

## Carcinogen List

### INDIANA UNIVERSITY-PURDUE UNIVERSITY AT INDIANAPOLIS IUPUI

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*List of Known or Anticipated Carcinogens taken from the National Toxicology Program (NTP) and International Agency for Research on Cancer (IARC)*

The following is a compilation of chemical substances listed by the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP).

This list does not include exposure circumstances (e.g., manufacture of auramine) that are included in NTP and IARC documents.

#### A

A-alpha-C (2-Amino-9H-pyrido[2,3-b]indole)  
Acetaldehyde  
Acetamide  
2-Acetylaminofluorene  
Acrylamide  
Acrylonitrile  
Adriamycin® (Doxorubicin Hydrochloride)  
AF-2 [2-(2-Furyl)-3-(5-nitro-2-furyl)acrylamide]  
Aflatoxin M1  
Aflatoxins  
Alcoholic Beverage Consumption  
para-Aminoazobenzene  
ortho-Aminoazotoluene  
2-Aminoanthraquinone  
o-Aminoazotoluene  
4-Aminobiphenyl  
1-Amino-2,4-dibromoanthraquinone  
1-Amino-2-methylantraquinone  
2-Amino-3,4-dimethylimidazo[4,5-f]quinoline (MeIQ)  
2-Amino-3,8-dimethylimidazo[4,5-f]quinoxaline (MeIQx)  
2-Amino-3-methylimidazo[4,5-f]quinoline (IQ)  
2-Amino-1-methyl-6-phenylimidazo[4,5-b]pyridine (PhIP)  
2-Amino-5-(5-nitro-2-furyl)-1,3,4-thiadiazole  
Amitrole  
Amsacrine  
Analgesic mixtures containing phenacetin  
Androgenic (anabolic) steroids  
o-Anisidine Hydrochloride  
Antimony trioxide  
Aramite®  
Auramine  
Azaserine  
Aziridine  
Areca nut  
Aristolochic acids (naturally occurring mixtures of)  
Arsenic Compounds, Inorganic  
Asbestos  
Azacitidine (5-Azacitidine®, 5-AzaC)  
Azathioprine

#### B

Benz[a]anthracene (See Polycyclic Aromatic Hydrocarbons)  
Benzene  
Benzidine (See Benzidine and Dyes Metabolized to Benzidine)

Benzidine-based dyes  
Benzo[b]fluoranthene (See Polycyclic Aromatic Hydrocarbons)  
Benzo[j]fluoranthene (See Polycyclic Aromatic Hydrocarbons)  
Benzo[k]fluoranthene (See Polycyclic Aromatic Hydrocarbons)  
Benzofuran  
Benzo[a]pyrene (See Polycyclic Aromatic Hydrocarbons)  
Benzotrichloride  
Benzyl violet 4B  
Beryllium and Beryllium Compounds  
N,N-Bis(2-chloroethyl)-2-naphthylamine (Chlornaphazine)  
Betel quid with tobacco  
Betel quid without tobacco  
Bitumens  
Bleomycins  
Bracken fern  
2,2-bis-(Bromoethyl)-1,3-propanediol (Technical Grade)  
Bromodichloromethane  
1,3-Butadiene  
1,4-Butanediol Dimethanesulfonate (Myleran®)  
Butylated Hydroxyanisole (BHA)  
beta-Butyrolactone

## C

Cadmium and Cadmium Compounds  
Caffeic acid  
Captafol  
Carbon black  
Carbon Tetrachloride  
Carrageenan  
Catechol  
Ceramic Fibers (Respirable Size)  
Chlorambucil  
Chloramphenicol  
Chlordane  
Chlordecone (Kepone)  
Chlorendic Acid  
Chlorinated Paraffins (C12, 60% Chlorine)  
alpha-Chlorinated toluenes (benzal chloride, benzotrichloride, benzyl chloride) and benzoyl chloride (combined exposures)  
para-Chloroaniline  
3-Chloro-4-(dichloromethyl)-5-hydroxy-2(5H)-furanone  
1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea  
1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea (MeCCNU)  
bis(Chloromethyl) Ether and Technical-Grade Chloromethyl Methyl Ether  
bis(Chloroethyl) nitrosourea  
Chloroform  
1-Chloro-2-methylpropene  
3-Chloro-2-methylpropene  
4-Chloro-ortho-toluidine  
4-Chloro-o-phenylenediamine  
Chlorophenoxy herbicides  
4-Chloro-ortho-phenylenediamine  
Chloroprene  
Chlorothalonil  
p-Chloro-o-toluidine and p-Chloro-o-toluidine Hydrochloride  
Chlorozotocin  
Chromium Hexavalent Compounds  
CI Acid Red 114  
CI Basic Red 9 Monohydrochloride  
CI Direct Blue 15  
Citrus Red No. 2

