Pacific Northwest National Laboratory

Operated by Battelle for the
U.S. Department of Energy

A Compilation of Regulated Organic Constituents Not Associated with the Hanford Site, Richland, Washington

K.D. Wiemers
R.T. Hallen
H. Babad

L.K. Jagoda
K. Meier

December 1998

Prepared for the U.S. Department of Energy
under Contract DE-AC06-76RLO 1830

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor Battelle Memorial Institute, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof, or Battelle Memorial Institute. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

PACIFIC NORTHWEST NATIONAL LABORATORY
operated by
BATTELLE
for the
UNITED STATES DEPARTMENT OF ENERGY
under Contract DE-AC06-76RLO 1830

Printed in the United States of America

Available to DOE and DOE contractors from the
Office of Scientific and Technical Information, P.O. Box 62, Oak Ridge, TN 37831;
prices available from (615) 576-8401.

Available to the public from the National Technical Information Service,
U.S. Department of Commerce, 5285 Port Royal Rd., Springfield, VA 22161

This document was printed on recycled paper.

(9/97)

PNNL-12040-REV0
Attachment I

**A Compilation of Regulated Organic Constituents
Not Associated with the Hanford Site,
Richland, Washington
(PNNL-11927)**

3 3679 00051 4010

A Compilation of Regulated Organic Constituents Not Associated with the Hanford Site, Richland, Washington

December 1998

KD Wiemers
RT Hallen
H Babad
LK Jagoda
K Meier

Prepared for
the U.S. Department of Energy
under Contract DE-AC06-76RLO 1830

Pacific Northwest National Laboratory
Richland, Washington

Contents

1.0	Introduction	1
2.0	Methodology	1
3.0	Regulated Compounds Assigned to Industries Not Related to the Hanford Site	3
4.0	References	3

Distribution

No. of Copies

OFFSITE

Harry Babad, Ph. D.
2540 Cordoba Court
Richland, WA 99352-1609

Mitzi Miller (3)
Environmental Quality Management
2000 Logston Blvd.
Richland, WA 99352

ONSITE

21 DOE Richland Operations Office

D.W. Bowser	A2-22
N.R. Brown (2)	A0-21
R. Carreon (2)	A0-21
C.E. Clark	A5-15
P.K. Clark	S7-55
R.A. Gilbert	A0-21
L.A. Huffman (5)	A0-21
A.C. McKarns	A5-15
J.A. Poppiti	S7-54
J.F. Thompson	S7-54
N.C. Welliver (5)	A0-21

2 Fluor Daniel Hanford

G.R. Franz	S7-40
S.M. Price	H6-23

No. of Copies

7 Lockheed Martin Hanford

D.L. Banning	R1-12
K.A. Gasper (2)	A3-03
K.M. Hall	R2-12
C.H. Mulkey	R1-51
L.D. Pennington	S7-01
R.D. Potter	R3-73

25 Pacific Northwest National Laboratory

J.A. Campbell	P8-08
P.M. Daling	K8-03
S.C. Goheen	P8-08
R.T. Hallen	K2-12
L.K. Holton	A0-21
K.J. Kjarmo	A2-22
J.L. Kovach (Consultant)	A0-21
M.E. Lerchen (2)	A0-21
B.A. Reynolds	A0-21
L.A. Smyser (2)	A0-21
W.C. Weimer	P7-27
K.D. Wiemers (5)	A0-21
Information Release Office (7)	K1-06

2 Waste Management Federal Services of Hanford, Inc.

R.C. Bowman	H6-24
C.M. Seidel	S3-30

1.0 Introduction

The Hanford Site has 177 underground storage tanks that contain 54 million gallons of high-level radioactive waste. The U.S. Department of Energy (DOE), Washington State Department of Ecology (Ecology), and the U.S. Environmental Protection Agency (EPA) have entered into the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement or TPA) under the *Resource Conservation and Recovery Act of 1976* (RCRA) and the *Washington Hazardous Waste Management Act of 1976* (HWMA). Under the RCRA and HWMA, the tank waste is designated as listed, characteristic, and criteria waste. Characterization data are needed for the tank waste to ensure compliant treatment, storage, and disposal of the waste, including requirements for meeting land disposal restrictions, delisting, and risk assessment. The DOE and Ecology through the Regulatory Data Quality Objectives (DQO) process have defined and documented (Wiemers et al. 1998) characterization needs for the Hanford Site single-shell tank (SST) and double-shell tank (DST) waste.

The DQO process included selection of regulated analytes to be measured in Hanford DST and SST waste. The analyte selection process was completed through a series of technically defensible logic steps that are described by Wiemers et al. (1998). The analyte selection logic begins with a large universe of regulated compounds compiled from a number of applicable regulatory-related compound lists. These input lists include the Underlying Hazardous Constituents and Universal Treatment Standards (40 CFR 268.48) and the Toxic Air Pollutant (TAP) Class A (WAC 173-460-150) and Class B (WAC 173-460-160). In the analyte selection logic, each of the regulated compounds was evaluated, in part, with respect to the plausibility of existing in the Hanford Site SST and DST waste. One of the plausibility decisions addressed the likelihood of the use or presence of the compound at the Hanford Site. This document describes the methodology and technical sources used for primary industry use assignment of selected regulated compounds. Compounds assigned to industries unrelated to the Hanford Site operations were excluded from further consideration in the Regulatory DQO analyte selection logic.

2.0 Methodology

The industry-use assignments were based primarily on information from the *Hazardous Substances Data Bank* (HSDB). Using the chemical abstract service number (CAS #) as a search parameter, the Major Uses and Consumption Pattern information from HSDB was copied into an Excel spreadsheet. Alternate databases were used when no information was available in the HSDB. The industry-use information was edited and is reported as "Detailed Industry Usage and/or Manufacture Information." The predominant uses for each compound are summarized as "Comment on Industry."

A list of input sources for the assignment of selected regulated organic compounds to primary industry uses is provided below. These databases are accessible through the TOMES Plus System (see below) or from government Internet databases.

Hazardous Substances Data Bank (HSDB) contains comprehensive information addressing the impact of more than 4,500 potentially toxic chemical substances on health and the environment. Created and updated by specialists at the U.S. National Library of Medicine (NLM), the information presented covers a wide range of standards, guidelines, and regulatory data for environmental, workplace, transport, and other jurisdictions. Sources include standard text and monographs, government documents, technical reports, and journals.

HAZARDTEXT® is designed to assist with management of hazardous chemical incidents involving spills or leaks. Specific information about fires, explosions, chemical reactivity, evacuation and disposal guidelines, and personal protection is included.

MEDITEXT® provides information on clinical effects of chemicals organized by route of exposure, including decontamination procedures. It is extremely valuable when assessing employee exposure to chemicals.

New Jersey Hazardous Substance Fact Sheets from the New Jersey Department of Health contains employee oriented exposure risk information including personal protective equipment, worker right-to-know issues, and emergency information for over 900 hazardous substances.

NIOSH Pocket Guide to Chemical Hazards contains critical industrial hygiene data for approximately 677 chemicals regularly found in the workplace. Proven helpful in recognizing and controlling occupational chemical hazards, this electronic version of the guide is updated more frequently than the hard-copy version.

Registry of Toxic Effects of Chemical Substances (RTECS) from the National Institute of Occupational Safety and Health (NIOSH) is an annual compendium of toxicity data of chemicals gathered from scientific literature worldwide. Evaluations of the data are included and assist with information comparison.

Reproductive Risk Information System (REPRORISK®) provides information helpful when evaluating reproductive risks of drugs, chemicals, and physical and environmental agents on females, males, and unborn children. REPRORISK includes TERIS, The Teratogen Information System; REPROTEXT®, Shepard's Catalog of Teratogenic Agents; and REPROTOX®.

SARATEXT® assists in complying with the medical reporting requirements set forth by the Superfund Amendments and Reauthorization Act (SARA) Title III regulations and presents acute and chronic effects data for the 366 chemicals included on the EHS list.

Toxicology, Occupational Medicine & Environmental Series (TOMES Plus System) is a CD ROM database published by Micromedex, Inc. Micromedex, Inc. in Englewood, Colorado, USA, publishes a computerized library of proprietary and government databases providing rapid, easy-access to medical and hazard information needed for safe management of chemicals in the workplace and the environment.

3.0 Regulated Compounds Assigned to Industries Not Related to the Hanford Site

The compounds evaluated for industry-use represent a subset of the initial regulatory input list. The subset was derived from preceding analyte selection logic steps which excluded some regulated compounds from further consideration. The industry-use evaluation resulted in 208 regulated organic compounds assigned to industries not associated with the Hanford Site (refer to Table 1). Information in Table 1 was obtained from the HSBD of the TOMES Plus® CD Data Base, Volume 34, unless otherwise noted.

4.0 References

Hazardous Waste Management Act of 1976. Ch. 70.105 RCW.

Resource Conservation and Recovery Act of 1976. 42 USC 6901 et seq.

40 CFR 268.48. "Land Disposal Restrictions." *U.S. Code of Federal Regulations*, as amended.

WAC 173-460. "Controls for New Sources of Toxic Air Pollutants." *Washington Administrative Code*, as amended.

Wiemers KD, ME Lerchen, M Miller, and K Meier. 1998. *Regulatory Data Quality Objectives Supporting Tank Waste Remediation System Privatization Project.* PNNL-12040, Rev. 0. Pacific Northwest National Laboratory, Richland, Washington.

Table 1. Regulated Analytes Not Previously Reported in Hanford Double-Shell and Single-Shell Tank Waste and Assigned to Industries Not Related to Hanford Site Operation

	CAS #	Constituent	Alternate Name	Comment on Industry	Detailed Industry Usage and/or Manufacture Information
1	100-01-6	4-Nitroaniline		Chemical Intermediate	Consumption Patterns: 40% AS AN INT FOR ANTIOXIDANTS; 20% AS AN INT FOR GASOLINE GUM INHIBITORS; 20% AS AN INT FOR DYES & PIGMENTS; 7% IN PHARMACEUTICAL & VETERINARY USE; 13% IN MISC APPLICATIONS (1968).
2	100-44-7	Benzyl chloride		Chemical Intermediate	Consumption Patterns: CHEM INT FOR N-BUTYL BENZYL PHTHALATE, 60%; CHEM INT FOR PHARMACEUTICALS, 12%; CHEM INT FOR QUATERNARY AMMONIUM SALTS, 10%; CHEM INT FOR OTHER BENZYL PHTHALATES, 7%; CHEM INT FOR BENZYL ALCOHOL, 6%; OTHER USES, 5% (1981)
3	100-75-4	N-Nitrosopiperidine		Research Chemical Only	Major Uses: 1. ... N-Nitroso compounds are produced primarily as research chemicals and not for commercial purposes. /N-Nitroso compounds/ **PEER REVIEWED** [USEPA; Ambient Water Quality Criteria Doc: Nitrosamines p. A-1 (1980) EPA-440/5-80-064] U.S. Production: 1. (1977) NOT PRODUCED COMMERCIALY IN USA **PEER REVIEWED** [SRI 2. (1982)] NOT PRODUCED COMMERCIALY IN USA **PEER REVIEWED**
4	101-14-4	4,4'-Methylenebis(2-chloroaniline)		Polymer	Major Uses: Curing agent for polyurethane elastomers. **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987. 767]
5	101-27-9	Barban	4-CHLORO-2-BUTYNYL N-(3-CHLOROPHENYL)CARBAMATE	Herbicide	Major Uses: FOR POSTEMERGENCE CONTROL OF ... CANARYGRASS IN BARLEY, FLAX, LENTILS, MUSTARD (GROWN FOR OIL), PEAS, SAFFLOWER, SUGAR BEETS, WHEAT, SEMI-DWARF WHEAT, SUNFLOWER & SOYBEANS. FOR POSTEMERGENCE CONTROL OF ITALIAN RYEGRASS IN BARLEY, FLAX, LENTILS, MUSTARD (GROWN FOR OIL), PEAS, SAFFLOWER, SUGAR BEETS, WHEAT, SEMI-DWARF SUNFLOWER, AND SOYBEANS IN CALIFORNIA AND OREGON. /FORMER USE/ **PEER REVIEWED** [Farm Chemicals Handbook 1984. Willoughby, Ohio: Meister Publishing Co., 1984. p. C-46] Consumption Patterns: 1. 100% AS AN HERBICIDE ON WHEAT (1975)
6	101-77-9	4,4'-Methylene dianiline	4,4'-DIAMINODIPHENYLMETHANE	Chemical Intermediate - Corrosion Inhibitor - Lab Analytical Reagent - Polymer	Major Uses: 1. DETERMINATION OF TUNGSTEN & SULFATES; AS CORROSION INHIBITOR; PREPN OF AZO DYES **PEER REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 470] 2. AS CURING AGENT FOR POLYURETHANE ELASTOMERS, & POLYURETHANE EPOXY RESINS **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V4 81 (1974)] 3. CHEM INT FOR POLYMETHYLENE POLYPHENYLISOCYANATE (CAPTIVE), 4,4'-METHYLENEDIPHENYLISOCYANATE (CAPTIVE); MONOMER FOR POLYAMIDE & POLYIMIDE RESINS & FIBERS; CHEM INT FOR THE DYE PARAROSANILINE; LAB ANALYTICAL REAGENT **PEER REVIEWED** [SRI]
7	101-80-4	4,4'-Diaminodiphenyl ether	BIS(4-AMINOPHENYL) ETHER	Chemical Intermediate for Polymers	Major Uses: 1. CHEM INT FOR POLYIMIDE & POLY(ESTER-IMIDE) RESINS **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V29 204 (1982)]

Comment on			Detailed Industry Usage and/or Manufacture Information	
CAS #	Constituent	Alternate Name	Industry	
8 105-60-2	Caprolactam, vapor	AMINOCAPROIC LACTAM; OR 2-AZACYCLOHEPTANONE	Chemical Intermediate - Manufacture of Synthetic Fibers ***NOTE*** No Separate Vapor and Dust Information Available	Major Uses: 1. MFR SYNTHETIC FIBERS OF THE POLYAMIDE TYPE (PERLON); SOLVENT FOR HIGH MOL WT POLYMERS **QC REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989, 286] 2. Manufacture of synthetic fibers (especially nylon 6), plastics, bristles, film, coatings, synthetic leather, plasticizers and paint vehicles, cross-linking agent for polyurethanes, synthesis of amino acid lysine. **QC REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987, 214] Consumption Patterns: 1. 93% FOR NYLON 6 FIBERS; 7% FOR NYLON 6 PLASTICS AND FILMS (1973) **QC REVIEWED** [SRI] 2. 86.4% NYLON-6 FIBERS, INCL MONO-FILAMENT; 9.6% NYLON-6 RESINS AND FILM; 3.7% EXPORTS; 0.3% MISC (1984) **QC REVIEWED** [CHEMICAL PROFILE: CAPROLACTAM, 1984]
9 105-60-2a	Caprolactam, dust	AMINOCAPROIC LACTAM; OR 2-AZACYCLOHEPTANONE	Chemical Intermediate - Manufacture of Synthetic Fibers ***NOTE*** No Separate Vapor and Dust Information Available	Major Uses: 1. MFR SYNTHETIC FIBERS OF THE POLYAMIDE TYPE (PERLON); SOLVENT FOR HIGH MOL WT POLYMERS **QC REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989, 286] 2. Manufacture of synthetic fibers (especially nylon 6), plastics, bristles, film, coatings, synthetic leather, plasticizers and paint vehicles, cross-linking agent for polyurethanes, synthesis of amino acid lysine. **QC REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987, 214] Consumption Patterns: 1. 93% FOR NYLON 6 FIBERS; 7% FOR NYLON 6 PLASTICS AND FILMS (1973) **QC REVIEWED** [SRI] 2. 86.4% NYLON-6 FIBERS, INCL MONO-FILAMENT; 9.6% NYLON-6 RESINS AND FILM; 3.7% EXPORTS; 0.3% MISC (1984) **QC REVIEWED** [CHEMICAL PROFILE: CAPROLACTAM, 1984]
10 10595-95-6	N-Nitrosomethylamine		Research Chemical	Major Uses: 1. RESEARCH CHEMICAL **PEER REVIEWED** [SRI] Consumption Patterns: 1. ESSENTIALLY 100% AS A RESEARCH CHEMICAL **PEER REVIEWED** U.S. Production: 1. (1977) NOT PRODUCED COMMERCIALY IN USA **PEER REVIEWED**
11 106-47-8	4-Chloroaniline	1-AMINO-4-CHLORO BENZENE	Chemical Intermediate - Pharmaceuticals - Agricultural	Major Uses: 1. DYE INT, PHARMACEUTICALS, AGRICULTURAL CHEMICALS **PEER REVIEWED** [Lewis, R.J., Sr (Ed.), Hawley's Condensed Chemical Dictionary, 12th ed. New York, NY: Van Nostrand Reinhold Co., 1993, 262] 2. CHEM INT FOR AZOIC COUPLING AGENTS 5 & 10 **PEER REVIEWED** [SRI] 3. Reacts with anhydrous hydrogen chloride and phosphene at 70-75 deg C in dioxane to produce p-chlorophenyl isocyanate, an intermediate used for the production of urea herbicides. **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Volumes 1-26: New York, NY: John Wiley and Sons, 1978-1984, p. V12, 319]
12 106-49-0	p-Toluidine	4-AMINOTOLUENE; OR 4-AMINO-1-METHYLBENZENE	Chemical Intermediate - Test Reagent - Preparation Chemical for Ion Exchange Resins	Major Uses: 1. CHEM INT FOR MANY DYES **PEER REVIEWED** [SRI] 2. TEST REAGENT FOR LIGNIN, NITRITE, PHLOROGLUCINOL, AGENT IN PREPARATION OF ION EXCHANGE RESINS **PEER REVIEWED** [SRI]

CAS #	Constituent	Alternate Name	Comment on		Detailed Industry Usage and/or Manufacture Information
			Industry	Major Uses:	
13 106-51-4	p-Benzquinone	1,4-BENZOQUINONE; OR 1,4-CYCLOHEXADIENEDIONE	Chemical Intermediate - for Pharmaceuticals, Dyes, Polymers, Resins - Tanning agent for leather - Used in Quinhydrone electrodes for pH meters - Oxidizing agent (reduced to hydroquinone)	1. TANNING HIDES; MAKING GELATIN INSOL; STRENGTHENING ANIMAL FIBERS 2. FOR P-BENZOQUINONEDIOXIME, A RUBBER ACCELERATOR, FOR QUINHYDRONE USED IN PH ELECTRODES, FOR 2,3-DICHLORO-5,6-DICYANOBENZOQUINONE; CHEM INTERMEDIATE FOR DYES-EG3. USED IN COSMETIC INDUSTRIES 3. Raw material for hydroquinone 4. In the manufacture of fungicides; as an analytical reagent; an oxidizing agent and in photography. 5. In adhesive mixtures 6. In coal analysis (dehydrogenation of coal) 7. Determination of amino acids by the formation of red charge-transfer complexes. 8. /Used/ in pharmaceutical industry for production of cortisone & addition compd with barbiturates; use in polymer & resins industry. ... use as a tanning agent for leather industry; use in mfr of quinhydrone electrodes for use for pH determinations. 9. Acts as an oxidizing agent & is reduced to hydroquinone ****See comments for sites****	
14 108-89-8	Epichlorohydrin	1-CHLORO-2,3-EPOXYPROPANE; OR 3-CHLORO-1,2-PROPYLENE OXIDE	Chemical Intermediate	Consumption Patterns: 1. Epoxy resins, 65%; glycerine, 25%; epichlorohydrin elastomers, 5%; miscellaneous, 5% (1984) **PEER REVIEWED** [CHEMICAL PRODUCTS SYNOPSIS: Epichlorohydrin, 1984]	
15 10605-21-7	Carbendazim	Methyl benzimidazole carbamate, a precursor of benomyl; OR 2-Benzimidazolecarbamic acid, methyl ester; OR Carbamate Herbicides and Fungicides	Agricultural - Comercial Products - Chemical Intermediate ***Data from several sources***	SOURCES: 1. Some are found in suntan and antiseptic sprays, and some medicated cleansing agents. Some are also used in the plastic industry as an antioxidant, and as a rubber accelerator (Dahi 1988). USES: 1. These chemicals are applied as dusts, sprays of solutions, and wettable powder suspensions and emulsions, depending on the chemical and physical properties of the various agents. Formulations are widely used for pest control in home gardens and in commercial agriculture. 2. THIRAM: Used for foliage and seed treatment, as a disinfectant for nuts, fruits, and mushrooms, and as a rodent and large animal repellent. 3. ETU (Ethyleneethiourea): Used as an accelerator in rubber vulcanization, in dyes, synthetic resins, electroplating baths, and pharmaceuticals (Kurtio & Savolainen 1990).	
16 107-19-7	Propargyl alcohol	Acetylenylcarbinol; OR 1-HYDROXY-2-PROPYNE	Chemical Intermediate	Major Uses: 1. HAS BEEN USED TO PREVENT HYDROGEN EMBRITTLEMENT OF STEEL; AS CORROSION INHIBITOR; SOLVENT STABILIZER; SOIL FUMIGANT; CHEMICAL INTERMEDIATE **PEER REVIEWED** [American Conference of Governmental Industrial Hygienists Documentation of the Threshold Limit Values and Biological Exposure Indices. 5th ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1986. 496] 2. LAB REAGENT **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.) Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. 989] 3. PHARMACEUTICALS **PEER REVIEWED** [CHEMICALS 1985 p 110] 4. Chemical synthesis; alloys **PEER REVIEWED** [O'Donoghue, J.L. (ed.) Neurotoxicity of Industrial and Commercial Chemicals. Volume I. Boca Raton, FL: CRC Press, Inc., 1985. 126]	

