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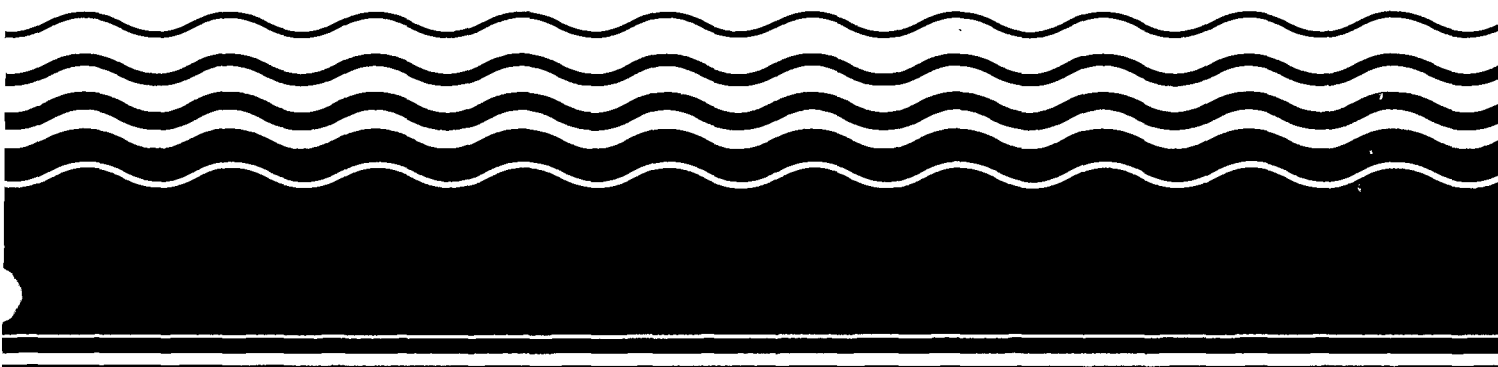
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Health Effects Assessment Summary Tables FY 1994

Supplement Number 1



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HEALTH EFFECTS ASSESSMENT

SUMMARY TABLES

FY-1994 Supplement No. 1

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HEALTH EFFECTS ASSESSMENT SUMMARY TABLES
FY-1994 SUPPLEMENT NO. 1

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July 30, 1994

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INTRODUCTION

This document is the July 1994 Supplement No. 1 for the March 1994 Annual Update of the Health Effects Assessment Summary Tables (HEAST) prepared by EPA's Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH for use at both Superfund and RCRA sites. Supplement No. 1 updates the information in the March 1994 HEAST Annual Update. When using this document, please refer to the Annual Update. The supplements were not produced to stand alone and do not contain the User's Guides or Appendix that are available in the Annual Update. Thus, the user is strongly encouraged to reference the March 1994 HEAST for this information.

The HEAST is a comprehensive listing consisting almost entirely of PROVISIONAL HEALTH EFFECTS INFORMATION relative to oral and inhalation routes for chemicals of interest to Superfund, the Resource Conservation and Recovery Act (RCRA), and the EPA in general. These entries in the HEAST are limited to chemicals that have undergone review and have the concurrence of individual Agency Program Offices, and each is supported by an Agency reference. This health effects information has not, however, had enough review to be recognized as high quality, Agency-wide consensus information.

The Integrated Risk Information System (IRIS) is the Agency's official repository of Agency-wide consensus chronic human health risk information. IRIS evaluations are conducted by the Agency's Work Group Review process, i.e., they have been examined by either the Reference Dose/Reference Concentration (RfD/RfC) Work Group or

the Carcinogen Risk Assessment Verification Endeavor (CRAVE) Work Group. These Agency Work Groups conduct a process that leads to internal Agency scientific consensus regarding health effects information on a chemical. This information is recorded on IRIS, is considered to be "Work Group Verified," and does not appear on the HEAST. Thus, provisional health effects information on the HEAST is subject to possible review and revision by these Agency Work Groups.

There are two exceptions to the above discussion. The HEAST also contains information on chemicals that are a part of the National Ambient Air Quality Standards (NAAQS) or the Drinking Water Criteria Document (DWCD) series. In each of these cases, the chemicals are subject to extensive scientific peer review processes of extremely high quality.