Cisplatin  
Cisplatin Clonorchis sinensis (infection with)  
Coal Tar Pitches (See Coal Tars and Coal Tar Pitches)  
Coal Tars (See Coal Tars and Coal Tar Pitches)  
Cobalt and cobalt compounds  
Cobalt Sulfate  
Coffee  
Coke Oven Emissions  
Creosotes (from coal-tars)  
p-Cresidine  
Cupferron  
Cycasin  
Cyclophosphamide  
Cyclosporin A

## D

Dacarbazine  
Danthron (1,8-Dihydroxyanthraquinone)  
Daunomycin  
N,N'-Diacetylbenzidine  
2,4-Diaminoaniline Sulfate  
4,4'-Diaminodiphenyl ether  
2,4-Diaminotoluene  
Diazoaminobenzene  
Dibenz[a,h]acridine (See Polycyclic Aromatic Hydrocarbons)  
Dibenz[a,j]acridine (See Polycyclic Aromatic Hydrocarbons)  
Dibenz[a,h]anthracene (See Polycyclic Aromatic Hydrocarbons)  
7H-Dibenzo[c,g]carbazole (See Polycyclic Aromatic Hydrocarbons)  
Dibenzo[a,e]pyrene (See Polycyclic Aromatic Hydrocarbons)  
Dibenzo[a,h]pyrene (See Polycyclic Aromatic Hydrocarbons)  
Dibenzo[a,i]pyrene (See Polycyclic Aromatic Hydrocarbons)  
Dibenzo[a,l]pyrene (See Polycyclic Aromatic Hydrocarbons)  
1,2-Dibromo-3-chloropropane  
1,2-Dibromoethane (Ethylene Dibromide)  
2,3-Dibromo-1-propanol  
tris(2,3-Dibromopropyl) Phosphate  
Dichloroacetic acid  
para-Dichlorobenzene  
1,4-Dichlorobenzene  
3,3'-Dichlorobenzidine and 3,3'-Dichlorobenzidine Dihydrochloride  
3,3'-Dichloro-4,4'-diaminodiphenyl ether  
Dichlorodiphenyltrichloroethane (DDT)  
1,2-Dichloroethane (Ethylene Dichloride)  
Dichloromethane (Methylene Chloride)  
1,3-Dichloropropene (Technical Grade)  
Dichlorvos  
Diepoxybutane  
1,2-Diethylhydrazine  
Diesel Exhaust Particulates  
Diethyl Sulfate  
Diethylstilbestrol  
Diglycidyl Resorcinol Ether  
Dihydrosafrole  
Diisopropyl sulfate  
4-Dimethylaminoazobenzene  
trans-2-[(Dimethylamino)methylimino]-5-[2-(5-nitro-2-furyl)-vinyl]-1,3,4-oxadiazole  
2,6-Dimethylaniline (2,6-Xylidine)  
3,3'-Dimethylbenzidine (See 3,3'-Dimethylbenzidine and Dyes Metabolized to 3,3'-Dimethylbenzidine)  
Dimethylcarbamoyl Chloride  
3,3'-Dimethoxybenzidine (See 3,3'-Dimethoxybenzidine and Dyes Metabolized to 3,3'-Dimethoxybenzidine)

