

# Report on Carcinogens

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## **Appendix A: Manufacturing Processes, Occupations, and Exposure Circumstances Classified By IARC As Category 1, Carcinogenic To Humans**

Certain manufacturing processes, occupations, and exposure circumstances have been considered by the International Agency for Research on Cancer (IARC) and have been classified by IARC as sources that are known to be carcinogenic to humans because of the associated increased incidences of cancer in workers in these settings. The National Toxicology Program has not reviewed the data supporting the listings of these occupational situations or exposure circumstances as posing a carcinogenic threat to humans, and recognizes that certain aspects of these exposures may differ in different parts of the world or may have changed over time. In addition, the manufacturing processes and occupations reviewed by IARC in its determinations may differ greatly from what has been or is currently used in the United States. In the interest of public health and for completeness, these occupational exposures and exposure circumstances are referenced here with the corresponding IARC citation given. The interested reader is referred to these documents for details.

- Aluminum production, occupational exposures during (IARC vol. 100F, 2012)
- Auramine production (IARC vol. 100F, 2012)
- Coal gasification (IARC vol. 100F, 2012)
- Coal, indoor emissions from household combustion of (IARC vol. 100E, 2012)
- Coal-tar distillation, occupational exposures during (IARC vol. 100F, 2012)
- Coke production (IARC vol. 100F, 2012)
- Hematite mining, underground, with exposure to radon (IARC vol. 100D, 2012)
- Iron and steel founding, occupational exposure during (IARC vol. 100F, 2012)
- Isopropyl alcohol manufacture by the strong-acid process (IARC vol. 100F, 2012)
- Magenta production (IARC vol. 100F, 2012)
- Painter, occupational exposure as a (IARC vol. 100F, 2012)
- Rubber-manufacturing industry, occupational exposures in the (IARC vol. 100F, 2012)

The following occupational exposure circumstances were previously listed by IARC as Group 1, but they are no longer considered by IARC as separate “agents.” IARC working groups for volume 100 (which reviewed all Group 1 carcinogens) concluded that the cancers observed in these industries were due to specific exposures, which are listed as Group 1 carcinogens:

- Boot and Shoe Manufacture and Repair (IARC vol. 25, 1981, IARC suppl. 4, 1982)
- Furniture Manufacture (IARC vol. 25, 1981, IARC suppl. 4, 1982, IARC suppl. 7, 1987)
- Nickel Refining (IARC vol. 2, 1973, IARC vol. 11, 1976, IARC suppl. 4, 1982).

## Appendix B: Substances Delisted from the Report on Carcinogens

The agents, substances, mixtures, or exposure circumstances contained in this appendix were previously listed in the Report on Carcinogens as either *known* or *reasonably anticipated to be human carcinogens*. For substances removed from the Report on Carcinogens prior to the 1996 establishment of a formal review procedure for delisting substances from the Report on Carcinogens, the table below shows the reason for delisting. The reason for delisting is in some cases the fact that residents of the United States are not exposed to these substances because since they are no longer produced or used in the United States and in other cases that the rulings or findings as to the carcinogenic potential of the substances have been revised (e.g., as a result of new studies). The table indicates the last edition of

the Report on Carcinogens in which these substances appeared, to which reference can be made for all information available.

For each substance removed from the Report on Carcinogens as a result of a formal review for delisting (from the Eighth Edition forward), a profile is provided following the table, which summarizes the review for delisting, including the relevant information and the issues identified by the scientific review groups that led to the substance's delisting. Background documents outlining in more detail the issues considered during the reviews for delisting these substances can be obtained by contacting the National Toxicology Program at the following address: National Toxicology Program, Report on Carcinogens Center, P.O. Box 12233, MD K2-14, Research Triangle Park, NC 27709.

Substance Name	CAS Number	Last Listing	Reason for Delisting
Chloramphenicol	56-75-7	<i>known</i> First RoC (1980)	Human data considered inadequate
Aramite	140-57-8	<i>reasonably anticipated</i> Fourth RoC (1985)	No U.S. residents exposed
<i>N,N</i> -Bis(2-chloroethyl)-2-naphthylamine (chlornaphazine)	494-03-1	<i>known</i> Fourth RoC (1985)	No U.S. residents exposed
Cycasin	14901-08-7	<i>reasonably anticipated</i> Fourth RoC (1985)	No U.S. residents exposed
Methyl iodide	78-88-4	<i>reasonably anticipated</i> Fourth RoC (1985)	Reevaluated by IARC; evidence now considered equivocal
5-Nitro- <i>o</i> -anisidine	99-59-2	<i>reasonably anticipated</i> Fifth RoC (1989)	Insufficient evidence of carcinogenicity
<i>p</i> -Nitrosodiphenylamine	156-10-5	<i>reasonably anticipated</i> Fifth RoC (1989)	Insufficient evidence of carcinogenicity
Ethyl acrylate	140-88-5	<i>reasonably anticipated</i> Eighth RoC (1998)	See following profile
Saccharin	81-07-2	<i>reasonably anticipated</i> Eighth RoC (1998)	See following profile

## Report on Carcinogens Review Group Actions on the Nomination of Ethyl Acrylate for Delisting from the Report on Carcinogens

Summary of data contained in the Ethyl Acrylate Background Document (December 1998)

### Ethyl Acrylate

#### CAS No. 140-88-5

Ethyl acrylate is used in various industries as an intermediate in the production of emulsion-based polymers which are then used in paint formulations, industrial coatings, and latex products. It is also used as a synthetic flavoring substance and fragrance adjuvant in consumer products. Human exposure to ethyl acrylate occurs mostly through inhalation of ethyl acrylate vapors, but it may also result from skin contact or ingestion as a food additive or from drinking of contaminated water. The Report on Carcinogens review groups considered the data underlying the nomination to remove ethyl acrylate from the Report on Carcinogens, where it has been listed as *reasonably anticipated to be a human carcinogen* since 1989. The basis for this listing was a gavage study that resulted in dose-related benign and malignant forestomach neoplasms in rats and mice. The Basic Acrylic Monomer Manufacturers, Inc. (BAMM), submitted a nomination to remove ethyl acrylate from the Report on Carcinogens based upon the following information: (1) negative tumorigenicity results from chronic-exposure studies using routes other than gavage in corn oil, (2) research results suggesting that the forestomach carcinogenicity observed in the gavage studies was secondary to a site-specific and concentration-dependent irritating effect of ethyl acrylate, and (3) the fact that significant human exposure to ethyl acrylate monomer is unlikely in light of current manufacturing practices and patterns of usage (see Human Exposure and Cancer Studies in Humans, below).

The majority opinion of the Report on Carcinogens review groups was to recommend that ethyl acrylate be removed from the Report on Carcinogens. This opinion was based on the facts that (1) the forestomach tumors induced in animal studies were seen only when ethyl acrylate was administered by gavage at high concentrations that induced marked local irritation and cellular proliferation, (2) animal studies using other routes of administration, including inhalation, gave negative results, and (3) significant chronic human oral exposure to high concentrations of ethyl acrylate monomer is unlikely. Therefore, ethyl acrylate does not meet the criteria to be listed in the Report on Carcinogens as *reasonably anticipated to be a human carcinogen*.

#### Summary of Available Carcinogenicity Data and Other Relevant Information

##### Cancer Studies in Experimental Animals

Although mutagenic in some *in vitro* tests, ethyl acrylate is not genotoxic under *in vivo* physiological conditions, perhaps because of its rapid metabolism to acrylic acid and ethanol by carboxyesterases and detoxification through binding to non-protein sulfhydryls. Target tissue toxicity in the form of irritation was observed in the skin in a lifetime mouse skin-painting study, in the nasal olfactory mucosa in 27-month inhalation studies in rats and mice, and in the forestomach in two-year corn-oil gavage studies in rats and mice. Only body-weight reduction was observed in a two-year study of exposure via drinking water in rats. The forestomach carcinogenicity observed in the corn-oil gavage studies was the only treatment-related tumorigenic response in the various animal studies. The irritation, hyper-

plasia, and tumor responses in the forestomach were related more to target-tissue concentration of ethyl acrylate than to delivered dose in the chronic gavage study. Based upon stop-exposure studies, gavage doses of ethyl acrylate in corn oil sufficient to induce sustained mucosal hyperplasia in the forestomach must be administered for longer than six months to induce forestomach neoplasia.

##### Human Exposure and Cancer Studies in Humans

Prolonged consumer exposure to high levels of ethyl acrylate monomer by the oral route is unlikely. Potentially significant exposures would most likely occur in an occupational setting where the routes of exposure would be dermal or by inhalation. Ethyl acrylate has a strong acrid odor (odor threshold ~ 0.5 ppb) and is a known irritant to the skin, eyes, and mucous membranes, making it unlikely that humans would be chronically exposed to high concentrations. Data provided in the BAMM nomination on worker exposure showed occupational exposure well below the threshold limit value (TLV = 5 ppm for an eight-hour time-weighted average) and the short-term exposure limit (STEL = 15 ppm), although exposure of painters in an unventilated room has been reported to be as high as 8 ppm in the painter's breathing zone.

An epidemiology study reported on mortality from cancer of the colon and rectum in three separate cohorts of workers from two plants manufacturing and polymerizing acrylate monomers. Workers were exposed to ethyl acrylate and methyl methacrylate monomer between 1933 and 1982. Risks for both types of cancer were associated with exposure in the earliest cohort, although the rectal cancer results are imprecise because of the small number of cases involved. The greatest relative risk was found in workers with the highest level of exposure and a 20-year latency. The other two cohorts, with later dates of hire, showed no excess risk, but very few cases were available for observation. This study, by itself, can neither establish nor rule out a causal relationship of ethyl acrylate with cancer.

##### Action on Nomination

Ethyl acrylate will be removed from the Report on Carcinogens because the relevant data are not sufficient to meet the current criteria to list this chemical as *reasonably anticipated to be a human carcinogen*. This is based on the fact that the forestomach tumors induced in animal studies were seen only when the chemical was administered by gavage at high concentrations of ethyl acrylate that induced marked local irritation and cellular proliferation, and because significant chronic human exposure to high concentrations of ethyl acrylate monomer is unlikely.

## Report on Carcinogens Review Group Actions on the Nomination of Saccharin for Delisting from the Report on Carcinogens

Summary of data contained in the Saccharin Background Document (October 1997)

### Saccharin

#### CAS No. 81-07-2

Saccharin and its sodium and potassium salts have been produced commercially in the United States for over 80 years. Saccharin is primarily used as a non-nutritive sweetening agent. Potential exposure to saccharin occurs through the consumption of dietetic foods and drinks and the use of some personal hygiene products. Potential exposure to saccharin also occurs in the workplace, specifically in occupations, industries, or facilities that produce and deal with saccharin

and its salts. The Report on Carcinogens review groups considered the data underlying the nomination to remove saccharin from the Report on Carcinogens where it has been listed as *reasonably anticipated to be a human carcinogen* since 1981. The basis for this listing was sufficient evidence of carcinogenicity in experimental animals. The Calorie Control Council submitted a nomination to the NTP to consider removing saccharin from the Report on Carcinogens based upon mechanistic data related to development of urinary-bladder cancers in rats (see Studies on Mechanisms of Carcinogenesis, below).

The majority opinion of the review groups was to recommend that saccharin be removed from the Report on Carcinogens. There is evidence for the carcinogenicity of saccharin in rats, but less convincing evidence in mice. Studies indicate that the observed urinary-bladder cancers in rats are related to the physiology of the rat urinary system, including urinary pH, osmolality, volume, the presence of precipitate, and urothelial damage with attendant hyperplasia following consumption of diets containing sodium saccharin at concentrations of 3% or higher, with inconsistent findings at lower dietary concentrations. The factors thought to contribute to tumor induction by sodium saccharin in rats would not be expected to occur in humans. The mouse data are inconsistent and require verification by additional studies. Results of several epidemiology studies indicate no clear association between saccharin consumption and urinary-bladder cancer. Although it is impossible to conclude with absolute certainty that it poses no threat to human health, sodium saccharin is not *reasonably anticipated to be a human carcinogen* under conditions of general usage as an artificial sweetener.