CAS #	Constituent	Alternate Name	Comment on Industry	Detailed Industry Usage and/or Manufacture Information
17 107-20-0	Chloroacetaldehyde		Chemical Intermediate - Algicide/Bactericide/Fungicide - Dentistry	<p>Major Uses:</p> <ol style="list-style-type: none"> CHEM INT **QC REVIEWED** [SRI] IN MFR OF 2-AMINOTHIAZOLE: TO FACILITATE BARK REMOVAL FROM TREE TRUNKS **QC REVIEWED** [The Merck Index, 10th ed. Rahway, New Jersey: Merck Co., Inc., 1983. 286] FUNGICIDE **QC REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987. 260] Control of algae, bacteria, and fungi in water **QC REVIEWED** [Mackison, F. W., R. S. Stricoff, and L. J. Partridge, Jr. (eds.), NIOSH(NIOSH) - Occupational Health Guidelines for Chemical Hazards. DHHS(NIOSH) PublicationNo. 81-123 (3 VOLS). Washington, DC: U.S. Government Printing Office, Jan. 1981. 3] Used as a spinning solution of poly B-alanine. **QC REVIEWED** [Mackison, F. W., R. S. Stricoff, and L. J. Partridge, Jr. (eds.), NIOSH(NIOSH) - Occupational Health Guidelines for Chemical Hazards. DHHS(NIOSH) PublicationNo. 81-123 (3 VOLS). Washington, DC: U.S. Government Printing Office, Jan. 1981. 3] Used in dentistry **QC REVIEWED** [Lawrence WH, Avian J. J Dent Res 51: 878 (1972)]
18 107-30-2	Chloromethyl methyl ether	DIMETHYLCHLOROETHER	Chemical Intermediate	<p>Major Uses:</p> <ol style="list-style-type: none"> CHEM INT, EG, FOR DODECYLBENZYL CHLORIDE **PEER REVIEWED** [SRI] An alkylating agent & solvent used in the manufacture of water repellents, ion-exchange resins, & indust polymers **PEER REVIEWED** [GOSSELIN. CTCP 5TH ED p.11-183 (1984)] In synthesis of chloromethylated compounds. **PEER REVIEWED** [The Merck Index, 10th ed. Rahway, New Jersey: Merck Co., Inc., 1983. 301]
19 107-41-5	Hexylene glycol	2-METHYL-2,4-PENTANEDIOL	Chemical Intermediate - Cosmetics - Petroleum Solvent - Industry Additive for Commercial Products	<p>Major Uses:</p> <ol style="list-style-type: none"> IN COSMETICS **PEER REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 744] USED IN TEXTILE DYE VEHICLES; RECOMMENDED AS SOLVENT IN PETROLEUM REFINING **PEER REVIEWED** [Gosselin, R.E., H.C.Hodge, R.P. Smith, and M.N. Gleason. Clinical Toxicology of Commercial Products. 4th ed. Baltimore: Williams and Wilkins, 1978. p. 11-120] AS CEMENT ADDITIVE; AS CHEMICAL INTERMEDIATE **PEER REVIEWED** [American Conference of Governmental Industrial Hygienists, Inc. Documentation of the Threshold Limit Values and Biological Exposure Indices. 6th ed. Volumes I,II, III. Cincinnati, OH: ACGIH, 1991. 759] FUEL & LUBRICANT ADDITIVE **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987. 602] COUPLING AGENT IN HYDRAULIC BRAKE FLUIDS & PRINTING INKS; GASOLINE ANTI-ICER ADDITIVE **PEER REVIEWED** [SRI]
20 107-49-3	Tetraethyl pyrophosphate		Agricultural - Medication	<p>Major Uses:</p> <ol style="list-style-type: none"> INSECTICIDE-ACARICIDE; USED ON THREE VEGETABLE CROPS AND THREE FRUIT CROPS; ONE OF FIRST ORG PHOSPHATE INSECTICIDES IN US (1946); LARGELY REPLACED BY OTHER PRODUCTS. **PEER REVIEWED** [SRI] MEDICATION **QC REVIEWED** CONTACT POISON ... VERY EFFECTIVE AGAINST ACTIVE STAGES OF MITES & OTHER SOFT BODIED INSECTS. **PEER REVIEWED** [Farm Chemicals Handbook 1981. Willoughby, Ohio: Meister, 1981. p. C-328] Consumption Patterns: 1. 100% FOR AGRICULTURE (1975) **PEER REVIEWED** [SRI]

CAS #	Constituent	Alternate Name	Comment on Industry	Detailed Industry Usage and/or Manufacture Information
21	108-31-6 Maleic anhydride (2,5-Furandione)	CIS-BUTENEDIOIC ANHYDRIDE; OR DIHYDRO-2,5-DIOXOFURAN	Chemical Intermediate	<p>Major Uses:</p> <p>1. IN DIELS-ALDER SYNTHESIS (AS A DIENOPHILE), IN COPOLYMERIZATION REACTIONS; MANUFACTURE OF ALKYD-TYPE OF RESINS, DYE INTERMEDIATES, PHARMACEUTICALS, AGRICULTURAL CHEMICALS (MALEIC HYDRAZIDE, MALATHION). **PEER REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals, Rahway, NJ: Merck and Co., Inc., 1989, 896]</p> <p>2. CHEM INT FOR SURFACTANTS-EG, ALKYL SULFOSUCCINATES **PEER REVIEWED** [SRI]</p> <p>Consumption Patterns:</p> <p>1. COMONOMER FOR UNSATURATED POLYESTER RESINS, 52%; CHEM INT FOR LUBE OIL ADDITIVES, 12%; CHEM INT FOR FUMARIC ACID, 11%; CHEM INT FOR AGRICULTURAL CHEMICALS, 9%; COMONOMER FOR OTHER COPOLYMERS, 5%; CHEM INT FOR MALIC ACID, 4%; ALL OTHER USES, 7% (1981) **PEER REVIEWED** [SRI]</p>
22	108-44-1 m-Toluidine	3-AMINOTOLUENE; OR 3-AMINO-1-METHYLBENZENE	Chemical Intermediate for Dyes - Organics	<p>Major Uses:</p> <p>1. MFR DYES & OTHER ORGANIC CHEMICALS **PEER REVIEWED** [The Merck Index, 10th ed, Rahway, New Jersey: Merck Co., Inc., 1983, 1365]</p>
23	108-46-3 Resorcinol (1,3-Benzenediol)	1,3-DIHYDROXYBENZENE	Resins - Rubber - Chemical Intermediate - Medication	<p>Major Uses:</p> <p>1. IN TANNING; MFR HEXYLRESORCINOL; P-AMINOSALICYLIC ACID; EXPLOSIVES; DYES; IN COSMETICS; AS REAGENT FOR ZINC DYEING & PRINTING TEXTILES; KERATOLYTIC **QC REVIEWED** [The Merck Index, 10th ed, Rahway, New Jersey: Merck Co., Inc., 1983, 1178]</p> <p>2. CROSS-LINKING AGENT FOR NEOPRENE; RUBBER TACKIFIER; MFR STYPHNIC ACID **PEER REVIEWED** [Hawley, G.G. The Condensed Chemical Dictionary, 10th ed, New York: Van Nostrand Reinhold Co., 1981, 892]</p> <p>3. IN PHOTOGRAPHY **PEER REVIEWED** [Clayton, G. D. and F. E. Clayton (eds.), Patty's Industrial Hygiene and Toxicology, Volume 2A, 2B, 2C: Toxicology, 3rd ed, New York: John Wiley Sons, 1981-1982, 2586]</p> <p>4. CHEMICAL INTERMEDIATE IN SYNTH OF RESORCINOL-FORMALDEHYDE RESINS, RESIN PROGENITORS, WOOD ADHESIVE RESINS **PEER REVIEWED** [SRI]</p> <p>5. MEDICATION **QC REVIEWED**</p> <p>8. MEDICATION (VET) **QC REVIEWED**</p> <p>7. Used as tire and rubber adhesives ... also as wood adhesives; as ultraviolet absorbers (resorcinol derivatives); and as starting materials for the preparation of dyestuffs. **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Volumes 1-28, New York, NY: John Wiley and Sons, 1978-1984, p.13(81) 39-69]</p> <p>8. Resorcinol is an indirect food additive polymer for use as a basic component of single and repeated use food contact surfaces. ... For use only as a reactive adjuvant substance employed in the production of gelatin-bonded cord composition for use in lining crown closures. ... **PEER REVIEWED** [21 CFR 177.1210 (4/1/86)]</p> <p>Consumption Patterns:</p> <p>1. 42% FOR RESORCINOL-FORMALDEHYDE RESINS AND RESIN PROGENITORS; 31% EXPORTED; 15% FOR WOOD ADHESIVE RESINS; 12% FORMISC APPLICATIONS (1970) **PEER REVIEWED** [SRI]</p> <p>2. In 1977, the United States use of resorcinol was 65% in the manufacture of rubber products, 20% in wood adhesives, and 15% for miscellaneous uses. **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Volumes 1-28, New York, NY: John Wiley and Sons, 1978-1984, p. 13(81) 39-69]</p>
24	108-98-5 Thiophenol	BENZENETHIOL; OR MERCAPTOBENZENE	Chemical Intermediate - Insecticide	<p>Major Uses:</p> <p>1. CHEM INT FOR CARBOPHENOTHION INSECTICIDE & ACARICIDE, FUNGICIDES, EG, FONOFOS; CHEM INT FOR ITS SODIUM SALT, ALKYL PHENYL SULFIDES, PHARMACEUTICALS, PENTACHLOROTHIOPHENOL & ITS ZINC SALT & INT FOR POLYMERS (EG, WITH FORMALDEHYDE, OTHER PHENOLS). **PEER REVIEWED** [SRI]</p> <p>2. MOSQUITO LARVICIDE. **PEER REVIEWED** [Clayton, G. D. and F. E. Clayton (eds.), Patty's Industrial Hygiene and Toxicology, Volume 2A, 2B, 2C: Toxicology, 3rd ed, New York: John Wiley Sons, 1981-1982, 2080]</p>

Comment on			Detailed Industry Usage and/or Manufacture Information	
CAS #	Constituent	Alternate Name	Industry	
25	109-87-5 Methylal	METHYLENE DIMETHYL ETHER	Chemical Intermediate - Solvent - Prelumery & External Ointment	<p>Major Uses:</p> <p>1. IN PERFUMERY; MFR ARTIFICIAL RESINS; REACTION MEDIUM FOR GRIGNARD & REPPE REACTIONS **PEER REVIEWED** [The Merck Index, 8th ed. Rahway, New Jersey, Merck & Co., 1976. 786]</p> <p>2. EXTERNALLY ASOINTMENT **PEER REVIEWED** [International Labour Office. Encyclopedia of Occupational Health and Safety, Volumes I and II. New York: McGraw-Hill Book Co., 1971. 76]</p> <p>3. SPECIAL PURPOSES FUEL; SOLVENT FOR ADHESIVES & COATINGS; IN ORG SYNTHESIS **PEER REVIEWED** [American Conference of Governmental Industrial Hygienists, Inc. Documentation of the Threshold Limit Values, 4th ed., 1980. Cincinnati, Ohio: American Conference of Governmental Industrial Hygienists, Inc., 1980. 262]</p> <p>Consumption Patterns:</p> <p>1. CHEM INT FOR 2-ETHOXYETHYL ACETATE, 48%, SOLVENT FOR EPOXY & OTHER COATINGS, 9%; GENERAL SOLVENT USES (EG, PRINTING INKS & DUPLICATING FLUIDS), 4%; EXPORTS, 38% (1983) **PEER REVIEWED** [SRI]</p>
26	110-80-5 2-Ethoxyethanol	ETHYLENE GLYCOL MONOETHYL ETHER	Chemical Intermediate - Solvent	<p>Major Uses:</p> <p>1. EMBALMING FLUID **PEER REVIEWED** [Gosselin, R.E., H.C. Hodge, R.P. Smith, and M.N. Gleason. Clinical Toxicology of Commercial Products, 4th ed. Baltimore: Williams and Wilkins, 1976. p. II-123]</p> <p>2. TISSUE FIXATION **PEER REVIEWED**</p> <p>3. INTERMEDIATE; CROSS-LINKING PROTEIN & POLYHYDROXY MATERIALS; TANNING OF SOFT LEATHERS **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987. 566]</p> <p>4. CHEM INT FOR ADHESIVES, SEALANTS, ELECTRICAL PRODUCTS **PEER REVIEWED** [SRI]</p> <p>5. In sterilization of endoscopic instruments, thermometers, rubber or plastic equipment which cannot be heat sterilized **PEER REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 702]</p> <p>6. Used as a biocide in the oil industry **PEER REVIEWED** [Gerhartz, W. (exec ed.) Ullmann's Encyclopedia of Industrial Chemistry, 5th ed Vol A1: Deerfield Beach, FL: VCH Publishers, 1985 to Present. p. VA16 567]</p> <p>7. The most popular enzyme cross-linking reagent; microbial cells are also cross-linked with glutaraldehyde to yield cell pellets **PEER REVIEWED** [Gerhartz, W. (exec ed.), Ullmann's Encyclopedia of Industrial Chemistry, 5th ed Vol A1: Deerfield Beach, FL: VCH Publishers, 1985 to Present. p. VA9 386]</p> <p>8. Skin disinfectant **PEER REVIEWED** [Gerhartz, W. (exec ed.), Ullmann's Encyclopedia of Industrial Chemistry, 5th ed Vol A1: Deerfield Beach, FL: VCH Publishers, 1985 to Present. p. VA8 555]</p> <p>9. MEDICATION **QC REVIEWED**</p> <p>10. DISINFECTANT THAT IS VERY GOOD NOT ONLY AGAINST VEGETATIVE BACTERIA BUT ALSO AGAINST SPORES. ITS EFFICACY AGAINST FUNGI & VIRUSES IS GOOD. DISINFECTANT OF CHOICE FOR COLD STERILIZATION OF SURGICAL INSTRUMENTS BUT IS BEING DISPLACED BY ETHYLENE OXIDE... GLUTARALDEHYDE AEROSOLS ARE ALSO USED TO "STERILIZE" HOSPITAL ROOMS; OPERATING AREAS. ETC. ACID GLUTARALDEHYDE IS MORE EFFECTIVE THAN ALKALINE GLUTARALDEHYDE... **PEER REVIEWED** [Osol, A. and J.E. Hoover, et al. (eds.), Remington's Pharmaceutical Sciences, 15th ed. Easton, Pennsylvania: Mack Publishing Co., 1975. 1103]</p>
27	111-30-8 Glutaraldehyde	1,5-PENTANEDIAL	Biocide/disinfectant - Embalming Fluid - Chemical Intermediate - Tanning Agent - Enzyme Cross-linking Reagent Medication	
28	1114-71-2 Pebulate	BUTYLETHYLTHIOCARBAMIC ACID S- PROPYL ESTER	Herbicide	<p>Major Uses:</p> <p>1. PRE-PLANT SELECTIVE HERBICIDE **PEER REVIEWED** [Farm Chemicals Handbook 1994. Willoughby, OH: Meister, 1994. p. C358]</p>

Comment on			Detailed Industry Usage and/or Manufacture Information	
CAS #	Constituent	Alternate Name	Industry	
29 1120-71-4	1,3-Propane sultone	3-HYDROXY-1-PROPANESULPHONIC ACID SULFONE	Chemical Intermediate	<p>Major Uses:</p> <p>1. 1,3-PROPANE SULTONE IS USED AS CHEMICAL INTERMEDIATE TO INTRODUCE SULFOROPROPYL GROUP ... INTO MOLECULES, & TO CONFER WATER SOLUBILITY & ANIONIC CHARACTER **QC REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V4 254 (1974)]</p> <p>2. CHEM INT, EG, A SULFOALKYLATING AGENT (FORMER USE) **PEER REVIEWED** [SRI]</p>
30 114-26-1	Propoxur	2-ISOPROPOXYPHENYL N-METHYLCARBAMATE	Insecticide - Molluscicide	<p>Consumption Patterns:</p> <p>1. OVER 50% AS AN INSECTICIDE FOR MOSQUITOES IN OUTDOOR AREAS; UNDER 50% IN ALL OTHER APPLICATIONS AS AN INSECTICIDE (FOR FLIES ON AGRICULTURAL PREMISES, FOR FLEAS & TICKS ON PETS, ON LAWNS & TURF, FOR ANTS ON FLOWERING PLANTS, & IN DWELLINGS & PUBLIC FACILITIES) (1974) **PEER REVIEWED** [SRI]</p>
31 115-29-7	Endosulfan	1,2,3,4,7,7-HEXACHLOROBICYCLO-2,2,1-HEPTEN-5,8-BIS(OXYMETHYLENE) SULFITE O,O-DIETHYL O-(4-(METHYLSULFINYL)PHENYL) PHOSPHOROTHIOATE	Insecticide	<p>Consumption Patterns:</p> <p>1. INSECTICIDE USED ON DECIDUOUS FRUITSNUTS, 50%; INSECTICIDE USED ON VEGETABLES, 50% (1982) **PEER REVIEWED** [SRI]</p> <p>Consumption Patterns:</p> <p>1. ABOUT 80% AS AN INSECTICIDE & NEMATOCIDE FOR TOBACCO, MOST OF BALANCE AS AN INSECTICIDE & NEMATOCIDE FOR CORN (1974) **QC REVIEWED** [SRI]</p>
33 117-79-3	2-Aminoanthraquinone		Chemical Intermediate for Dyes and Pharmaceuticals	<p>Major Uses:</p> <p>1. CHEM INT FOR DYES (EG. C.I. VAT BLUE 6, 8.33%), (EG. C.I. PIGMENT BLUES 22 & 60) **PEER REVIEWED** [SRI]</p> <p>2. Pharmaceutical intermediate **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987. 55]</p>
34 118-98-7	2,4,6-Trinitrotoluene	2-METHYL-1,3,5-TRINITROBENZENE	Explosives - Chemical Intermediate	<p>Major Uses:</p> <p>1. MILITARY EXPLOSIVE USED IN BOMBS & GRENADES **PEER REVIEWED** [SRI]</p> <p>2. INTERMEDIATE IN DYE STUFFS & PHOTOGRAPHIC CHEMICALS **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987. 1191]</p> <p>Consumption Patterns:</p> <p>1. NEARLY 100% AS AN EXPLOSIVE FOR MILITARY USE; SMALL AMOUNTS MAY BE USED FOR INDUSTRIAL EXPLOSIVE APPLICATIONS, SUCH AS DEEP WELL & UNDERWATER BLASTING (1976) **PEER REVIEWED** [SRI]</p>
35 119-90-4	3,3-Dimethoxybenzidine	4,4-DIAMINO-3,3'-DIMETHOXYDIPHENYL		<p>Consumption Patterns:</p> <p>1. ESSENTIALLY 100% AS A CHEM INT FOR DYES AND PIGMENTS **PEER REVIEWED** [SRI]</p>
36 119-93-7	3,3'-Dimethylbenzidine	3,3'-DIMETHYLDIPHENYL-4,4'-DIAMINE	Reagent - Chemical Intermediate for Dyes and Polymers	<p>Major Uses:</p> <p>1. ... VERY SENSITIVE REAGENT FOR DETECTION OF GOLD (1:10 MILLION DETECTABLE); AND FREE CHLORINE IN WATER **PEER REVIEWED** [Budavari, S. (ed.). The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 1498]</p> <p>2. CHEM INT FOR AZO DYES ... AND 3,3'-DIMETHYL-4,4'-BIPHENYLENE DIISOCYANATE **PEER REVIEWED** [SRI]</p> <p>3. ... Curing agent for urethane resins **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987. 1162]</p> <p>Consumption Patterns:</p> <p>1. Over 75% of DMB is used as a dye & as an intermediate in the production of dyestuffs & pigments ... approximately 20% of DMB is used in the production of polyurethane-based high-strength elastomers, coatings, & rigid plastics **PEER REVIEWED** [Sittig, M. Handbook of Toxic and Hazardous Chemicals and Carcinogens, 1985. 2nd ed. Park Ridge, NJ: Noyes Data Corporation, 1985. 868]</p>

Comment on			Detailed Industry Usage and/or Manufacture Information	
CAS #	Constituent	Alternate Name	Industry	Major Uses:
37 120-58-1	Isosafrole	3,4-METHYLENEDIOXY-1-PROPENYL BENZENE; OR 4-PROPENYL-1,2-METHYLENEDIOXYBENZENE	Chemical Intermediate - Flavoring Agent - Fragrance	1. MFR PESTICIDE SYNERGISTS. **PEER REVIEWED** [Lewis, R.J., Sr. (Ed.). Hawley's Condensed Chemical Dictionary, 12th ed. New York, NY: Van Nostrand Reinhold Co., 1993 663] 2. CHEM INT FOR HELIOTROPIN, FRAGRANCE FOR COSMETICS, FLAVORING AGENT IN ROOT BEER (FORMER USE), CHEM INT FOR DIHYDROSAFROLE (NON-USA USE). **PEER REVIEWED** [SRI]
38 120-80-9	Catechol	1,2-DIHYDROXYBENZENE	Industrial Antioxidant - Chemical Intermediate - Fungicide	Major Uses: 1. AS AN ANTIOXIDANT IN THE RUBBER, CHEMICAL, PHOTOGRAPHIC, DYE, FAT, & OIL INDUSTRIES; ... IN COSMETICS & SOME PHARMACEUTICALS **QC REVIEWED** [Clayton, G. D. and F. E. Clayton (eds.), Patty's Industrial Hygiene and Toxicology, Volume 2A, 2B, 2C: Toxicology, 3rd ed. New York: John Wiley Sons, 1981-1982, 2584] 2. ANTIFUNGAL PRESERVATIVE FOR TREATING SEED POTATO PIECES. /FORMER USE/ **QC REVIEWED** [Farm Chemicals Handbook, 1980. Willoughby, Ohio: Meister, 1980, p. D-61]
39 121-14-2	2,4-Dinitrotoluene	1-METHYL-2,4-DINITROBENZENE	Explosives - Chemical Intermediate	Major Uses: 1. CHEM INT FOR TOLUENE-2,4-DIAMINE, A TOLUENEDISOCYANATE INT; GELATINIZING & WATERPROOFING AGENT IN EXPLOSIVES; CHEM INT FOR DYES (FORMER USE) **PEER REVIEWED** [SRI] 2. Used as an explosives intermediate, rubber chemical and plastics manufacture. **PEER REVIEWED** [CHEMICYCLOPEDIA 1987 p.72] Consumption Patterns: 1. Manufacture of toluene diisocyanate consumes much of the 2,4-DNT produced. In 1978, 560 million lb of toluene diisocyanate was produced. Consumption Patterns: 1. INSECTICIDE FOR AQUATIC USES, 15%; LIVESTOCK/POULTRY, 7%; OTHER NON AGRICULTURAL USES-EG, HOME & GARDEN, LAWN, TURF, ORNAMENTAL, COMMERCIAL, HOUSEHOLD & INDUSTRIAL USES, 33%; COTTON, 14%; VEGETABLES, 10%; ALFALFA, 4%; TOBACCO, 3%; CITRUS, 1%; OTHER FIELD CROPS-EG, CORN, DECIDUOUS FRUIT/NUTS, SORGHUM & WHEAT, 11% (1982) **PEER REVIEWED** [SRI]
40 121-75-5	Malathion	O,O-DIMETHYL S-(1,2-DICARBETHOXYETHYL) DITHIOPHOSPHATE		
41 121-82-4	Cyclonite	CYCLOTRIMETHYLENETRINITRAMINE	Explosives	Consumption Patterns: 1. APPROX 100% IN EXPLOSIVES FOR MILITARY USE (1975) **PEER REVIEWED** [SRI]
42 122-42-9	Propham	ISOPROPYL PHENYL CARBAMATE; OR 1-methylethyl phenyl carbamate	Herbicide	Consumption Patterns: 1. 100% IN AGRICULTURAL APPLICATIONS AS A SELECTIVE HERBICIDE FOR ANNUAL GRASSES & BROADLEAF WEEDS ON FORAGE CROPS (CLOVER & ALFALFA), FLAX, LETTUCE, SAFFLOWER, SPINACH, SUGAR BEETS, LENTILS, & PEAS (1975) **PEER REVIEWED** [SRI]
43 126-72-7	Tris(2,3-dibromopropyl) phosphate		Flame Retardant Additive - No Longer Used in USA	Major Uses: tris(2,3-dibromo-1-propyl) phosphate (TRIS) is no longer used in the United States. Major uses for TRIS were in plastics and ... flame retardant additive used in children's nightwear. Other applications included the treatment of ... packaging, draperies, institutional bedding, toys, doll clothing, and wigs. **PEER REVIEWED** [DHHS/NTP, Fourth Annual Report On Carcinogens p.197 (1985) NTP 85-002]
44 128-85-2	Nitrogen mustard N-oxide	2,2'-Dichloro-N-methyldiethylamine-N-oxide	No Use Information Available	

