

CHEMICAL CARCINOGENS

The following substances are listed in the 11th Report on Carcinogens 2004, released by the National Institute of Environmental Health Sciences (NIEHS) under the National Toxicology Program (NTP). Substances are grouped in two classes:

- **Known to be human carcinogens:** There is sufficient evidence of carcinogenicity from studies in humans which indicates a causal relationship between exposure to the substance and human cancer.

- **Reasonably anticipated to be human carcinogens:** There is limited evidence of carcinogenicity from studies in humans which indicates that causal interpretation is credible, but that alternative explanations, such as chance, bias, or confounding factors, could not be adequately excluded; or there is sufficient evidence of carcinogenicity from studies in experimental animals.

The NTP report also lists many poorly defined materials such as soots, tars, mineral oils, coke oven emissions, etc. These materials are not included here.

The table lists the name normally used in the *Handbook of Chemistry and Physics*, followed by additional names and acronyms by which the substance is known. In many cases the primary name given here is different from that used in the NTP report; however, names used in the NTP report appear in the Other Names column. The Chemical Abstracts Service Registry Number (CAS RN), given in the last column, is taken from the NTP report. Extensive details on each substance are given in the reference.

Reference

Public Health Service, National Toxicology Program, 11th Report on Carcinogens, available on the Internet at <<http://ntp.niehs.nih.gov/>>

Substance	Other Names	CAS RN
<i>Known to be Human Carcinogens</i>		
Aflatoxins		1402-68-2
4-Aminobiphenyl	<i>p</i> -Biphenylamine	92-67-1
Arsenic compounds, inorganic		
Asbestos		1332-21-4
Azathioprine	6-[(1-Methyl-4-nitro-1 <i>H</i> -imidazol-5-yl)thio]-1 <i>H</i> -purine	446-86-6
Benzene		71-43-2
<i>p</i> -Benzidine (includes dyes metabolized to benzidine)	[1,1'-Biphenyl]-4,4'-diamine	92-87-5
Beryllium and beryllium compounds		7440-41-7
Bis(2-chloroethyl) sulfide	Mustard gas	505-60-2
Bis(chloromethyl) ether		542-88-1
1,3-Butadiene		106-99-0
1,4-Butanediol dimethylsulfonate	Myleran; Busulfan	55-98-1
Cadmium and cadmium compounds		7440-43-9
Chlorambucil		305-03-3
Chloroethene	Vinyl chloride; Chloroethylene	75-01-4
1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea	MeCCNU	13909-09-6
Chloromethyl methyl ether		107-30-2
Chromium hexavalent compounds		
Cyclophosphamide	Cyclophosphane; 2 <i>H</i> -1,3,2-Oxazaphosphorin-2-amine, <i>N,N</i> -bis(2-chloroethyl)tetrahydro-, 2-oxide	50-18-0
Cyclosporin A	Cyclosporine	59865-13-3
Diethylstilbestrol		56-53-1
Erionite		66733-21-9
Estrogens, steroidal		
<i>N</i> -(4-Ethoxyphenyl)acetamide	Phenacetin	62-44-2
Melphalan	<i>L</i> -Phenylalanine, 4-[bis(2-chloroethyl)amino]-	148-82-3
Methoxsalen (with UV therapy)	PUVA; 9-Methoxy-7 <i>H</i> -furo[3,2- <i>g</i>][1]benzopyran-7-one	298-81-7
2-Naphthylamine	2-Aminonaphthalene; β -Naphthylamine	91-59-8
Nickel compounds		
Oxirane	Ethylene oxide	75-21-8