## Summary of Available Carcinogenicity Data and Other Relevant Information

### Cancer Studies in Experimental Animals

In four studies of up to 30 months' duration, sodium saccharin was carcinogenic in Charles River CD and Sprague-Dawley male rats, as evidenced by a dose-related increased incidence of benign or malignant urinary-bladder neoplasms at dietary concentrations greater than 1% (Tisdell *et al.* 1974, Arnold *et al.* 1980, Taylor *et al.* 1980, Schoenig *et al.* 1985). Non-statistically-significant increases in urinary-bladder cancer also were seen in saccharin-exposed female rats in studies showing a positive effect in males (Arnold *et al.* 1980, Taylor *et al.* 1980). Furthermore, several initiation/promotion studies in different rat strains showed a reduced latency and/or increased incidence of similar urinary-bladder cancers in male and female rats fed sodium saccharin after treatment with various urinary-bladder tumor initiators (e.g., Hicks and Chowanec 1977, Cohen *et al.* 1979, Nakanishi *et al.* 1980a, West *et al.* 1986, Fukushima *et al.* 1990). Several additional rat studies in which sodium saccharin was administered either in the diet or in drinking water gave negative results for tumorigenicity (Fitzhugh *et al.* 1951, Lessell 1971, Schmähl 1973, Chowanec and Hicks 1979, Hooson *et al.* 1980, Schmähl and Habs 1984).

Three mouse studies reported carcinogenicity following exposure to saccharin. Two of these studies involved surgical implantation of saccharin-containing cholesterol pellets into the urinary bladders and resulted in development of malignant urothelial neoplasms (Allen *et al.* 1957, Bryan *et al.* 1970). In the third study, dietary exposure to sodium saccharin resulted in increased incidences of malignant thyroid-gland neoplasms (Prasad and Rai 1986). Although the data from studies in mice cannot be discounted, some of these studies had methodological flaws, provided limited information, did not show a dose-response relationship, or had unexpected outcomes that may be species- or strain-specific, and should be verified by additional studies. The results of four studies in mice were

judged negative for tumorigenesis (Roe *et al.* 1970, Kroes *et al.* 1977, Homberger 1978, Frederick *et al.* 1989), as were limited studies in nonhuman primates (McChesney *et al.* 1977, Sieber and Adamson 1978, Thorgierson *et al.* 1994, Cohen *et al.* 1996) and a single hamster study (Althoff *et al.* 1975).

### Cancer Studies in Humans

Most of the relevant human epidemiology studies examined associations between urinary-bladder cancer and artificial sweeteners, rather than saccharin *per se*. The time-trend data for urinary-bladder cancer showed no clear indication that the increased use of saccharin or artificial sweeteners commencing in the 1940s was associated with a general increase in urinary-bladder cancer when confounding factors, chiefly smoking, were controlled for. Risks of urinary-bladder cancer in diabetics, who presumably consume greater amounts of artificial sweeteners than the general population, were no greater than risks in the general population (Armstrong and Doll 1975). Based upon several case-control studies, there was no overall association between use of artificial sweeteners and urinary-bladder cancer (reviewed by IARC 1980, 1987b, JECFA 1993). However, an association between use of artificial sweeteners and urinary-bladder cancer could not be ruled out in some case-control subgroups, albeit involving small numbers (Howe *et al.* 1980, Hoover and Strasser 1980, Cartwright *et al.* 1981, Morrison *et al.* 1982, Mommsen *et al.* 1983). Taken together, the available epidemiology data show no consistent evidence that saccharin is associated with increased urinary-bladder cancer in general; however, a small increased risk in some subgroups, such as heavy users of artificial sweeteners, cannot be unequivocally excluded. With regard to the general population, if sodium saccharin is a risk factor, it is weak, and a causal relationship with cancer cannot be proven or disproven, because of a lack of exposure data and intrinsic limitations of the available epidemiology studies.

### Studies on Mechanisms of Carcinogenesis

Extensive studies of the mutagenicity and genotoxicity of saccharin have shown generally negative but occasionally conflicting results. Sodium saccharin is essentially nonmutagenic in conventional bacterial systems, but is weakly clastogenic or genotoxic in short-term *in vitro* and in some *in vivo* test systems (reviewed by Ashby 1985, IARC 1987a,b, Whysner and Williams 1996). Urine from mice exposed to sodium saccharin was mutagenic in *Salmonella typhimurium* in one study (Batzinger *et al.* 1977). Saccharin does not covalently bind to DNA and does not induce unscheduled DNA synthesis in urinary-bladder urothelium.

Saccharin-induced carcinogenesis in rats showed a sex predilection for males (Tisdell *et al.* 1974, Arnold *et al.* 1980, Taylor *et al.* 1980), an organ specificity for urinary bladder (Tisdell *et al.* 1974, Arnold *et al.* 1980, Taylor *et al.* 1980, Fukushima *et al.* 1983, Schoenig *et al.* 1985), and a dose-response when exposure to dietary concentrations of 1% to 7.5% of the sodium salt of saccharin was begun early in life (beginning at birth or immediately at weaning) and continued for approximately two years (Schoenig *et al.* 1985). The results of mechanistic studies have shown that certain physiological conditions must be simultaneously or sequentially present for induction of urinary-bladder tumorigenesis. These conditions include a urinary pH greater than 6.5, increased urinary sodium concentration, increased urine volume, decreased urine osmolality, and presence of urinary crystals or precipitate, with resulting damage to the urothelium prompting a proliferative (hyperplastic) response of the urinary-bladder epithelium. All of these conditions have been studied extensively in male rats but less so in female rats or in mice. The high levels of urinary protein characteristically produced by male rats may partially explain



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the sex predilection. The high intrinsic rate of urothelial proliferation at about the time of weaning is also believed to contribute to the observed tumorigenic effects. The urinary milieu in rats, especially male rats, is sufficiently different from that in humans or other species to support the contention that these observations are specific to rats. Pharmacokinetic and metabolism data on sodium saccharin do not explain the male rat's sensitivity for induction of urinary-bladder neoplasms (Sweatman and Renwick 1979, 1980).

### Action On Nomination

Saccharin will be removed from the Report on Carcinogens, because the data on cancer in rodents are not sufficient to meet the current criteria to list this chemical as *reasonably anticipated to be a human carcinogen*. This decision is based on the perception that the observed urinary-bladder tumors in rats arise by mechanisms not relevant to humans, and the lack of data in humans suggesting a carcinogenic hazard.

### References

- Allen MJ, Boyland E, Dukes CE, Horning ES, Watson JG. 1957. Cancer of the urinary bladder induced in mice with metabolites of aromatic amines and tryptophan. *Br J Cancer* 11:212-231.
- Althoff J, Cardesa A, Pour P, Shubik P. 1975. A chronic study of artificial sweeteners in syrian golden hamsters. *Cancer Lett* 1:21-24.
- Armstrong B, Doll R. 1975. Bladder cancer mortality in diabetics in relation to saccharin consumption and smoking habits. *Br J Prev Soc Med* 29:73-81.
- Arnold DL, Moodie CA, Grice HC, Charbonneau SM, Stavric B, Collins BT, Mcguire PF, Zawidzka ZZ, Munro IC. 1980. Long-term toxicity of *ortho*-toluenesulfonamide and sodium saccharin in the rat. *Toxicol Appl Pharmacol* 52:113-152.
- Ashby J. 1985. The genotoxicity of sodium saccharin and sodium chloride in relation to their cancer-promoting properties. *Food Chem Toxicol* 23:507-519.
- Batzinger RP, Ou S-YL, Bueding E. 1977. Saccharin and other sweeteners: Mutagenic properties. *Science* 198:944-946.
- Bryan GT, Erturk E, Yoshida O. 1970. Production of urinary bladder carcinomas in mice by sodium saccharin. *Science* 168:1238-1240.
- Cartwright RA, Adib R, Ghashan R, Gray BK. 1981. The epidemiology of bladder cancer in West Yorkshire. A preliminary report on non-occupational aetiologies. *Carcinogenesis* 2:343-346.
- Chowaniec J, Hicks RM. 1979. Response of the rat to saccharin with particular reference to the urinary bladder. *Br J Cancer* 39:355-375.
- Cohen SM, Arai M, Jacobs JB, Friedell GH. 1979. Promoting effect of saccharin and *DL*-tryptophan in urinary bladder carcinogenesis [Abstract]. *Cancer Res* 39:1207-1217.
- Cohen SM, Arnold LL, Cano M, Thorgeirsson U, Takayama S. 1996. Lack of effect of sodium saccharin feeding on monkey urine and urinary bladder epithelium [Abstract]. *Proc Am Assoc Cancer Res* 37:108.
- Fitzhugh OG, Nelson AA, Frawley JP. 1951. A comparison of the chronic toxicities of synthetic sweetening agents. *J Am Pharm Assoc* 40:583-586.
- Fukushima S, Arai M, Nakanowatari J, Hibino T, Okuda M, Ito N. 1983. Differences in susceptibility to sodium saccharin among various strains of rats and other animal species. *Gann* 74:8-20.
- Fukushima S, Uwagawa S, Shirai T, Hasegawa R, Ogawa K. 1990. Synergism by sodium L-ascorbate but inhibition by L-ascorbic acid for sodium saccharin promotion of rat two-stage bladder carcinogenesis. *Cancer Res* 50:4195-4198.
- Hicks RM, Chowaniec J. 1977. The importance of synergy between weak carcinogens in the induction of bladder cancer in experimental animals and humans. *Cancer Res* 37:2943-2949.
- Homburger F. 1978. Negative lifetime carcinogen studies in rats and mice fed 50,000 ppm saccharin. In *Chemical Toxicology of Food*. Galli CL, Paoletti R, Vettorazzi G, eds. Amsterdam: Elsevier/North-Holland Biomedical Press. pp. 359-373.
- Hooson J, Hicks RM, Grasso P, Chowaniec J. 1980. *ortho*-Toluene sulfonamide and saccharin in the promotion of bladder cancer in the rat. *Br J Cancer* 42(1): 129-147.
- Hoover RN, Strasser PH. 1980. Artificial sweeteners and human bladder cancer: Preliminary results. *Lancet* 1(8173):837-840.
- Howe GR, Burch JD, Miller AB, Cook GM, Esteve J, Morrison B, et al. 1980. Tobacco use, occupation, coffee, various nutrients, and bladder cancer. *J Natl Cancer Inst* 64(4): 701-713.
- IARC. 1980. Saccharin. In *Some Non-Nutritive Sweetening Agents*. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, vol. 22. Lyon, France: International Agency for Research on Cancer. pp. 111-170.
- IARC. 1987a. Saccharin. In *Genetic and Related Effects: An Updating of Selected IARC Monographs from Volumes 1-42*. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans, suppl. 6. Lyon, France: International Agency for Research on Cancer. pp. 488-496.
- IARC. 1987b. Saccharin. In *Overall Evaluations of Carcinogenicity: An Updating of IARC Monographs Volumes 1-42*. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans, suppl. 7. Lyon, France: International Agency for Research on Cancer. pp. 334-339.
- JECFA. 1993. Saccharin and Its Salts. In *Toxicological Evaluation of Certain Food Additives and Contaminants*. Joint FAO/WHO Expert Committee on Food Additives. WHO Food Additives Series no. 32. International Programme on Chemical Safety. <http://www.inchem.org/documents/jecfa/jecmono/v32je09.htm>.
- Kroes R, Peters PWJ, Berkvens JM, HG Verschuuren, De Vries T, van Esch GJ. 1977. Long term toxicity and reproduction study (including a teratogenicity study) with cyclamate, saccharin and cyclohexylamine. *Toxicology* 8:285-300.
- Lessel B. 1971. Carcinogenic and teratogenic aspects of saccharin. In *Proceedings of the Third International Congress of Food Science and Technology, S05/70*. Chicago, IL: Institute of Food Technologists. pp. 764-770.
- McChesney EW, Coulston F, Benitz K-F. 1977. Six-year study of saccharin in rhesus monkeys [Abstract]. *Toxicol Appl Pharmacol* 41:164.
- Mommensen S, Aagaard J, Sell A. 1983. A case-control study of female bladder cancer. *J Cancer Clin Oncol* 19:725-729.
- Morrison AS, Verhoek WG, Leck I, Aoki K, Ohno Y, Obata K. 1982. Artificial sweeteners and bladder cancer in Manchester, U.K. and Nagoya, Japan. *Br J Cancer* 45:332-336.
- Nakanishi K, Hirose M, Ogiso T, Hasegawa R, Arai M, Ito N. 1980. Effects of sodium saccharin and caffeine on the urinary bladder of rats treated with *N*-butyl-*N*-(4-hydroxybutyl)nitrosamine. *Gann* 71:490-500.
- Prasad O, Rai G. 1986. Induction of papillary adenocarcinoma of thyroid in albino mice by saccharin feeding. *Indian J Exp Biol* 24:197-199.
- Roe FJC, Levy LS, Carter RL. 1970. Feeding studies on sodium cyclamate, saccharin and sucrose for carcinogenic and tumor-promoting activity. *Food Cosmet Toxicol* 8:135-145.
- Schmähel D. 1973. Lack of carcinogenic effect of cyclamate, cyclohexylamine and saccharin in rats [in German]. *Arzneim Forsch* 23:1466-1470.
- Schmähel D, Habs M. 1984. Investigations on the carcinogenicity of the artificial sweeteners sodium cyclamate and sodium saccharin in rats in a two-generation experiment [in German]. *Arzneim Forsch* 34:604-608.
- Schoenig GP, Goldenthal EI, Geil RG, Frith CH, Richter WR, Carlborg FW. 1985. Evaluation of the dose response and *in utero* exposure to saccharin in the rat. *Food Chem Toxicol* 23:475-490.
- Sieber SM, Adamson RH. 1978. Long-term studies on the potential carcinogenicity of artificial sweeteners in non-human primates. In *Health and Sugar Substitutes*. Guggenheim B, ed. Basel, Switzerland: Karger. pp. 266-271.
- Sweatman TW, Renwick AG. 1979. Saccharin metabolism and tumorigenicity. *Science* 205:1019-1020.
- Sweatman TW, Renwick AG. 1980. The tissue distribution and pharmacokinetics of saccharin in the rat. *Toxicol Appl Pharmacol* 5:18-31.
- Taylor JM, Weinberger MA, Friedman L. 1980. Chronic toxicity and carcinogenicity to the urinary bladder of sodium saccharin in the *in utero*-exposed rat. *Toxicol Appl Pharmacol* 54:57-75.
- Thorgeirsson U, Dalgard D, Reeves J, Adamson R. 1994. Tumor incidence in a chemical carcinogenesis study of nonhuman primates. *Regul Toxicol Pharmacol* 19:130-151.
- Tisdell MO, Nees PO, Harris DL, Derser PH. 1974. Long-term feeding of saccharin in rats. In *Symposium: Sweeteners*. Inglett, GE, ed. Westport, CT: Avi Publishing Co. pp. 145-158.
- West RW, Sheldom WG, Gaylor DW, Haskin MG, Delongchamp RR, Kadlubar FF. 1986. The effects of saccharin on the development of neoplastic lesions initiated with *N*-methyl-*N*-nitrosourea in the rat urothelium. *Fundam Appl Toxicol* 7:585-600.
- Whysner J, Williams GM. 1996. Saccharin mechanistic data and risk assessment: urine composition, enhanced cell proliferation, and tumor promotion. *Pharmacol Ther* 71:225-252.