CAS #	Constituent	Alternate Name	Comment on Industry	Detailed Industry Usage and/or Manufacture Information
45 126-99-8	Chloroprene	2-CHLORO-1,3-BUTADIENE	Chemical Intermediate	<p>Major Uses:</p> <p>1. ... Used as a chemical intermediate in the manufacture of artificial rubber. **PEER REVIEWED** [International Labour Office. Encyclopedia of Occupational Health and Safety. Vols. I&II. Geneva, Switzerland: International Labour Office, 1983. 467]</p> <p>2. ... AS COMPONENT OF ADHESIVES THAT ARE INTENDED FOR USE IN FOOD PACKAGING. **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V19 133 (1979)]</p> <p>3. MANUFACTURE OF NEOPRENE. **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. 272]</p> <p>Consumption Patterns:</p> <p>1. ESSENTIALLY 100% AS A MONOMER FOR NEOPRENE ELASTOMERS. **PEER REVIEWED** [SRI]</p>
46 1300-73-8	Xylidine	Aminodimethylbenzene	Raw Material or Chemical Intermediate for many Products - Gasoline Additive	<p>Major Uses:</p> <p>1. Xylidine is a raw material in the manufacture of dyes, pharmaceuticals. **PEER REVIEWED** [American Conference of Governmental Industrial Hygienists. Documentation of the Threshold Limit Values and Biological Exposure Indices. third ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1986. 639]</p> <p>2. As a gasoline additive **PEER REVIEWED** [Mackison, F. W., R. S. Stricoff, and L. J. Partridge, Jr. (eds.). NIOSHOSH - Occupational Health Guidelines for Chemical Hazards. DHHS (NIOSH) Publication No. 81-123 (3 VOLS). Washington, DC: U.S. Government Printing Office, Jan. 1981. 3]</p> <p>3. Use in manufacture of curing agents, antioxidants, and antiozonants. **PEER REVIEWED** [Mackison, F. W., R. S. Stricoff, and L. J. Partridge, Jr. (eds.). NIOSHOSH - Occupational Health Guidelines for Chemical Hazards. DHHS (NIOSH) Publication No. 81-123 (3 VOLS). Washington, DC: U.S. Government Printing Office, Jan. 1981. 3]</p> <p>4. Use in polymer production **PEER REVIEWED** [Mackison, F. W., R. S. Stricoff, and L. J. Partridge, Jr. (eds.). NIOSHOSH - Occupational Health Guidelines for Chemical Hazards. DHHS (NIOSH) Publication No. 81-123 (3 VOLS). Washington, DC: U.S. Government Printing Office, Jan. 1981. 3]</p> <p>5. In organic synthesis in preparation of wood preservatives, wetting agents for textiles, frothing agents for ore dressing, special lacquers, and metal complexes. **PEER REVIEWED** [Mackison, F. W., R. S. Stricoff, and L. J. Partridge, Jr. (eds.). NIOSHOSH - Occupational Health Guidelines for Chemical Hazards. DHHS (NIOSH) Publication No. 81-123 (3 VOLS). Washington, DC: U.S. Government Printing Office, Jan. 1981. 3]</p>
47 13121-70-5	Cyhexatin	TRICYCLOHEXYLTIN HYDROXIDE	Acaricide - Miticide - Biocide	<p>Major Uses:</p> <p>1. Miticide **PEER REVIEWED** [Purdue University, National Pesticide Information Retrieval System (1988)]</p> <p>2. Currently, the only two biocidal materials that are used extensively in antifouling paints are cuprous oxide & organotin compounds (usually tributyltin oxide or tributyltin fluoride). /Organotin cmpd/ **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology. 3rd ed., Volumes 1-26. New York, NY: John Wiley and Sons, 1978-1984. p. V6 451 (1979)]</p>
48 13552-44-8	4,4-Methylenedianiline dihydrochloride		Chemical Intermediate for Elastomers - Research Chemical	<p>Major Uses:</p> <p>1. ... As a research chemical. ... **PEER REVIEWED** [DHHS/NIHES; Seventh Annual Rpt on Carcinogens Summary p. 251 (1994)]</p> <p>2. Over 90% of the 4,4'-methylenedianiline produced in the USA is used as a closed system intermediate in the production of 4,4'-methylenediphenyl diisocyanate which is used for the manufacture of elastomers such as spandex fibers. /4,4'-Methylenedianiline/ **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V39 350 (1988)]</p>
49 136-78-7	Sesone	SODIUM 2,4-DICHLOROPHENOXYETHYL SULFATE	Herbicide	<p>Major Uses:</p> <p>1. USED AS AN HERBICIDE **PEER REVIEWED** [Gosselin, R.E., R.P. Smith, H.C. Hodge. Clinical Toxicology of Commercial Products. 5th ed. Baltimore: Williams and Wilkins, 1984. p. II-224]</p>

Comment on			Detailed Industry Usage and/or Manufacture Information	
CAS #	Constituent	Alternate Name	Industry	
50 137-26-8	Thiram	BIS(OIMETHYLTHIOCARBAMOYL) DISULFIDE	Chemical Intermediate (Vulcanizer) - Fungicide - Bacteriostat	<p>Major Uses:</p> <p>1. Used as vulcanizer, seed disinfectant, bacteriostat in soap, animal repellent. **PEER REVIEWED** [Budavari, S (ed.). The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 1476]</p> <p>2. Thiram is a protective fungicide suitable for application to foliage control. Botrytis species on lettuce, ornamentals, soft fruit, and vegetables; rusts on ornamentals; Venturia pluma on pears. Also as a seed treatment, sometimes with added insecticide or other fungicide, to control "damping off" diseases of maize, ornamentals and vegetables. At high doses it is a repellent to birds, rodents and deer in fields and orchards. **PEER REVIEWED** [Tomlin, C.L. (ed.). The Pesticide Manual - World Compendium. 10th ed. Surrey, UK: The British Crop Protection Council, 1994. 989]</p> <p>4. MEDICATION **QC REVIEWED**</p> <p>Consumption Patterns:</p> <p>1. ABOUT 97% OF THIRAM UTILIZED IN USA IS AS PRIMARY & SECONDARY ACCELERATORS IN COMPOUNDING NATURAL ISOBUTYLENE-ISOPRENE BUTADIENE STYRENE-BUTADIENE, SYNTHETIC ISOPRENE & NITRILE-BUTADIENE RUBBERS. **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V12 261 (1976)]</p> <p>Major Uses:</p> <p>1. Ziram is used in the rubber processing industry as an accelerator or promoter. Small amounts are used in industrial fungicides, in combination with 2-mercaptobenzothiazole, in adhesives (including those used in food packaging), paper coatings (for non-food contact), industrial cooling water, latex-coated articles, neoprene, paper and paperboard, plastics (polyethylene and polystyrene) and textiles. **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V12 261 (1976)]</p> <p>2. Has been used as repellent to birds & rodents. **PEER REVIEWED** [Worthing, C.R. and S.B. Walker (eds.). The Pesticide Manual - A World Compendium. 8th ed. Thornton Heath, UK: The British Crop Protection Council, 1987. 850]</p> <p>3. EXTENSIVE USE IN CONTROL OF VEGETABLE DISEASES (CELERY LEAF BLIGHT, DOWNY MILDEW OF CUCURBITS, BEAN ANTHRACNOSE, CABBAGE DOWNY MILDEW, & SQUASH BLACK ROT). **PEER REVIEWED** [Osol, A. (ed.). Remington's Pharmaceutical Sciences. 16th ed. Easton, Pennsylvania: Mack Publishing Co., 1980. 1208]</p> <p>4. Used extensively on almond & peaches to control shot hole, brown rot, & peach leaf curl. **PEER REVIEWED** [Farm Chemicals Handbook 1992. Willoughby, OH: Meister Publishing Co., 1992. p. C-367]</p> <p>5. Control of snails (3-5 ppm in water) **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology. 3rd ed., Volumes 1-26. New York, NY: John Wiley and Sons, 1978-1984. p. V18 305 (1982)]</p> <p>6. Ziram is an indirect food additive for use as a component of adhesives. **PEER REVIEWED** [21 CFR 175.105 (4/1/91)]</p> <p>Consumption Patterns:</p> <p>1. USE AS A FUNGICIDE, 1.82X10+7 G (1978) **PEER REVIEWED** [SR]</p>
51 137-30-4	Ziram	BIS(OIMETHYLDITHIOCARBAMATO)ZINC	Chemical Intermediate - Agricultural - Food Packaging	<p>Major Uses:</p> <p>1. Ziram is used in the rubber processing industry as an accelerator or promoter. Small amounts are used in industrial fungicides, in combination with 2-mercaptobenzothiazole, in adhesives (including those used in food packaging), paper coatings (for non-food contact), industrial cooling water, latex-coated articles, neoprene, paper and paperboard, plastics (polyethylene and polystyrene) and textiles. **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V12 261 (1976)]</p> <p>2. Has been used as repellent to birds & rodents. **PEER REVIEWED** [Worthing, C.R. and S.B. Walker (eds.). The Pesticide Manual - A World Compendium. 8th ed. Thornton Heath, UK: The British Crop Protection Council, 1987. 850]</p> <p>3. EXTENSIVE USE IN CONTROL OF VEGETABLE DISEASES (CELERY LEAF BLIGHT, DOWNY MILDEW OF CUCURBITS, BEAN ANTHRACNOSE, CABBAGE DOWNY MILDEW, & SQUASH BLACK ROT). **PEER REVIEWED** [Osol, A. (ed.). Remington's Pharmaceutical Sciences. 16th ed. Easton, Pennsylvania: Mack Publishing Co., 1980. 1208]</p> <p>4. Used extensively on almond & peaches to control shot hole, brown rot, & peach leaf curl. **PEER REVIEWED** [Farm Chemicals Handbook 1992. Willoughby, OH: Meister Publishing Co., 1992. p. C-367]</p> <p>5. Control of snails (3-5 ppm in water) **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology. 3rd ed., Volumes 1-26. New York, NY: John Wiley and Sons, 1978-1984. p. V18 305 (1982)]</p> <p>6. Ziram is an indirect food additive for use as a component of adhesives. **PEER REVIEWED** [21 CFR 175.105 (4/1/91)]</p> <p>Consumption Patterns:</p> <p>1. USE AS A FUNGICIDE, 1.82X10+7 G (1978) **PEER REVIEWED** [SR]</p>
52 13838-16-9	Enflurane	2-Chloro-1-(difluoromethoxy)-1,1,2-trifluoroethane	No Use Information Available	
53 139-91-3	5-(Morpholinomethyl)-3-amino-2-oxazolidinone (rualudone)		No Use Information Available	
54 1395-21-7	Subtilisins	Bacillus subtilis, Bacillus subtilis BPN, Bacillus subtilis Carlsburg, Proteolytic enzymes, Subtilisin BPN, Subtilisin Carlsburg	It is an enzyme obtained from bacteria and it is used in laundry detergents. *** Various Source***	<p>It is an enzyme obtained from bacteria and it is used in laundry detergents. (Note: Commercial proteolytic enzymes are used in laundry detergents.)</p>

Comment on				
CAS #	Constituent	Alternate Name	Industry	Detailed Industry Usage and/or Manufacture Information
55	140-57-8	2-(P-TERT-BUTYLPHENOXY)ISOPROPYL 2-CHLOROETHYL SULFITE	Aramidite	Antimicrobicide - Miticide
56	141-66-2	3-(DIMETHOXYPHOSPHINYLOXY)-N,N-DIMETHYL-CIS-CROTONAMIDE	Dicrotophos	Insecticide - Acaricide
57	143-50-0	CHLORDECONE; OR 1,2,3,4,5,6,7,8,9,10,10-dodecachlorooctahydro-1,3,4-metheno-2-cyclobuta-(c,d)-pentalone	Kepone	Insecticide - Acaricide - Fungicide
58	14484-64-1	Dimethyl-carbamodithioic acid iron(3+) salt	Ferbam	Fungicide
59	1477-55-0	m-Xylene-a,a'-diamine	Curing Agent - Chemical Raw Material	1. FUNGICIDE USED ON FRUIT, NUTS, VEGETABLES, ORNAMENTAL CROPS, IN HOUSEHOLD APPLICATIONS. **PEER REVIEWED** [SRI] Consumption Patterns: 1. 30% IS USED ON PEACHES, PEARS, CHERRIES, APRICOTS, PLUMS, PRUNES, AND NECTARINES; 25% IS USED ON CITRUS FRUIT; 23% ON OTHER FRUITS AND NUTS; 15% ON APPLES; 7% ON FIELD CROPS INCLUDING VEGETABLES AND PEANUTS (1971). **PEER REVIEWED** [SRI] Major Uses: 1. CURING AGENT FOR EPOXY RESINS; A SOURCE OF M-XYLYLENE DIISOCYANATE **PEER REVIEWED** [American Conference of Governmental Industrial Hygienists, Inc. Documentation of the Threshold Limit Values, 4th ed., 1980. Cincinnati, Ohio: American Conference of Governmental Industrial Hygienists, Inc., 1980. 440]
60	151-56-4	Ethyleneimine	Myriad Industrial Chemical Intermediate Uses - Polymers - Textile - Pharmaceutical - Agricultural	Major Uses: 1. ... POLYMERIZATION PRODUCTS ... USED IN THE PAPER INDUSTRY & AS FLOCCULATION AIDS. ... **PEER REVIEWED** [International Labour Office. Encyclopedia of Occupational Health and Safety. Vols. I&II. Geneva, Switzerland: International Labour Office, 1983. 229] 2. IN TEXTILE CHEMICALS, ADHESIVES, BINDERS, PETROLEUM REFINING CHEM, FUELS & LUBRICANTS, COATING RESINS, VARNISHES **PEER REVIEWED** [Clayton, G. D. and F. E. Clayton (eds.), Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982. 2673] 3. IN LACQUERS, AGRICULTURAL CHEMICALS, COSMETICS, ION EXCHANGE RESINS, PHOTOGRAPHIC CHEMICALS, & SURFACANTS **PEER REVIEWED** [Clayton, G. D. and F. E. Clayton (eds.), Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982. 2673] 11. Pharmaceuticals **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987. 490]
61	151-67-7	Halothane	2-BROMO-2-CHLORO-1,1,1-TRIFLUOROETHANE	Major Uses: 1. MEDICATION (VET) **QC REVIEWED** 2. MEDICATION **QC REVIEWED**
62	1563-38-8	Carbafuran phenol	2,3-DIHYDRO-2,2-DIMETHYL-7-BENZOFURANOL	No Use Information Available

Detailed Industry Usage and/or Manufacture Information			Comment on Industry	
CAS #	Constituent	Alternate Name		
63 1563-86-2	Carbafuran	2,3-Dihydro-2,2-dimethyl-7-benzofuranol-N-methylcarbamate	Agricultural	<p>Major Uses:</p> <p>1. SYSTEMIC INSECTICIDE, ACARICIDE, NEMATOCIDE **PEER REVIEWED** [Budavari, S. (ed.). The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 273250]</p> <p>Consumption Patterns:</p> <p>1. ABOUT 82% AS AN INSECTICIDE ON CORN; ABOUT 15% AS AN INSECTICIDE ON ALFALFA; AND THE BALANCE ON TOBACCO AND OTHER FIELD CROPS (1974) **PEER REVIEWED** [SRI]</p> <p>2. Applied to Alfalfa, 47.1%; Rice, 42.2%; Turf, 6.7%; Grapes, 2.4% Remainder on other grains, fruits and vegetables, and non-food crops (1984) /California use, calculated from table/ **PEER REVIEWED** [California State Dept Food and Agriculture, Pesticide Use Report Annual pp.14-15 (1984)]</p>
64 1615-80-1	N,N'-Diethylhydrazine		Research Chemical	<p>Major Uses:</p> <p>1. IN CHEMICAL LAB FOR SYNTH OF SYMMETRICAL DI-MANNICH-BASES **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V4 154 (1974)]</p> <p>2. RESEARCH CHEMICAL **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V4 154 (1974)]</p>
65 1646-88-4	Aldicarb sulfone	2-Methyl-2-(methylsulfonyl)propionaldehyde O- (methylcarbamoyl)oxime	No Use Information Available	
66 16752-77-5	Melthomyl	(([(METHYLAMINO)CARBONYLOXY]ETHANI MIDOTHIOIC ACID METHYL ESTER	Agricultural	<p>Consumption Patterns:</p> <p>1. ABOUT 50% AS AN INSECTICIDE ON VEGETABLES; ABOUT 50% AS AN INSECTICIDE ON ALFALFA, CORN, COTTON, SOYBEANS, & TOBACCO (1974) **PEER REVIEWED** [SRI]</p> <p>2. Alfalfa, 17.8%; Grapes, 9.8%; Lettuce, 26%; Sugarbeets, 6.1%; Tomatoes, 8.6%; Citrus, 3.9%; Other vegetables account for most of remainder, 18.1% (1984) /California use, calculated from table/ **PEER REVIEWED** [California State Dept Food and Agriculture, Pesticide Use Report Annual pp.63-64 (1984)]</p>
67 1694-09-3	Benzyl violet 4b	Acid Fast Violet	Dye	<p>Major Uses:</p> <p>1. DYE FOR WOOL, NYLON, LEATHER, ANODIZED ALUMINUM, INKS, & PAPER; BIOLOGICAL & WOOD STAIN **PEER REVIEWED** [SRI]</p> <p>3. Was used in the USA as a color additive for food, drugs and cosmetics until 10 April 1973, at which time the USA FDA terminated its provisional listing as an additive and cancelled all certificates issued for it... **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V16 155 (1978)]</p> <p>Consumption Patterns:</p> <p>1. ESSENTIALLY 100% AS A DYE **PEER REVIEWED** [SRI]</p>
68 1746-01-6	TCDD (Dioxin/Furan Indicator)	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	Research Chemical - Not Used Commercially in the USA	<p>Major Uses:</p> <p>1. RESEARCH CHEMICAL **PEER REVIEWED** [SRI]</p> <p>2. NOT USED COMMERCIALY IN USA **PEER REVIEWED** [SRI]</p>
69 17804-35-2	Benomyl	1-(Butylcarbamoyl)-2-benzimidazolecarbamic acid, methyl ester	Fungicide	<p>Major Uses:</p> <p>1. FUNGICIDE, ASCARICIDE, ACTIVITY AS CATALYST IN BIOLOGICAL OXIDATION OF SEWAGE & FERTILIZERS. **PEER REVIEWED** [Budavari, S. (ed.). The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 163]</p> <p>2. MEDICATION (VET) **QC REVIEWED**</p> <p>Consumption Patterns:</p> <p>1. 100% USED AS A FUNGICIDE (1975) **PEER REVIEWED** [SRI]</p>

Comment on			Detailed Industry Usage and/or Manufacture Information	
CAS #	Constituent	Alternate Name	Industry	Major Uses:
70 1888-71-7	Hexachloropropylene	PERCHLOROPROPENE	Chemical Intermediate - Hydraulic Fluid - Solvent	1. SOLVENT; PLASTICIZER; HYDRAULIC FLUID **PEER REVIEWED** [Lewis, R.J., Sr (Ed.), Hawley's Condensed Chemical Dictionary, 12th ed. New York, NY: Van Nostrand Reinhold Co., 1993. 598] 2. Uranium tetrachloride, a dark green solid, is best prepared from uranium trioxide and hexachloropropene **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Volumes 1-26 New York, NY: John Wiley and Sons, 1978-1984, p. V23 537 (1978)]
71 1912-24-9	Atrazine	1-CHLORO-3-ETHYLAMINO-5-ISOPROPYLAMINO-2,4,6-TRIAZINE	Herbicide	Consumption Patterns: 1. 96% AS AN AGRICULTURAL HERBICIDE FOR GRASSES & BROADLEAF WEEDS (PRINCIPALLY ON CORN, SORGHUM & SUGARCANE); 2% AS A HERBICIDE IN INDUSTRIAL & COMMERCIAL APPLICATIONS (IN RE-FORESTATION); 2% AS A HERBICIDE FOR HOME & GARDEN USE (ON TURF) (1972) **PEER REVIEWED** [SR]
72 1929-77-7	Vernolate	Dipropylcarbamothioic acid S-propyl ester	Herbicide	Major Uses: 1. SELECTIVE SOIL INCORPORATED HERBICIDE **PEER REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 1568] Nitrapyrin is a white crystalline solid (sugar or salt-like). It is a fertilizer additive used to prevent soil nitrogen loss. *** New Jersey Hazardous Substances Fact Sheet
73 1929-82-4	Nitrapyrin	2-Chloro-6-(trichloromethyl)pyridine	Agricultural Chemical	Major Uses: 1. A SELECTIVE HERBICIDE ... WELL TOLERATED BY CORN ... EFFECTIVE AGAINST ANNUAL GRASS WEED SPECIES SUCH AS BARNYARD GRASS ... CRABGRASS ... FOXTAILS ... & GOOSEGRASS ... IT IS ALSO EFFECTIVE AGAINST NUTSEDGES ... BERMUDAGRASS SEEDLINGS ... & JOHNSONGRASS SEEDLINGS ... **PEER REVIEWED** [Spencer, E. Y. Guide to the Chemicals Used in Crop Protection, 7th ed. Publication 1083. Research Institute, Agriculture Canada, Ottawa, Canada: Information Canada, 1982. 74]
74 2008-41-5	Butylate	Diisobutylthiocarbamic acid S-ethyl ester	Herbicide	Major Uses: 1. ACARICIDE; MOLLUSCICIDE **PEER REVIEWED** [Worthing, C.R. and S.B. Walker (eds.), The Pesticide Manual - A World Compendium, 8th ed. Thornton Heath, UK: The British Crop Protection Council, 1987. 548] 2. Used to control slugs & snails in a wide range of agricultural situations. Broad-range control of Lepidoptera, Coleoptera, Diptera, & Homoptera (incl soil insects), & spider mites in pome fruit. Used as seed treatment, also acts as a bird repellent. **PEER REVIEWED** [Hartley, D. and H. Kidd (eds.), The Agrochemicals Handbook, 2nd ed. Lechworth, Herts, England: The Royal Society of Chemistry, 1987. p. A258/Aug 87] Consumption Patterns: 1. Citrus, 53.2%; Rice, 18.8%, most of remainder applied to artichokes, cherries and ornamentals (1984). California use, calculated from table. **PEER REVIEWED** [California State Dept Food and Agriculture, Pesticide Use Report Annual 1984 p.83]
75 2032-65-7	Methiocarb	3,5-dimethyl-4-methylmercaptophenyl-N-methyl-carbamate	Agricultural	Major Uses: 1. INSECTICIDE FOR COTTON (FORMER USE) **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Volumes 1-26 New York, NY: John Wiley and Sons, 1978-1984, p. V13 442 (1981)] 4. ... EFFECTIVE AGAINST WIDE RANGE OF PESTS... **PEER REVIEWED** [Osol, A. (ed.), Remington's Pharmaceutical Sciences, 16th ed Easton, Pennsylvania: Mack Publishing Co., 1980. 1202] Consumption Patterns: 1. ESSENTIALLY 100% AS AN INSECTICIDE FOR COTTON **QC REVIEWED** [SR]
76 2104-64-5	EPN	ETHYL P-NITROPHENYL BENZENETHIONOPHOSPHONATE	Insecticide	Major Uses: 1. Controls a large number of grass and broadleaf weeds infesting agricultural crops. **PEER REVIEWED** [Farm Chemicals Handbook 1992. Willoughby, OH: Meister Publishing Co., 1992. p. C-224]
77 21087-64-9	Metribuzin	4-Amino-6-tert-butyl-4,5-dihydro-3-methylthio-1,2,4-triazin-5-one	Herbicide	Major Uses: 1. SYNTHETIC FLAVOR; FOOD ADDITIVE **PEER REVIEWED** [Fenaroli's Handbook of Flavor Ingredients, Volume 2. Edited, translated, and revised by T.E. Furia and N. Bellanca. 2nd ed. Cleveland: The Chemical Rubber Co., 1975. 491]
78 2179-59-1	Allyl propyl disulfide	4,5-DITHIA-1-OCTENE	Food Additive	