Substance	Other Names	CAS RN
Radon		10043-92-2
Silicon dioxide (respirable size)	Quartz; Silica	14808-60-7
Silicon dioxide (respirable size)	Cristobalite; Silica	14464-46-1
Silicon dioxide (respirable size)	Tridymite; Silica	15468-32-3
Sulfuric acid (strong acid mists)	Oil of vitriol	7664-93-9
Tamoxifen		10540-29-1
2,3,7,8-Tetrachlorodibenzo- <i>p</i> -dioxin	TCDD; Dioxin	1746-01-6
Thorium(IV) oxide	Thorium dioxide	1314-20-1
Triethylenethiophosphoramidate	Thiotepa; Tris(1-aziridinyl)phosphine, sulfide	52-24-4
Reasonably Anticipated to be Human Carcinogens		
Acetaldehyde	Ethanal	75-07-0
2-(Acetylamino)fluorene		53-96-3
Acrylamide	2-Propenamamide	79-06-1
Acrylonitrile	Propenenitrile	107-13-1
4-Allyl-1,2-dimethoxybenzene	Methyleugenol; 1,2-Dimethoxy-4-allylbenzene	93-15-2
2-Amino-9,10-anthracenedione	2-Aminoanthraquinone	117-79-3
1-Amino-2,4-dibromo-9,10-anthracenedione	1-Amino-2,4-dibromoanthraquinone	81-49-2
2-Amino-3,4-dimethylimidazo[4,5-f]quinoline	MeIQ	77094-11-2
2-Amino-3,8-dimethylimidazo[4,5-f]quinoxaline	MeIQx	77500-04-0
1-Amino-2-methyl-9,10-anthracenedione	1-Amino-2-methylanthraquinone	82-28-0
2-Amino-3-methyl-3 <i>H</i> -imidazo[4,5-f]quinoline	IQ	76180-96-6
2-Amino-1-methyl-6-phenylimidazo[4,5-b]pyridine	PhIP	105650-23-5
Azacitidine	5-Azacitidine; 4-Amino-1-β- <i>D</i> -ribofuranosyl-1,3,5-triazine-2(1 <i>H</i>)-one	320-67-2
Benz[a]anthracene		56-55-3
Benzo[b]fluoranthene	Benzo[e]acephenanthrylene	205-99-2
Benzo[j]fluoranthene		205-82-3
Benzo[k]fluoranthene	2,3,1,8'-Binaphthylene	207-08-9
Benzo[a]pyrene		50-32-8
2,2'-Bioxirane	Diepoxybutane	1464-53-5
Bis(4-amino-3-chlorophenyl)methane	4,4-Methylene-bis(2-chloraniline); MBOCA	101-14-4
2,2-Bis(bromomethyl)-1,3-propanediol	BBMP; Pentaerythritol dibromide	3296-90-0
Bis(2-chloroethyl)methylamine	Nitrogen mustard hydrochloride	55-86-7
<i>N,N'</i> -Bis(2-chloroethyl)- <i>N</i> -nitrosourea	BCNU; Carmustine	154-93-8
Bis[4-(dimethylamino)phenyl]methane	Michler's Base; 4,4-Methylenebis(<i>N,N</i> -dimethylbenzenamine)	101-61-1
1,3-Bis(2,3-epoxypropoxy)benzene	Diglycidyl resorcinol ether	101-90-6
Bis(2-ethylhexyl) phthalate	DEHP; Di(2-ethylhexyl) phthalate	117-81-7
Bromodichloromethane		75-27-4
Bromoethene	Vinyl bromide	593-60-2
<i>tert</i> -Butyl-4-hydroxyanisole	BHA; Butylated hydroxyanisole	25013-16-5
Chloramphenicol		56-75-7
Chlorendic acid	1,4,5,6,7,7-Hexachloro-5-norbornene-2,3-dicarboxylic acid	115-28-6
Chlorinated paraffins (C ₁₂ , 60% Cl)		108171-26-2
4-Chloro-1,2-benzenediamine	4-Chloro- <i>o</i> -phenylenediamine	95-83-0
2-Chloro-1,3-butadiene	Chloroprene	126-99-8
1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea	CCNU; Lomustine; Belustine	13010-47-4
4-Chloro-2-methylaniline	<i>p</i> -Chloro- <i>o</i> -toluidine	95-69-2
4-Chloro-2-methylaniline hydrochloride	<i>p</i> -Chloro- <i>o</i> -toluidine hydrochloride	3165-93-3

