

A listing and summary of evidence regarding occupational factors that may cause human cancer can be found in a series of critical monographs published by the International Agency for Research on Cancer (IARC). Since 1971, the IARC, an agency of the World Health Organization headquartered in Lyon, France, has published more than 60 volumes dealing with cancer risks from individual chemicals, and mixtures of chemicals, in selected occupations or industries. Individual exposures are reconsidered whenever indicated by new information. The most recent summary of all pertinent reviews was published in 1987 (IARC, Supplement 7).

TABLE 1

Chemicals, Groups of Chemicals, or Industrial Processes Carcinogenic to Humans

GROUP 1:

Industrial processes and occupational exposures that are carcinogenic to humans:

Aluminum production

Auramine manufacture

Boot and shoe manufacture and repair (certain occupations)

Coal gasification

Coal-tar pitches

Coke production

Furniture manufacture

Iron and steel founding

Isopropyl alcohol manufacture (strong-acid process)

Manufacture of magenta

Nickel refining

Rubber industry (certain occupations)

Underground hematite mining (with exposure to radon)

Chemicals and groups of chemicals that are carcinogenic to humans:

4-Aminobiphenyl

Arsenic and arsenic compounds

Asbestos

Benzene

Benzidine

N,N-bis(2-chloroethyl)-2-naphthylamine

bis(chloromethyl)ether and chloromethyl ethyl ether

Chromium and certain chromium compounds

Mineral oils

Mustard gas

2-Naphthylamine

Nickel and nickel compounds

Soots, tars, and oils

Vinyl chloride

TABLE 2

Chemicals, Groups of Chemicals, or Industrial Processes Probably or Possibly Carcinogenic to Humans

GROUP 2A:

Probably carcinogenic to humans:

Acrylonitrile

Benzidine-based dyes

Benzo(a)pyrene

Beryllium and beryllium compounds

Cadmium and cadmium compounds

Dimethyl sulphate

Ethylene dibromide

Ethylene oxide

Formaldehyde

Ortho-Toluidine

Polychlorinated biphenyls

Propylene oxide

Silica

Styrene oxide

Group 2B:

Possibly carcinogenic to humans:

Acetaldehyde

Acrylamide

Amitrole

Auramine (technical grade)

1,3 Butadiene

Carbon black extracts

Carbon tetrachloride

Chlorophenols

Chlorophenoxy herbicides

DDT

3,3'-Dichlorobenzidine

3,3'-Dimethoxybenzidine (Ortho-Dianisidine)

2,4-Diaminotoluene

1,2 Dichloroethane

Dichloromethane

1,4 Dioxane

Epichlorohydrin

Ethyl acrylate

Ethylene thiourea

Hexachlorobenzene
 Hydrazine
 Mirex
 2-Nitropropane
 Organolead
 Polybrominated biphenyls
 Styrene
 Tetrachlorodibenzo-para-dioxin (TCDD)
 1,1,2,2 Tetrachloroethane
 Tetrachloroethylene
 Toluene diisocyanates
 Toluidine
 Toxaphene
 Urethane

TABLE 3

Cancers Associated with Various Occupations or Occupational Exposures	
CANCER	SUBSTANCES OR PROCESSES
Lung	Arsenic, asbestos, bis(chloromethyl)ether, chromium compounds, coal gasification, mustard gas, nickel refining, foundry substances, radon, soots, tars, oils, acrylonitrile, beryllium, silica
Bladder	Aluminum production, auramine and magenta manufacture, rubber industry, leather industry, 4-aminobiphenyl, benzidine, naphthylamine
Nasal cavity and sinuses	Formaldehyde, isopropyl alcohol manufacture, mustard, gas, nickel refining, leather dust, wood dust
Larynx	Asbestos, isopropyl alcohol, mustard gas
Pharynx	Formaldehyde, mustard gas
Mesothelioma	Asbestos
Lymphatic and hematopoietic system	Benzene, ethylene oxide, chlorophenols, chlorophenoxy, herbicides, X-radiation
Skin	Arsenic, coal tars, mineral oils
Soft-tissue sarcoma	Chlorophenols, chlorophenoxy herbicides
Liver	Arsenic, vinyl chloride

REFERENCES

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: Overall Evaluations of Carcinogenicity: An Updating of IARC Monographs 1 to 42, (Suppl 7), Lyon, 1987.