CAS #	Constituent	Alternate Name	Industry	Comment on
79 2212-67-1	Molinate	S-ethyl-N-hexamethylenethiocarbamate	Herbicide	Detailed Industry Usage and/or Manufacture Information Major Uses: 1. SELECTIVE HERBICIDE **PEER REVIEWED** [Farm Chemicals Handbook 1992. Willoughby, OH: Meister Publishing Co., 1992. p. C-230] 2. Registered for use on rice for the control of watergrass (Echinochloa species) and other weeds. **PEER REVIEWED** [Weed Science Society of America. Herbicide Handbook. 5th ed. Champaign, Illinois: Weed Science Society of America, 1983. 325]
80 22224-92-6	Fenamiphos	Ethyl 3-methyl-4-(methylthio)phenyl isopropylphosphoramidate	Nematicide - Agricultural	Major Uses: 1. Nematicide for use on a wide variety of field, vegetable and fruit crops. Nematicidal activity against endoparasitic, ectoparasitic, cyst forming and root knotting species ... **PEER REVIEWED** [Spencer, E. Y. Guide to the Chemicals Used in Crop Protection. 7th ed Publication 1093. Research Institute, Agriculture Canada, Ottawa, Canada: Information Canada, 1982. 284]
81 2303-17-5	Triallate	Bis(1-methylthio)carbamothioic acid S-(2,3,3 trichloro-2-propenyl)ester	Herbicide	Major Uses: 1. PREEMERGENCE SELECTIVE HERBICIDE **PEER REVIEWED** [Farm Chemicals Handbook 1993. Willoughby, OH: Meister Publishing Co., 1993. p. C-148] 3. ... Herbicide used ... to control wild oats in barley, lentils, peas and spring and winter wheat. **PEER REVIEWED** [Worthing, C.R. and S.B. Walker (eds.). The Pesticide Manual - A World Compendium. 8th ed. Thornton Heath, UK: The British Crop Protection Council, 1987. 816]
82 23135-22-0	Oxamy	OXAMYL, OR N, N-dimethyl-alpha-methylcarbamoyloxymino-alpha-(methylthio)acetamide	Agricultural	Major Uses: 1. Insecticide, nematicide, acaricide **PEER REVIEWED** [Budavari, S. (ed.). The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 1094]
83 23564-05-8	Thiophanate-methyl	1,2-Bis(methoxycarbonylthioureido)benzene	Fungicide	Fungicide ***Shepard's Catalog of Teratogenic Agents
84 23950-58-5	Pronamide	3,5-dichloro-N-(1,1-dimethyl-2-propenyl)benzamide	Herbicide	Consumption Patterns: 1. HERBICIDE FOR VEGETABLES, 46%; FOR OTHER FIELD CROPS, 46%; FOR PASTURE & RANGELAND, 8% (1982) **PEER REVIEWED** [SRI]
85 2465-27-2	Auramine (technical grade)	AURAMINE HYDROCHLORIDE; OR 1,1-BIS(p-DIMETHYLAMINOPHENYL)METHYLENIMIN E HYDROCHLORIDE	Dye	Major Uses: 1. Auramine hydrochloride has an affinity for a wide spectrum of fibers. In fact, it has been used to dye materials as diverse as paper, leather, cotton, wool, silk, jute and coco fiber. It is an excellent fluorochrome and is used in fluorescent staining of acid-fast bacteria; tissue stain. **PEER REVIEWED** [Green F.J. The Sigma-Aldrich Handbook of Stains, Dyes and Indicators by Aldrich Chemical Co., Inc., Milwaukee, WI pp.103-4 (1990)]
86 2631-37-0	Promecarb	3-Isopropyl-5-methylphenyl N-methylcarbamate	Insecticide - Non-USA use Only	Major Uses: 1. INSECTICIDE (NON-US USE ONLY) **PEER REVIEWED** [SRI] 2. Promecarb is used as a non-systemic contact insecticide against lepidopterous pests and leaf miners of fruits. **PEER REVIEWED** [Worthing CR, Walker SB. The Pesticide Manual. Seventh Edition. Croydon, England: The British Crop Protection Council p. 457 (1983)]
87 2646-17-5	Oil orange SS	TOLUENE-2-AZONAPHTHOL-2	Dye	Major Uses: 1. DYE FOR VARNISHES, OILS, FATS, & WAXES **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V8 166]
88 28434-86-8	3,3'-Dichloro-4,4'-diaminodiphenyl ether		No Use Information Available	Consumption Patterns: 1. ESSENTIALLY 100% AS A DYE **PEER REVIEWED** [SRI]

Comment on			
CAS #	Constituent	Alternate Name	Industry
89 29191-52-4	Anisidine (o-, p- isomers)	2-METHOXY-1-AMINO BENZENE	Chemical Intermediate for Dyes
<p>Detailed Industry Usage and/or Manufacture Information</p> <p>1.4 USES/FORMS/SOURCES ***HAZARTEXT</p> <p>A. There are three anisidine isomers: m-anisidine, o-anisidine, and p-anisidine. Note: This document contains little information on m-anisidine, as very little was reported in standard reference sources.</p> <p>B. o-Anisidine</p> <p>1. It is used to prepare guaiacol via diazotization and hydrolysis (HSDB 1996; Lewis 1993).</p> <p>2. It also is used as an intermediate in the manufacture of azo dyes (Lewis 1993).</p> <p>C. p-Anisidines</p> <p>1. p-Anisidine is used in the manufacture of azo dyes and as a chemical intermediate for Vat Red 29 (CI 71140), Disperse Orange 15 (CI 10350), and Azoic Coupling Component 13 (HSDB 1996).</p>			
90 2971-90-6	Clotidol	3,5-Dichloro-2,6-dimethyl-4-pyridinol	Medication (vet)
<p>Drug ***RTECS</p> <p>Clotidol is a white to light brown powder used as an animal antibiotic. *** New Jersey Hazardous Substance Fact Sheet</p>			
91 298-00-0	Methyl parathion	O,O-DIMETHYL O-(P-NITROPHENYL) PHOSPHOROTHIOATE	Insecticide
<p>Major Uses:</p> <p>1. INSECTICIDE USED ON OVER 50 CROPS (PRIMARILY COTTON) & ON SEVERAL ORNAMENTALS ***PEER REVIEWED** [SRI]</p> <p>Consumption Patterns:</p> <p>1. 83% FOR COTTON; 8% FOR SOYBEANS; 2% FOR WHEAT; 5% FOR OTHER GRAIN CROPS INCLUDING CORN; 2% FOR ORNAMENTALS AND MISC AGRICULTURAL COMMODITIES INCLUDING TOBACCO, PEANUTS, ALFALFA, ASSORTED VEGETABLES, AND CITRUS FRUITS (1971) ***PEER REVIEWED** [SRI]</p> <p>2. Applied to alfalfa, 15.6%; Artichokes, 7.5%; Cotton, 7.8%; Lettuce, 7.9%; Onions, 3%; Rice, 32%; Sugarbeets, 7.4%; Tomatoes, 8.1%; Most of remainder applied to vegetable crops (1984); /California use, calculated from table/ (1984) 1.04X10+8 g /Used in California/ ***PEER REVIEWED** [California State Dept Food and Agriculture, Pesticide Use Report Annual 1984 p.69]</p>			
92 298-02-2	Phorate	O,O-DIETHYL S-ETHYLMERCAPTOMETHYL DITHIOPHOSPHATE	Agricultural
<p>Major Uses:</p> <p>1. Phorate ... is a systemic and contact insecticide and acaricide. It is used primarily to protect crops, especially root and feed crops, cotton, brassicas, and coffee from sucking and biting insects, mites, and certain nematodes Phorate is also used as a soil insecticide on corn and sugar beets. ***PEER REVIEWED** [Hayes, W.J., Jr., E.R. Laws, Jr., (eds.), Handbook of Pesticide Toxicology, Volume 2, Classes of Pesticides, New York, NY: Academic Press, Inc., 1991, 1056]</p> <p>2. A food additive permitted in the feed and drinking water of animals and/or for the treatment of food-producing animals. ***PEER REVIEWED** [Sax, N.I. Dangerous Properties of Industrial Materials, 6th ed. New York, NY: Van Nostrand Reinhold, 1984, 2208]</p> <p>3. Wide range of insects on a variety of crops... ***PEER REVIEWED** [Farm Chemicals Handbook 1992, Willoughby, OH: Meister Publishing Co., 1992, p. C-260]</p> <p>Consumption Patterns:</p> <p>1. 64% FOR CORN; 13% FOR FIELD CROPS; 13% FOR GRAINS; 10% FOR OTHER CROPS (1971) ***PEER REVIEWED** [SRI]</p> <p>2. Applied to barley, 4.4%; corn, 8.9%; cotton, 47.6%; sorghum, 3%; sugarbeets, 13.1%; wheat, 22.7%; remainder is used on alfalfa, beans, ornamentals, structures (1984)/California use/ ***PEER REVIEWED** [State of California Dept Food & Agric; Pesticide Use Report Annual 1984 p.82 1985]</p>			

Detailed Industry Usage and/or Manufacture Information			Comment on	
CAS #	Constituent	Alternate Name	Industry	
93 298-04-4	Disulfoton	O,O-diethyl-S-ethylmercapto-ethyl dithiophosphate	Insecticide	<p>Major Uses:</p> <p>1. INSECTICIDE FOR MITES & APHIDS ON SMALL GRAINS, CORN & SORGHUM, COTTON, OTHER FIELD CROPS, VEGETABLES, FRUIT & NUTS, ORNAMENTALS **PEER REVIEWED** [SRI]</p> <p>Consumption Patterns:</p> <p>1. 65% AS AN INSECTICIDE FOR MITES & APHIDS ON SORGHUM; 33% AS AN INSECTICIDE FOR MITES & APHIDS ON SMALL GRAINS, CORN, COTTON, OTHER FIELD CROPS, VEGETABLES, FRUIT, & NUTS; 2% AS AN INSECTICIDE FOR MITES & APHIDS IN HOME & GARDEN USE (ON ORNAMENTALS) (1974) **PEER REVIEWED** [SRI]</p> <p>2. Wheat, 23.4%; Broccoli, 20.1%; Cauliflower, 6.9%; Cotton, 10.6%; Lettuce, 12.5%; Turf, 5.5%; most of remainder used in production of other cole crops, other cereals and sugarbeets (1984) /California use, calculated from table/ **PEER REVIEWED** [California State Dept Food and agriculture, Pesticide Use Report Annual 1984 p.44]</p>
94 299-84-3	Ronnel	Dimethyl trichlorophenyl thiophosphate	Agricultural	<p>Major Uses:</p> <p>1. Medication: (Human and Vet). /Former use/ **PEER REVIEWED** [Hayes, W.J., Jr., E.R. Laws, Jr., (eds.) Handbook of Pesticide Toxicology. Volume 2. Classes of Pesticides. New York, NY: Academic Press, Inc., 1991. 1040]</p> <p>2. SYSTEMIC INSECTICIDE & ACARICIDE ... USED MAINLY ON LIVESTOCK, NON-PHYTOTOXIC TO CROPS EXCEPT CUCUMBERS, APPLES & ROSES, /FORMER USE/ **PEER REVIEWED** [Spencer, E. Y. Guide to the Chemicals Used in Crop Protection. 7th ed. Publication 1093. Research Institute, Agriculture Canada, Ottawa, Canada: Information Canada, 1982 505]</p> <p>Consumption Patterns:</p> <p>1. 100% FOR AGRICULTURE (LIVESTOCK AND LIVESTOCK HOUSING) (1972) **PEER REVIEWED** [SRI]</p>
95 299-86-5	Cruformate	RUELENE, OR 4-t-Butyl-2-chlorophenylmethyl methyl phosphoramidate	Insecticide	<p>Major Uses:</p> <p>1. SRP: FORMER USE/INSECTICIDE FOR CATTLE GRUBS, HORN FLIES & LICE ON CATTLE **PEER REVIEWED** [SRI]</p> <p>2. Medication (vet): Anthelmintic **PEER REVIEWED** [Budavari, S. (ed.). The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 408]</p> <p>Consumption Patterns:</p> <p>1. 100% AS AN INSECTICIDE FOR CATTLE GRUBS, HORN FLIES, & LICE ON BEEF CATTLE & NON-LACTATING DAIRY CATTLE (1973) **PEER REVIEWED** [SRI]</p>
96 300-76-5	Naled	1,2-DIBROMO-2,2-DICHLOROETHYL-DIMETHYL PHOSPHATE	Bactericide - Fungicide - Industrial Uses	<p>Major Uses:</p> <p>1. FUNGICIDE: BACTERICIDE **PEER REVIEWED** [Budavari, S. (ed.). The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 1517]</p> <p>2. USED IN COOLING TOWERS, PAPER AND PULP MILL SYSTEMS, HIDE AND LEATHER PROCESSING AND DISINFECTION. **PEER REVIEWED** [SAX NI, ed; DANGER PROPS INDUS MATER REPORT 5 (1): 87-99 (1985)]</p> <p>3. USED ON SWIMMING POOL, RELATED SURFACES, HOUSEHOLD SICKROOM EQUIPMENT, FOOD PROCESSING PLANTS AND EQUIPMENT, FOOD CONTACT SURFACES, HOSPITAL ROOMS, SICKROOM EQUIPMENT AND BATHROOMS. **PEER REVIEWED** [SAX NI, ed; DANGER PROPS INDUS MATER REPORT 5 (1): 87-99 (1985)]</p> <p>4. MEDICATION (VET) **QC REVIEWED**</p>
97 302-70-5	Nitrogen mustard N-oxide hydrochloride	2-CHLORO-N-(2-CHLOROETHYL)-N-METHYLETHANAMINE-N-OXIDE HYDROCHLORIDE	Medication - Not Produced in USA	<p>Major Uses:</p> <p>1. ANTINEOPLASTIC AGENT (NON-USA USE) **QC REVIEWED** [SRI]</p> <p>2. MEDICATION **QC REVIEWED**</p> <p>3. MEDICATION (VET) **QC REVIEWED** U.S. Production:</p> <p>1. NOT PRODUCED COMMERCIALY IN USA **QC REVIEWED** [SRI]</p>
98 30558-43-1	A2213	Ethanimidothioic acid, 2-(dimethylamino)-N-hydroxy-2-oxo-, methyl ester	No Use Information Available	

Comment on			Detailed Industry Usage and/or Manufacture Information	
CAS #	Constituent	Alternate Name	Industry	Major Uses:
99 315-18-4	Mexacarbate	4-DIMETHYLAMINO-3,5-DIMETHYLPHENYL N-METHYLCARBAMATE	Non-Agricultural Insecticide - Molluscicide - Not Produced in the USA	1. FORMERLY USED AS A MOLLUSCICIDE **PEER REVIEWED** [Hayes, Wayland J., Jr. Pesticides Studied in Man. Baltimore/London: Williams and Wilkins, 1982, 456] 3. INSECTICIDE FOR NON-AGRICULTURAL USES-e.g., LAWNS & TURF, FLOWERS, GARDENS, VINES, & FOREST LANDS, WOODY SHRUBS & TREES. **PEER REVIEWED** [SRI] U.S. Production: 1. (1978) NOT PRODUCED COMMERCIALY IN USA **PEER REVIEWED** [SRI]
100 333-41-5	Diazinon		Insecticide	Major Uses: 1. INSECTICIDE FOR NON-AGRICULTURAL USE (e.g., HOME & GARDEN) & FOR AGRICULTURAL USE (e.g., ALFALFA & CORN). **PEER REVIEWED** [SRI] 2. MEDICATION (VET) **QC REVIEWED** Consumption Patterns: 1. NON-AGRICULTURAL USE-e.g., IN HOME, GARDEN & LAWN PRODUCTS, 43%, ALFALFA, 12%, CORN, 5%; SOYBEANS, 5%; VEGETABLES, 5%; DECIDUOUS FRUITS & NUTS, 3%; WHEAT, 2%; COTTON, 2%; SORGHUM, 2%; OTHER FIELD CROPS-e.g., PEANUTS, RICE, SUGARCANE, SMALL GRAINS, & CITRUS, 21% (1982 INSECTICIDE USE). **PEER REVIEWED** [SRI]
101 3383-96-8	Temephos	O,O-DIMETHYLPHOSPHOROTHIOATE O,O-DIESTER WITH 4,4'-THIODIPHENOL	Larvicide - Insecticide	Major Uses: 1. LARVICIDE FOR MOSQUITOES, BLACK FLIES & MIDGES & IN OTHER APPLICATIONS. **PEER REVIEWED** [SRI] 2. EFFECTIVE IN CONTROLLING FLEAS ON DOGS & CATS AND LICE ON HUMANS. ON CROPS, IT IS EFFECTIVE IN CONTROLLING CUTWORMS, THIRPS, & LYGUS BUGS. **PEER REVIEWED** [Worthing, C.R. and S.B. Walker (eds.). The Pesticide Manual - A World Compendium. 8th ed. Thornton Heath, UK: The British Crop Protection Council, 1987, 772] Consumption Patterns: 1. 38% AS A LARVICIDE ON AGRICULTURAL CROPS; 62% AS A LARVICIDE IN OTHER APPLICATIONS. (1971) **PEER REVIEWED** [SRI]
102 3424-82-6	o,p'-DDE (2,4'-DDE)	Ethylene, 1,1-dichloro-2-(o-chlorophenyl)-2-(p-chlorophenyl)-	No Use Information Available	
103 35400-43-2	Suprofos	Phosphorodithioic acid, O-ethyl O-(4-(methylthio)phenyl) S-propyl ester	Pest Control - Medicine - Nerve Gas **From MEDITEXT	1.7 USES/FORMS/SOURCES These lipophilic compounds are formulated from solution in petroleum distillates into emulsifiable concentrates or suspensions. Wettable powders, dusts, and granules may also be available. Some products are also formulated as impregnated resins, fogging formulations, or smokes (Minton and Murray 1988). These are used in Agricultural, Industrial, Home and Veterinary products for Pest control. Isoflurophate (DFF, Dylfos, Floropryl) is a potent cholinesterase inhibitor contained in ophthalmic preparations for the treatment of glaucoma. Organophosphates which are very rapid-acting, such as TABUN, SARIN, and SOMAN, have been developed as "nerve gases" for chemical warfare but have not been used for this purpose (WHO 1986).
104 3547-04-4	DDE (p,p'-Dichlorodiphenyldichloroethylene)	2,2-Bis(p-chlorophenyl)ethane	No Use Information Available	
105 3689-24-5	Tetraethylthiopyrophosphate (TEDP)	DITHION; OR BIS-O-O-DIETHYLPHOSPHOROTHIONIC ANHYDRIDE	Insecticide - Acaricide	Major Uses: 1. INSECTICIDE, ACARICIDE **PEER REVIEWED** [Farm Chemicals Handbook 1989. Willoughby, OH: Meister Publishing Co., 1989, p. C-44] 2. GREENHOUSE FUMIGANT TO CONTROL APHIDS, SPIDER MITES, THIRPS, & WHITEFLIES. **PEER REVIEWED** [Farm Chemicals Handbook 1989. Willoughby, OH: Meister Publishing Co., 1989, p. C-44]
106 3761-53-3	Ponceau MX	DISODIUM (2,4-DIMETHYLPHENYLAZO)-2-HYDROXYNAPHTHALENE-3,6-DISULFONATE	Dye	Major Uses: 1. FOOD & DRUG COLORANTS **PEER REVIEWED** [Gosselin, R.E., R.P. Smith, H.C. Hodge. Clinical Toxicology of Commercial Products. 5th ed. Baltimore: Williams and Wilkins, 1984, p. VI-184] 2. DYE USED MAINLY IN TEXTILES AND LEATHER; DYE USED IN INKS, PAPER, PIGMENT, & WOOD STAINS **PEER REVIEWED** [SRI] Consumption Patterns: 1. ESSENTIALLY 100% AS A DYE **PEER REVIEWED** [SRI]

Detailed Industry Usage and/or Manufacture Information			Comment on Industry
CAS #	Constituent	Alternate Name	
107 4685-14-7	Paraquat	1,1'-DIMETHYL-4,4'-BIPYRIDINIUM	Herbicide
Consumption Patterns: 1. 100% FOR HERBICIDE AND DESICCANT USE (1973) **PEER REVIEWED** [SRI]			
108 479-45-8	Tetryl	N-METHYL-N,2,4,6-TETRANITROANILINE	Explosives - Indicator
Major Uses: 1. Used as an explosive in detonators and primers; as an intermediary detonating agent for other less sensitive, high explosives, and as a booster charge for military devices, it may also be employed as an explosive charge **PEER REVIEWED** [American Conference of Governmental Industrial Hygienists. Documentation of the Threshold Limit Values and Biological Exposure Indices, 5th ed Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1986, p. 588.1(88)] 2. Chemical indicator **PEER REVIEWED** [The Merck Index, 10th ed. Rahway, New Jersey: Merck Co., Inc., 1983, 943]			
109 509-14-8	Tetranitromethane		Organic Reagent - Rocket Fuel Indicator
Major Uses: 1. Rocket fuel, as an oxidant or monopropellant; qualitative test for unsaturated compounds, diesel fuel booster, organic reagent. **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987, 1139] 2. ... As explosive in admixture with toluene. To increase cetane number of diesel fuels. Reagent for detecting the presence of double bonds in organic compd. **PEER REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals, Rahway, NJ: Merck and Co., Inc., 1989, 1455]			
110 51-79-8	Ethyl carbamate (urethane)	O-ETHYLURETHANE	Solvent - Medication - Chemical Intermediate
Major Uses: 1. MOLTEN URETHAN IS GOOD SOLVENT FOR VARIOUS ORG MATERIALS; PREPN & MODIFICATION OF AMINO RESINS; AS SOLUBILIZER & CO-SOLVENT FOR PESTICIDES, FUMIGANTS. **PEER REVIEWED** [The Merck Index, 10th ed. Rahway, New Jersey: Merck Co., Inc., 1983, 1411] 2. MEDICATION (VET): ANESTHETIC, HYPNOTIC, SEDATIVE, DIURETIC **PEER REVIEWED** [Rossoff, I.S. Handbook of Veterinary Drugs. New York: Springer Publishing Company, 1974, 632] 3. SOLUBILIZER & CO-SOLVENT FOR COSMETICS. **PEER REVIEWED** [SRI] 4. AS CHEMICAL INTERMEDIATE, PRIMARILY FOR REACTION WITH FORMALDEHYDE TO PRODUCE N-HYDROXYMETHYL DERIVATIVES, WHICH ARE USEFUL AS CROSS LINKING AGENTS IN TEXTILE TREATMENTS DESIGNED TO IMPART WASH AND WEAR PROPERTIES TO FABRICS. **PEER REVIEWED** [IARC: Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work), p. V7 113 (1974)] 5. Intermediate for pharmaceuticals; biochemical research. **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987, 1210] 6. ANTI-NEOPLASTIC AGENT: HYPNOTIC; AS ADJUNCT TO SULFONAMIDE THERAPY; AS COMPONENT (WITH QUININE) OF SCLEROSING SOLN FOR VARICOSE VEINS, & AS TOPICAL BACTERICIDE. /FORMER USES/ **PEER REVIEWED** [IARC: Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work), p. V7 112 (1974)] 7. MORE RECENT SOURCE STATES THAT LARGE DOSES OF URETHANE PRODUCE BONE MARROW DEPRESSION, & THAT FOR TIME IT WAS USED IN TREATMENT OF CHRONIC LEUKEMIA & MULTIPLE MYELOMA. NO EVIDENCE WAS FOUND THAT URETHANE PRESENTLY FINDS USE IN USA IN HUMAN MEDICINE. **PEER REVIEWED** [IARC: Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work), p. V7 112 (1974)]			