Substance	Other Names	CAS RN
1-Chloro-2-methylpropene	Dimethylvinyl chloride	513-37-1
3-Chloro-2-methylpropene		563-47-3
Chlorozotocin	2-[[[(2-Chloroethyl)nitrosoamino]carbonyl]amino]-2-deoxy- <i>D</i> -glucose	54749-90-5
Fuchsin	C.I. Basic Red 9, monohydrochloride	569-61-9
Cobalt(II) sulfate	Cobaltous sulfate	10124-43-3
Cupferron		135-20-6
Dacarbazine	5-(3,3-Dimethyl-1-triazenyl)-1 <i>H</i> -imidazole-4-carboxamide	4342-03-4
Decabromobiphenyl		13654-09-6
cis-Diaminedichloroplatinum	Cisplatin	15663-27-1
2,4-Diaminoanisole sulfate	1,3-Benzenediamine, 4-methoxy, sulfate	39156-41-7
4,4'-Diaminodiphenyl ether	4,4'-Oxydianiline	101-80-4
4,4'-Diaminodiphenylmethane	4,4'-Methylenedianiline	101-77-9
4,4'-Diaminodiphenylmethane dihydrochloride	4,4'-Methylenedianiline dihydrochloride	13552-44-8
4,4'-Diaminodiphenyl sulfide	4,4'-Thiodianiline	139-65-1
Dibenz[a,h]acridine		226-36-8
Dibenz[a,j]acridine	7-Azadibenz[a,j]anthracene	224-42-0
Dibenz[a,h]anthracene	1,2:5,6-Dibenzanthracene	53-70-3
7 <i>H</i> -Dibenzo[c,g]carbazole		194-59-2
Dibenzo[a,e]pyrene	Naphtho[1,2,3,4-def]chrysene	192-65-4
Dibenzo[a,h]pyrene	Dibenzo[b,def]chrysene	189-64-0
Dibenzo[a,i]pyrene	Benzo[<i>rst</i>]pentaphene	189-55-9
Dibenzo[a,l]pyrene	Dibenzo[def,p]chrysene	191-30-0
1,2-Dibromo-3-chloropropane		96-12-8
1,2-Dibromoethane	Ethylene dibromide; EDB	106-93-4
2,3-Dibromo-1-propanol	DBP	96-13-9
2,3-Dibromo-1-propanol, phosphate (3:1)	Tris(2,3-dibromopropyl) phosphate	126-72-7
<i>p</i> -Dichlorobenzene	1,4-Dichlorobenzene	106-46-7
3,3'-Dichloro- <i>p</i> -benzidine	3,3'-Dichloro[1,1'-biphenyl]-4,4'-diamine	91-94-1
3,3'-Dichloro- <i>p</i> -benzidine dihydrochloride	3,3'-Dichloro-[1,1'-biphenyl]-4,4'-diamine dihydrochloride	612-83-9
1,2-Dichloroethane	Ethylene dichloride	107-06-2
Dichloromethane	Methylene chloride	75-09-2
1,3-Dichloropropene (unspecified isomer)		542-75-6
Diethyl sulfate		64-67-5
2,3-Dihydro-6-propyl-2-thioxo-4(1 <i>H</i>)-pyrimidinone	Propylthiouracil	51-52-5
1,8-Dihydroxy-9,10-anthracenedione	Danthron; 1,8-Dihydroxyanthraquinone	117-10-2
3,3'-Dimethoxybenzidine (and dyes metabolized to 3,3'-Dimethoxybenzidine)	Dianisidine	119-90-4
<i>p</i> -(Dimethylamino)azobenzene		60-11-7
2,3-Dimethyl-4-aminoazobenzene	<i>o</i> -Aminoazotoluene; 4- <i>o</i> -Tolylazo- <i>o</i> -toluidine	97-56-3
Dimethylcarbamic chloride	Dimethylcarbamoyl chloride	79-44-7
1,1-Dimethylhydrazine	UDMH	57-14-7
Dimethyl sulfate		77-78-1
1,6-Dinitropyrene		42397-64-8
1,8-Dinitropyrene		42397-65-9
1,4-Dioxane		123-91-1
1,2-Diphenylhydrazine	Hydrazobenzene	122-66-7
1,3-Diphenyl-1-triazene	Diazoaminobenzene	136-35-6

