel engine exhaust, coal tar, polycyclic aromatic hydrocarbons, wood dust, leather dust, polychlorinated biphenyls, benzene, formaldehyde, ionizing radiation, 1-3 butadiene, aromatic amines, trichloroethylene, ortho-toluidine, vinyl chloride, strong inorganic acids, UV radiation	Lung cancer, mesothelioma*, nasal cancer, skin cancer, acute myeloid leukaemia, bladder cancer, liver cancer, kidney cancer, larynx cancer
Electricity, gas, steam, and air-conditioning supply	Asbestos, respirable crystalline silica, polychlorinated biphenyls, polycyclic aromatic hydrocarbons	Lung cancer, mesothelioma*, bladder cancer, liver cancer
Water supply, sewerage, and waste management and remediation activities	Asbestos, respirable crystalline silica, solar UV radiation, diesel engine exhaust	Lung cancer, mesothelioma*, skin cancer
Construction	Solar UV radiation, asbestos, respirable crystalline silica, welding fumes, arsenic, hexavalent chromium, nickel, cadmium, beryllium, second-hand smoke, radon, diesel engine exhaust, coal tar, polycyclic aromatic hydrocarbons, UV radiation	Lung cancer, nasal cancer, bladder cancer, skin cancer
Wholesale and retail trade; repair of motor vehicles and motorcycles	Benzene, trichloroethylene, diesel engine exhaust, polycyclic aromatic hydrocarbons	Acute myeloid leukaemia, kidney cancer, lung cancer
Transportation and storage	Asbestos, respirable crystalline silica, welding fumes, arsenic, hexavalent chromium, nickel, cadmium, beryllium, environmental tobacco smoke, radon, diesel engine exhaust, polycyclic aromatic hydrocarbons	Lung cancer
Accommodation and food service activities (hospitality)	Second-hand smoke	Lung cancer
Public administration and defence; compulsory social security	Polycyclic aromatic hydrocarbons, asbestos, diesel engine exhaust, solar UV radiation	Mesothelioma, bladder cancer, lung cancer, skin cancer
Human health and social work activities	Antineoplastic agents, ionizing radiation, second-hand tobacco smoke, formaldehyde, ethylene oxide	Acute myeloid leukaemia, acute and chronic myeloid leukaemia, uterine cancer, lung cancer, breast cancer
Other service activities (repair, dry cleaning, hair dressing)	Ethanol, trichloroethylene, UV radiation	Kidney cancer, skin cancer

Learn about the policies that help support eliminating or reducing exposure to occupational carcinogens

Government agencies (e.g. labour inspectorates), policy-makers, and labour unions should help to enforce existing regulations and policies (e.g. the Carcinogens and Mutagens Directive and social dialogue agreements). Funds should be available to support risk assessment and management in small and medium-sized companies and for self-employed people, and to initiate and evaluate workplace interventions at the industry, national, and EU levels.

References

Cherrie et al. (2024). Ann Work Expo Health. 68(7): 673-677. PMID 38768378

EU-OSHA (2023). Occupational cancer risk factors in Europe – first findings of the Workers' Exposure Survey. Available from: https://osha.europa.eu/en/publications/occupational-cancer-risk-factors-europe-first-findings-workers-exposure-survey

GBD 2016 Occupational Carcinogens Collaborators. (2016). Occup Environ Med. 77(3):151-159. PMID: 32054819

International Agency for Research on Cancer. (2012). Chemical agents and related occupations. IARC Monographs 100F

International Agency for Research on Cancer. (2012). Monographs on the Evaluation of Carcinogenic Risks to Humans Volume 100D

Olsson & Kromhout. (2021). Mol Oncol. 15(3):753-763. PMID: 33544948

Takala et al. (2014). J Occup Environ Hyg. 11(5) 326–337. PMID: 24219404

This Fact Sheet was developed by the Working Group 2 on Environmental and Occupational Determinants with support from Working Group 5 on Communication and Health Literacy, and the Secretariat of the European Code Against Cancer, 5th Edition project.

October 2025