1,1-Dimethylhydrazine  
1,1-Dimethylhydrazine  
1,2-Dimethylhydrazine  
Dimethyl Sulfate  
Dimethylvinyl Chloride  
3,7-Dinitrofluoranthene  
3,9-Dinitrofluoranthene  
1,6-Dinitropyrene (See Nitroarenes (selected))  
1,8-Dinitropyrene (See Nitroarenes (selected))  
2,4-Dinitrotoluene  
2,6-Dinitrotoluene  
1,4-Dioxane  
Disperse Blue 1  
Dyes Metabolized to Benzidine (See Benzidine and Dyes Metabolized to Benzidine)  
Dyes Metabolized to 3,3'-Dimethoxybenzidine (See 3,3'-Dimethoxybenzidine and Dyes Metabolized to 3,3'-Dimethoxybenzidine)  
Dyes Metabolized to 3,3'-Dimethylbenzidine (See 3,3'-Dimethylbenzidine and Dyes Metabolized to 3,3'-Dimethylbenzidine)

## **E**

Epichlorohydrin  
Engine exhaust, gasoline  
Environmental Tobacco Smoke (See Tobacco Related Exposures)  
1,2-Epoxybutane  
Epstein-Barr virus  
Erionite  
Estrogens, Steroidal  
Ethyl acrylate  
Ethylbenzene  
Ethylene dibromide  
Ethylene Oxide  
N-Ethyl-N-nitrosourea  
Etoposide in combination with cisplatin and bleomycin  
Ethylene Thiourea  
di(2-Ethylhexyl) Phthalate  
Ethyl Methanesulfonate

## **F**

Foreign bodies, implanted in tissues (Vol. 74; 1999)  
Polymeric, prepared as thin smooth films (with the exception of poly(glycolic acid))  
Metallic, prepared as thin smooth films  
Metallic cobalt, metallic nickel and an alloy powder containing 66-67% nickel, 13-16% chromium and 7% iron  
Formaldehyde (Gas)  
2-(2-Formylhydrazino)-4-(5-nitro-2-furyl)thiazole  
Fuel oils, residual (heavy)  
Fumonisin B1  
Furan

## **G**

Gallium arsenide  
Gasoline  
Glass Wool (Respirable Size)  
Glu-P-1 (2-Amino-6-methyldipyrido[1,2-a:3',2'-d]imidazole)  
Glu-P-2 (2-Aminodipyrido[1,2-a:3',2'-d]imidazole)  
Glycidaldehyde  
Glycidol  
Griseofulvin

## **H**

HC Blue No. 1  
Helicobacter pylori (infection with)  
Heptachlor  
Hepatitis B Virus  
Hepatitis C Virus  
Herbal remedies containing plant species of the genus Aristolochia  
Hexachlorobenzene  
Hexachlorocyclohexane Isomers (See Lindane and Other Hexachlorocyclohexane Isomers)  
Hexachloroethane  
Hexamethylphosphoramide  
Hot mate  
Hydrazine and Hydrazine Sulfate  
Hydrazobenzene  
Human immunodeficiency virus type 1 (infection with)  
Human immunodeficiency virus type 2 (infection with)  
Human Papillomas Viruses: Some Genital-Mucosal Types  
Human papillomaviruses: some types other than 16, 18, 31 and 33  
1-Hydroxyanthraquinone

## **I**

Indeno[1,2,3-cd]pyrene (See Polycyclic Aromatic Hydrocarbons)  
Indium phosphide IQ (2-Amino-3-methylimidazo[4,5-f]quinoline)  
Iron Dextran Complex  
Isoprene

## **K**

Kaposi's sarcoma herpesvirus/human herpesvirus 8 (Vol. 70; 1997)  
Kepone® (Chlordecone)

## **L**

Lasiocarpine  
Lead and Lead Compounds  
Lindane and Other Hexachlorocyclohexane Isomers

