WV-0206 34-1

PLAINTIFF'S EXHIBIT

UC-2123

SAFETY AND HEALTH INFORMATION MANUAL



UNION CARBIDE

HEALTH, SAFETY, and ENVIRONMENTAL AFFAIRS GROUP
SPECIALTY CHEMICALS DIVISION

UCC 006521

UNION CARBIDE CORPORATION

PETROCHEMICAL DIVISIONS

SAFETY AND HEALTH INFORMATION MANUAL

MANUAL NUMBER: 46

ASSIGNED TO: J. R. DEMENT

DATE: SEPTEMBER 24, 1987

PLEASE DO NOT REASSIGN

IF YOU NO LONGER HAVE NEED FOR THIS MANUAL, RETURN IT TO:

SC DIVISION PERSONNEL AND PROCESS SAFETY MANAGER
HEALTH, SAFETY, AND ENVIRONMENTAL AFFAIRS DEPARTMENT
P. O. BOX 8004, BUILDING 82/907
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UNION CARBIDE INTERNAL EXPOSURE STANDARDS LIST

BASED ON CARCINOGENICITY, TERATOGENICITY OR OTHER SIGNIFICANT TOXICITY

(See Reverse Side for Explanations and Definitions)

SUBSTANCE (CAS No.)	CARCINOGENICITY	TERATO-GENICITY	OTHER SIGNIFICANT TOXICITY	EXPOSURE STANDARD FOLLOWED BY UNION CARBIDE (SOURCE)
2-Acetylamino-fluorene (53-96-3)	Animal Carcinogen	Animal Teratogen (R)		OSHA Standard
Acrylic acid (79-10-7)	**	**		2 ppm TWA_8 (UCC)
Acrylonitrile (107-13-1)	Human Carcinogen	Animal Teratogen (R)		2 ppm TWA_8 10 ppm C (OSHA)
Allyl Methacrylate 96-05-9		**	**	20 ppm TWA_8 (Skin) (UCC)
4-Aminodiphenyl (92-67-1)	Human Carcinogen	N.D.		OSHA Standard
Asbestos (1332-21-4)	Human Carcinogen	(—)		2 Fibers/cc TWA_8 10 Fibers/cc C >5 µm long (OSHA)
2,2'-Azobis-isobutyronitrile (78-67-1)	**	N.D.		0.5 ppm TWA_8 2 ppm STEL (UCC)

U.C. Corporate List (Effective 8-1-85)

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Benzene (71-43-2)	Human Carcinogen	Animal Teratogen (R)		10 ppm TWA_8 25 ppm C 50 ppm/10 – min duration (OSHA)
Benzidine (92-87-5)	Human Carcinogen	N.D.		OSHA Standard
Benzidine-derived dyes	Human Carcinogens	N.D.		As Low As Practical (UCC)
Benzyl Chloride (100-44-7)	**	N.D.		1 ppm TWA_8 (OSHA)
Bis-2-Chloro ethyl ether (111-44-4)	**	N.D.		15 ppm C (Skin) (UCC)
Bis-2-Chloro-ethyl-2-naphthyl-amine (494-03-1)	Human Carcinogen	N.D.		As Low As Practical (UCC)

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Bis-Chloromethyl ether (542-88-1)	Human Carcinogen	N.D.		OSHA Standard
Butadiene (106-99-0)	Animal Carcinogen	(—)		10 ppm TWA_8 (UCC)
Cadmium (7440-43-9)	Animal Carcinogen (R)	Animal Teratogen (R)		40 $\mu g/m^3$ TWA_8 (F) 200 $\mu g/m^3$ C (UCC)
Carbon Disulfide (75-15-0) (R)	N.D. (R)	N.D. (R)		10 ppm TWA_8 30 ppm STEL (15 min) (UCC) (R)
Carbon Tetra-chloride (56-23-5)	Animal Carcinogen	(—)	Embryotoxic	2 ppm TWA_8 4 ppm C (UCC)
Chlorodifluoro-methane (Fluorocarbon-22) (75-45-6)	**	Animal Teratogen* (R)		1000 ppm TWA_8 (ACGIH, UCC)