## Appendix C: Substances Reviewed but Not Recommended for Listing in the Report on Carcinogens

Nominated agents, substances, mixtures, or exposure circumstances all are considered for possible listing in the Report on Carcinogens. For many of these, it is possible to determine that there are insufficient data available to warrant any formal consideration by the scientific review groups without carrying out an extensive evaluation. For others, relevant animal or human cancer studies do exist, but, after a formal consideration, the review groups reach the conclusion that the data do not warrant listing the agent, substance, mixture, or exposure circumstance in the Report on Carcinogens. The following table

contains a record of nominations that were formally considered for listing by the NTP and, after evaluation by the Report on Carcinogens review groups, were recommended not to be listed in the Report on Carcinogens. Background documents outlining in more detail the issues considered during formal reviews of a nomination can be obtained by contacting the National Toxicology Program at the following address: National Toxicology Program, Report on Carcinogens Center, P.O. Box 12233, MD K2-14, Research Triangle Park, NC 27709.

<b>Substance Name</b>	<b>CAS Number</b>	<b>Reviewed for Listing in</b>	<b>Reason for not Listing</b>
Methyl <i>tert</i> -butyl ether (MTBE)	1634-04-4	Ninth RoC (1999)	Rodent cancer data not sufficient
Nickel alloys		Tenth RoC (2000)	Human data are inadequate and rodent cancer data not sufficient
Diethanolamine	111-42-2	Eleventh RoC (2004)	Rodent cancer data not sufficient

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## **Appendix E: Chemicals Nominated to the NTP for In- Depth Toxicological Evaluation**

A searchable database of substances nominated to the NTP for toxicological testing is available on the NTP website at <http://ntp.niehs.nih.gov/go/nom-search>. The available information includes the substance nominated and the nomination date, source, rationale, and status. If NTP testing has been conducted, a link is provided to the results and status information. Nominations can be searched by substance name, Chemical Abstract Service Registry Number (CASRN) or keyword.

The Management Status Report (<http://ntp.niehs.nih.gov/go/MSR-index>) gives the status of substances selected for study using standard 2-week, 13-week, and/or 2-year toxicology and carcinogenicity protocols. Abstracts for all published NTP long-term carcinogenicity technical reports and short-term toxicity study reports are available electronically on the NTP Web site. To view the abstracts or download full reports, visit <http://ntp.niehs.nih.gov>.

For additional information about NTP studies, contact Central Data Management, Mail Drop K2-05, NIEHS, P.O. Box 12233, Research Triangle Park, NC 27709 (phone: 919-541-3419; e-mail: [CDM@niehs.nih.gov](mailto:CDM@niehs.nih.gov)).

## Appendix F: Substance Names and Common Synonyms

### A

2-AAF *see* 2-Acetylaminofluorene  
 ABP *see* 4-Aminobiphenyl  
 ABVD therapy *see* Dacarbazine  
 ADBAQ *see* 1-Amino-2,4-dibromoanthraquinone  
 AFB1 *see* Aflatoxins  
 As *see* Arsenic and Inorganic Arsenic Compounds  
 5-AzaC *see* Azacitidine  
 2-acetamidofluorene *see* 2-Acetylaminofluorene  
 2-acetaminofluorene *see* 2-Acetylaminofluorene  
 acetate blue G *see* Disperse Blue 1  
 acetic aldehyde *see* Acetaldehyde  
 acetothioamide *see* Thioacetamide  
 acetylaldehyde *see* Acetaldehyde  
 acetylhydride *see* Acetaldehyde  
 acid red 114 (C.I.) *see* 3,3'-Dimethylbenzidine and Dyes Metabolized to 3,3'-Dimethylbenzidine, Dyes Metabolized to 3,3'-Dimethylbenzidine  
 aciniform carbon *see* Soots  
 acrylic acid amide *see* Acrylamide  
 actinolite *see* Asbestos  
 actinon *see* Ionizing Radiation, Radon  
 alcohol drinking *see* Alcoholic Beverage Consumption  
 aluminum-beryllium alloy *see* Beryllium and Beryllium Compounds  
*o*-aminoanisole *see* *o*-Anisidine and Its Hydrochloride  
 2-aminoanisole hydrochloride *see* *o*-Anisidine and Its Hydrochloride  
 2-amino-9,10-anthracenedione *see* 2-Aminoanthraquinone  
 $\beta$ -aminoanthraquinone *see* 2-Aminoanthraquinone  
 2-aminoazotoluene *see* *o*-Aminoazotoluene  
*p*-aminobiphenyl *see* 4-Aminobiphenyl  
 2-amino-3,4-dimethylimidazo[4,5-*f*]quinoline *see* Heterocyclic Amines (Selected)  
 2-amino-3,8-dimethylimidazo[4,5-*f*]quinoxaline *see* Heterocyclic Amines (Selected)  
 4-aminodiphenyl *see* 4-Aminobiphenyl  
*p*-aminodiphenyl *see* 4-Aminobiphenyl  
*para*-aminodiphenyl *see* 4-Aminobiphenyl  
 1-amino-2-methyl-9,10-anthracenedione *see* 1-Amino-2-methylanthraquinone  
 2-amino-3-methyl-3*H*-imidazo(4,5-*f*)quinoline *see* Heterocyclic Amines (Selected), 2-Amino-3-methylimidazo[4,5-*f*]quinoline (IQ)  
 2-amino-1-methyl-6-phenylimidazo[4,5-*b*]pyridine *see* Heterocyclic Amines (Selected)  
 2-amino-3-methylimidazo[4,5-*f*]quinoline *see* Heterocyclic Amines (Selected)  
 4-[(4-aminophenyl)(4-imino-2,5-cyclohexadien-1-ylidene)methyl]-benzenamine, monohydrochloride *see* Basic Red 9 Monohydrate  
 4-amino-1- $\beta$ -D-ribofuranosyl-1,3,5-triazin-2(1*H*)-one *see* Azacitidine  
 3-amino-1,2,4-triazol *see* Amitrole  
 aminotriazole *see* Amitrole  
 amosite *see* Asbestos

analgesic mixtures containing phenacetin *see* Phenacetin and Analgesic Mixtures Containing Phenacetin  
 2-anisidine hydrochloride *see* *o*-Anisidine and Its Hydrochloride  
 anthophyllite *see* Asbestos  
 Aroclor 1016 *see* Polychlorinated Biphenyls  
 Aroclor 1221 *see* Polychlorinated Biphenyls  
 Aroclor 1242 *see* Polychlorinated Biphenyls  
 Aroclor 1248 *see* Polychlorinated Biphenyls  
 Aroclor 1254 *see* Polychlorinated Biphenyls  
 Aroclor 1260 *see* Polychlorinated Biphenyls  
 Aroclor 1262 *see* Polychlorinated Biphenyls  
 arsanilic acid *see* Arsenic and Inorganic Arsenic Compounds  
 arsenate *see* Arsenic and Inorganic Arsenic Compounds  
 arsenite *see* Arsenic and Inorganic Arsenic Compounds  
 arsenous oxide *see* Arsenic and Inorganic Arsenic Compounds  
 arsenous trichloride *see* Arsenic and Inorganic Arsenic Compounds  
 arsine *see* Arsenic and Inorganic Arsenic Compounds  
 5-azacytidine *see* Azacitidine

### B

B-1 glass fibers *see* Certain Glass Wool Fibers (Inhalable)  
 B-09 glass fibers *see* Certain Glass Wool Fibers (Inhalable)  
 B-20 glass fibers *see* Certain Glass Wool Fibers (Inhalable)  
 BA *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Benz[*a*]anthracene  
 B[*a*]P *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Benzo[*a*]pyrene  
 BB-153 (hexabromobiphenyl) *see* Polybrominated Biphenyls  
 B[*b*]F *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Benzo[*b*]fluoranthene  
 BBMP *see* 2,2-Bis(bromomethyl)-1,3-propanediol (Technical Grade)  
 BCME *see* Bis(chloromethyl) Ether and Technical-Grade Chloromethyl Methyl Ether  
 BCNU *see* Nitrosourea Chemotherapeutic Agents, Bis(chloroethyl) Nitrosourea  
 Be *see* Beryllium and Beryllium Compounds  
 BHA *see* Butylated Hydroxyanisole  
 B[*j*]F *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Benzo[*j*]fluoranthene  
 B[*k*]F *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Benzo[*k*]fluoranthene  
 basic fuchsin *see* Basic Red 9 Monohydrate  
 basic red 9 *see* Basic Red 9 Monohydrate  
 basic red 9 monohydrochloride (C.I.) *see* Basic Red 9 Monohydrate  
 basic zinc chromate *see* Chromium Hexavalent Compounds  
 beer *see* Alcoholic Beverage Consumption  
 1,2-benzanthracene *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Benz[*a*]anthracene  
 benz[*a*]anthracene *see* Polycyclic Aromatic Hydrocarbons: 15 Listings  
 benz[*a*]anthracene *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Benz[*a*]anthracene  
 benz[*e*]acephenanthrylene *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Benzo[*b*]fluoranthene  
 benzidine dye class *see* Benzidine and Dyes Metabolized to Benzidine, Dyes Metabolized to Benzidine  
 benzo[*b*]fluoranthene *see* Polycyclic Aromatic Hydrocarbons: 15 Listings