CAS #	Constituent	Alternate Name	Comment on Industry	Detailed Industry Usage and/or Manufacture Information
111 52-85-7	Famphur	O,O-DIMETHYL O,p-(N,N-DIMETHYLSULFAMOYL) PHENYL PHOSPHOROTHIOATE	Insecticide (Veterinary)	8. VET: REPORTED ... APPLICATIONS OF URETHANE INCL ITS INFREQUENT USE AS HYPNOTIC & ITS MORE FREQUENT USE AS ANESTHETIC FOR LAB ANIMALS. **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization/International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V7 113 (1974)] 9. VET: HAS OCCASIONALLY BEEN USED WITH OTHER DRUGS, SINCE IT NOT ONLY AUGMENTS THEIR ACTION, BUT INCR THEIR AQUEOUS SOLUBILITY. WIDE MARGIN OF SAFETY IN FISH ANESTHESIA, BUT NOT POPULAR SINCE IT MAY BE CARCINOGENIC TO USER. **PEER REVIEWED** [Rossoff, I.S. Handbook of Veterinary Drugs. New York: Springer Publishing Company, 1974. 632]
112 528-29-0	Dinitrobenzene, all isomers		Chemical Intermediate	Major Uses: 1. VET: INSECTICIDE (GRUBICIDE) **PEER REVIEWED** [Budavari, S. (ed.). The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc. 1989. 616] 2. Vet. Bo-Ana is used as an insecticide for control of lice infestations **PEER REVIEWED** [Veterinary Pharmaceuticals and Biologicals, 1982-1983. Edwardsville, Kansas: Veterinary Medicine Publishing Co., 1983. p. 19/1] Major Uses: 1. USED FOR THE SYNTHESIS OF DYESTUFFS, DYESTUFF INTERMEDIATES, EXPLOSIVES, AND CELLULOID PRODUCTION. **PEER REVIEWED** [SITTIG. HDBK TOX & HAZARD CHEM & CARCINOGENS 2ND ED 1985 p.273] 2. 1,2-Dinitrobenzene is used in organic synthesis and as a camphor substitute in cellulose nitrate. /Dinitrobenzene/ **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. 420] 3. 97% of nitrobenzene is used to reduce aniline, which has wide application in the manufacture of dyes, ... & medicines. Nitrobenzenes/ **PEER REVIEWED** [National Research Council. Drinking Water & Health, Volume 4. Washington, DC: National Academy Press, 1981. 222]
113 53-19-0	o,p'-DDD (2,4'-DDD)	MITOTANE, OR 1-CHLORO-2-[2,2-DICHLORO-1-(4-CHLOROPHENY)ETHYL]BENZENE	Medicine	Major Uses: 1. ANTINEOPLASTIC **PEER REVIEWED** [Budavari, S. (ed.). The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 979] 2. Used in palliative treatment of inoperable adrenal cortical carcinoma **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology. 4th ed. Volumes 1: New York, NY: John Wiley and Sons, 1991-Present. p. V5 894]
114 53-96-3	2-Acetylaminofluorene		Research Chemical	Major Uses: 1. Used in the study of liver enzymes and the carcinogenicity and mutagenicity of aromatic amines as a positive control **PEER REVIEWED** [Sittig, M. Handbook of Toxic and Hazardous Chemicals and Carcinogens, 1985. 2nd ed. Park Ridge, NJ: Noyes Data Corporation, 1985. 455] 2. It has been used as a research tool. Acetylaminofluorene is the type of chemical carcinogen most commonly investigated in research laboratories. It is potent and reproducibly carcinogenic. **PEER REVIEWED** [Origins of Human Cancer; Hiatt HH (eds) Book C: Human Risk Assessment Vol #4 p.1687 (1977)]
115 532-27-4	a-Chloroacetophenone	Chemical Mace, OR Tear Gas, OR PHENYLCHLOROMETHYLKETONE	Riot Control	Major Uses: 1. ... ALCOHOL DENATURANT (FORMER USE) Pharmaceutical intermediate; riot control gas **QC REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. 261]
116 534-52-1	4,6-Dinitro-o-cresol		Medical - Dyes - Agricultural	Major Uses: 1. INSECTICIDE, FUNGICIDE, HERBICIDE, DEFOLIANT. /FORMER USE/ **PEER REVIEWED** [Farm Chemicals Handbook 1986. Willoughby, Ohio: Meister Publishing Co., 1986. p. C-90] 2. IN DYESTUFF INDUSTRY. /FORMER USE/ **PEER REVIEWED** [International Labour Office. Encyclopedia of Occupational Health and Safety. Vols. I&II. Geneva, Switzerland: International Labour Office, 1983. 695] 3. AT ONE TIME IT WAS USED MEDICALLY AS A WEIGHT-REDUCING AGENT SIMILAR TO DINITROPHENOL. /FORMER USE/ **PEER REVIEWED** [Grant, W.M. Toxicology of the Eye. 3rd ed. Springfield, IL: Charles C. Thomas Publisher, 1986. 357]

Comment on			Detailed Industry Usage and/or Manufacture Information	
CAS #	Constituent	Alternate Name	Industry	
117 54-11-5	Nicotine	1-METHYL-2-(3-PYRIDYL)PYRROLIDINE	Insecticide - Medication - Tanning	<p>Major Uses:</p> <ol style="list-style-type: none"> 1. INSECTICIDE **PEER REVIEWED** [The Merck Index. 10th ed Rahway, New Jersey: Merck Co., Inc., 1983. 935] 2. MEDICATION **QC REVIEWED** 3. MEDICATION (VET) **QC REVIEWED** 4. IN TANNING **PEER REVIEWED** [National Research Council. Drinking Water & Health Volume 1. Washington, DC: National Academy Press, 1977. 747] 5. Greenhouse fumigant (former use) **PEER REVIEWED** [Farm Chemicals Handbook 87. Willoughby, Ohio: Meister Publishing Co., 1987. p. C-183] <p>Major Uses:</p> <ol style="list-style-type: none"> 1. THERE ARE NO KNOWN COMMERCIAL USES, ALTHOUGH IT WAS EVALUATED EXPTL AS HIGH ENERGY ROCKET FUEL **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V4 146 (1974)] 2. RESEARCH CHEMICAL **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V4 148 (1974)] U.S. Production: 2. (1982) NOT PRODUCED COMMERCIALY IN USA **PEER REVIEWED** [SRI]
118 540-73-8	1,2-Dimethylhydrazine		Research Chemical - Not Used Commercially in the USA	<p>Major Uses:</p> <ol style="list-style-type: none"> 1. AS LAB REAGENT **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. 149] 2. ... NO LONGER USED FOR CHLOROMETHYLATION IN INDUSTRY, BUT IS USED AS THE MONITORING INDICATOR FOR CHLOROMETHYL ETHER, BECAUSE OF ITS GREATER STABILITY IN WORKROOM AIR, AND AS AN INT IN /SYNTHESIS OF/ ANIONIC EXCHANGE STRONG-BASE RESINS OF THE QUATERNARY AMMONIUM TYPE. **PEER REVIEWED** American Conference of Governmental Industrial Hygienists. Documentation of the Threshold Limit Values and Biological Exposure Indices. 5th ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1986. 131] 3. RESEARCH CHEMICAL **PEER REVIEWED** [SRI] 4. This compd is used as an alkylating agent in the manufacture of polymers. **PEER REVIEWED** [Sittig, M. Handbook of Toxic and Hazardous Chemicals and Carcinogens, 1985. 2nd ed. Park Ridge, NJ: Noyes Data Corporation, 1985. 91]
119 542-88-1	Dichloromethyl ether	BIS(CHLOROMETHYL) ETHER; OR 1,1'-DICHLORODIMETHYL ETHER	Lab Reagent - Chemical Intermediate - Research Chemical	<p>Major Uses:</p> <ol style="list-style-type: none"> 1. GASOLINE & LUBRICANT ADDITIVE; ANTIOXIDANT; STABILIZER **PEER REVIEWED** [Budavari, S. (ed.). The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 1049] 2. RESEARCH CHEMICAL **PEER REVIEWED** [SRI]
120 55-18-5	N-Nitrosodiethylamine		Research Chemical - Gasoline & Lubricant Additive	<p>Major Uses:</p> <ol style="list-style-type: none"> 1. INSECTICIDE PRIMARILY FOR MOSQUITOES; INSECTICIDE FOR HOUSEFLIES; FOR INSECT PESTS ON ORNAMENTALS; ROACHES; GRUBS, FLIES, AND LICE ON BEEF CATTLE; DRUG FOR USE AGAINST INTERNAL PARASITES /SRP: WARBLE FLY LARVAE/; VET DRUG FOR CONTROL OF TICKS AND FLEAS ON DOGS; CHEMICAL INTERMEDIATE FOR PHARMACEUTICALS **PEER REVIEWED** [SRI] 2. Control of fruit flies, leafhoppers, leaf miners, leaf-eating larvae, stemborers, bugs, and other insect pests in fruit (including citrus), vines, olives, vegetables, cotton, tea, sugar cane, rice, beet, tobacco, ornamentals, etc. Control of insect pests (flies, mosquitoes, cockroaches, fleas, ants, lice, etc.) in public health situations and animal houses, and control of animal ectoparasites. **PEER REVIEWED** [Hartley, D. and H. Kidd (eds.). The Agrochemicals Handbook. 2nd ed. Lechworth, Herts, England: The Royal Society of Chemistry, 1987. p. A203/AUG 87]
121 55-38-9	Fenthion	O,O-dimethyl-(4-methylmercapto-3-methylphenyl) thionophosphate	Insecticide - Medication	

CAS #	Constituent	Alternate Name	Comment on Industry	Detailed Industry Usage and/or Manufacture Information
122 55-63-0	Nitroglycerin	TRINITROGLYCERIN; OR 1,2,3-PROPANETRIYL NITRATE	Explosives - Rocket Fuel - Medication	3. AS RESIDUAL PREMISE SPRAY (0.75-1.5% CONC) AGAINST FLIES... AS DUST OR POUR-ON, SPRAYS, & EXPTL IN FEED OR BY INJECTION, TICK CONTROL ON HORSES, PARENTERALLY, IN DOGS FOR CONTROL OF FLEAS, TICKS, ASCARIDS, HOOKWORMS... & DEMODECTIC MITES. ONE OR TWO 2-3 ML INTRALESIONAL INJECTIONS OF 10% SOLN APPEARS TO BE VERY EFFECTIVE... FOR HEALING GRANULOMATOUS LESIONS CAUSED BY HABRONEMA SPECIES NEAR EYES OF HORSES. **PEER REVIEWED** [Rossoff, I.S. Handbook of Veterinary Drugs. New York: Springer Publishing Company, 1974, 215] Consumption Patterns: 1. ABOUT 40% APPLIED TO AQUATIC AREAS IN CA AS AN INSECTICIDE FOR CONTROL OF MOSQUITOES. MOST OF THE BALANCE IS BELIEVED TO HAVE BEEN USED FOR MOSQUITO CONTROL ELSEWHERE IN THE US (1974). **PEER REVIEWED** [SRI]
123 555-84-9	1-(5-Nitrofurfurylidene)amino)-2-imidazolidinone		No Use Information Available	Major Uses: 1. High explosive, production of dynamite and other explosives **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987, 830] 2. Combating fires in oil wells **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987, 830] 3. Rocket propellants **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987, 830] 4. MEDICATION **QC REVIEWED** 5. MEDICATION (VET) **QC REVIEWED**
124 55720-99-5	Chlorinated diphenyl oxide	Trichloro diphenyl ether	Chemical Intermediate	Chlorinated Diphenyl Oxide is a white or yellowish waxy solid material or liquid. It is used to make other chemicals and in dry cleaning detergents. *** New Jersey Hazardous Substance Fact Sheet
125 56-38-2	Parathion	O,O-diethyl-O-(4-nitrophenyl) phosphorothioate	Insecticide	Major Uses: 1. INSECTICIDE e.g., FOR WHEAT & NUTS; ACARICIDE **PEER REVIEWED** [SRI] Consumption Patterns: 1. INSECTICIDE FOR WHEAT, 49%; DECIDUOUS FRUITS & NUTS, 14%; VEGETABLES, 14%; SORGHUM, 11%; COTTON, 4%; CITRUS, 1%; OTHER FIELD CROPS e.g., BARLEY & OATS, 7% (1982 AGRICULTURAL CROP USE) **PEER REVIEWED** [SRI]
126 563-12-2	Ethion	O,O,O',O'-Tetraethyl S,S'-methylenebisphosphorothioate	Insecticide - Medication	Major Uses: 1. INSECTICIDE AND ACARICIDE FOR CITRUS FRUIT, APPLES, NUTS, OTHER FRUIT, & COTTON **PEER REVIEWED** [SRI] 2. MEDICATION (VET) **QC REVIEWED** Consumption Patterns: 1. 70% AS AN INSECTICIDE & ACARICIDE ON CITRUS FRUIT; 30% AS AN INSECTICIDE & ACARICIDE ON OTHER FRUIT, NUTS, & COTTON (EST) (1974) **PEER REVIEWED** [SRI] 2. Applied to melons, 50.1%; Tree fruits, 2.6%; Citrus, 12.8%; Grapes, 4.5%; Other vegetables, nuts, and fruits account for remainder (1984) /California use, calculated from table/ **PEER REVIEWED** [California State Dept Food and Agriculture, Pesticide Use Report Annual 1984 p.48]

CAS #	Constituent	Alternate Name	Industry	Comment on Industry	Detailed Industry Usage and/or Manufacture Information
127 57-24-9	Stychnine		Pest Control - Poison - Medicine		Major Uses: 1. FOR DESTROYING RODENTS & PREDATORY ANIMALS & FOR TRAPPING FUR-BEARING ANIMALS **PEER REVIEWED** [The Merck Index 10th ed. Rahway, New Jersey: Merck Co., Inc., 1983. 1288] 2. MEDICATION **QC REVIEWED** 3. MEDICATION (VET) **QC REVIEWED** Consumption Patterns: 1. Rodent control in fruit production, 11.4%; Forage crops production, 27%; many agricultural and non-agricultural uses account for remainder (1984) /California use, calculated from label/ **PEER REVIEWED** [California State Dept Food and Agriculture. Pesticide Use Report Annual 1984 pp 92-93]
128 57-47-6	Physostigmine	(3aS-cis)-1,2,3,3a,8,8a-Hexahydro-1,3a,8-timethyrrholo(2,3-b)indol-5-ol methylcarbamate	Medication		Major Uses: 1. MEDICATION **QC REVIEWED** 2. MEDICATION (VET) **QC REVIEWED**
129 57-64-7	Physostigmine salicylate		No Use Information Available		
130 59-87-0	Nitrofurazone	2[(5-Nitro-2-furanyl)methylene]-hydrazinecarboxamide	Antibacterial Agent - Medication		Major Uses: 1. ANTIBACTERIAL AGENT **PEER REVIEWED** [SRI] 2. SENSITIZER & FOOD ADDITIVE: EXPTL CARCINOGEN **PEER REVIEWED** [Sax, N.I. Dangerous Properties of Industrial Materials. 5th ed. New York: Van Nostrand Reinhold, 1979. 697] 3. ANTIBACTERIAL AGENT FOR BURNS AND SKIN GRAFTS; ANTIBACTERIAL AGENT IN VETERINARY MEDICINE **PEER REVIEWED** [SRI] 4. Medication: Anti-infective agent **PEER REVIEWED** [Hussar, D.A. (ed.), Model's Drugs in Current Use and New Drugs. 38th ed. New York, NY: Springer Publishing Co., 1992. 116]
131 59355-75-8	Methyl acetylene-propadiene mixture (MAPP)		No Use Information Available		
132 59689-28-0	Thiodicarb	N,N'-(Thiobis((methylimino)carbonyloxy)) bisethanimidothioic acid dimethyl ester	Agricultural Chemical		Major Uses: 1. FOR DETERMINATION OF FREE HYDROCHLORIC ACID IN GASTRIC JUICE, SPOT TEST IDENTIFICATION OF PEROXIDIZED FATS; PH INDICATOR (RED 2.9, YELLOW 4.0). **PEER REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 510] Consumption Patterns: 1. NOT USED COMMERCIALY IN USA **PEER REVIEWED** [SRI]
133 60-11-7	p-Dimethylaminoazobenzene	BRILLIANT FAST SPIRIT YELLOW	Indicator - Not Used Commercially in USA		Major Uses: 1. CHEM INT FOR TOLUENE-2,6-DIAMINE, A TOLUENE DIISOCYANATE INT, GELATINIZING & WATERPROOFING AGENT IN EXPLOSIVES **PEER REVIEWED** [SRI] 2. Used in the synthesis of TNT, urethane polymers, flexible and rigid foams, surface coatings and dyes **PEER REVIEWED** [Verschuere, K. Handbook of Environmental Data of Organic Chemicals. 2nd ed. New York, NY: Van Nostrand Reinhold Co., 1983. 574]
134 608-20-2	2,6-Dinitrotoluene	2-METHYL-1,3-DINITRO-BENZENE	Chemical Intermediate		Major Uses: 1. CHEM INT FOR PENTACHLORONITROBENZENE **PEER REVIEWED** [SRI] Consumption Patterns: 1. ESSENTIALLY 100% AS A CHEM INT FOR PENTACHLORONITROBENZENE**PEER REVIEWED** [SRI]
135 608-93-5	Pentachlorobenzene		Chemical Intermediate		Major Uses: 1. CHEM INT FOR PENTACHLORONITROBENZENE **PEER REVIEWED** [SRI]
136 61-62-5	Amitrole	2-AMINO-1,3,4-TRIAZOLE	Herbicide		Major Uses: 1. Nonselective systemic herbicide. Noncrophand for annual grasses, broadleaf weeds, perennial broadleaf weed, poison ivy, some aquatic weeds in marshes, drainage ditches. **PEER REVIEWED** [Farm Chemicals Handbook 1991. Willoughby, OH: Meister, 1991. p. C 20] Consumption Patterns: 1. HERBICIDE FOR INDUSTRIAL/COMMERCIAL USES, 86%, AQUATIC USES, 14% (1982) **PEER REVIEWED** [SRI]

CAS #		Constituent	Alternate Name	Comment on Industry	Detailed Industry Usage and/or Manufacture Information
137	615-53-2	N-Nitroso-N-methylurethane		Research Chemical - Not Used Commercially in the USA	Major Uses: 1. RESEARCH CHEMICAL; LABORATORY PREPARATION OF DIAZOMETHANE (FORMER USE) **PEER REVIEWED** [SRI] 2. ... N-nitroso compounds are produced primarily as research chemicals and not for commercial purposes. /N-Nitroso compounds/ **PEER REVIEWED** [USEPA; Ambient Water Quality Criteria Doc: Nitrosamines p.A-1 (1980) EPA-440/5-80-0084]
138	62-44-2	Phenacetin	4-ETHOXYACETANILIDE	Additive In Commercial Products - Medication	Major Uses: 1. AS STABILIZER FOR HYDROGEN PEROXIDE IN HAIR BLEACHING PREPN. **PEER REVIEWED** [ARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V13 143] 2. MEDICATION (VET) **QC REVIEWED** 3. MEDICATION **QC REVIEWED**
139	62-73-7	Dichlorvas	2,2-Dichloroethyl dimethyl phosphate	Pesticide	Major Uses: 1. CHLORINATED ORGANIC PHOSPHATE INSECTICIDE WITH APPRECIABLE VAPOR PRESSURE. INCORPORATED INTO PLASTIC STRIPS IT SLOWLY RELEASES ... VAPOR. ... HAS BEEN APPROVED FOR USE IN DISINFECTION OF ... AIRCRAFT. **PEER REVIEWED** [Gosselin, R.E., R.P. Smith, H.C. Hodge. Clinical Toxicology of Commercial Products. 5th ed. Baltimore: Williams and Wilkins, 1984. p. II-291] 3. MEDICATION (VET) **QC REVIEWED** 4. Controls household, public health, stored product insects. Controls mushrooms, flies, aphids, spider mites, caterpillars, thrips, white flies in glasshouse crops, outdoor fruit, vegetables. **PEER REVIEWED** [Farm Chemicals Handbook 1991. Willoughby, OH: Meister, 1991. p. C-96] Consumption Patterns: 1. ESSENTIALLY 100% AS A PESTICIDE **PEER REVIEWED** [SRI]
140	62-74-8	Fluoroacetic acid, sodium salt (Ftalol)	SODIUM FLUOROACETATE	Pest Control - Poison	Major Uses: 1. FIELD RODENTICIDE **PEER REVIEWED** [Farm Chemicals Handbook 1989. Willoughby, OH: Meister Publishing Co., 1989. p. C-264] 2. Predator elimination (coyotes), rodenticide. **PEER REVIEWED** [Sax N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. 1060]
141	63-25-2	Carbaryl	N-METHYL-1-NAPHTHYL CARBAMATE	Insecticide - Acaricide - Molluscicide - Medication (vet)	Major Uses: 1. INSECTICIDE FOR CORN, ALFALFA, LIVESTOCK, POULTRY, OTHER NON-AGRICULTURAL USES (e.g., HOME USE), GARDENS, LAWNS, & FOR COMMERCIAL/INDUSTRIAL USE; ACARICIDE & MOLLUSCICIDE **QC REVIEWED** [SRI] 2. Medication (Vet): Parasiticide (external use) **QC REVIEWED** [The Merck Index. 10th ed. Rahway, New Jersey: Merck Co., Inc., 1983. 247] 5. Use in medical facilities, & in sewage treatment plants **QC REVIEWED** [Mackison, F. W., R. S. Stitcott, and L.J. Partridge, Jr. (eds.). NIOSHOSH - Occupational Health Guidelines for Chemical Hazards. DHHS (NIOSH) Publication No. 81-123 (3 VOLS). Washington, DC: U.S. Government Printing Office, Jan. 1981. 3] 6. Carbaryl has been used to treat oyster grounds and has become a controversial issue in the Pacific northwest. Oyster growers maintain carbaryl is needed to kill two types of burrowing shrimp which render Pacific oyster beds soft and silty, preventing oyster culture. **QC REVIEWED** [Buchanan DV et al; Univ of Alaska Dungeness Crab Biol & Mgmt Sym p. 401-7 (1984)] Consumption Patterns: 1. INSECTICIDE FOR CORN, 14%; VEGETABLES, 13%; SOYBEANS, 11%; COTTON, 4%; DECIDUOUS FRUITS & NUTS, 4%; TOBACCO, 4%; SORGHUM, 2%; ALFALFA, 1%; CITRUS, 1%; OTHER FIELD CROPS, 17%; FORESTS, 2%; LIVESTOCK & POULTRY, 1%; OTHER NON-AGRICULTURAL USES, 28% (1982) **QC REVIEWED** [SRI] 2. 1.5 million lbs on soybeans, 0.2 million lbs on corn, 0.2 million lbs on peanuts, 0.1 million lbs on tobacco, & 0.1 million lbs on other small grains (1982) **QC REVIEWED** [DCE/NCI; Monograph On Human Exposure To Chemicals In The Workplace: Carbaryl p.2-3 (1985)]