U.C. Corporate List (Effective 8-1-85)

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Chloroform (67-66-3)	Animal Carcinogen	Animal Teratogen (R)		10 ppm TWA_8 25 ppm STEL (UCC)
Chloroprene (126-99-8)	**	**	Embryotoxic	10 ppm TWA_8 (Skin) (ACGIH)
Chromium-6 compounds	Animal Carcinogen	**		0.05 mg/m^3 TWA_8 (as Cr) (ACGIH)
Diallylamine 124-02-7	N.D.	N.D.		10 ppm TWA_8 (UCC)
Di-Sec-butoxy-acetophenone (68109-57-9)	**	N.D.		**
3,3'-Dichloro-benzidine (and salts) (91-94-1)	Animal Carcinogen	N.D.		OSHA Standard
Dichlorofluoromethane (Fluorocarbon 21) (75-43-4)	**	**		10 ppm TWA_8 (ACGIH)

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Diethyl sulfate (64-67-5)	Animal Carcinogen	N.D.		1 ppm TWA_8 No skin or oral contact (UCC)
Diisopropyl sulfate (2973-10-6)	Suspect Human Carcinogen	N.D.		1 ppm TWA_8 No skin or oral contact (UCC)
1,2-Dimethoxy-ethane (110-71-4)	**	Animal Teratogen (R)		10 ppm TWA_8 25 ppm STEL (Skin) (UCC)
Dimethyl-acetamide (127-19-5)	N.D.	Animal Teratogen (R)		10 ppm TWA_8 No skin contact (OSHA)
Dimethylamine 124-40-3	N.D.	N.D.		10 ppm TWA_8 (ACGIH)
4-Dimethylamino-azobenzene (60-11-7)	Animal Carcinogen	Animal Teratogen (R)		OSHA Standard

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Dimethyl formamide (68-12-2)	**	Animal Teratogen (R)		10 ppm TWA_8 No skin contact (OSHA)
Dimethyl sulfate (77-78-1)	Animal Carcinogen	N.D.		0.1 ppm TWA_8 No skin or oral contact (ACGIH, UCC)
Dimethyl sulfoxide (67-68-5)	N.D.	Animal Teratogen (R)		10 ppm (Skin) TWA_8 (UCC)
1,4-Dioxane (123-91-1)	Animal Carcinogen	**		25 ppm TWA_8 100 ppm STEL (Skin) (ACGIH)
n-Dodecyl mercaptan (112-55-0)	**	**		0.5 ppm C (UCC) (R)
t-Dodecyl mercaptan (25103-58-6)	**	**		0.5 ppm TWA_8 (UCC)

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Dripolenes-A,B,C	Animal Carcinogen (D)	N.D.		600 $\mu g/m^3$ TWA_8 No skin contact (UCC)
Epichlorohydrin (106-89-8)	Animal Carcinogen	N.D.		0.5 ppm TWA_8 (UCC)
Epoxy resin ERL-2774 (25068-38-6)	Animal Carcinogen	N.D.		10 ppm TWA_8 No skin or oral contact (UCC)
Epoxy resin ERL-4205 (2386-90-5)	Animal Carcinogen	N.D.		10 ppm TWA_8 No skin or oral contact (UCC)
Epoxy resin ERL-4206 (106-87-6)	Animal Carcinogen	N.D.		10 ppm TWA_8 No skin or oral contact (UCC)
Epoxy resin ERL-4234 (26616-47-7)	Animal Carcinogen	N.D.		10 ppm TWA_8 No skin or oral contact (UCC)