Substance	Other Names	CAS RN
Disperse Blue No. 1	1,4,5,8-Tetraamino-9,10-anthracenedione	2475-45-8
Doxorubicin hydrochloride	Adriamycin	23214-92-8
Epichlorohydrin	(Chloromethyl)oxirane	106-89-8
1,2-Epoxy-4-(epoxyethyl)cyclohexane	4-Vinyl-1-cyclohexene dioxide	106-87-6
Ethyl carbamate	Urethane	51-79-6
Ethyl methanesulfonate		62-50-0
<i>N</i> -Ethyl- <i>N</i> -nitrosourea	ENU; <i>N</i> -Nitroso- <i>N</i> -ethylurea	759-73-9
Fluoroethene	Vinyl fluoride	75-02-5
Formaldehyde (gas)	Methanal	50-00-0
Furan		110-00-9
Hexabromobiphenyl isomers	Firemaster FF-1	67774-32-7
Hexachlorobenzene	Perchlorobenzene	118-74-1
Hexachlorocyclohexane isomers		608-73-1
1,2,3,4,5,6-Hexachlorocyclohexane, (1 α ,2 α ,3 β ,4 α ,5 β ,6 β)	α -Hexachlorocyclohexane	319-84-6
1,2,3,4,5,6-Hexachlorocyclohexane, (1 α ,2 β ,3 α ,4 β ,5 α ,6 β)	β -Hexachlorocyclohexane	319-85-7
1,2,3,4,5,6-Hexachlorocyclohexane, (1 α ,2 α ,3 β ,4 α ,5 α ,6 β)	Lindane; γ -Hexachlorocyclohexane	58-89-9
Hexachloroethane	Perchloroethane	67-72-1
Hexamethylphosphoric triamide	Hexamethylphosphoramide; Tris(dimethylamino)phosphine oxide	680-31-9
Hydrazine		302-01-2
Hydrazine sulfate		10034-93-2
2-Imidazolidinethione	Ethylene thiourea	96-45-7
Indeno[1,2,3- <i>cd</i>]pyrene	1,10-(1,2-Phenylene)pyrene	193-39-5
Kepone	Chlordecone	143-50-0
Lead and lead compounds	Includes all lead compounds	7439-92-1
<i>o</i> -Methoxyaniline hydrochloride	<i>o</i> -Anisidine hydrochloride	134-29-2
2-Methoxy-5-methylaniline	<i>p</i> -Cresidine; 5-Methyl- <i>o</i> -anisidine	120-71-8
<i>o</i> -Methylaniline	<i>o</i> -Toluidine	95-53-4
<i>o</i> -Methylaniline hydrochloride	<i>o</i> -Toluidine hydrochloride	636-21-5
2-Methyl-1,3-butadiene	Isoprene	78-79-5
5-Methylchrysene		3697-24-3
4,4'-Methylenedianiline dihydrochloride	Benzenamine, 4,4'-methylenedi-, dihydrochloride	13552-44-8
Methyl methanesulfonate		66-27-3
<i>N</i> -Methyl- <i>N'</i> -nitro- <i>N</i> -nitrosoguanidine		70-25-7
<i>N</i> -Methyl- <i>N</i> -nitrosourea	<i>N</i> -Nitroso- <i>N</i> -methylurea	684-93-5
Methyloxirane	1,2-Propylene oxide	75-56-9
Metronidazole	2-Methyl-5-nitro-1 <i>H</i> -imidazole-1-ethanol	443-48-1
Mirex	Hexachloropentadiene dimer	2385-85-5
Naphthalene		91-20-3
Nickel (metallic)		7440-02-0
Nitrilotriacetic acid	<i>N,N</i> -Bis(carboxymethyl)glycine	139-13-9
2-Nitroanisole	1-Methoxy-2-nitrobenzene	91-23-6
Nitrobenzene		98-95-3
6-Nitrochrysene		7496-02-8
Nitrofen	2,4-Dichloro-1-(4-nitrophenoxy)benzene	1836-75-5
Nitromethane		75-52-5
2-Nitropropane		79-46-9
1-Nitropyrene		5522-43-0