Comment on			Detailed Industry Usage and/or Manufacture Information	
CAS #	Constituent	Alternate Name	Industry	
142 636-21-5	o-Toluidine hydrochloride	2-METHYLANILINE HYDROCHLORIDE	Chemical Intermediate For Dyes	Major Uses: 1. INTERMEDIATE IN MANUFACTURE OF DYES **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V16 353] Consumption Patterns: 1. ESSENTIALLY 100% AS A CHEM INT FOR DYES. **PEER REVIEWED** [SRI] Propylene Glycol Dinitrate is a colorless or red-orange colored liquid with a disagreeable odor. It is used as a torpedo propellant (in Otto Fuel II) and in explosives. *** New Jersey Hazardous Substance Fact Sheet
143 6423-43-4	Propylene glycol dinitrate		Explosive	Major Uses: 1. RESEARCH CHEMICAL **PEER REVIEWED** [SRI] 2. TESTED CLINICALLY AS CANCER CHEMOTHERAPEUTIC AGENT **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V7 254 (1974)] 3. Experimentally as mutagen **PEER REVIEWED** [Budavari, S (ed.). The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 958] Consumption Patterns: 1. ESSENTIALLY 100% AS A RESEARCH CHEMICAL **PEER REVIEWED** [SRI] SUBSTANCE INVESTIGATED AS: Tumorigen, Drug, Mutagen, Reproductive Effector, Human Data
144 66-27-3	Methyl methanesulfonate		Research Chemical	Major Uses: 1. PROCESSING SOLVENT FOR AROMATIC POLYAMIDE FIBER **PEER REVIEWED** [SRI] 2. DE-ICING ADDITIVE FOR JET FUELS; /EXPERIMENTAL/ CHEMOSTERILANT FOR A NUMBER OF INSECT PESTS; AS A CHEMICAL MUTAGEN **PEER REVIEWED** [Budavari, S. (ed.). The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 734] 3. AS A SOLVENT FOR POLYMERS, AS A SELECTIVE SOLVENT FOR GASES, AS A POLYMERIZATION CATALYST, AS A STABILIZER AGAINST THERMAL DEGRADATION IN POLYSTYRENE, AS AN ADDITIVE TO POLYVINYL & POLYOLEFIN RESINS TO PROTECT AGAINST DEGRADATION BY UV LIGHT, & AS A SOLVENT IN ORG & ORGANOMETALLIC REACTIONS IN RESEARCH LAB **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V15 213 (1977)]
145 67-45-8	Furazolidone	2-Oxazolidinone, 3-((5-nitrofurfurylidene)amino)-	No Use Information Available	Major Uses: 1. FOR LABORATORY SYNTHESIS OF DIAZOMETHANE (FORMER USE), FOR ITS MUTAGENIC EFFECTS ON VARIOUS PLANTS **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V17 228 (1978)] 2. HAS BEEN STUDIED AS ANTINEOPLASTIC AGENT **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V17 228 (1978)] 3. MEDICATION **QC REVIEWED**
146 680-31-9	Hexamethylphosphoramide		Solvent - Industrial Additive - Chemical Intermediate	Major Uses: 1. FOR LABORATORY SYNTHESIS OF DIAZOMETHANE (FORMER USE), FOR ITS MUTAGENIC EFFECTS ON VARIOUS PLANTS **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V17 228 (1978)] 2. HAS BEEN STUDIED AS ANTINEOPLASTIC AGENT **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V17 228 (1978)] 3. MEDICATION **QC REVIEWED**
147 684-93-5	N-Nitroso-N-methylurea		Chemical Intermediate - Medicine	Major Uses: 1. FOR LABORATORY SYNTHESIS OF DIAZOMETHANE (FORMER USE), FOR ITS MUTAGENIC EFFECTS ON VARIOUS PLANTS **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V17 228 (1978)] 2. HAS BEEN STUDIED AS ANTINEOPLASTIC AGENT **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V17 228 (1978)] 3. MEDICATION **QC REVIEWED**
148 68476-85-7	Liquidified petroleum gas		Fuel Propellant - Chemical Intermediate	Major Uses: 1. FOR LABORATORY SYNTHESIS OF DIAZOMETHANE (FORMER USE), FOR ITS MUTAGENIC EFFECTS ON VARIOUS PLANTS **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V17 228 (1978)] 2. HAS BEEN STUDIED AS ANTINEOPLASTIC AGENT **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V17 228 (1978)] 3. MEDICATION **QC REVIEWED**

CAS #	Constituent	Alternate Name	Comment on Industry	Detailed Industry Usage and/or Manufacture Information
149 6923-22-4	Monocrotophos	Dimethyl-1-methyl-3-(methylamino)-3-oxo-1-propenyl phosphate	Insecticide	<p>Major Uses:</p> <p>1. MONOCROTOPHOS IS A FAST-ACTING INSECTICIDE WITH BOTH SYSTEMIC & CONTACT ACTION, USED AGAINST A WIDE RANGE OF PESTS... ON VARIETY OF CROPS. **PEER REVIEWED** [Worthing, C.R. and S.B. Walker (eds.). The Pesticide Manual - A World Compendium. 8th ed. Thornton Heath, UK: The British Crop Protection Council, 1987. 581]</p> <p>2. Control of a broad spectrum of pests, including sucking, chewing, and boring insects, and spider mites on cotton, deciduous fruits, citrus fruits, vines, olives, hops, rice, maize, sorghum, coffee, sugar cane, sugar beet, groundnuts, potatoes, tomatoes, soya beans, vegetables, ornamentals, and tobacco. **PEER REVIEWED** [Hartley, D. and H. Kidd (eds.). The Agrochemicals Handbook. 2nd ed. Lechworth, Herts, England: The Royal Society of Chemistry, 1987. p. A284/AUG 87]</p> <p>Consumption Patterns:</p> <p>1. 40% AS AN INSECTICIDE & ACARICIDE ON COTTON; 30% AS AN INSECTICIDE & ACARICIDE ON TOBACCO; AND 30% AS AN INSECTICIDE & ACARICIDE ON OTHER FIELD CROPS & VEGETABLES (1974). **PEER REVIEWED** [SRI]</p>
150 886-28-6	Dichlorophenylarsine	PHENYL-DICHLOROARSINE	Solvent - Feed Additive - Chemical Intermediate	<p>Major Uses:</p> <p>1. LACRYMATOR POISON GAS; SOLVENT FOR DIPHENYLCYANOARSINE **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. 901]</p> <p>2. It is used as a ... feed additive. [Phenylarsonic compounds/ **PEER REVIEWED** [National Research Council. Drinking Water & Health Volume 1. Washington, DC: National Academy Press, 1977. 338]</p>
151 74-88-4	Iodomethane	METHYL IODIDE	Chemical Intermediate - Lab Reagent - Fire Extinguishers	<p>Major Uses:</p> <p>1. IN METHYLATIONS; IN MICROSCOPY BECAUSE OF HIGH REFRACTIVE INDEX; AS IMBEDDING MATERIAL FOR EXAMINING DIATOMS; IN TESTING FOR PYRIDINE. **QC REVIEWED** [Budavari, S. (ed.). The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 957]</p> <p>2. ... USED AS METHYLATING AGENT IN PREP OF PHARMACEUTICAL INTERMEDIATES ... **PEER REVIEWED** [ARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V15 247 (1977)]</p> <p>3. CHEM INTERMEDIATE FOR METHYLAMINES & QUATERNARY AMMONIUM IODIDES **QC REVIEWED** [SRI]</p> <p>4. CHEM INTERMEDIATE FOR QUATERNARY PHOSPHONIUM IODIDES **QC REVIEWED** [SRI]</p> <p>5. CHEM INTERMEDIATE FOR ORGANOMETALLICS, e.g., METHYL MERCURIC IODIDE **QC REVIEWED** [SRI]</p> <p>6. ... Used as a fire extinguisher ... **PEER REVIEWED** [Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982. 3446]</p> <p>7. Organic synthesis ... **QC REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. 772]</p>
152 74-83-1	Thiomethanol	METHYL MERCAPTAN; OR METHYL SULFHYDRATE	Catalyst - Chemical Intermediate - Indicator - Food Additive	<p>Major Uses:</p> <p>1. As a gas odorant to serve as a warning property for odorless but hazardous gases. **PEER REVIEWED** [Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982. 2066]</p> <p>3. Catalyst **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. 752]</p> <p>4. Intermediate in manufacturing of jet fuels ... fungicides, /and/ plastics ... **PEER REVIEWED** [Budavari, S. (ed.). The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 936]</p> <p>5. Synthetic flavoring substances and adjuncts ... **PEER REVIEWED** [Furia, T.E. (ed.). CRC Handbook of Food Additives. 2nd ed. Volume 2. Boca Raton, Florida: CRC Press, Inc., 1980. 288]</p>

Comment on			Detailed Industry Usage and/or Manufacture Information	
CAS #	Constituent	Alternate Name	Industry	
153 74-95-3	Dibromomethane		Chemical Intermediate - Solvent - Fire Extinguishers - Gage Fluid	Major Uses: 1. IN ORGANIC SYNTHESIS **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.) Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987. 788] 2. SOLVENT FOR FATS, WAXES, & RESINS; HEAVY LIQUID IN SOLID SEPARATIONS; INGREDIENT OF FIRE EXTINGUISHING FLUIDS; GAGE FLUID **PEER REVIEWED** [SRI]
154 75-47-8	Iodoform	TRIIODOMETHANE	Chemical Intermediate - Medication - Industry Additive	Major Uses: 1. MEDICATION (VET) **QC REVIEWED** 2. MEDICATION **QC REVIEWED** 3. CHEMICAL INTERMEDIATE **PEER REVIEWED** [Clayton, G. D. and F. E. Clayton (eds.) Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology, 3rd ed. New York: John Wiley Sons, 1981-1982. 3471] 4. PHOTSENSITIVE AGENT FOR DEFORMATION RECORDING MEDIA **PEER REVIEWED** [SRI] 5. Iodoform is used as a component of adhesives and as a polymerization control agent **PEER REVIEWED** [21 CFR 175.105 (4/1/86)]
155 759-73-9	N-Nitroso-N-ethylurea		Research Chemical	Major Uses: 1. RESEARCH CHEMICAL: LABORATORY PREPARATION OF DIAZOETHANE (FORMER USE). **PEER REVIEWED** [SRI] 2. Experimentally as mutagen, ethylating agent. **PEER REVIEWED** [Budavari, S. (ed.) The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 803] 3. HAS BEEN STUDIED FOR PROMOTING GROWTH OF VARIOUS PLANTS. **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V17 192 (1978)]
156 759-94-4	EPTC	EPTAM; OR Dipropylcarbamothioic acid S-ethyl ester	Herbicide	Major Uses: 1. SELECTIVE HERBICIDE FOR CONTROL OF A VARIETY OF WEEDS **PEER REVIEWED** [SRI] 2. For annual grassy weeds, perennial weeds, some broadleaf weeds in beans, forage, legumes, potatoes, corn, sweet potatoes in some areas. **PEER REVIEWED** [Farm Chemicals Handbook 1992. Willoughby, OH: Meister Publishing Co., 1992. p. C-138] Consumption Patterns: 1. HERBICIDE, OF WHICH APPROXIMATELY 59% IS USED ON CORN. 31% ON VEGETABLES, 10% ON SUGAR BEETS (1975) **PEER REVIEWED** [SRI]
157 76-06-2	Chloropicrin	NITROTRICHLOROMETHANE	Tear Gas - Agricultural Fumigant - Chemical Intermediate	Major Uses: 1. AS RODENTICIDE **PEER REVIEWED** [International Labour Office. Encyclopedia of Occupational Health and Safety. Volumes I and II. New York: McGraw-Hill Book Co., 1971. 294] 2. TEAR GAS **PEER REVIEWED** [The Merck Index. 10th ed. Rahway, New Jersey: Merck Co., Inc., 1983. 303] 3. IT MAY BE INJECTED IN SOIL IN COMBINATION WITH XYLENE, CARBON TETRACHLORIDE, OR ETHYLENE DICHLORIDE TO HELP DISTRIBUTE GAS. **PEER REVIEWED** [Osol, A. and J.E. Hoover, et al. (eds.) Remington's Pharmaceutical Sciences, 15th ed. Easton, Pennsylvania: Mack Publishing Co., 1975. 1197] 4. FUMIGANT FOR NON-DECIDUOUS FRUITS, TOMATOES, & TOBACCO **PEER REVIEWED** [SRI] 5. Disinfecting cereals and grains; in synthesis, esp in manuf of methyl violet fumigant; soil insecticide; war gas **PEER REVIEWED** [Budavari, S. (ed.) The Merck Index- Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 333] Consumption Patterns: 1. FUMIGANT FOR NON-DECIDUOUS FRUITS, 44%; TOMATOES, 14%; TOBACCO, 6%; POTATOES, 3%; OTHER FIELD CROPS-e.g., COTTON, PEANUTS, SUGAR BEETS, & DECIDUOUS FRUITS & NUTS, 8%; OTHER VEGETABLES, 5%; FLORAL CROPS, LAWNS, TURF, & ORNAMENTALS, 11%; COMMODITIES, SPACE, & STRUCTURAL PEST CONTROL, 3%; MISCELLANEOUS SOIL FUMIGATION, 5% (1982) **PEER REVIEWED** [SRI]

Comment on			
CAS #	Constituent	Alternate Name	Industry
158 76-22-2	Camphor, synthetic	1,7,7-TRIMETHYLBICYCLO(2.2.1)-2-HEPTANONE	Chemical Intermediate - Cosmetics - Food Additive - Medication - Insect Repellent - Explosives - Varnishes
Detailed Industry Usage and/or Manufacture Information			
Major Uses: 1. USED IN MFR OF PLASTICS; AS PLASTICIZER FOR CELLULOSE ESTERS & ETHERS; IN LACQUERS & VARNISHES; IN EXPLOSIVES; IN PYROTECHNICS; IN EMBALMING FLUID; IN MFR OF CYMENE; IN CAMPHORATED PARACHLOROPHENOL, PAREGORIC, & FLEXIBLE COLLOIDION **QC REVIEWED** [The Merck Index, 10th ed. Rahway, New Jersey: Merck Co., Inc., 1983, 238] 2. MEDICATION **QC REVIEWED** 3. MEDICATION (VET) **QC REVIEWED** 4. ISOLATION OF CINEOL, SAFROLE, LINALOOL, & IN PERFUMERY/CAMPOR OIL/ **PEER REVIEWED** [Fenaroli's Handbook of Flavor Ingredients. Volume 1. Edited, translated, and revised by T.E. Furia and N. Bellanca. 2nd ed. Cleveland: The Chemical Rubber Co., 1975, 303] 5. INSECT REPELLANT (PARTICULARLY TO CONTROL CLOTHES MOTHS); COSMETIC INGREDIENT (DEPILATORIES, DEODORANT); COUNTER-IRRITANT **QC REVIEWED** [SRI] 6. IN FLAVORS JAPANESE WHITE CAMPOR OIL (FEMA NO 2231) HAS BEEN REPORTED USED IN ... NON-ALCOHOLIC BEVERAGES 5.4 PPM, BAKED GOODS 1.6-48 PPM, & CONDIMENTS 15 PPM. /CAMPOR OIL**PEER REVIEWED** [Fenaroli's Handbook of Flavor Ingredients. Volume 1. Edited, translated, and revised by T.E. Furia and N. Bellanca. 2nd ed. Cleveland: The Chemical Rubber Co., 1975, 303]			
159 764-41-0	1,4-Dichloro-2-butene		Chemical Intermediate
Major Uses: 1. CHEM INT FOR 3,4-DICHLORO-1-BUTENE (A CHLOROPRENE INT), ADIPONITRILE (A HEXAMETHYLENEDIAMINE INT) & CHEM INT FOR 1,4-BUTANEDIOL (NON-US USE), **PEER REVIEWED** [SRI] 2. 1,4-Dichloro-2-butene is used for resins in oil-in-water emulsions. **PEER REVIEWED** [Dialog Inform Serv, Water Resources Abstracts (1985)] Consumption Patterns: 1. ESSENTIALLY 100% AS A CHEM INT FOR 3,4-DICHLORO-1-BUTENE & ADIPONITRILE **PEER REVIEWED** [SRI]			
160 765-34-4	Glycidylaldehyde	2,3-EPOXY-1-PROPANAL	Chemical Intermediate for Tanning Processes - Research Chemical - Medication
Major Uses: 1. CROSS-LINKING AGENT FOR FINISHING OF WOOL, FOR OIL TANNING & FAT-LIQUORING OF LEATHER & SURGICAL SUTURES; FOR PROTEIN INSOLUBILIZATION; HAS BEEN TESTED AS VAPOR-PHASE DISINFECTANT. **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V11 176 (1976)] 2. RESEARCH CHEMICAL **PEER REVIEWED** [SRI] 3. MEDICATION (VET) **QC REVIEWED** U.S. Production: 1. (1982) NOT PRODUCED COMMERCIALY IN USA **PEER REVIEWED** [SRI]			
161 77-78-1	Dimethyl sulfate		Chemical Intermediate - Solvent
Major Uses: 1. FORMERLY AS WAR GAS; MANUFACTURE OF DYES, COLORS, PERFUMES; SOLVENT FOR SEPARATION OF MINERAL OILS; ANALYSIS OF AUTO FLUIDS. **PEER REVIEWED** [Browning, E. Toxicity and Metabolism of Industrial Solvents. New York: American Elsevier, 1965, 713] 2. Methylating and sulfating agent for agricultural chemicals, fabric softeners, dyes, synthetic drugs, and various intermediates. **PEER REVIEWED** [Kuney, J.H. and J.N. Nullican (eds.) encyclopedia. Washington, DC: American Chemical Society, 1988, 71] Consumption Patterns: 1. ESSENTIALLY 100% AS A CHEM INTERMEDIATE. **PEER REVIEWED** [SRI]			
162 7782-41-4	Fluorine		Chemical Intermediate
Major Uses: 1. MFR FLUOROCHEMICALS & PLASTICS; ROCKET PROPELLANT **PEER REVIEWED** [Weast, R.C. (ed.) Handbook of Chemistry and Physics. 69th ed. Boca Raton, FL: CRC Press Inc., 988-1989. p. B-17] 2. CHEM INTERMED SULFUR HEXAFLUORIDE, CHLORINE TRIFLUORIDE, BROMINE TRIFLUORIDE URANIUM HEXAFLUORIDE, MOLYBDENUM HEXAFLUORIDE, PERCHLORYL FLUORIDE, OXYGEN DIFLUORIDE **PEER REVIEWED** [SRI]			

Comment on			Detailed Industry Usage and/or Manufacture Information	
CAS #	Constituent	Alternate Name	Industry	Major Uses:
163 7786-34-7	Mevinphos	ALPHA-2-CARBOMETHOXY-1-METHYL VINYL DIMETHYL PHOSPHATE	Agriculture	1. CONTROLS APHIDS, MITES, GRASSHOPPERS, CUTWORMS, LEAFHOPPERS, CATERPILLARS, & MANY OTHER INSECTS ON BROAD RANGE OF FIELD, FORAGE, VEGETABLE & FRUIT CROPS. DISSIPATES QUICKLY; APPLICATION BEFORE HARVEST INTERVAL 1-10 DAYS. DEPENDING ON CROP & DOSAGE. **PEER REVIEWED** [Farm Chemicals Handbook 1994, Willoughby, OH: Meister, 1994, p. C-239] Consumption Patterns: 1. ABOUT 60% USED ON VEGETABLES; THE BALANCE ON ALFALFA & DECIDUOUS FRUITS & NUTS (1974) **PEER REVIEWED** [SRI] 2. Lettuce, 30.4%; All vegetables, 73%; Cereals, 1.3%; Fruits, 4.7%; Non-cereal forage and feed crops, 20.8% (1984) California use, calculated from table! **PEER REVIEWED** [California State Dept Food and Agriculture, Pesticide Use Report Annual 1984 pp.70-71]
184 78-30-8	Triorthocresyl phosphate	TRI 2-METHYLPHENYL PHOSPHATE	Chemical Intermediate - Solvent - Industrial Additive - Flame Retardant	Major Uses: 1. FLAME RETARDANT AND PLASTICIZER, IN HOT EXTRUSION MOLDING, BULK FORMING OF PLASTICIZED POLYVINYL CHLORIDE, IN COATINGS AND ADHESIVES, AS A GASOLINE ADDITIVE TO CONTROL PRE-IGNITION, IN HYDROLIC FLUIDS, AS A HEAT EXCHANGE MEDIUM, ... AS A WATER PROOFING AGENT, AS A COMPONENT OF ADHESIVES FOR AIR FILTER MEDIA, IN A SOLVENT MIXTURE FOR VARIOUS RESINS, AS AN EXTRACTION SOLVENT, AND AS AN INTERMEDIATE IN THE SYNTHESIS OF PHARMACEUTICALS. **PEER REVIEWED** [American Conference of Governmental Industrial Hygienists, Documentation of the Threshold Limit Values and Biological Exposure Indices, 5th ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1986, 611] 3. As additive to extreme pressure lubricants; as a non-flammable fluid in hydraulic systems; as plasticizer in lacquers and varnishes; as plasticizer in vinyl plastics manufacture; as flame retardant; as lead scavenger in gasoline; and as solvent for nitrocellulose, in cellulosic molding compositions. **PEER REVIEWED** [Snyder, R. (ed.) Ethyl Browning's Toxicity and Metabolism of Industrial Solvents, 2nd ed. Volume II: Nitrogen and Phosphorus Solvents. Amsterdam: New York-Oxford: Elsevier, 1990, 462]
165 78-34-2	Dioxathion	2,3-P-DIOXANE S,S-BIS(O,O-DIETHYLPHOSPHORODITHIOATE)	Acaricide - Insecticide	Major Uses: 3. Control of insects and mites on apples, pears, peaches, strawberries, grapes, quince, walnuts, and ornamentals. **PEER REVIEWED** [Hartley, D. and H. Kidd (eds.), The Agrochemicals Handbook. Old Woking, Surrey, United Kingdom: Royal Society of Chemistry/Unwin Brothers Ltd., 1983, p. A163/OCT83] 4. Control by spray or dip of horn fly, lice, sheep ked, and ticks on cattle, goats, pigs, and sheep. **PEER REVIEWED** [Hartley, D. and H. Kidd (eds.), The Agrochemicals Handbook. Old Woking, Surrey, United Kingdom: Royal Society of Chemistry/Unwin Brothers Ltd., 1983, p. A163/OCT83] Consumption Patterns: 1. ABOUT 65% AS AN ACARICIDE ON CITRUS FRUIT; ABOUT 25% AS AN INSECTICIDE ON LIVESTOCK; AND ABOUT 10% AS AN ACARICIDE ON DECIDUOUS FRUITS AND NUTS (1974) **PEER REVIEWED** [SRI]
166 7803-51-2	Phosphine	PHOSPHORUS TRIHYDRIDE	Chemical Intermediate - Insecticide	Major Uses: 1. INSECTICIDE USED FOR FUMIGATION OF ANIMAL FEED, LEAF STORED TOBACCO, BOX CARS, & USED FOR RODENT CONTROL. **PEER REVIEWED** [Spencer, E. Y. Guide to the Chemicals Used in Crop Protection, 7th ed. Publication 1093, Research Institute, Agriculture Canada, Ottawa, Canada: Information Canada, 1982, 458] 2. Organic preparations, phosphonium halides, doping agent for n-type semiconductors, polymerization initiator, condensation catalyst. **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987, 909] 3. As an intermediate for the preparation of several flame retardants. **PEER REVIEWED** [Toy ADF, Walsh EN, Phosphorus Chemistry in Everyday Living 2nd ed p.216 (1987)]
187 789-02-6	o,p'-DDT (2,4'-DDT)	1,1,1-Trichloro-2-(p-chlorophenyl)-2-(p-chlorophenyl)ethane	No Use Information Available	