CHEMICAL STATUS DEFINITIONS

Chemicals reviewed by the Agency Work Groups are classified according to their status as either "verified," "not verifiable," or "under review." The toxicity values (other than NAAQS or DWCD values) listed on the HEAST are considered to be "provisional." The Agency has no official definitions for these terms, but the HEAST user may interpret them as follows:

Provisional: A toxicity value or a cancer value is "provisional" if the value has had some form of Agency review, but it does not appear on the IRIS system. These values are generated in several ways. Often they are determined in the course of developing an Agency document on a chemical or on a class of chemicals. Some have been generated through the Work Group process, but have not yet been input to the IRIS system. At the time each value was derived, all available information on the chemical was evaluated, the value was calculated using

the most current methodology, and a consensus was reached on the value by Agency scientists.

Brackets are placed around the names of toxicity and carcinogenicity values on the HEAST to distinguish these "provisional" values from information on IRIS. The following names are affected: RfD to [RfD], RfC to [RfC], slope factor to [slope factor], EPA group to [EPA Group] and unit risk to [unit risk].

These "provisional" values are found on the HEAST. They do not appear on IRIS.

Verified: A toxicity value or a cancer value is "Work Group Verified" if all available information on the value has been examined by an Agency Work Group, the value has been calculated using current Work Group methodology, a unanimous consensus has been reached on the value by the Work Group, and the value appears on IRIS.

Some numbers that have achieved unanimous consensus by the Work Group may appear on the HEAST for a short time until they are loaded onto IRIS, at which time they are termed, "verified." During the interim, they are considered to be "provisional" values that are still "under review" by the Work Group.

These "verified" numbers only appear on IRIS. They do not appear on the HEAST.

Not verifiable: A toxicity value is "not verifiable" if an Agency Work Group has considered all available data on a chemical and has unanimously determined that data are inadequate to generate a value that would be suitable for inclusion on IRIS. No toxicity value is calculated; no toxicity value is available for IRIS or the HEAST.

This "not verifiable" status is noted on IRIS, and is sometimes found on the HEAST, with a pointer to the IRIS system.

Under Review: A toxicity value is "under review" if an Agency Work Group is in the process of considering all available data on a chemical. All Work Group chemicals will have this status until the toxicity value is placed on the IRIS system. Toxicity values that have been withdrawn from IRIS by a Work Group for further review will have this status.

This "under review" status may be indicated on IRIS or on the HEAST. During this time, "provisional" toxicity values may appear on the HEAST.

In all cases, the status of a chemical may change as new data become available, and the assessment is revisited.

CAUTION

It is imperative for each user of the HEAST to recognize that the values listed in the toxicity tables and the cancer table are generally considered to be PROVISIONAL HEALTH EFFECTS INFORMATION. The user is referred to IRIS for "Work Group Verified" values. It is also important to remember that the numbers in these tables alone tell very little about the adverse effects of a chemical or the quality of evidence on which health effects information is based. Original assessment documents must be consulted by users of the HEAST in order to fully appreciate the strengths and limitations of a specific data base. Original source documents will allow for the most complete characterization of potential toxicity associated with the range of exposure pathways generally evaluated at Superfund and RCRA sites. The Reference Tables point the user to these sources.

CONTRIBUTORS

Chemicals commonly found at RCRA sites as identified by the Office of Solid Waste's (OSW) Technical Assessment Branch are included in the HEAST. The Office of Radiation Programs has provided data on radionuclide carcinogenicity for Tables 4A and 4B of the HEAST. Finally, the Office of Air Quality Planning and Standards (OAQPS) has provided information on chemicals for which Air Quality Criteria Documents and National Ambient Air Quality Standards have been developed.

CHEMICALS LISTED

Most of the chemicals included on the toxicity tables and carcinogenicity table are those for which at least one of the following EPA documents has been written: Health Effects Assessment Document (HEA), Health and Environmental Effects Profile (HEEP), Health and Environmental Effects Document (HEED), Health Assessment Document (HAD), Air Quality Criteria Document (AQCD), Drinking Water Criteria Document (DWCD). A description of each is provided in Appendix A, Section I. In a few cases, the values are supported by other written material, such as Work Group meeting notes or Carcinogen Assessment Group (CAG) Profiles. Radionuclide slope factor values are calculated by the EPA's Office of Radiation Programs.