## **M**

Magenta (containing CI Basic Red 9)  
Magnetic fields (extremely low-frequency)  
MeA-?-C (2-Amino-3-methyl-9H-pyrido[2,3-b]indole)  
Medroxyprogesterone acetate  
MeIQ (2-Amino-3,4-dimethylimidazo[4,5-f]quinoline)  
MeIQx (2-Amino-3,8-dimethylimidazo[4,5-f]quinoxaline)  
Melphalan  
Merphalan  
5-Methoxypsoralen  
8-Methoxypsoralen (Methoxsalen) plus ultraviolet A radiation  
Methoxsalen with Ultraviolet A Therapy (PUVA)  
2-Methylaziridine (Propylenimine)  
Methylazoxymethanol acetate  
5-Methylchrysene (See Polycyclic Aromatic Hydrocarbons)  
4,4'-Methylenebis(2-chloroaniline)  
4,4'-Methylenebis(N,N-dimethyl)benzenamine  
4,4'-Methylene bis(2-methylaniline)  
4,4'-Methylenedianiline and Its Dihydrochloride Salt  
Methyleugenol  
Methyl Methanesulfonate  
Methylmercury compounds  
2-Methyl-1-nitroanthraquinone  
N-Methyl-N'-nitro-N-nitrosoguanidine  
N-Methyl-N-nitrosourea  
N-Methyl-N-nitrosourethane

Nitrogen mustard  
N-Nitrosodiethylamine  
Methylthiouracil  
Metronidazole  
Michler's Ketone [4,4'-(Dimethylamino)benzophenone]  
Mineral Oils (Untreated and Mildly Treated)  
Mirex  
Mitomycin C  
Mitoxantrone  
Monocrotaline  
MOPP and other combined chemotherapy including alkylating agents  
5-(Morpholinomethyl)-3-[(5-nitrofurfurylidene)amino]-2-oxazolidinone  
Mustard Gas

## N

Nafenopin  
Naphthalene  
2-Naphthylamine  
Neutrons (See Ionizing Radiation)  
Nickel Compounds (See Nickel Compounds and Metallic Nickel)  
Niridazole  
Nitrilotriacetic Acid  
5-Nitroacenaphthene  
2-Nitroanisole  
o-Nitroanisole  
Nitrobenzene  
6-Nitrochrysene (See Nitroarenes (selected))  
Nitrofen (2,4-Dichlorophenyl-p-nitrophenyl ether)  
2-Nitrofluorene  
1-[(5-Nitrofurfurylidene)amino]-2-imidazolidinone  
N-[4-(5-Nitro-2-furyl)-2-thiazolyl]acetamide  
Nitrogen Mustard Hydrochloride  
Nitrogen mustard N-oxide  
Nitromethane  
2-Nitropropane  
1-Nitropyrene (See Nitroarenes (selected))  
4-Nitropyrene (See Nitroarenes (selected))  
N-Nitrosodi-n-butylamine  
N-Nitrosodiethanolamine  
N-Nitrosodiethylamine  
N-Nitrosodimethylamine  
N-Nitrosodi-n-propylamine  
N-Nitroso-N-ethylurea  
4-(N-Nitrosomethylamino)-1-(3-pyridyl)-1-butanone  
3-(N-Nitrosomethylamino)propionitrile  
N-Nitrosomethylethylamine  
N-Nitroso-N-methylurea  
N-Nitrosomethylvinylamine  
N-Nitrosomorpholine  
N-Nitrosornicotine  
N-Nitrosopiperidine  
N-Nitrosopyrrolidine  
N-Nitrososarcosine  
Non-arsenical insecticides (occupational exposures in spraying and application of)  
Norethisterone

## O

Ochratoxin A  
Oestrogen therapy, postmenopausal  
Oestrogens, nonsteroidal (NB: This evaluation applies to the group of compounds as a whole and not necessarily to all individual compounds within the group)

Oestrogens, steroidal (NB: This evaluation applies to the group of compounds as a whole and not necessarily to all individual compounds within the group)

Oil Orange SS

Opisthorchis viverrini (infection with)

Oral contraceptives, combined (NB: There is also conclusive evidence that these agents have a protective effect against cancers of the ovary and endometrium)

Oral contraceptives, sequential

Oxazepam

4,4'-Oxydianiline

Oxymetholone

## **P**

Palygorskite (attapulgit)

Panfuran S

Phenacetin (See Phenacetin and Analgesic Mixtures Containing Phenacetin)

Phenazopyridine Hydrochloride

Phenobarbital

Phenolphthalein

Phenoxybenzamine Hydrochloride

Phenyl glycidyl ether

Phenytoin

PhIP (2-Amino-1-methyl-6-phenylimidazo[4,5-b]pyridine)

