



# Occupation and Cancer



## Basic description

Occupational exposure to cancer-causing substances (carcinogens) is thought to account for about 4% of all cancers in the United States. Although occupational exposure to carcinogens has been reduced in recent decades, current statistics may reflect occupational exposures that occurred long in the past and are just now being identified.

It is known that certain chemicals (e.g., benzene, nickel compounds, vinyl chloride), dusts (e.g., leather or wood dusts, silica, asbestos), radiation (e.g., sunlight, radon gas, industrial, medical, or other exposure to ionizing radiation), and industrial processes (e.g., aluminum production, iron and steel founding, underground mining with exposure to uranium or radon) are occupational exposures that can cause cancer. In the United States, nearly all of these exposures are regulated, but potential exposure can occur through accidents, breaches in regulation, or unrecognized hazards.

## Cancers affected

A number of cancers have been associated with chemicals and chemical compounds, industrial processes, and naturally occurring radiation in the workplace. Some examples of these cancers and the substances or processes with which they are associated are summarized in the table on the back of this page.

## Opportunities for risk reduction

All cancers of occupational origin are preventable. Strong regulatory control, worker education, and constant attention to safe occupational practices are needed to minimize workplace exposure to carcinogens.

The US Food and Drug Administration, the Environmental Protection Agency, and the Occupational Safety and Health Administration all have regulatory responsibilities for developing safety standards for chemical or radiation exposure.

In addition, tobacco smoking greatly magnifies the risk of many occupational carcinogens. For instance, among workers exposed to asbestos, smokers have a lung cancer risk many times greater than that of people who are exposed to asbestos and do not smoke. Quitting the use of tobacco can dramatically reduce a worker's risk of developing occupationally caused cancers.

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## Cancers associated with various occupations or occupational exposures

Cancer	Examples of substances or processes
Lung	Arsenic, asbestos, beryllium, cadmium, coke oven fumes, chromium compounds, coal products, nickel refining, foundry substances, radon, soot, tars, silica, vinyl chloride, diesel exhaust, radioactive ores like uranium
Bladder	Paint/dyeing products; printing processes; benzidine; beta-naphthylamine; arsenic; chemicals used in rubber, leather, and textile industries
Nasal cavity and sinuses	Formaldehyde, textile industry, mustard gas, nickel refining, chromium dust, leather dust, wood dust, baking, flour milling, radium
Larynx	Asbestos; wood dust; paint fumes; chemicals used in metal working, petroleum, plastics, and textile industries
Mesothelioma	Asbestos
Lymphatic and hematopoietic	Benzene, herbicides, insecticides, radiation
Skin	Arsenic, coal tars, paraffin, certain oils, sunlight
Soft-tissue sarcoma	Radiation
Liver	Arsenic, vinyl chloride
Lip	Sunlight

### Bottom line

Most occupations in the United States do not present a major risk for developing cancer. However, there are some industries – such as certain types of chemical manufacturing, mining, coal production, and iron and steel founding – in which cancer risk is higher for certain workers. Research has identified a range of carcinogens that can be hazardous to workers in these industries if they are exposed to them over time. Therefore, protection from cancer risk in the workplace is essential and involves a combination of aggressive, scientifically based regulation, worker education, and surveillance.