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2-ethoxyethyl acetate CELLOSOLVE® Acetate 111-15-9	N.D.	Animal Teratogen (R)		5 ppm TWA_8 (Skin) (ACGIH) (R)
Ethylene dibromide (106-93-4)	Animal Carcinogen	**		0.1 ppm TWA_8 (UCC)
Ethylene dichloride (107-06-2)	Animal Carcinogen	(—)		5 ppm TWA_8 (UCC)
Ethylene glycol (107-21-1) (R)	(—) (R)	Animal Teratogen (R)		125 mg/m^3(50 ppm) C in vapor and/or mist form (UCC) (R)

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U.C. Corporate List (Effective 8-1-85)

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UNION CARBIDE INTERNAL EXPOSURE STANDARDS LIST

BASED ON CARCINOGENICITY, TERATOGENICITY OR OTHER SIGNIFICANT TOXICITY

(See Reverse Side for Explanations and Definitions)

SUBSTANCE (CAS No.)	CARCINOGENICITY	TERATO-GENICITY	OTHER SIGNIFICANT TOXICITY	EXPOSURE STANDARD FOLLOWED BY UNION CARBIDE (SOURCE)
Ethyleneimine (151-56-4)	Animal Carcinogen	**	Embryotoxic	OSHA Standard
Ethylene oxide (75-21-8)	Suspect Human Carcinogen	(—)		1 ppm TWA_8 Refer to OSHA Standards for other details
Ethylene thiourea (96-45-7)	Animal Carcinogen	Animal Teratogen (R)		As Low As Practical (UCC)
2-Ethylhexyl acrylate (103-11-7)	Animal Carcinogen (E)	N.D.		5 ppm TWA_8 (UCC)
Formaldehyde (50-00-0)	Animal Carcinogen	N.D.		2 ppm TWA_8 (UCC, see also OSHA)
Formamide (75-12-7)	N.D.	Animal Teratogen (R)		20 ppm TWA_8 No skin contact (ACGIH, UCC)
Fuel oil residues	Animal Carcinogen (D)	N.D.		As Low As Practical (UCC)

U.C. Corporate List (Effective 8-1-85)

UCC 006539

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UNION CARBIDE INTERNAL EXPOSURE STANDARDS LIST

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Hexafluoro-acetone (684-16-2)	N.D.	Animal Teratogen (R)		0.1 ppm TWA_8 No skin contact (ACGIH, UCC)
Hydrazine (302-01-2)	Animal Carcinogen	(—)		0.1 ppm (Skin) TWA_8 (ACGIH)
Hydrogen Sulfide (7783-06-4)	**	**	Chemical Asphyxiant	10 ppm TWA_8 (ACGIH, UCC)
Itaconic Acid (97-65-4)	**	**		5 mg/m^3 TWA_8 (UCC)
Lead (7439-92-1)	(—)	Animal Teratogen (R)		50 $\mu g/m^3$ TWA_8 30 $\mu g/m^3$ Action Level (OSHA)
Mercury Alkyl Compounds	**	Animal Teratogens* (R)		0.01 mg/m^3 TWA_8 (as Hg) (ACGIH, UCC)
Mercury, all compounds except Alkyl	**	**		0.05 mg/m^3 TWA_8 (as Hg) (ACGIH)

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UNION CARBIDE INTERNAL EXPOSURE STANDARDS LIST

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SUBSTANCE (CAS No.)	CARCINOGENICITY	TERATO-GENICITY	OTHER SIGNIFICANT TOXICITY	EXPOSURE STANDARD FOLLOWED BY UNION CARBIDE (SOURCE)
2-Methoxyethanol Methyl CELLOSOLVE® 109-86-4	N.D.	Animal Teratogen (R)		For women of childbearing potential: 2 ppm TWA_8 5 ppm, 15 min STEL (Skin) (UCC) For other persons: 5 ppm TWA_8 (Skin) (ACGIH) (R)
2-Methoxyethyl acetate Methyl CELLOSOLVE® Acetate 110-49-6	N.D.	Animal Teratogen (R)		For women of childbearing potential: 2 ppm TWA_8 5 ppm, 15 min STEL (Skin) (UCC) For other persons: 5 ppm TWA_8 (Skin) (ACGIH) (R)

