

OCCUPATIONAL CANCER

Dr. Arash Dadvand

Occupational Medicine Specialist

OCCUPATIONAL CANCER

- Millions of US workers are exposed to substances that are known to cause cancer in humans.
- The National Institute for Occupational Safety and Health (NIOSH) has estimated that 3-6% of cancers worldwide are caused by occupational exposures and that 46,000-92,000 US workers are afflicted with cancer due to past workplace exposures every year.

OCCUPATIONAL CANCER

- The identification of occupational carcinogens is important in part because most occupational cancers are completely preventable with appropriate exposure controls, personnel practices, and strict protective legislation.

OCCUPATIONAL CANCER

- Several governmental agencies and other organizations determine the carcinogenicity of chemical agents. The primary agency is the International Agency for Research on Cancer (**IARC**).
- Unfortunately, IARC has to-date evaluated less than 2% of chemicals manufactured or processed in the United States for carcinogenicity, meaning that virtually all chemicals to which workers are exposed on a daily basis are of unknown carcinogenic potential.

IARC classifies

- **Group 1:** Agents that are carcinogenic to humans
- **Group 2A:** Agents that are probably carcinogenic to humans (agents for which there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals)
- **Group 2B:** Agents that are possibly carcinogenic to humans (agents for which there is limited evidence of carcinogenicity in humans and an absence of sufficient evidence of carcinogenicity in animals, or when there is inadequate evidence of carcinogenicity in humans, but there is sufficient evidence of carcinogenicity in experimental animals)

IARC classifies

- **Group 3:** Agents that are not classifiable as to carcinogenicity in humans (agents that do not fall in any other group)
- **Group 4:** Agents that are probably not carcinogenic to humans (agents for which there is evidence suggesting lack of carcinogenicity in humans together with evidence suggesting lack of carcinogenicity in experimental animals)

Skin

- Ultraviolet radiation
 - Outdoor workers
- PAHs
 - Coal tar workers (fuel production)
 - Electrode production
 - Pigment industry workers
 - Roofers
 - Shale oil workers, tool setters, etc. (

Skin

- Arsenic
 - Arsenical, pesticide production and use
 - Copper, lead, zinc smelting
 - Sheep-dip manufacturers (contamination of drinking water)
- Ionizing radiation
 - Uranium miners
 - Health workers

Hematologic cancer

- Radiation
 - Health workers
 - Military personnel
 - Nuclear power plant workers
- Benzene
 - Petrochemical and refinery workers
 - Rubber workers

Lung cancer

- Asbestos
 - Asbestos miners
 - Insulation and filter material production
 - Shipyard workers
 - Textile manufacturing
- Radon
 - Domestic exposure
 - Uranium mining
- Chloromethyl ethers
 - Chemical production workers

Lung cancer

- Polycyclic aromatic hydrocarbons
 - Aluminum reduction workers
 - Coke oven workers
 - Roofers
 - Rubber workers
- Chromium
 - Chromate production
- Nickel
 - Nickel mining, refining
- Arsenic
 - Arsenical pesticide production and use
 - Copper, lead, zinc smelting

Mesothelioma

- Asbestos
 - Asbestos miners
 - Construction workers
 - Insulation and filter material production
 - Roofers
 - Shipyard workers
 - Textile manufacturing
 - Welders, plumbers, electricians

Nasal cavity & Sinuses

- Wood and other dusts
 - Boot and shoe manufacturing
 - Furniture workers
 - Textile manufacturing
- Nickel
 - Nickel refinery workers
- Chromium
 - Chromate pigment manufacturing
 - Metal plating workers
- Isopropyl alcohol, formaldehyde
 - Laboratory workers
 - Other industries

Larynx

- Asbestos
 - Asbestos miners
 - Insulation and filter material production
 - Shipyard workers
 - Textile manufacturing

Bladder

- Naphthylamine
 - Textile workers (dye/pigment manufacturing)
 - 4-Aminobiphenyl
 - Tire and rubber manufacturing
- Benzidine
 - Dye/pigment manufacturing
- Chlornaphazine
 - Leather workers
- 4-Chloro-*o*-toluidine
 - Bootblacks
 - Textile workers
- *o*-Toluidine
 - Painters

Bladder

- 4,4'-Methylene bis(2-chloroaniline)
 - Rubber manufacturing
 - Truck drivers
- Methylene dianiline
 - Drill press operators
- Benzidine-derived azo dyes
 - Chemical workers
- Phenacetin-containing compounds
 - Hairdressers
 - Petroleum workers

Liver

- Vinyl chloride
 - Polyvinyl chloride production
- Arsenic
 - Arsenical pesticide production and use
- Copper, lead, zinc smelting
 - Wine makers (contamination of drinking water)

Renal cell cancer has been reported in some
workers

PAHs,

Organic solvents,

Asbestos,

Cadmium,

Lead salts

Cancers of the gastrointestinal tract may be increased in workers exposed to

Asbestos (gastric, colon)

Coal dust (gastric)

Cancer of the Thyroid

- Ionizing radiation

Thank You