**benzo[*j*]fluoranthene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings

**benzo[*k*]fluoranthene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings

**benzoic trichloride** *see* Benzotrichloride

**benzol** *see* Benzene

**benzo[*rst*]pentaphene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Dibenzo[*a,i*]pyrene

**benzo[*a*]pyrene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings

**beryl ore** *see* Beryllium and Beryllium Compounds

**beta-aminoanthraquinone** *see* 2-Aminoanthraquinone

**beta-naphthylamine** *see* 2-Naphthylamine

**bidis** *see* Tobacco-Related Exposures, Tobacco Smoking

**2,2'-bioxirane** *see* Diepoxybutane

**4-biphenylamine** *see* 4-Aminobiphenyl

**2,2-bis(bromomethyl)propane-1,3-diol** *see* 2,2-Bis(bromomethyl)-1,3-propanediol (Technical Grade)

**bis(chloroethyl) nitrosourea** *see* Nitrosourea Chemotherapeutic Agents, Bis(chloroethyl) Nitrosourea

**4-[bis(2-chloroethyl)amino]-L-phenylalanine** *see* Melphalan

**4-[*p*-[bis(2-chloroethyl)amino]phenyl]butyric acid** *see* Chlorambucil

**bis(2-chloroethyl)sulfide** *see* Mustard Gas

**4-[bis(2-chloromethyl)amino]benzenebutanoic acid** *see* Chlorambucil

**4,4'-bis(dimethylamino)benzophenone** *see* Michler's Ketone

**bis(2-ethylhexyl) ester 1,2-benzenedicarboxylic acid** *see* Di(2-ethylhexyl) Phthalate

**bis(2-ethylhexyl phthalate)** *see* Di(2-ethylhexyl) Phthalate

**3,3-bis(4-hydroxyphenyl)-1-(3*H*)-isobenzofuranone** *see* Phenolphthalein

**broad-spectrum ultraviolet radiation** *see* Ultraviolet Radiation Related Exposures

**bromoethene** *see* Vinyl Halides (Selected), Vinyl Bromide

**busulfan** *see* 1,4-Butanediol Dimethanesulfonate

**Busulfex** *see* 1,4-Butanediol Dimethanesulfonate

**1,3-butadiene diepoxide** *see* Diepoxybutane

**butane diepoxide** *see* Diepoxybutane

**1,4-butanediol dimethanesulphonate** *see* 1,4-Butanediol Dimethanesulfonate

**butter yellow** *see* 4-Dimethylaminoazobenzene

## C

**Cd** *see* Cadmium and Cadmium Compounds

**CEP** *see* Epichlorohydrin

**C.I. 42500** *see* Basic Red 9 Monohydrochloride

**C.I. 64500** *see* Disperse Blue 1

**C.I. acid red 114** *see* 3,3'-Dimethylbenzidine and Dyes Metabolized to 3,3'-Dimethoxybenzidine, Dyes Metabolized to 3,3'-Dimethoxybenzidine

**C.I. basic red monohydrochloride** *see* Basic Red 9 Monohydrochloride

**C.I. direct black 38** *see* Benzidine and Dyes Metabolized to Benzidine, Dyes Metabolized to Benzidine

**C.I. disperse blue 1** *see* Disperse Blue 1

**C.I. direct blue 6** *see* Benzidine and Dyes Metabolized to Benzidine, Dyes Metabolized to Benzidine

**C.I. direct blue 15** *see* 3,3'-Dimethoxybenzidine and Dyes Metabolized to 3,3'-Dimethoxybenzidine, Dyes Metabolized to 3,3'-Dimethoxybenzidine

**C.I. direct brown 95** *see* Benzidine and Dyes Metabolized to Benzidine, Dyes Metabolized to Benzidine

**C.I. disperse orange** *see* 1-Amino-2-methylantraquinone

**C.I. solvent yellow 3** *see* *o*-Aminoazotoluene

**CCNU** *see* Nitrosourea Chemotherapeutic Agents, 1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea

**CMME** *see* Bis(chloromethyl) Ether and Technical-Grade Chloromethyl Methyl Ether

**Co** *see* Cobalt-Related Exposures, Cobalt and Cobalt Compounds That Release Cobalt Ions *In Vivo*

**Co/WC** *see* Cobalt-Related Exposures, Cobalt-Tungsten Carbide: Powders and Hard Metals

**calcium arsenate** *see* Arsenic and Inorganic Arsenic Compounds

**calcium arsenite** *see* Arsenic and Inorganic Arsenic Compounds

**calcium chromate** *see* Chromium Hexavalent Compounds

**camphechlor** *see* Toxaphene

**carbamic acid ethyl ester** *see* Urethane

**carbamidithioic acid, diethyl-, 2-chloro-2-propenyl ester** *see* Sulfallate

**carbon cenospheres** *see* Soots

**carbonaceous xerogol particles** *see* Soots

**carmustine** *see* Nitrosourea Chemotherapeutic Agents, Bis(chloroethyl) Nitrosourea

**cemented carbides** *see* Cobalt-Related Exposures, Cobalt-Tungsten Carbide: Powders and Hard Metals

**CertainTeed B glass fiber** *see* Certain Glass Wool Fibers (Inhalable)

**chewing tobacco** *see* Tobacco-Related Exposures, Smokeless Tobacco

**chinofer** *see* Iron Dextran Complex

**2-chlorallyl diethyldithiocarbamate** *see* Sulfallate

**chlordecone** *see* Kepone

**chloroethamine** *see* Nitrogen Mustard Hydrochloride

**chlorinated camphene** *see* Toxaphene

**4-chloro-1,2-benzenediamine** *see* 4-Chloro-*o*-phenylenediamine

**2-chloro-1,3-butadiene** *see* Chloroprene

**chlorocamphene** *see* Toxaphene

**2-chloro-*N*-(2-chloroethyl)-*N*-methylethanamine** *see* Nitrogen Mustard Hydrochloride

**1-chloro-2,3-dibromopropane** *see* 1,2-Dibromo-3-chloropropane

**3-chloro-1,2-dibromopropane** *see* 1,2-Dibromo-3-chloropropane

**chlorodiphenyls** *see* Polychlorinated Biphenyls

**1-chloro-2,3-epoxypropane** *see* Epichlorohydrin

**chloroethene** *see* Vinyl Halides (Selected), Vinyl Chloride

**2-(((2-chloroethyl)nitrosoamino)carbonyl)amino)-2-deoxy-D-glucose** *see* Nitrosourea Chemotherapeutic Agents, Chlorozotocin

**chloromethyl methyl ether** *see* Bis(chloromethyl) Ether and Technical-Grade Chloromethyl Methyl Ether

**chloromethyl oxirane** *see* Epichlorohydrin

**4-chloro-2-methylaniline** *see* *p*-Chloro-*o*-toluidine and Its Hydrochloride

**4-chloro-2-methylbenzenamine** *see* *p*-Chloro-*o*-toluidine and Its Hydrochloride

**4-chloro-2-methylbenzenamine hydrochloride** *see* *p*-Chloro-*o*-toluidine and Its Hydrochloride

**1-chloro-2-methylpropene** *see* Dimethylvinyl Chloride

**1-chloro-2-methyl-1-propene** *see* Dimethylvinyl Chloride

**3-chloro-2-methyl-1-propene** *see* 3-Chloro-2-methylpropene  
**4-chloro-1,2-phenylenediamine** *see* 4-Chloro-*o*-phenylenediamine  
**4-chloro-*o*-toluidine** *see* *p*-Chloro-*o*-toluidine and Its Hydrochloride  
**4-chloro-*o*-toluidine hydrochloride** *see* *p*-Chloro-*o*-toluidine and Its Hydrochloride  
**chromated copper arsenate (CCA)** *see* Arsenic and Inorganic Arsenic Compounds *and* Chromium Hexavalent Compounds  
**chromates** *see* Chromium Hexavalent Compounds  
**chromic trioxide** *see* Chromium Hexavalent Compounds  
**chromium VI** *see* Chromium Hexavalent Compounds  
**chrysazin** *see* Danthron  
**chrysotile** *see* Asbestos  
**ciclosporin** *see* Cyclosporin A  
**cigarettes** *see* Tobacco-Related Exposures, Tobacco Smoking  
**cigars** *see* Tobacco-Related Exposures, Tobacco Smoking  
**cis-dichlorodiamine platinum (II)** *see* Cisplatin  
**cis-1,3-dichloropropene** *see* 1,3-Dichloropropene (Technical Grade)  
**Clophen A** *see* Polychlorinated Biphenyls  
**Clophens** *see* Polychlorinated Biphenyls  
**coal tar distillates** *see* Coal Tars and Coal Tar Pitches  
**cobalt** *see* Cobalt-Related Exposures, Cobalt and Cobalt Compounds That Release Cobalt Ions *In Vivo*  
**cobalt(II) chloride** *see* Cobalt-Related Exposures, Cobalt and Cobalt Compounds That Release Cobalt Ions *In Vivo*  
**cobalt(II) oxide** *see* Cobalt-Related Exposures, Cobalt and Cobalt Compounds That Release Cobalt Ions *In Vivo*  
**cobalt(II) sulfate** *see* Cobalt-Related Exposures, Cobalt and Cobalt Compounds That Release Cobalt Ions *In Vivo*  
**coke and char fragments** *see* Soots  
**conjugated estrogens** *see* Estrogens, Steroidal  
**copper-beryllium alloy** *see* Beryllium and Beryllium Compounds  
**crystalite** *see* Silica, Crystalline (Respirable Size)  
**crocidolite** *see* Asbestos  
**crystalline quartz** *see* Silica, Crystalline (Respirable Size)  
**crystalline silica, respirable** *see* Silica, Crystalline (Respirable Size)  
**crystalline silicon dioxide** *see* Silica, Crystalline (Respirable Size)  
**(*R*-(*R*\*,*R*\*-(*E*)))**-cyclic(L-alanyl-D-alanyl-*N*-methyl-L-leucyl-*N*-methyl-L-leucyl-*N*-methyl-L-valyl-3-hydroxy-*N*,4-dimethyl-L-2-amino-6-octenoyl-L- $\alpha$ -aminobutyryl-*N*-methylglycyl-*N*-methyl-L-leucyl-L-valyl-*N*-methyl-L-leucyl) *see* Cyclosporin A  
**cyclosporine** *see* Cyclosporin A

## D

**DAAB** *see* Diazoaminobenzene  
**DB[a,e]P** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Dibenz[a,e]pyrene  
**DB[a,h]A** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Dibenz[a,h]anthracene  
**DB[a,h]P** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Dibenz[a,h]pyrene  
**DB[a,h]AC** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Dibenz[a,h]acridine  
**DB[a,i]P** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Dibenz[a,i]pyrene  
**DB[a,j]AC** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Dibenz[a,j]acridine  
**DB[a,l]P** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Dibenz[a,l]pyrene