Comment on			
CAS #	Constituent	Alternate Name	Industry
168 79-06-1	Acrylamide	PROPENOIC ACID AMIDE	Water Treatment - Chemical Intermediate - Genetic Engineering
Detailed Industry Usage and/or Manufacture Information			
<p>Major Uses:</p> <p>1. REACTIVE MONOMER & INTERMEDIATE IN PRODN OF ORGANIC CHEMICALS; POLYMER OR COPOLYMER **PEER REVIEWED** [American Conference of Governmental Industrial Hygienists. Documentation of the Threshold Limit Values and Biological Exposure Indices. 5th ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1986. 12]</p> <p>2. SYNTHESIS OF DYES; CROSS-LINKING AGENT; ADHESIVES, PAPER & TEXTILE SIZES; IN SOIL CONDITIONING AGENTS; FLOCCULANTS; SEWAGE & WASTE TREATMENT; IN ORE PROCESSING, PERMANENT PRESS FABRICS **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. 18]</p> <p>3. Used in the construction of dam foundations and tunnels. **PEER REVIEWED** [WHO; Environ Health Criteria 48: Acrylamide p.9 (1985)]</p> <p>4. Used in electrophoresis, molecular biology, genetic engineering. **PEER REVIEWED** [Kuney, J.H. (ed.). CHEMOCYCLOPEDIA 90. Washington, DC: American Chemical Society, 1990. 43]</p> <p>Consumption Patterns:</p> <p>1. 40% FOR POLYACRYLAMIDES USED IN THE WATER TREATMENT INDUSTRY; 20% FOR POLYACRYLAMIDES USED IN THE PULP AND PAPER INDUSTRY; 40% FOR POLYACRYLAMIDES USED IN MISC APPLICATIONS INCL DRILLING MUD ADDITIVES, TEXTILE TREATMENT, SURFACE COATINGS (1973) **PEER REVIEWED** [SRI]</p> <p>2. 45% FOR WATER TREATMENT, 20% FOR OIL DRILLING, 20% FOR PULP AND PAPER, 10% FOR MINERAL PROCESSING, 5% OTHER (1984) **PEER REVIEWED** [CHEMICAL PROFILE: ACRYLAMIDE (1985)]</p> <p>3. Water treatment, 45%; oil drilling, 20%; pulp and paper, 20%; mineral processing, 10%; other, 5%. **PEER REVIEWED** [Kavaler AR; Chemical Marketing Reporter 233 (2): 46 (1987)]</p> <p>Major Uses:</p> <p>1. CHEM INT FOR PARASYMPATHOMIMETIC AGENTS; CHEM INT FOR PESTICIDES. /FORMER USE/ **UNREVIEWED** [SRI]</p> <p>2. ... Chemical intermediate in the production of ... rocket fuel. /Former use/ **UNREVIEWED** [Sittig, M. Handbook of Toxic and Hazardous Chemicals and Carcinogens, 1985. 2nd ed. Park Ridge, NJ: Noyes Data Corporation, 1985. 363]</p> <p>3. Chemical intermediate in production of dyes, pharmaceuticals. /Former use/ **UNREVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. 412]</p> <p>Major Uses:</p> <p>1. CHEM SYNTHESIS; ROCKET PROPELLANT; GASOLINE ADDITIVE **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. 832]</p> <p>2. ... SOLVENT SYSTEMS ... USED IN COATINGS, e.g., VINYL, EPOXY, NITROCELLULOSE & CHLORINATED RUBBERS, PRINTING INKS & ADHESIVES. **PEER REVIEWED** [American Conference of Governmental Industrial Hygienists. Documentation of the Threshold Limit Values and Biological Exposure Indices. 5th ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1986. 441]</p> <p>3. Paint and varnish removal. **PEER REVIEWED** [Sittig M; Handbook of Toxic and Hazardous Chemicals p.500 (1981)]</p> <p>4. Intermediate in the synthesis of pharmaceuticals, dyes, and insecticides. **PEER REVIEWED** [Sittig M; Handbook of Toxic and Hazardous Chemicals p.500 (1981)]</p> <p>5. Explosives **PEER REVIEWED** [Kirk-Othermer Encyclopedia of Chemical Technology. 3rd ed 6: 764 (1981)]</p>			
169 79-44-7	Dimethylcarbamoyl chloride		Chemical intermediate for Dyes, Rocket fuel and Pesticides
170 79-46-9	2-Nitropropane		Chemical intermediate - Solvent - Explosives - Fuel Additive

CAS #	Constituent	Alternate Name	Comment on Industry	Detailed Industry Usage and/or Manufacture Information
171 80-82-6	Methyl methacrylate	METHYL 2-METHYL-2-PROPENOATE		<p>Major Uses:</p> <ol style="list-style-type: none"> 1. USED IN IMPREGNATION OF CONCRETE **PEER REVIEWED** [National Research Council. Drinking Water & Health Volume 1. Washington, DC: National Academy Press, 1977. 745] 2. MONOMER FOR POLYMETHYL METHACRYLATE **PEER REVIEWED** [SRI] 3. COMONOMER FOR COPOLYMERS-e.g., WITH ACRYLIC ESTERS **PEER REVIEWED** [SRI] 4. CHEM INT FOR HIGHER METHACRYLATE ESTERS-e.g., STEARYL **PEER REVIEWED** [SRI] 5. Used in the production of polymers such as surface coating resins, plastics (Plexiglas and Lucite), ion exchange resins and plastic dentures. **PEER REVIEWED** [Sittig, M. Handbook of Toxic and Hazardous Chemicals and Carcinogens, 1985, 2nd ed. Park Ridge, NJ: Noyes Data Corporation, 1985. 612] 6. In intraocular lenses **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Volumes 1-26. New York, NY: John Wiley and Sons, 1978-1984. p. 19(82) 287] 7. THE METHYL METHACRYLATE MONOMER AND POLYMERS HAVE WIDE APPLICABILITY IN MEDICAL TECHNOLOGY AS BONE CEMENT, BUT HAVE BEEN PARTIALLY REPLACED BY BUCRYLATE & SIMILAR SYNTHETICS. ALSO SERVES AS MEDICINAL SPRAY ADHESIVE OR NONIRRITANT BANDAGE SOLVENT. & IN DENTAL TECHNOLOGY AS CERAMIC FILLER OF CEMENT. **PEER REVIEWED** [Clayton, G. D. and F. E. Clayton (eds.), Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology, 3rd ed. New York: John Wiley Sons, 1981-1982. 2298] 8. Hard contact lenses with wettable surfaces were prepared from copolymers of hydroxyethyl methacrylate, (5-15 wt%) with methyl methacrylate (85-95 wt%). **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Volumes 1-26. New York, NY: John Wiley and Sons, 1978-1984. p. 6(79) 723] 9. Co-polymerization of methyl methacrylate (80-90%) with acrylic acid (10-20%), and diverse cross-linking agents, followed by neutralization of the polymerized acrylic acid with a basic substance, such as ammonium hydroxide or ethylenimine, produce hydrogels used for contact lenses. /Acrylic Acid/ **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Volumes 1-26. New York, NY: John Wiley and Sons, 1978-1984. p. 6(79) 735] 10. Concrete can also be made water-repellent by the polymerization of vinyl monomers on the surface. A treatment that may be practical for highway bridge decks is the application of methyl methacrylate, isodecyl methacrylate, or isobutyl methacrylate. **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Volumes 1-26. New York, NY: John Wiley and Sons, 1978-1984. p. 24(84) 461] <p>Consumption Patterns:</p> <ol style="list-style-type: none"> 1. MONOMER IN POLYMERS USED FOR ACRYLIC SHEET, 28%; FOR SURFACE COATING RESINS, 25%; FOR MOLDING & EXTRUSION COMPOUNDS, 21%; AS POLYMER PROCESSING AIDS & IMPACT MODIFIERS 8%; MONOMER IN EMULSION POLYMERS, 10%; IN UNSATURATED POLYESTER RESINS, 4%; CHEM INT FOR HIGHER METHACRYLATE ESTERS, 2%; OTHER USES (MOSTLY AS A MONOMER), 4% (1982). **PEER REVIEWED** [SRI] 2. Surface coatings, 33%; cast and extruded sheet, 30%; molding and extrusion compounds, 25%; misc, 2%; exports, 10% (1984). **PEER REVIEWED** [CHEMICAL PROFILE: Methyl Methacrylate, 1985] 3. CHEMICAL PROFILE: Methyl methacrylate. Cast and extruded sheet, 25%; molding powders and resins, 25%; surface coatings, 20%; impact modifiers, 10%; exports, 8%; other emulsion polymers, 8%; polyester modifiers, 4%; higher methacrylates, 2%. **PEER REVIEWED** [Kavaler AR; Chemical Marketing Reporter 233 (13): 62 (1988)] 4. CHEMICAL PROFILE: Methyl methacrylate. Demand: 1987: 1,028 million pounds; 1988: 1,055 million pounds; Trend: 1992: 1,164 million pounds (includes exports, but excludes monomer imports, which were one quarter of exports last year.) **PEER REVIEWED** [Kavaler AR; Chemical Marketing Reporter 233 (13): 62 (1988)]

CAS #	Constituent	Alternate Name	Comment on Industry
172 8001-58-9	Creosote	COAL TAR CREOSOTE	<p>Detailed Industry Usage and/or Manufacture Information</p> <p>Major Uses:</p> <ol style="list-style-type: none"> 1. Application as an antiseptic, disinfectant, antipyretic, astringent, styptic, germicide, constituent of fuel oil. It is also used as a lubricant for die molds, as an agent for waterproofing, as a wood preservative, as an animal dip, and in the manufacture of chemicals. **PEER REVIEWED** [Clayton, G. D. and F. E. Clayton (eds.), Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C. Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982. 2601] 2. Used as a hop defoliant **PEER REVIEWED** [Hartley, D. and H. Kidd (eds.). The Agrochemicals Handbook. 2nd ed. Lechworth, Herts, England: The Royal Society of Chemistry, 1987. p. A443/Aug 87] 3. Coal tar creosote can be used as a feedstock for the production of carbon blacks by either the furnace or the lampblack process. **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V35 108 (1985)] 4. In antifungal prepn **PEER REVIEWED** [Gliman, A. G., L. S. Goodman, and A. Gilman. (eds.). Goodman and Gilman's The Pharmacological Basis of Therapeutics. 7th ed. New York: Macmillan Publishing Co., Inc., 1985. 970] 5. Vermicide **PEER REVIEWED** [Gosselin, R. E., R. P. Smith, H. C. Hodge. Clinical Toxicology of Commercial Products. 5th ed. Baltimore: Williams and Wilkins, 1984. p. II-191] 6. THE PRINCIPAL USE OF CREOSOTE IS FOR THE PRESERVATION OF WOOD. RAILROAD TIES, POLES, FENCE POSTS, MARINE PILINGS, AND LUMBER FOR OUTDOOR USES ARE OFTEN IMPREGNATED WITH CREOSOTE. P.261 CREOSOTE IS USED AS A WATER PROOFING AGENT, AND ANIMAL DIP. A CONSTITUENT IN LDS, AS PITCH FOR ROOFING, AND IN THE MANUFACTURER OF FUEL OIL, A LUBRICANT FOR DIE MOLDS, AND IN THE MANUFACTURE OF CHEMICALS AND LAMPBLACK. IN THE PHARMACEUTICAL INDUSTRY, IT IS USED AS AN ... EXPECTORANT. **PEER REVIEWED** [CONSIDINE. CHEMICAL AND PROCESS TECHNOL ENCYC 1974 p.300] 7. CREOSOTE IS USED AS A WATER PROOFING AGENT, AND ANIMAL DIP. A CONSTITUENT IN FUEL OIL, A LUBRICANT FOR DIE MOLDS, AS PITCH FOR ROOFING, AND IN THE MANUFACTURE OF CHEMICALS AND LAMPBLACK. IN THE PHARMACEUTICAL INDUSTRY, IT IS USED AS AN ... EXPECTORANT. **PEER REVIEWED** [Sittig, M. Handbook of Toxic and Hazardous Chemicals and Carcinogens, 1985. 2nd ed. Park Ridge, NJ: Noyes Data Corporation, 1985. 261] 8. FROTHING AGENT FOR MINERAL SEPARATION **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology. 3rd ed., Volumes 1-28. New York, NY: John Wiley and Sons, 1978-1984. p. 10 529 (1980)] 9. CREOSOTE IS REGISTERED IN THE USA FOR USE AS AN ANIMAL OR BIRD REPELLENT, ANIMAL DIP, MITICIDE, FUNGICIDE, HERBICIDE, AND INSECTICIDE. HOWEVER, IT IS BELIEVED THAT CURRENTLY CREOSOTE IS USED IN ONLY LIMITED QUANTITIES AND IN ONLY THREE OF THESE APPLICATIONS: AS AN ANIMAL OR BIRD REPELLENT, AS AN INSECTICIDE (OVICIDE), AND AS AN ANIMAL DIP. **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V35 108 (1985)] 10. USED AS A FUEL IN STEEL PRODUCTION **PEER REVIEWED** [NIOSH. CRITERIA DOCUMENT: COAL TAR PRODUCTS p. 26 (1977) DHEW PUB. NIOSH 78-107] 11. CREOSOTE IS REPORTED TO BE USED AT A LEVEL OF ABOUT 12% IN TAP-HOLE REFRACTORY CEMENT (USED TO CLOSE OPENINGS IN FURNACES OR OVENS AFTER MATERIAL HAS BEEN WITHDRAWN). **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V35 108 (1985)] 12. To protect approximately 0.5 million steel water storage tanks in the United States from corrosion, a number of linings are used on the interior surfaces, including coal tar based materials. ... There are no statistical data on the number of tanks lined with specific materials. **PEER REVIEWED** [National Research Council. Drinking Water & Health, Volume 4. Washington, DC: National Academy Press, 1981. 72]

CAS #	Constituent	Alternate Name	Comment on Industry
173 8006-64-2	Turpentine		<p>Detailed Industry Usage and/or Manufacture Information</p> <p>13. CREOSOTE SPECIFICATION AWWA P1165 IS INTENDED FOR THE TREATMENT OF TIMBER FOR LAND AND FRESH WATER USE, AND THE HEAVY GRADE SPECIFIED AWWA P13/65 FOR THE PRESERVATION OF MARINE PILING AND TIMBER. **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Volumes 1-28. New York, NY: John Wiley and Sons, 1978-1984, p. V22 589 (1983)]</p> <p>Consumption Patterns:</p> <ol style="list-style-type: none"> 1. It is believed that the creosote used in the USA finds application almost exclusively in wood preservation, where it accounts for an est 80% of all wood preservatives in use. The est annual usage by application method is as follows: approx 98% by the pressure treatment process; almost 2% by the non-pressure process; and 0.2% by brush, dip, spray, or soak. **PEER REVIEWED** [American Conference of Governmental Industrial Hygienists. TLVs Threshold Limit Values for Chemical Substances in Workroom Air Adopted by ACGIH for 1981. Cincinnati, Ohio: American Conference of Governmental Industrial Hygienists, 1981, p. V35 108 (1985)] 2. About 90 percent of the creosote is sold to the wood preservation industry; the remainder is burned as fuel. **PEER REVIEWED** [USEPA: Health and Environmental Effects of Creosote p. 53-4 (1980) EPA No.53] <p>Major Uses:</p> <ol style="list-style-type: none"> 1. SOLVENT FOR OILS, RESINS, VARNISHES, VEHICLE FOR PAINTS **PEER REVIEWED** [The Merck Index, 10th ed. Rahway, New Jersey: Merck Co., Inc., 1983, 978] 2. IN PERFUMERY, SPRAYS, DEODORIZERS **PEER REVIEWED** [Fenaroli's Handbook of Flavor Ingredients, Volume 1. Edited, translated, and revised by T.E. Furia and N. Bellanca. 2nd ed. Cleveland: The Chemical Rubber Co., 1975, 482] 3. STEAM-DISTILLED TURPENTINE...USED IN... CANDY, 11 PPM; BAKED GOODS, 10-20 PPM; CHEWING GUM, 7.1 PPM. **PEER REVIEWED** [Fenaroli's Handbook of Flavor Ingredients, Volume 1. Edited, translated, and revised by T.E. Furia and N. Bellanca. 2nd ed. Cleveland: The Chemical Rubber Co., 1975, 483] 4. CHEM INT FOR SYNTHETIC PINE OIL **PEER REVIEWED** [SRI] 5. CHEM INT FOR POLYTERPENE RESINS **PEER REVIEWED** [SRI] 6. CHEM INT FOR PINE-BASED PERFUMES & FLAVORS **PEER REVIEWED** [SRI] 7. CHEM INT FOR OTHER TERPENES USED IN PHARMACEUTICALS **PEER REVIEWED** [SRI] 8. COMPONENT OF POLISHES, OILS, & INKS **PEER REVIEWED** [SRI] 9. Used in expectorant formulations. **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Volumes 1-28. New York, NY: John Wiley and Sons, 1978-1984, p. 9-543] 10. As constituent of stimulating ointments. **PEER REVIEWED** [The Merck Index, 10th ed. Rahway, New Jersey: Merck Co., Inc., 1983, 1403] 11. Insecticide. **PEER REVIEWED** [The Merck Index, 10th ed. Rahway, New Jersey: Merck Co., Inc., 1983, 1403] 12. In production of synthetic camphor. **PEER REVIEWED** [The Merck Index, 10th ed. Rahway, New Jersey: Merck Co., Inc., 1983, 1403] 13. Chemical feedstock for manufacture of ... cleaning materials, putty, mastics, cutting and grinding fluids **QC REVIEWED** [SITTING. HDBK TOX & HAZARD CHEM & CARCINOGENS 2ND ED 1985 p.906] 14. MEDICATION (VET) **QC REVIEWED** Consumption Patterns: <ol style="list-style-type: none"> 1. CHEM INT FOR SYNTHETIC PINE OIL, 48%; CHEM INT FOR TOXAPHENE, 18%; CHEM INT FOR BETA-PINENE RESINS, 15%; CHEM INT FOR PINE-BASED PERFUMES & FLAVORS, 10%; OTHER USES (EG, COMPONENT OF POLISHES, OILS, INKS, & PAINTS), 11% (1981) **PEER REVIEWED** [SRI] <p>Methyl Demeion is a colorless or yellow liquid with an unpleasant odor. It is an organophosphate insecticide. *** New Jersey Hazardous Substance Fact Sheet</p>
174 8022-00-2	Methyl Demeion		Insecticide

CAS #	Constituent	Alternate Name	Comment on Industry	Detailed Industry Usage and/or Manufacture Information
175 8052-42-4	Asphalt (petroleum) fumes		Road Material - Waterproofing - Insulation - Disposal Medium - Myriad Industrial Uses	<p>Major Uses:</p> <ol style="list-style-type: none"> 1. MAKING ROADS, ROOFS; MAKING TANKS WATERTIGHT **PEER REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 133] 2. SPECIAL PAINTS; ADHESIVE IN ELECTRICAL LAMINATES & HOT-MELT COMPOSITIONS; DILUENT IN LOW-GRADE RUBBER PRODUCTS; FLUID LOSS CONTROL IN HYDRAULIC FRACTURING OF OIL WELLS; MEDIUM FOR RADIOACTIVE WASTE DISPOSAL; PIPELINE & UNDERGROUND CABLE COATING; RUST-PREVENTIVE HOT-DIP COATINGS; BASE FOR SYNTHETIC TURF; WATER-RETAINING BARRIER FOR SANDY SOILS; SUPPORTER OF RAPID BACTERIAL GROWTH IN CONVERTING PETROLEUM COMPONENTS TO PROTEIN **PEER REVIEWED** [Lewis, R.J., Sr. (Ed.), Hawley's Condensed Chemical Dictionary. 12th ed. New York, NY: Van Nostrand Reinhold Co., 1983 100] 3. SOUND INSULATION MATERIAL-EG. CAR BODIES & MACHINE MOUNTS**PEER REVIEWED** [SRI] <p>Consumption Patterns:</p> <ol style="list-style-type: none"> 1. ROAD PAVING & OTHER PAVING PRODUCTS, 75-80%; ROOFING & OTHER ASPHALT PRODUCTS, 20-25% (1991) **PEER REVIEWED** [SRI]
176 8065-48-3	Demeton	SYSTOX, OR O,O-DIETHYL 2-ETHYLMERCAPTOETHYL THIOPHOSPHATE	Nematocide	<p>Major Uses:</p> <ol style="list-style-type: none"> 1. SYSTEMIC NEMATOCIDE **PEER REVIEWED** [White-Stevens, R. (ed.), Pesticides in the Environment: Volume 2. New York: Marcel Dekker, Inc., 1978. 235]
177 81-81-2	Warfarin (>0.3%)	3-(Acetonylbenzyl)-4-Hydroxycoumarin	Rodenticide - Medication	<p>Major Uses:</p> <ol style="list-style-type: none"> 1. RODENTICIDE FOR NORWAY RATS & FOR HOUSE MICE **PEER REVIEWED** [Farm Chemicals Handbook 1984. Willoughby, OH: Meister, 1984. p. C-381] 2. Medication / anticoagulant properties used to reduce risk of post-operative thrombosis **PEER REVIEWED** [Worthing, C.R. and S.B. Walker (eds.), The Pesticide Manual - A World Compendium. 8th ed. Thornton Heath, UK: The British Crop Protection Council, 1987. 842]
178 81-81-2a	Warfarin (<0.3%)		Concentration Differentials Not Available - See Previous Entry For Information	
179 83-28-1	Pindone	2-(TRIMETHYLACETYL)-1,3-INDANDIONE	Pharmaceutical Intermediate - Insecticide - Rodenticide	<p>Major Uses:</p> <ol style="list-style-type: none"> 1. PHARMACEUTICAL INTERMEDIATE; INSECTICIDE; RODENTICIDE **PEER REVIEWED** [Lewis, R.J., Sr. (Ed.), Hawley's Condensed Chemical Dictionary. 12th ed. New York, NY: Van Nostrand Reinhold Co., 1983 921]
180 83-79-4	Rotenone	(1)BENZOPYRANO(3,4-B)FURO(2,3-H)(1)BENZOPYRAN-8(6H)-ONE,1,2,12,12A-TETRAHYDRO-2-ALPHA-ISOPROPENYL-8,9-DIMETHOXY-	Pesticide - Medication	<p>Major Uses:</p> <ol style="list-style-type: none"> 1. MEDICATION: ANTIPROTOZOAL; MEDICATION (VET); GRUBICIDE; HAS BEEN USED FOR DEMODECTIC MANGE **PEER REVIEWED** [The Merck Index. 10th ed. Rahway, New Jersey: Merck Co., Inc. 1983. 1192] 2. Pesticide **PEER REVIEWED** [U.S. Department of the Interior, Fish and Wildlife Service. Handbook of Toxicity of Pesticides to Wildlife. Resource Publication 153 Washington, DC: U.S. Government Printing Office, 1984. 69] 3. In the form of ground dertis root, rotenone has been used as a nonpersistent insecticide to control pests on plants and animals and as a fish poison to manage or to eliminate undesirable species in reservoirs, lakes, and streams. **PEER REVIEWED** [National Research Council. Drinking Water & Health. Volume 5. Washington, D.C.: National Academy Press, 1983.] <p>Consumption Patterns:</p> <ol style="list-style-type: none"> 1. 21% USED ON CROPS; 78% USED ON LIVESTOCK; 1% FOR OTHER APPLICATIONS (1975) **PEER REVIEWED** [SRI]
181 838-88-0	4,4'-Methylenebis(2-methylaniline)		No Use Information Available	
182 85-00-7	Diquat	DIQUAT DIBROMIDE, OR 8,10-DIHYDRO-8A,10A-DIAZONIAPHENANTHRENE DIBROMIDE	Herbicide	<p>Major Uses:</p> <ol style="list-style-type: none"> 1. CONTACT HERBICIDE USED ALSO TO PRODUCE DESICCATION & DEFOLIATION. **QC REVIEWED** [The Merck Index. 10th ed. Rahway, New Jersey: Merck Co., Inc., 1983. 490] <p>Consumption Patterns:</p> <ol style="list-style-type: none"> 1. HERBICIDE FOR INDUSTRIAL/COMMERCIAL USES, 67%; AQUATIC USES, 33% (1982) **QC REVIEWED** [SRI]