U.C. Corporate List (Effective 8-1-85)

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UNION CARBIDE INTERNAL EXPOSURE STANDARDS LIST

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Methyl Chloride (74-87-3)	**	**		25 ppm TWA_8 50 ppm 15 min STEL (UCC)
Methyl chloro-methyl ether (107-30-2)	Human Carcinogen	N.D.		OSHA Standard
4,4-Methylene-dianiline (101-77-9)	Animal Carcinogen	N.D.		0.1 ppm TWA_8 No skin or oral contact (ACGIH, UCC)
Methylene Chloride (75-09-2)	**	**		50 ppm TWA_8 250 ppm 15 min STEL (UCC)
N-Methylpyrro-lidone (872-50-4)	**	**		500 ppm TWA_8 (UCC)
1-Naphthylamine (134-32-7)	**	N.D.		OSHA Standard

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2-Naphthylamine (91-59-8)	Human Carcinogen	N.D.		OSHA Standard
Neopentyl glycol diacrylate (2223-82-7)	Animal Carcinogen	N.D.		No skin or oral contact (UCC)
Nickel, Inorganic Compounds	Animal Carcinogen	**		1mg/m^3 TWA_8 (OSHA)
Nitric Oxide (10102-43-9)	**	**	Chemical Asphyxiant	25 ppm TWA_8 (OSHA)
Nitrobenzene (98-95-3)	**	N.D.	Chemical Asphyxiant	1 ppm (Skin) TWA_8 (OSHA)
4-Nitrodiphenyl (92-93-3)	Human Carcinogen	N.D.		OSHA Standard
2-Nitropropane (79-46-9)	Animal Carcinogen	**		25 ppm* TWA_8 (OSHA)

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N-Nitrosoamine compounds	Animal Carcinogen*	N.D.		No skin or oral contact (UCC)
N-Nitroso-dimethylamine (62-75-9)	Animal Carcinogen	(—)	Embryotoxic	OSHA Standard
N-Nitroso-N-Phenylhydroxyl-amine (148-97-0)	Animal Carcinogen	N.D.		*
Nitrous Oxide 10024-97-2 (R)	N.D. (R)	** (R)	Embryotoxic (R)	25 ppm TWA_8 (UCC) (R)
Ozone (10028-15-6)	**	**	Embryotoxic	0.1 ppm TWA_8 0.3 ppm STEL (ACGIH)
Peracetic Acid 79-21-0	**	**		10 ppm TWA_8 (Skin) (UCC)
Perchloro-ethylene (127-18-4)	**	(—)		50 ppm TWA_8 (ACGIH)

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Polychlorinated biphenyls(PCB's)	Animal Carcinogen	**	Embryotoxic	1 $\mu g/m^3$ * TWA_8 3 $\mu g/m^3$ C No skin contact (UCC)
β -Propiolactone (57-57-8)	Animal Carcinogen	N.D.		OSHA Standard
Propylene oxide (75-56-9)	Animal Carconigen	N.D.		20 ppm TWA_8 100 ppm STEL (UCC)
Pyrolysis fuel oil	Animal Carcinogen (D)	N.D.		200 $\mu g/m^3$ * TWA_8 600 $\mu g/m^3$ C No skin contact (UCC)
Quench oil	Animal Carcinogen (D)	N.D.		200 $\mu g/m^3$ * TWA_8 600 $\mu g/m^3$ C No skin contact (UCC)
Radiation	Human Carcinogen	Known human teratogen		0.5 REMS During Pregnancy 5 REMS-Equiv./yr. (NCRP Report 39, 1971)