**DBCP** *see* 1,2-Dibromo-3-chloropropane  
**DBP** *see* 2,3-Dibromo-1-propanol  
**DDT** *see* Dichlorodiphenyltrichloroethane  
***o*-*o*'-DDT** *see* Dichlorodiphenyltrichloroethane  
***o*-*p*'-DDT** *see* Dichlorodiphenyltrichloroethane  
***p*,*p*'-DDT** *see* Dichlorodiphenyltrichloroethane  
**DEHP** *see* Di(2-ethylhexyl) Phthalate  
**DEN** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosodiethylamine  
**DES** *see* Diethylstilbestrol  
**DMN** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosodimethylamine  
**danthron** *see* Danthron  
**decabromobiphenyl** *see* Polybrominated Biphenyls  
**1,1a,3,3a,4,5,5a,5b,6-decachlorooctahydro-1,3,4-metheno-2H-cyclobuta[cd]pentalen-2-one** *see* Kepone  
**2-deoxy-2((methyl-nitrosoamino)carbonyl)amino)-D-glucopyranose** *see* Nitrosourea Chemotherapeutic Agents, Streptozotocin  
**dextran iron complex** *see* Iron Dextran Complex  
**4,4'-diaminobiphenyl** *see* Benzidine  
**4,4'-diaminodiphenyl ether** *see* 4,4'-Oxydianiline  
**diaminodiphenyl ether** *see* 4,4'-Oxydianiline  
**4,4'-diaminodiphenyl sulfide** *see* 4,4'-Thiodianiline  
**4,4'-diaminodiphenylmethane** *see* 4,4'-Methylenedianiline and Its Dihydrochloride  
***o*-dianisidine** *see* 3,3'-Dimethoxybenzidine and Dyes Metabolized to 3,3'-Dimethoxybenzidine, Dyes Metabolized to 3,3'-Dimethoxybenzidine  
**dibenz[a,h]acridine** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings  
**dibenz[a,j]acridine** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings  
**dibenz[a,h]anthracene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings  
**7H-dibenzo[c,g]carbazole** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings  
**dibenzo[b,c,e,f]chrysene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Dibenz[a,h]pyrene  
**dibenzo[def,p]chrysene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Dibenz[a,l]pyrene  
**1,2,4,5-dibenzopyrene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Dibenz[a,e]pyrene  
**3,4,9,10-dibenzopyrene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Dibenz[a,i]pyrene  
**dibenzo[a,e]pyrene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings  
**dibenzo[a,h]pyrene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings  
**dibenzo[a,i]pyrene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings  
**dibenzo[a,l]pyrene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings  
**2,4-dibromo-1-anthraquinonylamine** *see* 1-Amino-2,4-dibromoanthraquinone  
**dibromoneopentyl glycol** *see* 2,2-Bis(bromomethyl)-1,3-propanediol (Technical Grade)  
**2,3-dibromopropanol** *see* 2,3-Dibromo-1-propanol  
**2,3-dibromopropan-1-ol** *see* 2,3-Dibromo-1-propanol  
**2,3-dibromo-1-propanol phosphate (3:1)** *see* Tris(2,3-dibromopropyl) Phosphate

- p-dichlorobenzene** *see* 1,4-Dichlorobenzene
- 3,3'-dichloro-(1,1'-biphenyl)-4,4'-diamine** *see* 3,3'-Dichlorobenzidine and Its Dihydrochloride
- 3,3'-dichloro-(1,1'-biphenyl)-4,4'-diamine dihydrochloride** *see* 3,3'-Dichlorobenzidine and Its Dihydrochloride
- dichlorobromomethane** *see* Bromodichloromethane
- dichlorodimethyl ether, symmetrical** *see* Bis(chloromethyl) Ether and Technical-Grade Chloromethyl Methyl Ether
- 2,2-dichloro-N-(2-hydroxy-1-(hydroxymethyl)-2-(4-nitrophenyl)ethyl)-, (R-(R\*,R\*))-nitrophenyl)ethyl]acetamide** *see* Chloramphenicol
- [R-(R\*,R\*)-2,2-dichloro-N-[2-hydroxy-1-(hydroxymethyl)-2-(4-nitrophenyl)ethyl]acetamide** *see* Chloramphenicol
- 2,4-dichloro-1-(4-nitrophenoxy)benzene** *see* Nitrofen
- 2,4-dichlorophenyl-p-nitrophenyl ether** *see* Nitrofen
- 1,3-dichloro-1-propene** *see* 1,3-Dichloropropene (Technical Grade)
- (E)-1,3-dichloropropene** *see* 1,3-Dichloropropene (Technical Grade)
- (Z)-1,3-dichloropropene** *see* 1,3-Dichloropropene (Technical Grade)
- dichromates** *see* Chromium Hexavalent Compounds
- 1,2:3,4-diepoxybutane** *see* Diepoxybutane
- diethyl ester sulfuric acid** *see* Diethyl Sulfate
- diethyl sulphate** *see* Diethyl Sulfate
- (E)-4,4'-(1,2-diethyl-1,2-ethenediyl)bisphenol** *see* Diethylstilbestrol
- diethylhexyl phthalate** *see* Di(2-ethylhexyl) Phthalate
- diethylnitrosamine** *see* N-Nitrosamines: 15 Listings, N-Nitrosodiethylamine
- Diethylstilboestrol** *see* Diethylstilbestrol
- Difolatan** *see* Captafol
- 2,3-dihydro-6-propyl-2-thioxo-4(1H)-pyrimidinone** *see* Propylthiouracil
- 1,8-dihydroxy-9,10-anthracenedione** *see* Danthron
- 1,8-dihydroxyanthraquinone** *see* Danthron
- 1,3-diisocyanatomethylbenzene** *see* Toluene Diisocyanates
- Dilantin** *see* Phenytoin and Phenytoin Sodium
- 3,3'-dimethoxybenzidine dye class** *see* 3,3'-Dimethoxybenzidine and Dyes Metabolized to 3,3'-Dimethoxybenzidine, Dyes Metabolized to 3,3'-Dimethoxybenzidine
- dimethyl ester sulfuric acid** *see* Dimethyl Sulfate
- p-dimethylaminoazobenzene** *see* 4-Dimethylaminoazobenzene
- para-dimethylaminoazobenzene** *see* 4-Dimethylaminoazobenzene
- 4,4'-(dimethylamino)benzophenone** *see* Michler's Ketone
- 3,3'-dimethylbenzidine dye class** *see* 3,3'-Dimethylbenzidine and Dyes Metabolized to 3,3'-Dimethylbenzidine, Dyes Metabolized to 3,3'-Dimethylbenzidine
- dimethylcarbamic chloride** *see* Dimethylcarbamoil Chloride
- (1,1-dimethylethyl)-4-methoxyphenol** *see* Butylated Hydroxyanisole
- dimethylnitrosamine** *see* N-Nitrosamines: 15 Listings, N-Nitrosodimethylamine
- 3,4-dimethyl-3H-imidazo[4,5-f]quinolin-2-amine** *see* Heterocyclic Amines (Selected), 2-Amino-3,4-dimethylimidazo[4,5-f]quinoline (MeIQ)
- 3,8-dimethyl-3H-imidazo[4,5-f]quinoxalin-2-amine** *see* Heterocyclic Amines (Selected), 2-Amino-3,8-dimethylimidazo[4,5-f]quinoxaline (MeIQx)
- 5-(3,3-dimethyl-1-triazenyl)1H-imidazole-4-carboxamide** *see* Dacarbazine
- 1,6-dinitropyrene** *see* Nitroarenes (Selected)
- 1,8-dinitropyrene** *see* Nitroarenes (Selected)
- dioctyl phthalate** *see* Di(2-ethylhexyl) Phthalate
- di-sec-octyl phthalate** *see* Di(2-ethylhexyl) Phthalate
- dioxin** *see* 2,3,7,8-Tetrachlorodibenzo-p-dioxin
- diphenylan** *see* Phenytoin and Phenytoin Sodium
- (Z)-2-[4-(1,2-diphenyl-1-butenyl)phenoxy]-N,N-dimethylethanamine** *see* Tamoxifen
- diphenylhydantoin** *see* Phenytoin and Phenytoin Sodium
- 5,5-diphenylhydantoin** *see* Phenytoin and Phenytoin Sodium
- 1,2-diphenylhydrazine** *see* Hydrazobenzene
- 5,5-diphenyl-2,4-imidazolidinedione** *see* Phenytoin and Phenytoin Sodium
- 1,3-diphenyltriazene** *see* Diazoaminobenzene
- direct black 38 (C.I.)** *see* Benzidine and Dyes Metabolized to Benzidine, Dyes Metabolized to Benzidine
- direct blue 1 (C.I.)** *see* 3,3'-Dimethoxybenzidine and Dyes Metabolized to 3,3'-Dimethoxybenzidine, Dyes Metabolized to 3,3'-Dimethoxybenzidine
- direct blue 2 (C.I.)** *see* Benzidine and Dyes Metabolized to Benzidine
- direct blue 6 (C.I.)** *see* Benzidine and Dyes Metabolized to Benzidine, Dyes Metabolized to Benzidine
- direct blue 8 (C.I.)** *see* 3,3'-Dimethoxybenzidine and Dyes Metabolized to 3,3'-Dimethoxybenzidine, Dyes Metabolized to 3,3'-Dimethoxybenzidine
- direct blue 14 (C.I.)** *see* 3,3'-Dimethylbenzidine and Dyes Metabolized to 3,3'-Dimethylbenzidine, Dyes Metabolized to 3,3'-Dimethylbenzidine
- direct blue 15 (C.I.)** *see* 3,3'-Dimethoxybenzidine and Dyes Metabolized to 3,3'-Dimethoxybenzidine, Dyes Metabolized to 3,3'-Dimethoxybenzidine
- direct blue 76 (C.I.)** *see* 3,3'-Dimethoxybenzidine and Dyes Metabolized to 3,3'-Dimethoxybenzidine, Dyes Metabolized to 3,3'-Dimethoxybenzidine
- direct blue 98 (C.I.)** *see* 3,3'-Dimethoxybenzidine and Dyes Metabolized to 3,3'-Dimethoxybenzidine, Dyes Metabolized to 3,3'-Dimethoxybenzidine
- direct blue 218 (C.I.)** *see* 3,3'-Dimethoxybenzidine and Dyes Metabolized to 3,3'-Dimethoxybenzidine, Dyes Metabolized to 3,3'-Dimethoxybenzidine
- direct brown 2 (C.I.)** *see* Benzidine and Dyes Metabolized to Benzidine, Dyes Metabolized to Benzidine
- direct brown 95 (C.I.)** *see* Benzidine and Dyes Metabolized to Benzidine, Dyes Metabolized to Benzidine
- direct green 6 (C.I.)** *see* Benzidine and Dyes Metabolized to Benzidine, Dyes Metabolized to Benzidine
- direct red 28 (C.I.)** *see* Benzidine and Dyes Metabolized to Benzidine, Dyes Metabolized to Benzidine
- disodium hydrogen arsenate** *see* Arsenic and Inorganic Arsenic Compounds
- disperse orange** *see* 1-Amino-2-methylanthraquinone
- 1,1a,2,2,3,3a,4,5,5,5a,5b,6-dodecachlorooctahydro-1,3,4-metheno-1H-cyclobuta(cd)pentalene** *see* Mirex
- Dowicide EC-7** *see* Pentachlorophenol and By-products of Its Synthesis
- doxorubicin hydrochloride** *see* Adriamycin
- dyes metabolized to benzidine** *see* Benzidine and Dyes Metabolized to Benzidine, 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'-Dimethoxybenzidine



**dyes metabolized to 3,3'-dimethylbenzidine** *see* 3,3'-Dimethylbenzidine and Dyes Metabolized to 3,3'-Dimethylbenzidine, Dyes Metabolized to 3,3'-Dimethylbenzidine

