



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. Occupational exposure to carcinogens has decreased greatly over the past several decades due to federal and state regulations. This means current statistics may reflect occupational exposures that occurred long in the past and are just now being identified.

It's 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 and jobs 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 don't smoke.

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Cancers associated with various occupations or occupational exposures

Cancer	Examples of substances or processes	Examples of occupations
Bladder	Benzidine, beta-naphthylamine, 4-aminobiphenyl, arsenic	Rubber, leather, paving, roofing, printing and textile industries; paint/dyeing products; chimney sweeping; machinists; hairdressers and barbers; truck drivers
Kidney	Cadmium, trichloroethylene, herbicides, wood dust	Painting; metalworking; petroleum, plastics, and textile industries
Larynx	Asbestos, wood dust, paint fumes	Metal working; petroleum, rubber, plastics, and textile industries
Leukemias	Formaldehyde, benzene, ethylene oxide, pesticides	Rubber manufacturing; oil refining; shoemaking
Liver	Arsenic, vinyl chloride, aflatoxins	Plastic manufacturing
Lung	Radon, secondhand smoke, asbestos, arsenic, cadmium, chromium compounds, diesel exhaust, sulfur mustard	Rubber manufacturing, paving, roofing, painting, chimney sweeping, iron and steel foundry work, welding
Lymphomas	Benzene, 1, 3-butadiene, ethylene oxide, herbicides, insecticides	Rubber manufacturing, painting, hairdresser or barber
Mesothelioma	Asbestos	Mining, railroad, automotive, plumbing, painting and construction industries; factory workers
Nasal cavity and sinuses	Mustard gas, nickel dust, chromium dust, leather dust, wood dust, radium	Textile and baking industry, flour milling, nickel refining, furniture and cabinet builders, shoemaking
Skin	Arsenic, coal tars, paraffin, certain oils, sunlight	Chimney sweeping; outside jobs that involve a lot of sun exposure

Bottom line

Most occupations in the United States don't 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're 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.