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Resin B condensates	Animal Carcinogen	N.D.		200 $\mu g/m^3$ • TWA_8 600 $\mu g/m^3$ C No skin contact (UCC)
Styrene Oxide 96-09-3	**	**		10 ppm TWA_8 (Skin) (UCC) (R)
Sulfur Dioxide (7446-09-5)	**	N.D.		2 ppm TWA_8 5 ppm STEL (ACGIH)
2,3,7,8-Tetra-chlorodibenzo-p-Dioxin (TCDD) (1746-01-6)	Animal Carcinogen	Animal Teratogen (R)		No exposure* (UCC)
Tetramethyl ammonium hydroxide pentahydrate (10424-65-4)	N.D.	N.D.		As Low as Feasible (Skin) (UCC)
Tetramethylthiourea (2782-91-4)	N.D.	**	Embryotoxic	No exposure* (UCC)

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UNION CARBIDE INTERNAL EXPOSURE STANDARDS LIST

NOTES OF EXPLANATION:

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   (d) The symbol (—) indicates that the available evidence is sufficient to determine that a material does not cause a given effect.

DEFINITIONS:

1. **Human Carcinogen** — Applied to any material where there is sufficient credible and relevant evidence, based principally on observation of exposed human populations, which demonstrates that the material has caused cancer in humans.

2. **Suspect Human Carcinogen** — Applied to any material for which there is sufficient credible evidence, based on animal and other related studies, that the material is carcinogenic in laboratory animals, and for which other relevant information is available to determine that the material might also be carcinogenic for humans.

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4. **Teratogen** means a chemical substance or physical agent which causes abnormalities in structural and/or functional development during gestation, in the absence of significant maternal toxicity. Depending on the nature of the information available, teratogens may be described as human or animal.

5. **Embryotoxic** effects are harmful effects produced in the embryo but not causing structural or functional abnormalities of development.

6. **Chemical asphyxiants** (biological asphyxiants) are materials which are absorbed into the body and interfere with the transport and/or utilization of oxygen in the body.

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UNION CARBIDE INTERNAL EXPOSURE STANDARDS LIST

BASED ON CARCINOGENICITY, TERATOGENICITY OR OTHER SIGNIFICANT TOXICITY

(See Reverse Side for Explanations and Definitions)

SUBSTANCE (CAS No.)	CARCINOGENICITY	TERATO-GENICITY	OTHER SIGNIFICANT TOXICITY	EXPOSURE STANDARD FOLLOWED BY UNION CARBIDE (SOURCE)
Tetramethylurea (632-22-4)	N.D.	Animal Teratogen (R)		No exposure* (UCC)
Tetrapropyl ammonium hydroxide (4499-86-9)	N.D.	N.D.		As Low as Feasible (Skin) (UCC)
Thionyl chloride (7719-09-7)	**	**		1 ppm or As Low As Feasible (UCC)
Toluene-2,4-diamine (95-80-7)	Animal Carcinogen	N.D.		0.1 ppm* TWA_8 No skin or oral contact (UCC)
Trichloro-ethylene (79-01-6)	**	(—)		50 ppm TWA_8 (ACGIH)
Trimethoxy Silane 2487-90-3	N.D.	N.D.		0.5 ppm TWA_8 5 ppm, 15 min STEL (UCC)
Vinyl Chloride (75-01-4)	Human Carcinogen	**		1 ppm TWA_8 5 ppm averaged over 15 min period (OSHA)

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UNION CARBIDE INTERNAL EXPOSURE STANDARDS LIST

BASED ON CARCINOGENICITY, TERATOGENICITY OR OTHER SIGNIFICANT TOXICITY

(See Reverse Side for Explanations and Definitions)

SUBSTANCE (CAS No.)	CARCINOGENICITY	TERATO-GENICITY	OTHER SIGNIFICANT TOXICITY	EXPOSURE STANDARD FOLLOWED BY UNION CARBIDE (SOURCE)

FOOTNOTES

(B) Teratogenic only in the presence of maternal toxicity.

(D) Standard based on suspected presence of Polycyclic Aromatic Hydrocarbons.

(E) Based on chronic skin painting study: To be reviewed on completion of Inter-Industry Acrylate Committee Chronic Toxicity Study.

(F) Values as "Respirable Fraction," measured as Cadmium.

(R) Revision to previous list.

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