## E

**EBV** *see* Viruses (Selected), Epstein-Barr Virus  
**EDB** *see* 1,2-Dibromoethane  
**ENU** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitroso-*N*-ethylurea  
**ETS** *see* Tobacco-Related Exposures, Environmental Tobacco Smoke  
**ETU** *see* Ethylene Thiourea  
**E-glass fibers** *see* Certain Glass Wool Fibers (Inhalable)  
**environmental tobacco smoke** *see* Tobacco-Related Exposures  
**1,2-epoxyethylbenzene** *see* Styrene-7,8-oxide  
**1-epoxyethyl-3,4-epoxycyclohexane** *see* 4-Vinyl-1-cyclohexene Diepoxide  
**estradiol** *see* Estrogens, Steroidal  
**estrone** *see* Estrogens, Steroidal  
**ethanal** *see* Acetaldehyde  
**ethanol** *see* Alcoholic Beverage Consumption  
**ethinylestradiol** *see* Estrogens, Steroidal  
**ethyl aldehyde** *see* Acetaldehyde  
**ethyl carbamate** *see* Urethane  
**ethyl methanesulphonate** *see* Ethylmethanesulfonate  
**ethylene dibromide** *see* 1,2-Dibromoethane  
**ethylene dichloride** *see* 1,2-Dichloroethane  
**ethylenethiourea** *see* Ethylene Thiourea  
**1-ethyl-1-nitrosoourea** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitroso-*N*-ethylurea  
**eugenol methyl ether** *see* Methyl Eugenol

## F

**FF-1** *see* Polybrominated Biphenyls  
**fast garnet GBC base** *see* *o*-Aminoazotoluene  
**ferrochromium** *see* Chromium Hexavalent Compounds  
**FG insulation fiberglass** *see* Certain Glass Wool Fibers (Inhalable)  
**FireMaster BP-6** *see* Polybrominated Biphenyls  
**FireMaster FF1** *see* Polybrominated Biphenyls  
**Firemaster t 23** *see* Tris(2,3-dibromopropyl) Phosphate  
**flavatoxin** *see* Aflatoxins  
**2-fluorenylacetamide** *see* 2-Acetylaminofluorene  
**fluoroethene** *see* Vinyl Halides (Selected), Vinyl Fluoride  
**formalin** *see* Formaldehyde  
**Fosphenytoin** *see* Phenytoin and Phenytoin Sodium

## G

**gamma radiation** *see* Ionizing Radiation, X-Radiation and Gamma Radiation  
**gamma-hexachlorocyclohexane** *see* Lindane, Hexachlorocyclohexane (Technical Grade), and Other Hexachlorocyclohexane Isomers  
**glass code 104** *see* Certain Glass Wool Fibers (Inhalable)  
**glass code 108b** *see* Certain Glass Wool Fibers (Inhalable)  
**glass code 110** *see* Certain Glass Wool Fibers (Inhalable)  
**glass wool fiber B** *see* Certain Glass Wool Fibers (Inhalable)  
**glass wool fiber P** *see* Certain Glass Wool Fibers (Inhalable)  
**glass wool fiber V** *see* Certain Glass Wool Fibers (Inhalable)  
**glycidaldehyde** *see* Glycidol

## H

**7H-DB[c,g]C** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, 7H-Dibenzo[c,g]carbazole  
**7H-dibenzo[c,g]carbazole** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings  
**HBV** *see* Viruses (Selected), Hepatitis B Virus  
**HCA's** *see* Heterocyclic Amines (Selected)  
**HCH** *see* Lindane, Hexachlorocyclohexane (Technical Grade), and Other Hexachlorocyclohexane Isomers  
**HCV** *see* Viruses (Selected), Hepatitis C Virus  
**HHV-4** *see* Viruses (Selected), Epstein-Barr Virus  
**HHV-8** *see* Viruses (Selected), Kaposi Sarcoma-Associated Herpesvirus  
**HIV-1** *see* Viruses (Selected), Human Immunodeficiency Virus Type 1  
**HMPA** *see* Hexamethylphosphoramide  
**HPV** *see* Human Papillomaviruses: Some Genital-Mucosal Types  
**HTLV-1** *see* Viruses (Selected), Human T-Cell Lymphotropic Virus Type 1  
**hard metals** *see* Cobalt-Related Exposures, Cobalt-Tungsten Carbide: Powders and Hard Metals  
**heptabromobiphenyls** *see* Polybrominated Biphenyls  
**heptachlorobiphenyls** *see* Polychlorinated Biphenyls  
**hexabromobiphenyls** *see* Polybrominated Biphenyls  
**1,4,5,6,7,7-hexa-chlorobicyclo[2.2.1]hept-5-ene-2,3-dicarboxylic acid** *see* Chlorendic Acid  
**hexachlorobiphenyls** *see* Polychlorinated Biphenyls  
**hexachlorocyclohexane** *see* Lindane, Hexachlorocyclohexane (Technical Grade), and Other Hexachlorocyclohexane Isomers  
 **$\gamma$ -hexachlorocyclohexane** *see* Lindane, Hexachlorocyclohexane (Technical Grade), and Other Hexachlorocyclohexane Isomers  
**hexachlorocyclohexane isomers** *see* Lindane, Hexachlorocyclohexane (Technical Grade), and Other Hexachlorocyclohexane Isomers  
**hexamethylphosphoric triamide** *see* Hexamethylphosphoramide  
**hexavalent chromium compounds** *see* Chromium Hexavalent Compounds  
**human herpesvirus 4** *see* Epstein-Barr Virus  
**human herpesvirus 8** *see* Kaposi Sarcoma-Associated Herpesvirus  
**14-hydroxydaunomycin** *see* Adriamycin  
**17-hydroxy-2-(hydroxymethylene)-17-methyl-5 $\alpha$ ,17 $\beta$ -androstane-3-one** *see* Oxymetholone  
**(17 $\alpha$ )-17-hydroxy-19-norpregn-4-en-20-yn-3-one** *see* Norethisterone

## I

**IP** *see* Indeno[1,2,3-cd]pyrene  
**IQ** *see* Heterocyclic Amines (Selected), 2-Amino-3-methylimidazo[4,5-f]quinoline  
**2-imidazolidinethione** *see* Ethylene Thiourea  
**indeno[1,2,3-cd]pyrene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings  
**Infed** *see* Iron Dextran Complex  
**inorganic acid mists** *see* Strong Inorganic Acid Mists Containing Sulfuric Acid  
**insulation glass fibers** *see* Certain Glass Wool Fibers (Inhalable)  
**involuntary smoking** *see* Tobacco-Related exposure, Environmental Tobacco Smoke  
**iron-carbohydrate complexes** *see* Iron Dextran Complex

**isocyanic acid** *see* Toluene Diisocyanates

**isopropylbenzene** *see* Cumene

## J

**JM 104/475 glass fibers** *see* Certain Glass Wool Fibers (Inhalable)

## K

**KSHV** *see* Viruses (Selected), Kaposi Sarcoma–Associated Herpesvirus

**Kanechlor 500** *see* Polychlorinated Biphenyls

## L

**lead acetate** *see* Lead and Lead Compounds

**lead arsenate** *see* Arsenic and Inorganic Arsenic Compounds

**lead chromates** *see* Chromium Hexavalent Compounds *and* Lead and Lead Compounds

**lead phosphate** *see* Lead and Lead Compounds

**lomustine** *see* Nitrosourea Chemotherapeutic Agents, 1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea

**lubricant base oils** *see* Mineral Oils: Untreated and Mildly Treated

## M

**MBOCA** *see* 4,4'-Methylenebis(2-chloroaniline)

**5-MC** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, 5-Methylchrysene

**MCPyV** *see* Viruses (Selected), Merkel Cell Polyomavirus

**MCV** *see* Viruses (Selected), Merkel Cell Polyomavirus

**MeCCNU** *see* Nitrosourea Chemotherapeutic Agents, 1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea

**MeIQ** *see* Heterocyclic Amines (Selected), 2-Amino-3,4-dimethylimidazo[4,5-*f*]quinoline

**MeIQx** *see* Heterocyclic Amines (Selected), 2-Amino-3,8-dimethylimidazo-[4,5-*f*]quinoxaline

**MMNG** *see* *N*-Nitrosamines: 15 Listings, *N*-Methyl-*N'*-nitro-*N*-nitrosoguanidine

**MMVF 33 glass fibers** *see* Certain Glass Wool Fibers (Inhalable)

**MMVF 10** *see* Certain Glass Wool Fibers (Inhalable)

**MMVF 10a** *see* Certain Glass Wool Fibers (Inhalable)

**MMVF 11** *see* Certain Glass Wool Fibers (Inhalable)

**MOCA** *see* 4,4'-Methylenebis(2-chloroaniline)

**MOPP** *see* Nitrogen Mustard Hydrochloride and Procarbazine and Its Hydrochloride

**MVNA** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosomethylvinylamine

**mainstream smoke** *see* Tobacco-Related Exposures, Environmental Tobacco Smoke

**man-made mineral fibers** *see* Ceramic Fibers (Respirable Size) *and* Certain Glass Wool Fibers (Inhalable)

**Manville 901 glass fiber** *see* Certain Glass Wool Fibers (Inhalable)

**mechlorethamine** *see* Nitrogen Mustard Hydrochloride

**mechlorethamine hydrochloride** *see* Nitrogen Mustard Hydrochloride

**mestranol** *see* Estrogens, Steroidal

**metallic arsenic** *see* Arsenic and Inorganic Arsenic Compounds

**metallic nickel** *see* Nickel Compounds and Metallic Nickel

**methallyl chloride** *see* 3-Chloro-2-methylpropene

**4-methoxy-1,3-benzenediamine** *see* 2,4-Diaminoanisole Sulfate

**9-methoxy-7H-furo [3,2g] [1] benzopyran-7-one** *see* Methoxsalen with Ultraviolet A Therapy

**2-methoxy-5-methylbenzenamine** *see* *p*-Cresidine

**1-methoxy-2-nitrobenzene** *see* *o*-Nitroanisole

**4-methoxy-*m*-phenylenediamine sulfate** *see* 2,4-Diaminoanisole Sulfate

**2-methoxybenzenamine** *see* *o*-Anisidine and Its Hydrochloride

**8-methoxyypsoralen** *see* Methoxsalen with Ultraviolet A Therapy

**methyl chloromethyl ether** *see* Bis(chloromethyl) Ether and Technical-Grade Chloromethyl Methyl Ether

**methyl ester methanesulfonic acid** *see* Methyl Methanesulfonate

**methyl eugenol** *see* Methyleugenol

**methyl 18β-hydroxy-11,17α-dimethoxy-3β,20α-yohimban-16β-carboxylate 3,4,5-trimethoxybenzoate (ester)** *see* Reserpine

**2-methylbenzenamine** *see* *o*-Toluidine

**4-methyl-1,3-benzenediamine** *see* 2,4-Diaminotoluene

**2-methyl-1,3-butadiene** *see* Isoprene

**methyl-CCNU** *see* Nitrosourea Chemotherapeutic Agents, 1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea

**5-methylchrysene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings

**methylene-bis-*o*-chloroaniline** *see* 4,4'-Methylenebis(2-chloroaniline)

**3-methyl-3*H*-imidazo[4,5-*f*]quinolin-2-amine** *see* Heterocyclic Amines (Selected), 2-Amino-3-methylimidazo[4,5-*f*]quinoline (IQ)

**2-methyl-4-[(2-methylphenyl)azo]-benzenamine** *see* *o*-Aminoazotoluene

**2-methyl-5-nitro-1*H*-imidazole-1-ethanol** *see* Metronidazole

**6-[(1-methyl-4-nitro-1*H*-imidazol-5-yl)thio]-1*H*-purine** *see* Azathioprine

**1-methyl-3-nitro-1-nitrosoguanidine** *see* *N*-Nitrosamines: 15 Listings, *N*-Methyl-*N'*-nitro-*N*-nitrosoguanidine

**4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone** *see* *N*-Nitrosamines: 15 Listings, 4-(*N*-Nitrosomethylamino)-1-(3-pyridyl)-1-butanone

**2-methyloxirane** *see* Propylene Oxide

**methyl-*m*-phenylene ester** *see* Toluene Diisocyanates

**1-methyl-6-phenyl-1*H*-imidazo[4,5-*b*]pyridin-2-amine** *see* Heterocyclic Amines (Selected), 2-Amino-1-methyl-6-phenylimidazo[4,5-*b*]pyridine (PhIP)