The names of criteria pollutants that are regulated as National Ambient Air Quality Standards (NAAQS) under the Clean Air Act are listed in the main body of the HEAST, but the actual criteria are included as Section V of Appendix A: Technical Information. The NAAQS were not included in the tables in order to distinguish them from the reference concentration ([RfC]) values. The NAAQS and [RfC]s represent different levels of review and different methods of calculation and thus, must be interpreted and used differently.

HIERARCHY OF SOURCES

It is recognized that at any point in time there may be multiple old and new Agency documents or data bases that present different values on a specific chemical. For chemicals other than those represented by the NAAQS or DWCDs, the following hierarchy of

sources is recommended in evaluating chemical toxicity for Superfund sites:

1. The Agency's Integrated Risk Information System (IRIS) and cited references. Changes are made in this data base on a monthly basis, but there may be data gaps. Call the RISK INFORMATION HOTLINE at (513)569-7254 for further information.
2. The Health Effects Assessment Summary Tables (HEAST) and cited references.
3. Consultation with the Superfund Health Risk Technical Support Center (TSC) at (513)569-7300.
4. Do not consult either the toxicity tables (Appendix A) in the Superfund Public Health Evaluation Manual (SPHEM, U.S. EPA, 1986) or the September 1988 Public Health Risk Evaluation Data Base (PHRED) as these sources are likely to contain numerous values that have since become out-of-date.

QUESTIONS

Chemical Toxicity and Carcinogenicity

Regional EPA Superfund Staff may direct questions regarding the contents of the chemical toxicity and carcinogenicity tables on the HEAST (e.g., chemicals not covered, chemicals with pending [RfD]s) to EPA's Superfund Health Risk Technical Support Center (TSC) in Cincinnati, OH at (513)569-7300. Questions from other users must be submitted to the TSC in writing and must contain the following information:

- Superfund site name, site location and twelve-digit site number;
- Name and phone number of the site Remedial Project Manager (RPM) or Regional Risk Assessor/Toxicologist;
- Detailed description of the health effects information related question.

Please send requests via mail or FAX to:

Superfund Health Risk Technical Support Center
US EPA
26 W. Martin Luther King Dr.
Environmental Criteria and Assessment Office
MS 117
Cincinnati, OH 45268
FAX#: (513)569-7159

RCRA Chemicals

Questions about RCRA chemicals may be addressed by calling the Office of Solid Waste at (202) 260-4761.

Radionuclide Carcinogenicity

Questions concerning radionuclide carcinogenicity should first be addressed by contacting the appropriate Regional Radiation Program Manager. A listing of these managers and several contacts in the Office of Radiation Programs can be found in Exhibit 2 of the User's Guide - Radionuclide Carcinogenicity.

REFERENCES

Most cited Agency references (e.g., HEAs, HEEPs, HEEDs), are (or will soon be) available through the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161 [(703)487-4650]. Carcinogen Assessment Group (CAG) Profiles cited in Table 3 are available through the RCRA docket (202)260-9327.

Drinking water documents are available by calling the Drinking Water Docket at (202)260-3027.

ORDERING INFORMATION

Limited copies of the HEAST are available for EPA Superfund staff, State Superfund programs and other Federal agencies working

on Superfund sites. Users in these groups can call Syracuse Research Corporation (616) 375-2121 to be put on the mailing list.

EPA's Office of Solid Waste (OSW) requests that their users (i.e., OSW staff, contractors, State solid waste programs) call the Health Assessment Section (202) 260-4761 to obtain copies of the HEAST. Regional OSW staff are reminded that copies are sent to all EPA Regional libraries.

Users of the HEAST in EPA's Office of Air and Radiation and State air programs should call Kelly Rimer of EPA's Office of Air Quality Planning and Standards at (919) 541-2962.