Phosphorus-32, as phosphate

Pickled vegetables (traditional in Asia)

Plutonium-239 and its decay products (may contain plutonium-240 and other isotopes), as aerosols

Polybrominated Biphenyls (PBBs)

Polychlorinated Biphenyls (PCBs)

Polychlorophenols and their sodium salts (mixed exposures)

Polycyclic Aromatic Hydrocarbons (PAHs)

Ponceau MX

Ponceau 3R

Potassium bromate

Procarbazine Hydrochloride

Progesterone

Progestins

1,3-Propane Sultone

beta-Propiolactone

Propylene Oxide

Propylthiouracil

## **R**

Radioiodines, short-lived isotopes, including iodine-131, from atomic reactor accidents and nuclear weapons detonation (exposure during childhood)

Radionuclides, a-particle-emitting, internally deposited (NB: Specific radionuclides for which there is sufficient evidence for carcinogenicity to humans are also listed individually as Group 1 agents)

Radionuclides, b-particle-emitting, internally deposited (NB: Specific radionuclides for which there is sufficient evidence for carcinogenicity to humans are also listed individually as Group 1 agents)

Radium-224 and its decay products

Radium-226 and its decay products

Radium-228 and its decay products

Radon-222 [10043-92-2] and its decay products

Radon (See Ionizing Radiation)

Refractory ceramic fibres

Riddelliine

Reserpine

## **S**

Safrole

Salted fish (Chinese-style)

Schistosoma haematobium (infection with)

Schistosoma japonicum (infection with)  
Selenium Sulfide  
Shale-oils  
Silica, Crystalline (Respirable Size)  
Smokeless Tobacco (See Tobacco Related Exposures)  
Sodium ortho-phenylphenate  
Solar Radiation (See Ultraviolet Radiation Related Exposures)  
Soots  
Special-purpose fibres such as E-glass and '475' glass fibres  
Sterigmatocystin  
Streptozotocin  
Styrene  
Strong Inorganic Acid Mists Containing Sulfuric Acid  
Styrene-7,8-oxide  
Sulfallate  
Sunlamps or Sunbeds, Exposure to (See Ultraviolet Radiation Related Exposures)

## T

Talc containing asbestiform fibres  
Tamoxifen  
Toxaphene (Polychlorinated camphenes)  
Teniposide  
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD); "Dioxin"  
Tetrachloroethylene (Perchloroethylene)  
Tetrafluoroethylene  
Tetranitromethane  
Thioacetamide  
4,4'-Thiodianiline  
Thiotepa  
Thiouracil  
Thiourea  
Thorium Dioxide (See Ionizing Radiation)  
Toluene Diisocyanate  
o-Toluidine and o-Toluidine Hydrochloride  
Toxaphene  
Toxins derived from Fusarium moniliforme  
Trosulfan  
Trichloroethylene  
Trichlormethine (Trimustine hydrochloride)  
2,4,6-Trichlorophenol  
1,2,3-Trichloropropan  
Tris(2,3-dibromopropyl) phosphate  
Trp-P-1 (3-Amino-1,4-dimethyl-5H-pyrido[4,3-b]indole)[62450-06-0]  
Trp-P-2 (3-Amino-1-methyl-5H-pyrido[4,3-b]indole)[62450-07-1]  
Trypan blue  
Tobacco Smoking (See Tobacco Related Exposures)

## U

Uracil mustard  
Ultraviolet A Radiation (See Ultraviolet Radiation Related Exposure)  
Ultraviolet B Radiation (See Ultraviolet Radiation Related Exposure)  
Ultraviolet C Radiation (See Ultraviolet Radiation Related Exposure)  
Urethane

## V

Vanadium pentoxide  
Vinyl acetate  
Vinyl Bromide  
Vinyl Chloride  
4-Vinyl-1-cyclohexene Diepoxide

4-Vinylcyclohexene  
Vinyl Fluoride

**W**  
Welding fumes  
Wood Dust

**X**  
X-Radiation and Gamma Radiation (See Ionizing Radiation)

**Z**  
Zalcitabine  
Zidovudine (AZT)