Substance	Other Names	CAS RN
4-Nitropyrene		57835-92-4
<i>N</i> -Nitrosodibutylamine	Dibutylnitrosamine	924-16-3
<i>N</i> -Nitrosodiethanolamine	2,2'-(Nitrosoimino)ethanol	1116-54-7
<i>N</i> -Nitrosodiethylamine	DEN; Diethylnitrosamine	55-18-5
<i>N</i> -Nitrosodimethylamine	DMN; Dimethylnitrosamine	62-75-9
4-(<i>N</i> -Nitrosomethylamino)-1-(3-pyridyl)-1-butanone	NNK; Ketone, 3-pyridyl-3-(<i>N</i> -methyl- <i>N</i> -nitrosamino)propyl	64091-91-4
<i>N</i> -Nitroso- <i>N</i> -methylvinylamine	<i>N</i> -Methyl- <i>N</i> -nitrosoethenamine	4549-40-0
4-Nitrosomorpholine	<i>N</i> -Nitrosomorpholine	59-89-2
<i>N</i> -Nitrososornicotine	<i>N</i> '-Nitroso-3-(2-pyrrolidinyl)pyridine	16543-55-8
<i>N</i> -Nitrosopiperidine	1-Nitrosopiperidine	100-75-4
<i>N</i> -Nitroso- <i>N</i> -propyl-1-propanamine	<i>N</i> -Nitrosodipropylamine	621-64-7
<i>N</i> -Nitrosopyrrolidine		930-55-2
<i>N</i> -Nitrososarcosine	<i>N</i> -Methyl- <i>N</i> -nitrosoglycine	13256-22-9
Norethisterone	19-Norpregn-4-en-20-yn-3-one, 17-hydroxy-, (17 α)-	68-22-4
Ochratoxin A		303-47-9
Octabromobiphenyl isomers		61288-13-9
2-Oxetanone	β -Propiolactone	57-57-8
Oxiranemethanol	Glycidol	556-52-5
Oxymetholone	Androstan-3-one, 17-hydroxy-2-(hydroxymethylene)-17-methyl-	434-07-1
Phenazopyridine hydrochloride	3-(Phenylazo)-2,6-pyridinediamine, monohydrochloride	136-40-3
Phenolphthalein	3,3-Bis(4-hydroxyphenyl)-1(3 <i>H</i>)-isobenzofuranone	77-09-8
Phenoxybenzamine hydrochloride		63-92-3
Phenylloxirane	Styrene-7,8-oxide	96-09-3
Phenytol	5,5-Diphenyl-2,4-imidazolidinedione	57-41-0
Polybrominated biphenyls	PBBs	
Polychlorinated biphenyls	PCBs	1336-36-3
Procarbazine hydrochloride		366-70-1
Progesterone	Pregn-4-ene-3,20-dione	57-83-0
1,3-Propane sultone	1,2-Oxathiolane, 2,2-dioxide	1120-71-4
Propyleneimine	2-Methylaziridine	75-55-8
Reserpine		50-55-5
Safrole	5-(2-Propenyl)-1,3-benzodioxole	94-59-7
Selenium sulfide		7446-34-6
Streptozotocin	<i>D</i> -Glucopyranose, 2-deoxy-2-[[methylnitrosoamino)carbon yl]amino]-	18883-66-4
Sulfallate	<i>N,N</i> -Diethyldithiocarbamic acid, 2-chloroallyl ester	95-06-7
Tetrachloroethene	Tetrachloroethylene; Perchloroethylene	127-18-4
Tetrachloromethane	Carbon tetrachloride	56-23-5
Tetrafluoroethene	Tetrafluoroethylene	116-14-3
<i>N,N,N,N'</i> -Tetramethyl-4,4'-diaminobenzophenone	Bis(dimethylamino)benzophenone; Michler's Ketone	90-94-8
Tetranitromethane		509-14-8
Thioacetamide	Ethanethioamide	62-55-5
Thiourea	Thiocarbamide	62-56-6
<i>o</i> -Tolidine	3,3'-Dimethylbenzidine	119-93-7
Toluene-2,4-diamine	2,4-Diaminotoluene	95-80-7
Toluene diisocyanate (unspecified isomer)		26471-62-5
Toxaphene	Polychlorocamphene	8001-35-2

Substance	Other Names	CAS RN
1 <i>H</i> -1,2,4-Triazol-3-amine	Amitrole	61-82-5
1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane	DDT; Dichlorodiphenyltrichloroethane	50-29-3
Trichloroethene	Trichloroethylene	79-01-6
Trichloromethane	Chloroform	67-66-3
(Trichloromethyl)benzene	Benzotrichloride	98-07-7
2,4,6-Trichlorophenol		88-06-2
1,2,3-Trichloropropane		96-18-4