All other users must purchase the document from:

National Technical Information Service (NTIS)
5285 Port Royal Road
Springfield, VA 22161
(703) 487-4650

For ordering information, call the NTIS Subscriptions Department at (703) 487-4630. NTIS normally ships 4th class United States mail. Therefore, users may wish to consult with NTIS concerning the use of an overnight delivery service. When ordering the 1994 Health Effects Assessment Summary Table annual update and supplements from NTIS refer to the following order numbers:

PB94-921100: Annual HEAST Update and Supplements

PB94-921199: Annual HEAST update

PB94-921101: July 1994 Supplement No. 1

PB94-921102: November 1994 Supplement No. 2

WHAT'S NEW IN THE JULY 1994 SUPPLEMENT NO. 1

GENERAL CHANGES -- CHEMICAL TOXICITY AND CARCINOGENICITY

The changes in this version of the HEAST reflect changes in IRIS through May 1, 1994. It is also current with RfD/RfC and CRAVE Work Group activities through May 1, 1994.

CHEMICAL-SPECIFIC CHANGES -- CHEMICAL TOXICITY AND CARCINOGENICITY

A. CHEMICAL-SPECIFIC CHANGES ON HEAST TABLE 1: SUBCHRONIC AND CHRONIC TOXICITY (OTHER THAN CARCINOGENICITY)

Acrylic acid 000079-10-7

The chronic oral RfD has been replaced on IRIS. The chronic oral RfD on IRIS was adopted as the subchronic oral [RfD].

Aroclor 1248 012672-29-6

An indicator was added to show that a comment is now on IRIS that the chronic oral RfD is considered not verifiable by the RfD/RfC (07/20/93) Work Group.

Aroclor 1254 0111097-69-1

The chronic [RfD] under review by the RfD/RfC Work Group was added to the table. The subchronic [RfD] was derived from the chronic [RfD].

Carbon Disulfide 000075-15-0

No change in the table. Reference to the 1989 RfD/RfC Work Group was added.

Dibromoethane, 1,2- 000106-93-4

The subchronic [RfC] was modified to be consistent with the chronic [RfC].

Dimethylphthalate 000131-11-3

The chronic oral [RfD] has been removed. A comment was added to show that the chronic oral [RfD] is considered not verifiable by the RfD/RfC (02/16/94) Work Group.

Methylenediphenyl isocyanate, 4,4- /
(Diphenylmethanediisocyanate) 000101-68-8

An indicator was added to show that the chronic inhalation RfC is now on IRIS. The chronic inhalation RfC on IRIS was adopted as the subchronic inhalation [RfC].

Trichloroethane, 1,1,1,- 000071-55-6

A comment pertaining to the subchronic [RfC] was added to the table.

B. CHEMICAL-SPECIFIC CHANGES ON HEAST TABLE 2: ALTERNATE METHODS -- SUBCHRONIC AND CHRONIC TOXICITY (OTHER THAN CARCINOGENICITY)

No changes were made to HEAST Table 2.

C. CHEMICAL-SPECIFIC CHANGES ON HEAST TABLE 3: CARCINOGENICITY

Bis(2-chloroisopropyl) ether 039638-32-9

Removed from Table 3. Compound tested was **Technical bis(2-chloro-1-methylethyl) ether** containing 70% **bis(2-chloro-1-methylethyl) ether** and 30% **bis(2-chloroisopropyl) ether**. [Slope factor], [unit risk], and [EPA Group] classification were only derived for **bis(2-chloro-1-methylethyl) ether**.

Bis(2-chloro-1-methylethyl) ether 000108-06-1

Replaced on Table 3. Compound tested was **Technical bis(2-chloro-1-methylethyl) ether** containing 70% **bis(2-chloro-1-methylethyl) ether** and 30% **bis(2-chloroisopropyl) ether**. [Slope factor], [unit risk], and [EPA Group] classification were only derived for **bis(2-chloro-1-methylethyl) ether**.

Dimethylhydrazine, 1,2- 000540-73-8

The general comment, "Contact the Superfund Health Risk Technical Support Center" has been removed from the table.

D. CHEMICAL-SPECIFIC CHANGES ON HEAST TABLES 4A AND 4B: RADIONUCLIDE CARCINOGENICITY -- SLOPE FACTORS

No new radionuclide slope factors were added to Tables 4A and 4B, and none of the slope factors listed in the March 1994 HEAST Annual Update were changed.