CAS #		Constituent	Alternate Name	Comment on Industry	Detailed Industry Usage and/or Manufacture Information
183	85-44-9	Phthalic anhydride	1,2-BENZENEDICARBOXYLIC ACID ANHYDRIDE	Chemical Intermediate	<p>Major Uses:</p> <p>1. MFR PHTHALEINS, PHTHALATES, BENZOIC ACID, SYNTHETIC INDIGO, ARTIFICIAL RESINS (GLYPTAL), **PEER REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 1170]</p> <p>Consumption Patterns:</p> <p>1. CHEM INT FOR: PHTHALATE PLASTICIZERS, 53%; UNSATURATED POLYESTER RESINS, 22%; ALKYD RESINS, 19%; OTHER USES (e.g., CHEM INT FOR DYES, RUBBER RETARDER), 6% (1983) **PEER REVIEWED** [SR]</p> <p>2. End use pattern: phthalate plasticizers, 50%; unsaturated polyesters, 25%; alkyd resins, 15%; miscellaneous, 10% (1985) **PEER REVIEWED** [Chem Prod Synopsis, July 1985]</p> <p>3. CHEMICAL PROFILE: Phthalic Anhydride. Plasticizers, 48%; polyester resins, 23%; alkyd resins, 19%; miscellaneous, 5%; exports, 5%. **PEER REVIEWED** [Kavaler AR; Chemical Marketing Reporter 236 (4): 58 (1989)]</p> <p>5. TODAY 80% OF PRODUCTION IS USED AS A PLASTICIZER IN VINYL CHLORIDE POLYMERIZATION. ABOUT 30% OF OUTPUT IS USED FOR THE PRODUCTION OF SATURATED & UNSATURATED POLYESTER RESINS, FOR PESTICIDES & AS CONSTITUENTS OF CERTAIN ESSENCES & PERFUMES. THE REMAINING 10% IS EMPLOYED IN THE PRODUCTION OF ALKYD RESINS USED IN PAINTS & LACQUERS, OF PHTHALOCYANINE DYES & ALSO FOR THE PREPARATION OF BENZOIC ACID. **PEER REVIEWED** [International Labour Office. Encyclopedia of Occupational Health and Safety. Vols. 1&II. Geneva, Switzerland: International Labour Office, 1983. 1693]</p>
184	86-50-0	Azinphos-methyl	O,O-DIMETHYL-S-(BENZAZINOMETHYL) DITHIOPHOSPHATE	Insecticide - Acaricide - Molluscicide	<p>Major Uses:</p> <p>1. Organophosphate insecticide, acaricide, molluscicide **QC REVIEWED** [Purdue University. National Pesticide Information Retrieval System (1986)]</p> <p>Consumption Patterns:</p> <p>1. INSECTICIDE FOR DECIDUOUS FRUITS & NUTS, 53%; COTTON, 17%; SOYBEANS, 10%; VEGETABLES, 10%; CITRUS, 3%; OTHER FIELD CROPS, 7% (1982) **PEER REVIEWED** [SR]</p>
185	86-86-4	alpha-Naphthylthiourea		Rodenticide	<p>Major Uses:</p> <p>1. Use as a rodenticide in locations where rats feed, water, or travel. **PEER REVIEWED** [Mackison, F. W., R. S. Stricoff, and L. J. Patridge, Jr. (eds.), NIOSHOSHA - Occupational Health Guidelines for Chemical Hazards. DHHS (NIOSH) Publication No. 81-123 (3 VOLS). Washington, DC: U.S. Government Printing Office, Jan. 1981. 2]</p>
186	87-65-0	2,6-Dichlorophenol		Chemical Intermediate - Pesticide Additive	<p>Major Uses:</p> <p>1. CHEM INT FOR TRI, TETRA, AND PENTACHLOROPHENOLS **PEER REVIEWED** [SR]</p> <p>2. The sex pheromone, 2,6-dichlorophenol, was combined with a pesticide to control populations of the American dog tick, <i>Dermacentor variabilis</i> (Say). ... **PEER REVIEWED** [Sonenshine DE et al; Exp Appl Acarol 1 (1): 23-34 (1985)]</p>
187	90-04-0	o-Anisidine	2-METHOXY-1-AMINO BENZENE	Chemical Intermediate for Dyes	<p>Major Uses:</p> <p>1. IN MANUFACTURE OF AZO DYES (ANISIDINE) **PEER REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 106]</p>
188	91-80-5	Methapyrilene	2-((2-DIMETHYLAMINO)ETHYL)-2-THIENYLAMINO)PYRIDINE	Medication	<p>Major Uses:</p> <p>1. MEDICATION **QC REVIEWED**</p> <p>2. MEDICATION (VET) **QC REVIEWED**</p>
189	91-94-1	3,3-Dichlorobenzidine		Chemical Intermediate for Dyes - Curing Agent for Rubber/Plastics	<p>Major Uses:</p> <p>1. MFR AZO DYES **PEER REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 482]</p> <p>2. RUBBER & PLASTIC COMPOUNDING INGREDIENT **PEER REVIEWED** [Searle, C. E. (ed.), Chemical Carcinogens. ACS Monograph 173. Washington, DC: American Chemical Society, 1976. 392]</p> <p>5. 3,3'-Dichlorobenzidine base and salts are used as chemical intermediates to produce pigments that are produced commercially in the USA (Pigment Yellows 12, 13, 14, 17, 34, & 55). **PEER REVIEWED** [USEPA/OTS: A Study of Industrial Data on Candidate Chemicals for Testing. EPA-560/5-77-006 p.4-205 (1977)]</p>

Comment on			
CAS #	Constituent	Alternate Name	Industry
190 92-67-1	4-Aminobiphenyl		Indicator - Chemical Intermediate for Dyes - Not Used Commercially in the USA
<p>Detailed Industry Usage and/or Manufacture Information</p> <p>Major Uses:</p> <ol style="list-style-type: none"> 1. IN DETECTION OF SULFATES; FORMERLY AS RUBBER ANTIOXIDANT. AS CARCINOGEN IN CANCER RESEARCH. **PEER REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 193] 2. CHEM INT FOR DYES (FORMER USE) **PEER REVIEWED** [SRI] <p>Consumption Patterns:</p> <ol style="list-style-type: none"> 1. NOT USED COMMERCIALY IN USA **PEER REVIEWED** [SRI] 			
191 92-84-2	Phenothiazine	DIBENZO-1,4-THIAZINE	Chemical Intermediate - Polymerization Inhibitor - Medication
<p>Major Uses:</p> <ol style="list-style-type: none"> 1. MFR OF DYES; PARENT CMPD FOR CHLORPROMAZINE & RELATED ANTIPSYCHOTIC DRUGS; POLYMERIZATION INHIBITOR; ANTIOXIDANT **PEER REVIEWED** [Lewis, R.J., Sr (Ed.), Hawley's Condensed Chemical Dictionary, 12th ed. New York, NY: Van Nostrand Reinhold Co., 1983 895] 2. Used in control of insects that breed in manure **PEER REVIEWED** [Booth, N.H., L.E. McDonald (eds.), Veterinary Pharmacology and Therapeutics, 5th ed. Ames, Iowa: Iowa State University Press, 1982. 1094] 3. MEDICATION (NET) **QC REVIEWED** 4. MEDICATION **QC REVIEWED** 			
192 92-87-5	Benzidine	4,4'-DIAMINOBIPHENYL	Chemical Intermediate for Dyes - Curing Agent for Rubber/Plastics - Lab Reagent
<p>Major Uses:</p> <ol style="list-style-type: none"> 1. MANUFACTURE OF DYES; ... AS REAGENT FOR HYDROGEN PEROXIDE IN MILK. ... **PEER REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co., Inc., 1989. 168] 2. ORG SYNTHESIS; ... STAIN IN MICROSCOPY; ... STIFFENING AGENT IN RUBBER COMPOUNDING **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987. 131] 3. ... MFR OF PLASTIC FILMS; IT REACTS WITH INK ERASERS TO GIVE COLORED PRODUCTS & THEREFORE HAS BEEN USED IN SECURITY PRINTING; LAB AGENT FOR DETECTION OF HYDROGEN CYANIDE & SULFATE, FOR QUANTITATIVE DETERMINATION OF NICOTINE & AS SPRAY REAGENT FOR SUGARS **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V1 81 (1972)] 4. Lignification measurement **PEER REVIEWED** [ITI. Toxic and Hazardous Industrial Chemicals Safety Manual. Tokyo, Japan: The International Technical Information Institute, 1982. 64] 5. ALCOHOLIC BENZIDINE & HYDROGEN PEROXIDE WERE FORMERLY USED TO VERIFY TLC BANDS ATTRIBUTED TO BLOOD. **PEER REVIEWED** [ARGERI NJ ET AL; BIOQUIM CLIN 4 (4): 177 (1970)] 			
193 924-16-3	N-Nitrosodi-n-butylamine	N,N-DIBUTYLNITROSOAMINE	Research Chemical - Not Used Commercially in the USA
<p>Major Uses:</p> <ol style="list-style-type: none"> 1. ... N-nitroso compounds are produced primarily as research chemicals and not for commercial purposes. /N-Nitroso compounds/ **PEER REVIEWED** [USEPA; Ambient Water Quality Criteria Doc: Nitrosamines p.A-1 (1980) EPA-440/5-80-084] 2. NDPA has been used in the synthesis of di-n-butylhydrazine, although there is no indication that it has been used commercially in this way **PEER REVIEWED** [IARC MONOGRAPHS 1972-PRESENT V17 p.52] <p>U.S. Production:</p> <ol style="list-style-type: none"> 1. (1977) NOT PRODUCED COMMERCIALY IN USA **PEER REVIEWED** [SRI] 			
194 930-55-2	N-Nitrosopyrrolidine		Research Chemical - Not Used Commercially in the USA
<p>Major Uses:</p> <ol style="list-style-type: none"> 1. ... N-Nitroso compounds are produced primarily as research chemicals and not for commercial purposes. /N-Nitroso compounds/ **PEER REVIEWED** [USEPA; Ambient Water Quality Criteria Doc: Nitrosamines p.A-1 (1980) EPA-440/5-80-084] <p>U.S. Production:</p> <ol style="list-style-type: none"> 1. (1977) NOT PRODUCED COMMERCIALY IN USA **PEER REVIEWED** [SRI] 			

CAS #	Constituent	Alternate Name	Comment on		Detailed Industry Usage and/or Manufacture Information
			Industry	Industry	
195 94-59-7	Saffole	1-ALLYL-3,4-METHYLENEDIOXYBENZENE	Chemical Intermediate - Soaps	Additive	<p>Major Uses:</p> <ol style="list-style-type: none"> 1. IN MFR OF PIPERONYL BUTOXIDE. **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V10 234 (1976)] 2. USED AS PRESERVATIVE IN MUCILAGE & LIBRARY PASTE. **PEER REVIEWED** [Osol, A. (ed.) Remington's Pharmaceutical Sciences. 16th ed. Easton, Pennsylvania: Mack Publishing Co., 1980. 1239] 3. In perfumery; denaturing fats in soap manufacture; also in manufacture of heliotropin. <p>**PEER REVIEWED** [Budavari, S. (ed.). The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals. Rahway, NJ: Merck and Co. Inc. 1989. 1322]</p> <ol style="list-style-type: none"> 4. Used in soaps, as an antiseptic. **PEER REVIEWED** [Lewis, R.J., Sr. (Ed.). Hawley's Condensed Chemical Dictionary. 12th ed. New York, NY: Van Nostrand Reinhold Co., 1993 1018] 5. OIL OF SASSAFRAS CONTAINING SAFROLE WAS FORMERLY USED AS FLAVORING AGENT IN SOFT DRINKS... HOWEVER, THIS USE IS NO LONGER PERMITTED IN USA ... **PEER REVIEWED** [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). p. V10 234 (1976)]
196 944-22-9	Fonolos	DYPHONATE; OR O-ETHYL S-PHENYL ETHYLDITHIOPHOSPHONATE	Insecticide		<p>Major Uses:</p> <ol style="list-style-type: none"> 1. DYPHONATE IS SOIL INSECTICIDE USEFUL IN CONTROLLING SOIL INSECTS SUCH AS CORN ROOTWORMS (DIABROTICA SPECIES), WIREWORMS (ELATERIDAE), GARDEN SYMPHYLAN (SCUTIGERELLA IMMACULATA), ROOT MAGGOTS (HYLEMYA SPECIES), CRICKETS (GRYLLIDAE) & OTHERS. **PEER REVIEWED** [Spencer, E. Y. Guide to the Chemicals Used in Crop Protection. 7th ed. Publication 1093. Research Institute, Agriculture Canada, Ottawa, Canada: Information Canada, 1982. 308] 2. Control of soil insects in cereals, maize, sorghum, vegetables, ornamentals, fruit (including citrus and bananas), vines, olives, potatoes, sugar beet, sugar cane, groundnuts, tobacco, and turf. **PEER REVIEWED** [Hartley, D. and H. Kidd (eds.). The Agrochemicals Handbook. 2nd ed. Lechworth, Herts, England: The Royal Society of Chemistry, 1987. p. A214/Aug 87] <p>Consumption Patterns:</p> <ol style="list-style-type: none"> 1. OVER 80% AS AN INSECTICIDE ON CORN; THE BALANCE MOSTLY ON OTHER FIELD CROPS (1974) **PEER REVIEWED** [SRI]
197 95-53-4	o-Toluidine (2-methylaniline)	2-AMINOTOLUENE	Chemical Intermediate - Lab Reagent		<p>Major Uses:</p> <ol style="list-style-type: none"> 1. PREPARATION OF ION EXCHANGE RESINS; SYNTHESIS OF DYE STUFFS & OTHER INTERMEDIATES **PEER REVIEWED** [Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology. Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982. 2483] 2. CHEM INT FOR DYES; ANTIOXIDANT IN RUBBER MFR; LAB REAGENT IN GLUCOSE ANALYSIS **PEER REVIEWED** [SRI] <p>Major Uses:</p> <ol style="list-style-type: none"> 1. Detection of nitrite, textile developing agent; laboratory reagent; vulcanizing agent; ion-exchange resins; block polymers; corrosion inhibitors; photography **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987 901]
198 95-54-5	1,2-Phenylenediamine	1,2-DIAMINOBENZENE	Chemical Intermediate - Lab Reagent - Hair Color Constituent - Photography		<p>Major Uses:</p> <ol style="list-style-type: none"> 2. HAIR DYE CONSTITUENT **PEER REVIEWED** [BURNETT C ET AL; J TOXICOL ENVIRON HEALTH 2(3) 657-662 (1977)] <p>Major Uses:</p> <ol style="list-style-type: none"> 1. PHOTOGRAPHIC DEVELOPER (AS PER SRP) **PEER REVIEWED** 2. Preparation of toluene isocyanates (the major use), dyes, impact resins, polyimides with superior wire coating properties, benzimidazolethiols (antioxidants), hydraulic fluids, urethane foams and fungicide stabilizers. **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology. 3rd ed., Volumes 1-28. New York, NY: John Wiley and Sons, 1978-1984. p. V2 321 (1978)]
199 95-80-7	Toluene-2,4-diamine		Chemical Intermediate - Photography		

CAS #		Constituent	Alternate Name	Comment on	
				Industry	Detailed Industry Usage and/or Manufacture Information
200	95-94-3	1,2,4,5-Tetrachlorobenzene		Chemical Intermediate	<p>Major Uses:</p> <ol style="list-style-type: none"> 1. IN SYNTH OF 2,4,5-TRICHLOROPHENATE SODIUM **PEER REVIEWED** [Doul, J., C.D.Klassen, and M.D. Arndur (eds.), Casarett and Doull's Toxicology, 3rd ed., New York: Macmillan Co., Inc., 1986, 554] 2. INT FOR HERBICIDES & DEFOLIANTS; INSECTICIDE; IMPREGNANT FOR MOISTURE RESISTANCE; ELECTRICAL INSULATION **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed, New York: Van Nostrand Reinhold Co., 1987, 1131] 3. USED IN THE PRODUCTION OF 2,4,5-TRICHLOROPHENOL **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Volumes 1-26, New York, NY: John Wiley and Sons, 1978-1984, p. 5(79) 866]
201	96-18-4	1,2,3-Trichloropropane		Solvent - Chemical Intermediate	<p>Major Uses:</p> <ol style="list-style-type: none"> 1. Paint and varnish remover, solvent, degreasing agent **PEER REVIEWED** [Lewis, R.J., Sr. (Ed.), Hawley's Condensed Chemical Dictionary, 12th ed, New York, NY: Van Nostrand Reinhold Co., 1993 1172] 2. In the synthesis of hexafluoropropylene **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Volumes 1-26, New York, NY: John Wiley and Sons, 1978-1984, p. V11 24-35] 3. Solvent for oils, fats, waxes, chlorinated rubber, and resins. Synthesis of thiokol polysulfide elastomers if some branching of the polymer structure is required. **PEER REVIEWED** [Gehartz, W. (exec ed.), Ullmann's Encyclopedia of Industrial Chemistry, 5th ed Vol A1: Deerfield Beach, FL: VCH Publishers, 1985 to Present, p. VA6 311]
202	96-45-7	Ethylenethiourea	4,5-DIHYDROMIDAZOLE-2(3H)-THIONE	Chemical Intermediate - Electroplating Baths	<p>Major Uses:</p> <ol style="list-style-type: none"> 1. ELECTROPLATING BATHS; INTERMEDIATE FOR ANTIOXIDANTS, INSECTICIDES; FUNGICIDES, VULCANIZATION ACCELERATORS, DYES, PHARMACEUTICALS; MFR/ SYNTHTIC RESINS. **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed, New York: Van Nostrand Reinhold Co., 1987, 491] 2. ACCELERATOR FOR NEOPRENE RUBBERS-EG. FOR COATED FABRICS; FOR EPICHLOROHYDRIN RUBBERS AND FOR CHLOROSULFONATED POLYETHYLENE RUBBERS. **PEER REVIEWED** [SRI]
203	97-63-2	Ethyl methacrylate	METHACRYLIC ACID, ETHYL ESTER	Chemical Intermediate - Polymers	<p>Major Uses:</p> <ol style="list-style-type: none"> 2. USED AS A COMONOMER IN ACRYLIC POLYMERS FOR SURFACE COATING RESINS; ACRYLIC EMULSION POLYMERS FOR POLISHES, ETC; COMONOMER IN DENTURE-BASE MATERIAL; & USED AS A CHEMICAL INTERMEDIATE **QC REVIEWED** [SRI] <p>Consumption Patterns:</p> <ol style="list-style-type: none"> 1. The most important products prepared from methacrylate compounds are polymers. The physical properties of polymers of methacrylate esters can be modified for different uses by suitable changes in the alkyl portion of the molecule, e.g., by varying carbon chain length or by introducing a functional group. The largest use of methacrylates is in plastics. /Methacrylate compounds/ **QC REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Volumes 1-26, New York, NY: John Wiley and Sons, 1978-1984, p. 15(81) 372]
204	97-77-8	Disulfiram	1,1'-DITHIOBIS(N,N-DIETHYLTHIOFORMAMIDE)	Rubber Accelerator - Fungicide - Medication	<p>Major Uses:</p> <ol style="list-style-type: none"> 1. RUBBER ACCELERATOR; VULCANIZER; SEED DISINFECTANT; FUNGICIDE **QC REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals, Rahway, NJ: Merck and Co., Inc., 1989, 531] 2. MEDICATION **QC REVIEWED**

Comment on			
CAS #	Constituent	Alternate Name	Industry
205 98-00-1	Furfuryl alcohol	2-HYDROXYMETHYLFURAN	Solvent - Chemical Intermediate - Liquid Propellant
			<p>Major Uses:</p> <ol style="list-style-type: none"> 1. AS A SOLVENT FOR CELLULOSE ETHERS & ESTERS, ESTER GUM, DYES, COUMARONE & NATURAL RESINS; IN MFR OF PHENOLIC RESINS & DARK-COLORED THERMOSETTING RESINS; LIQ. PROPELLANT. **PEER REVIEWED** [Clayton, G. D. and F. E. Clayton (eds.), Patty's Industrial Hygiene and Toxicology, Volume 2A, 2B, 2C: Toxicology, 3rd ed. New York: John Wiley Sons, 1981-1982, 1489] 2. CHEM INT FOR TETRAHYDROFURFURYL ALCOHOL. **PEER REVIEWED** [SRI] 4. Wetting agent, furan polymers, corrosive-resistant sealants and cements, foundry cores; modified urea-formaldehyde polymers, penetrant, solvent for dyes and resins, flavoring. **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987, 546] 5. AS A LIQUID PROPELLANT ... A MAJOR COMPONENT OF "CORPORAL" MISSILE FUEL ... **PEER REVIEWED** [Browning, E. Toxicity and Metabolism of Industrial Solvents, New York: American Elsevier, 1965, 382] <p>Consumption Patterns:</p> <ol style="list-style-type: none"> 1. CLOSE TO 100% AS A REACTANT IN FURAN RESIN PRODUCTION (1974) **PEER REVIEWED** [SRI]
206 98-07-7	Benzotrifluoride	1-(TRICHLOROMETHYL)BENZENE	Chemical Intermediate
			<p>Major Uses:</p> <ol style="list-style-type: none"> 1. In organic syntheses (source of benzoyl group). **PEER REVIEWED** [Budavari, S. (ed.), The Merck Index - Encyclopedia of Chemicals, Drugs and Biologicals, Rahway, NJ: Merck and Co., Inc., 1989, 173] 3. ... Benzotrifluoride is used to make benzotrifluoride, hydroxybenzophenone, pharmaceuticals, and antimicrobial agents. **PEER REVIEWED** [DHS/NTP, Fourth Annual Report on Carcinogens p.41 (1985) NTP 85-002] 4. ... Used extensively as an intermediate. **PEER REVIEWED** [DHS/NTP, Fourth Annual Report on Carcinogens p.41 (1985) NTP 85-002] <p>Consumption Patterns:</p> <ol style="list-style-type: none"> 1. The major part of benzotrifluoride production is used in the manufacture of benzoyl chloride ... Less amt are consumed in the manufacture of benzotrifluoride, as a dyestuff intermediate, and in producing hydroxybenzophenone ultraviolet light stabilizers ... **PEER REVIEWED** [Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Volumes 1-28, New York, NY: John Wiley and Sons, 1978-1984, p. V5(79) 834]
207 98-87-3	Benzal chloride	(DICHLOROMETHYL)BENZENE	Chemical Intermediate
			<p>Major Uses:</p> <ol style="list-style-type: none"> 1. MANUFACTURE OF BENZALDEHYDE & CINNAMIC ACID. (FORMER USE) **PEER REVIEWED** [Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawley's Condensed Chemical Dictionary, 11th ed. New York: Van Nostrand Reinhold Co., 1987, 136] 2. To prepare benzoyl chloride. **PEER REVIEWED** [Sittig, M. Handbook of Toxic and Hazardous Chemicals and Carcinogens, 1985, 2nd ed. Park Ridge, NJ: Noyes Data Corporation, 1985, 108] <p>Consumption Patterns:</p> <ol style="list-style-type: none"> 1. ESSENTIALLY 100% AS CHEM INTERMEDIATE FOR BENZALDEHYDE. **PEER REVIEWED** [SRI]
208 99-55-8	5-Nitro-o-toluidine		Chemical Intermediate For Dyes
			<p>Major Uses:</p> <ol style="list-style-type: none"> 1. CHEM INT FOR PIGMENTS-EG, CI PIGMENT RED 22 & DYES-EG AZOIC DIAZO COMPONENT. **QC REVIEWED** [SRI] <p>Consumption Patterns:</p> <ol style="list-style-type: none"> 1. ESSENTIALLY 100% AS CHEM INT FOR PIGMENTS & DYES. **QC REVIEWED** [SRI]