**methylene chloride** *see* Dichloromethane

**4,4'-methylenebis(2-chlorobenzanamine)** *see* 4,4'-Methylenebis(2-chloroaniline)

**4,4'-methylenebisbenzenamine** *see* 4,4'-Methylenedianiline and Its Dihydrochloride

**4,4'-methylenebisbenzenamine dihydrochloride** *see* 4,4'-Methylenedianiline and Its Dihydrochloride

**methylenedianiline dihydrochloride** *see* 4,4'-Methylenedianiline and Its Dihydrochloride

**4,4'-methylenedianiline dihydrochloride** *see* 4,4'-Methylenedianiline and Its Dihydrochloride

**4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone** *see* *N*-Nitrosamines: 15 Listings, 4-(*N*-Nitrosomethylamino)-1-(3-pyridyl)-1-butanone

**methyloxirane** *see* Propylene Oxide

**Michler's base** *see* 4,4'-Methylenebis(*N,N*-dimethyl)benzenamine

**mildly treated mineral oils** *see* Mineral Oils: Untreated and Mildly Treated

**mists, strong inorganic acid** *see* Strong Inorganic Acid Mists Containing Sulfuric Acid

**Myleran** *see* 1,4-Butanediol Dimethanesulfonate



**N**

**NDEA** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosodiethylamine

**NEU** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitroso-*N*-ethylurea

**Ni** *see* Nickel Compounds and Metallic Nickel

**NMU** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitroso-*N*-methylurea

**NNK** *see* *N*-Nitrosamines: 15 Listings, 4-(*N*-Nitrosomethylamino)-1-(3-pyridyl)-1-butanone

**NNN** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrososarcosine

***n*-propyl bromide** *see* 1-Bromopropane

**6-*n*-propylthiouracil** *see* Propylthiouracil

***N*-butyl-*N*-nitroso-1-butamine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosodi-*n*-butylamine

***N*-(2-chloroethyl)-*N'*-cyclohexyl-*N*-nitrosoarea** *see* Nitrosoarea Chemotherapeutic Agents, 1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosoarea

***N*-(2-chloroethyl)-*N*-(1-methyl-2-phenoxybenzenemethanamine hydrochloride** *see* Phenoxybenzamine Hydrochloride

***N*-dibutylnitrosoamine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosodi-*n*-butylamine

***N*-(4-ethoxyphenyl)acetamide** *see* Phenacetin and Analgesic Mixtures Containing Phenacetin

***N*-ethyl-*N*-nitroso-ethanamine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosodiethylamine

***N*-ethyl-*N*-nitrosoarea** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitroso-*N*-ethylurea

***N*-2-fluorenylacetamide** *see* 2-Acetylaminofluorene

***N*-fluoren-2-yl-acetamide** *see* 2-Acetylaminofluorene

***N*-methyl-*N*-nitroso-ethenylamine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosomethylvinylamine

***N*-methyl-*N*-nitroso-glycine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrososarcosine

***N*-methyl-*N*-nitroso-*N'*-nitroguanidine** *see* *N*-Nitrosamines: 15 Listings, *N*-Methyl-*N'*-nitro-*N*-nitrosoguanidine

***N*-methyl-*N*-nitrosomethanamine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosodimethylamine

***N*-methyl-*N*-nitrosoarea** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitroso-*N*-methylurea

***N*-(1-methylethyl)-4-[(2-methylhydrazino)methyl]-benzamide monohydrochloride** *see* Procarbazine and Its Hydrochloride

***N*-methylvinylnitrosamine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosomethylvinylamine

***N,N*-bis(carboxymethyl)glycine** *see* Nitrotriacetic Acid

***N,N'*-bis(2-chloroethyl)-*N*-nitrosoarea** *see* Nitrosoarea Chemotherapeutic Agents, Bis(chloroethyl) Nitrosoarea

***N,N*-bis(2-chloroethyl)tetrahydro-2*H*-1,3,2-oxaphosphorin-2-amine, 2-oxide monohydrate** *see* Cyclophosphamide

***N,N*-dibutylnitrosoamine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosodi-*n*-butylamine

***N,N*-diethyldithiocarbamic acid 2-choroallyl ester** *see* Sulfallate

***N,N*-dimethyl-4-aminoazobenzene** *see* 4-Dimethylaminoazobenzene

***N,N*-dimethyl-4-(phenylazo)-benzenamine** *see* 4-Dimethylaminoazobenzene

***N*-Nitroso-*N*-methylglycine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrososarcosine

***N*-nitroso-*N*-propyl-1-propanamine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosodi-*n*-propylamine

***N*-nitrosodipropylamine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosodi-*n*-propylamine

***N*-nitrosoethylurea** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitroso-*N*-ethylurea

***N*-nitrosomethylurea** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitroso-*N*-methylurea

***N*-nitrosophenylhydroxylamine, ethanolamine salt** *see* Cupferron

**naphtho(1,2,3,4-*def*)chrysene** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings, Dibenzo[*a,e*]pyrene

**$\beta$ -naphthylamine** *see* 2-Naphthylamine

**beta-naphthylamine** *see* 2-Naphthylamine

**neutrons** *see* Ionizing Radiation

**nickelocene** *see* Nickel Compounds and Metallic Nickel

**niclofen** *see* Nitrofen

**2-nitroanisole** *see* *o*-Nitroanisole

**nitrochlor** *see* Nitrofen

**6-nitrochrysene** *see* Nitroarenes (Selected)

**nitrogen mustard** *see* Nitrogen Mustard Hydrochloride

**1-nitropyrene** *see* Nitroarenes (Selected)

**4-nitropyrene** *see* Nitroarenes (Selected)

**nitrosodibutylamine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosodi-*n*-butylamine

**2,2'-(nitrosoimino)bis[ethanol]** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosodiethanolamine

**4-nitrosomorpholine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosomorpholine

**1-nitroso-piperidine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosopiperidine

**3-(1-nitroso-2-pyrrolidinyl)pyridine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrososarcosine

**1-nitrosopyrrolidine** *see* *N*-Nitrosamines: 15 Listings, *N*-Nitrosopyrrolidine

**2-nitrotoluene** *see* *o*-Nitrotoluene

**norethindrone** *see* Norethisterone

**O**

***o*-*o'*-DDT** *see* Dichlorodiphenyltrichloroethane

***o*-*p'*-DDT** *see* Dichlorodiphenyltrichloroethane

***o*-aminoanisole** *see* *o*-Anisidine and Its Hydrochloride

***o*-dianisidine** *see* 3,3'-Dimethoxybenzidine and Dyes Metabolized to 3,3'-Dimethoxybenzidine, Dyes Metabolized to 3,3'-Dimethoxybenzidine

***o*-tolidine** *see* 3,3'-Dimethylbenzidine and Dyes Metabolized to 3,3'-Dimethylbenzidine, Dyes Metabolized to 3,3'-Dimethylbenzidine

**octabromobiphenyl** *see* Polybrominated Biphenyls

**Oleum** *see* Strong Inorganic Acid Mists Containing Sulfuric Acid

**orange 16** *see* 3,3'-Dimethoxybenzidine and Dyes Metabolized to 3,3'-Dimethoxybenzidine

**orthoarsenic acid** *see* Arsenic and Inorganic Compounds

**Owens-Corning FG insulation fiberglass with binder** *see* Certain Glass Wool Fibers (Inhalable)

**Owens-Corning FM series air filter media** *see* Certain Glass Wool Fibers (Inhalable)

**Owens-Corning glass wool** *see* Certain Glass Wool Fibers (Inhalable)

**1,2-oxathiolane, 2,2-dioxide** *see* 1,3-Propane Sultone

**2-oxetanone** *see*  $\beta$ -Propiolactone

**oxirane** *see* Ethylene Oxide

**oxiranemethanol** *see* Glycidol

**3-oxiranyl-7-oxabicyclo[4.1.0]heptane** *see* 4-Vinyl-1-cyclohexene Diepoxide

4,4'-oxybisbenzenamine *see* 4,4'-Oxydianiline

**P**

*p*-aminobiphenyl *see* 4-Aminobiphenyl  
*p*-aminodiphenyl *see* 4-Aminobiphenyl  
*p*-dichlorobenzene *see* 1,4-Dichlorobenzene  
*p*-dimethylaminoazobenzene *see* 4-Dimethylaminoazobenzene  
*p*-rosaniline hydrochloride *see* Basic Red 9 Monohydrate  
*p,p'*-DDT *see* Dichlorodiphenyltrichloroethane  
*p,p'*-tetramethyldiaminodiphenylmethane *see* 4,4'-Methylenebis(*N,N*-dimethyl)benzenamine  
**PAHs** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings  
**Pb** *see* lead  
**PBBs** *see* Polybrominated Biphenyls  
**PCBs** *see* Polychlorinated Biphenyls  
**PCDD** *see* 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin  
**PhIP** *see* Heterocyclic Amines (Selected), 2-Amino-1-methyl-6-phenylimidazo-[4,5-*b*]pyridine  
**PROP** *see* Propylthiouracil  
**PUVA** *see* Methoxsalen with Ultraviolet A Therapy  
*p*-rosaniline hydrochloride *see* Basic Red 9 Monohydrate  
*para*-aminodiphenyl *see* 4-Aminobiphenyl  
*para*-dimethylaminoazobenzene *see* 4-Dimethylaminoazobenzene  
**paraffins, chlorinated** *see* Chlorinated Paraffins  
**paraformaldehyde** *see* Formaldehyde  
**pararosaniline hydrochloride** *see* Basic Red 9 Monohydrochloride  
**passive smoke** *see* Tobacco-Related Exposures, Environmental Tobacco Smoke  
**pentabromobiphenyl** *see* Polybrominated Biphenyls  
**pentachlorobiphenyl** *see* Polychlorinated Biphenyls  
**perc** *see* Tetrachloroethylene  
**perchloroethylene** *see* Tetrachloroethylene  
**petroleum** *see* Mineral Oils: Untreated and Mildly Treated  
**L-phenylalanine, N-[(5-chloro-3,4-dihydro-8-hydroxy-3-methyl-1-oxo-1*H*-2-benzopyran-7-yl)-carbonyl]-, (R)-** *see* Ochratoxin A  
**3-phenylazo-2,6-diaminopyridine hydrochloride** *see* Phenazopyridine Hydrochloride  
**3-(phenylazo)-2,6-pyridinediamine monohydrochloride** *see* Phenazopyridine Hydrochloride  
**2,2'-(phenylenebis(oxyethylene))bisoxirane** *see* Diglycidyl Resorcinol Ether  
**phenyloxirane** *see* Styrene-7,8-oxide  
**1,1',1''-phosphinothioylidynetrisaziridine** *see* Thiotepta  
**Phthalate esters** *see* Di(2-ethylhexyl) Phthalate  
**pipe smoking** *see* Tobacco-Related Exposures  
**piperazine estrone sulfate** *see* Estrogens, Steroidal  
**platinum, diamminedichloro-, (SP-4-2)-** *see* Cisplatin  
**polychlorinated camphenes** *see* Toxaphene  
**polychlorocamphene** *see* Toxaphene  
**polychlorophenols** *see* 2,4,6-Trichlorophenol  
**polynuclear aromatic hydrocarbons** *see* Polycyclic Aromatic Hydrocarbons: 15 Listings  
**potassium arsenate** *see* Arsenic and Inorganic Arsenic Compounds  
**potassium arsenite** *see* Arsenic and Inorganic Arsenic Compounds  
**potassium chromate** *see* Chromium Hexavalent Compounds  
**potassium dichromate** *see* Chromium Hexavalent Compounds  
**pregn-4-ene-3,20-dione** *see* Progesterone

**progesterone** *see* Progesterone  
**propane sultone** *see* 1,3-Propane Sultone  
**2-propenamide** *see* Acrylamide  
**2-propenenitrile** *see* Acrylonitrile  
**5-(2-propenyl)-1,3-benzodioxole** *see* Safrole  
*n*-propyl bromide *see* 1-Bromopropane  
**6-propyl-2-thiouracil** *see* Propylthiouracil  
**6-*n*-propylthiouracil** *see* Propylthiouracil  
**propylenimine** *see* 2-Methylaziridine  
**psoralen** *see* Methoxsalen with Ultraviolet A Therapy  
**pyridium** *see* Phenazopyridine Hydrochloride

**Q**

**quartz** *see* Silica, Crystalline (Respirable Size)

**R**

**Rn** *see* Ionizing Radiation, Radon  
**radiation, ionizing** *see* Ionizing Radiation  
**radon** *see* Ionizing Radiation  
**refractory ceramic fibers** *see* Ceramic Fibers (Respirable Size)  
**resorcinol diglycidyl ether** *see* Diglycidyl Resorcinol Ether  
**respirable crystalline silica** *see* Silica, Crystalline (Respirable Size)  
*p*-rosaniline hydrochloride *see* Basic Red 9 Monohydrate

**S**

**SCCP** *see* Chlorinated Paraffins  
**sawdust** *see* Wood Dust  
**Schleicher and Schuell (S&S 106) glass wool fibers** *see* Certain Glass Wool Fibers (Inhalable)  
**secondhand smoke** *see* Tobacco-Related Exposures, Environmental Tobacco Smoke  
**Selsun** *see* Selenium Sulfide  
**semustine** *see* Nitrosourea Chemotherapeutic Agents, 1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea  
**short-chain chlorinated paraffins** *see* Chlorinated Paraffins  
**sidestream smoke** *see* Tobacco-Related Exposures, Environmental Tobacco Smoke  
**sintered carbides** *see* Cobalt-Related Exposures, Cobalt-Tungsten Carbide: Powders and Hard Metals  
**smokeless tobacco** *see* Tobacco-Related Exposures  
**snuff** *see* Tobacco-Related Exposures, Smokeless Tobacco  
**sodium arsenate** *see* Arsenic and Inorganic Arsenic Compounds  
**sodium arsenite** *see* Arsenic and Inorganic Arsenic Compounds  
**sodium chromate** *see* Chromium Hexavalent Compounds  
**sodium dichromate** *see* Chromium Hexavalent Compounds  
**sodium equilin sulfate** *see* Estrogens, Steroidal  
**sodium estrone sulfate** *see* Estrogens, Steroidal  
**solar radiation** *see* Ultraviolet Radiation Related Exposures  
**solvent blue 18 (C.I.)** *see* Disperse Blue 1  
**special-purpose glass fibers** *see* Certain Glass Wool Fibers (Inhalable)  
**spirits** *see* Alcoholic Beverage Consumption  
**steroidal estrogens** *see* Estrogens, Steroidal  
**stilbestrol** *see* Diethylstilbestrol  
**strontium chromate** *see* Chromium Hexavalent Compounds  
**styrene oxide** *see* Styrene-7,8-oxide  
**sulfur mustard** *see* Mustard Gas

**sulfuric acid** *see* Strong Inorganic Acid Mists Containing Sulfuric Acid  
**sunbeds** *see* Ultraviolet Radiation Related Exposures, Sunlamps or Sunbeds, Exposure to  
**sunlamps** *see* Ultraviolet Radiation Related Exposures  
**synthetic mineral fibers** *see* Ceramic Fibers (Respirable Size) and Certain Glass Wool Fibers (Inhalable)  
**synthetic vitreous fibers** *see* Certain Glass Wool Fibers (Inhalable)

## T

**TCDD** *see* 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin  
**2,3,7,8-TCDD** *see* 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin  
**TCE** *see* Trichloroethylene  
**TDI** *see* Toluene Diisocyanates  
**TEPA** *see* Thiotepa  
**TFE** *see* Tetrafluoroethylene  
**TRIS** *see* Tris(2,3-dibromopropyl) Phosphate  
**Telone II** *see* 1,3-Dichloropropene (Technical Grade)  
**Tempstran code 100/475 glass fibers** *see* Certain Glass Wool Fibers (Inhalable)  
**2-tert-butyl-4-hydroxyanisole (2-BHA)** *see* Butylated Hydroxyanisole  
**3-tert-butyl-4-hydroxyanisole (3-BHA)** *see* Butylated Hydroxyanisole  
**1,4,5,8-tetraamino-9,10-anthracenedione** *see* Disperse Blue 1  
**1,4,5,8-tetraaminoanthraquinone** *see* Disperse Blue 1  
**tetrachlorobiphenyl** *see* Polychlorinated Biphenyls  
**tetrachloroethene** *see* Tetrachloroethylene  
**tetrachloromethane** *see* Carbon Tetrachloride  
**tetraethyl lead** *see* Lead and Lead Compounds  
**tetrafluoroethene** *see* Tetrafluoroethylene  
**tetramethyl lead** *see* Lead and Lead Compounds  
***p,p'*-tetramethyldiaminodiphenylmethane** *see* 4,4'-Methylenebis(*N,N*-Dimethyl)benzenamine  
**4,4'-thiobisbenzenamine** *see* 4,4'-Thiodianiline  
**1,1'-thiobis(2-chloroethane)** *see* Mustard Gas  
**thiodianiline** *see* 4,4'-Thiodianiline  
**thorium dioxide** *see* Ionizing Radiation  
**thorium oxide** *see* Ionizing Radiation, Thorium Dioxide  
**thoron** *see* Ionizing Radiation, Radon  
**Thorotrast** *see* Ionizing Radiation, Thorium Dioxide  
**tobacco smoking** *see* Tobacco-Related Exposures  
***o*-tolidine** *see* 3,3'-Dimethylbenzidine and Dyes Metabolized to 3,3'-Dimethylbenzidine, Dyes Metabolized to 3,3'-Dimethylbenzidine  
**2,4-toluene diisocyanate** *see* Toluene Diisocyanates  
**2,6-toluene diisocyanate** *see* Toluene Diisocyanates  
**toluenediamine** *see* 2,4-Diaminotoluene  
**tolylene diisocyanate** *see* Toluene Diisocyanates  
***trans*-1,3-dichloropropene** *see* 1,3-Dichloropropene (Technical Grade)  
**tremolite** *see* Asbestos  
**1,1,1-trichloro-2,2-bis(*p*-chlorophenyl) ethane** *see* Dichlorodiphenyltrichloroethane  
**trichloroethene** *see* Trichloroethylene  
**1,1,2-trichloroethene** *see* Trichloroethylene  
**trichloromethane** *see* Chloroform  
**1-(trichloromethyl)benzene** *see* Benzotrichloride

**$\alpha,\alpha,\alpha$ -trichlorotoluene** *see* Benzotrichloride  
**tridymite** *see* Silica, Crystalline (Respirable Size)  
**triethylenethiophosphoramidate** *see* Thiotepa  
**trimethylene methanesulfonate** *see* 1,4-Butanediol Dimethanesulfonate  
**trioxane** *see* Formaldehyde  
**tris(1-aziridinyl)phosphine sulfide** *see* Thiotepa  
**trypan blue** *see* 3,3'-Dimethylbenzidine and Dyes Metabolized to 3,3'-Dimethylbenzidine, Dyes Metabolized to 3,3'-Dimethylbenzidine  
**tungsten carbides** *see* Cobalt-Related Exposures, Cobalt-Tungsten Carbide: Powders and Hard Metals

## U

**UMDH** *see* 1,1-Dimethylhydrazine  
**UVA** *see* Ultraviolet Radiation Related Exposures  
**UVB** *see* Ultraviolet Radiation Related Exposures  
**UVC** *see* Ultraviolet Radiation Related Exposures  
**UVR** *see* Ultraviolet Radiation Related Exposures  
**unsymmetrical dimethylhydrazine** *see* 1,1-Dimethylhydrazine  
**untreated mineral oils** *see* Mineral Oils: Untreated and Mildly Treated  
**urethan** *see* Urethane

## V

**Vidaza** *see* Azacitidine  
**4-vinylcyclohexene diepoxide** *see* 4-Vinyl-1-cyclohexene Diepoxide  
**vinylcyclohexene dioxide** *see* 4-Vinyl-1-cyclohexene Diepoxide  
**vitreous fibers, synthetic** *see* Certain Glass Wool Fibers (Inhalable)

## W

**WC/Co** *see* Cobalt-Related Exposures, Cobalt-Tungsten Carbide: Powders and Hard Metals  
**wine** *see* Alcoholic Beverage Consumption

## X

**xanthotoxin** *see* Methoxsalen with Ultraviolet A Therapy  
**X-radiation** *see* Ionizing Radiation  
**X-rays** *see* Ionizing Radiation, X-Radiation and Gamma Radiation

## Y

**yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester, (3 $\beta$ ,16 $\beta$ ,17 $\alpha$ ,18 $\beta$ ,20 $\alpha$ )-** *see* Reserpine

## Z

**(Z)-1,3-dichloropropene** *see* 1,3-Dichloropropene (Technical Grade)  
**(Z)-2-[4-(1,2-diphenylbut-1-enyl)phenoxy]-*N,N*-dimethylethanamine** *see* Tamoxifen  
**Zanosar** *see* Streptozocin  
**zeolites** *see* Erionite  
**zinc beryllium silicate** *see* Beryllium and Beryllium Compounds  
**zinc chromates** *see* Chromium Hexavalent Compounds  
**zinc yellow** *see* Chromium Hexavalent Compounds

## Appendix G: List of Substances by CAS Number

- 50-00-0 see Formaldehyde  
 50-18-0 see Cyclophosphamide  
 50-29-3 see Dichlorodiphenyltrichloroethane  
 50-32-8 (benzo[*a*]pyrene) see Polycyclic Aromatic Hydrocarbons: 15 Listings  
 50-55-5 see Reserpine  
 51-52-5 see Propylthiouracil  
 51-79-6 see Urethane  
 52-24-4 see Thiotepe  
 53-70-3 (dibenzo[*a,h*]anthracene) see Polycyclic Aromatic Hydrocarbons: 15 Listings  
 53-96-3 see 2-Acetylaminofluorene  
 55-18-5 (*N*-Nitrosodiethylamine) see *N*-Nitrosamines: 15 Listings  
 55-86-7 see Nitrogen Mustard Hydrochloride  
 55-98-1 see 1,4-Butanediol Dimethanesulfonate  
 56-23-5 see Carbon Tetrachloride  
 56-53-1 see Diethylstilbestrol  
 56-55-3 (benzo[*a*]anthracene) see Polycyclic Aromatic Hydrocarbons: 15 Listings  
 56-75-7 see Chloramphenicol  
 57-14-7 see 1,1-Dimethylhydrazine  
 57-41-0 (phenytoin) see Phenytoin and Phenytoin Sodium  
 57-57-8 see  $\beta$ -Propiolactone  
 57-83-0 see Progesterone  
 58-89-9 (lindane) see Lindane, Hexachlorocyclohexane (Technical Grade), and Other Hexachlorocyclohexane Isomers  
 59-89-2 (*N*-nitrosomorpholine) see *N*-Nitrosamines: 15 Listings  
 60-11-7 see 4-Dimethylaminoazobenzene  
 61-82-5 see Amitrole  
 62-44-2 (phenacetin) see Phenacetin and Analgesic Mixtures Containing Phenacetin  
 62-50-0 see Ethylmethanesulfonate  
 62-55-5 see Thioacetamide  
 62-56-6 see Thiourea  
 62-75-9 (*N*-nitrosodimethylamine) see *N*-Nitrosamines: 15 Listings  
 63-92-3 see Phenoxybenzamine Hydrochloride  
 64-67-5 see Diethyl Sulfate  
 66-27-3 see Methyl Methanesulfonate  
 67-66-3 see Chloroform  
 67-72-1 see Hexachloroethane  
 68-22-4 see Norethisterone  
 70-25-7 (*N*-methyl-*N'*-nitro-*N*-nitrosoguanidine) see *N*-Nitrosamines: 15 Listings  
 71-43-2 see Benzene  
 75-01-4 (vinyl chloride) see Vinyl Halides (Selected)  
 75-02-5 (vinyl fluoride) see Vinyl Halides (Selected)  
 75-07-0 see Acetaldehyde  
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U.S. Department of Health and Human Services  
Public Health Service  
National Toxicology Program  
PO Box 12233  
Research Triangle Park, NC 27709-2510  
ISSN 1551-8280 0