HEAST TABLE 1: SUBCHRONIC AND CHRONIC TOXICITY (OTHER THAN CARCINOGENICITY)

July 1994

CHEMICAL LEVEL	DOSE ROUTE	SPECIES EXPERIMENT LENGTH	TARGET	CRITICAL EFFECT	[RfC]	Subchronic	Chronic	REFERENCE
					(mg/cu m) UF	[RfD] (mg/kg/day) UF	[RfC] (mg/cu m) UF	
ACRYLIC ACID								
	NOAEL 53 MG/KG/DAY	RAT						
	ORAL: DRINKING WATER	2 GENERATION	WHOLE BODY	DECREASED PUP WEIGHT		5E-1 100	IRIS	005836
	SUBCHRONIC [RfD] COMMENT: THE CHRONIC ORAL RfD ON IRIS WAS ADOPTED AS THE SUBCHRONIC ORAL [RfD].							
	LOAEL 5 PPM	MOUSE						
	INHALATION: INTERMITTENT	13 WEEKS	NASAL MUCOSA	LESIONS	3E-3 100		IRIS	010346
AROCLOR 1248								
							IRIS	
								010940
	CHRONIC RfD COMMENT: THE CHRONIC ORAL RfD IS CONSIDERED NOT VERIFIABLE (07/20/93) BY THE RfD/RfC WORK GROUP.							
AROCLOR 1254								
	LOAEL 0.005 MG/KG/DAY	MONKEY	IMMUNE SYSTEM	TOXICITY		5E-5 100	2E-5 300	010963
CARBON DISULFIDE								
	NOEL 11 MG/KG/DAY	RABBIT						
	INHALATION: INTERMITTENT		FETUS	TOXICITY		1E-1 100	IRIS	010259
	SUBCHRONIC [RfD] COMMENT: THE CHRONIC ORAL RfD WAS ADOPTED AS THE SUBCHRONIC ORAL [RfD].							
	CHRONIC [RfD] COMMENT: THE CHRONIC ORAL RfD WAS DETERMINED FROM A TERATOLOGY STUDY WITH EXPOSURES BEFORE AND DURING THE ENTIRE GESTATION PERIOD.							
	NOAEL 10 MG/CU M	RAT						
	INHALATION: INTERMITTENT	GESTATION	FETUS	TOXICITY	1E-2 1000		1E-2 1000	010430
	SUBCHRONIC [RfC] COMMENT: THE CHRONIC INHALATION [RfC] WAS ADOPTED AS THE SUBCHRONIC INHALATION [RfC].							

HEAST TABLE 1: SUBCHRONIC AND CHRONIC TOXICITY (OTHER THAN CARCINOGENICITY)

March 1994

CHEMICAL LEVEL	DOSE ROUTE	SPECIES EXPERIMENT LENGTH	TARGET	CRITICAL EFFECT	Subchronic		Chronic		REFERENCE
					[RfC] (mg/cu m) UF	[RfD] (mg/kg/day) UF	[RfC] (mg/cu m) UF	[RfD] (mg/kg/day) UF	
DIBROMOETHANE, 1,2- LOAEL 88 PPB		HUMAN							
	INHALATION: INTERMITTENT	000106-93-4	SPERM	EFFECTS	2E-3 100		2E-4 1000		010854
SUBCHRONIC [rfc] COMMENT: THE CHRONIC INHALATION [rfc] WAS MODIFIED TO ESTIMATE THE SUBCHRONIC INHALATION [rfc].									
CHRONIC [rfc] COMMENT: UNDER REVIEW, CURRENT NUMBER SUBJECT TO CHANGE.									
GENERAL COMMENT: ALSO SEE HEAST TABLE 3: CARCINOGENICITY.									
DIMETHYLPHTHALATE									
		000131-11-3							
CHRONIC RfD COMMENT: THE CHRONIC ORAL [RfD] IS CONSIDERED NOT VERIFIABLE (02/16/94) BY THE RfD/RfC WORK GROUP.									
IRIS									
CHRONIC RfC COMMENT: THE CHRONIC INHALATION RfC IS CONSIDERED NOT VERIFIABLE (07/26/90) BY THE RfD/RfC WORK GROUP.									
METHYLENEDIPHENYL ISOCYANATE, 4,4- / (DIPEHNYLMETHANE DIISOCYANATE)									
NOAEL 0.2 MG/CU M		RAT							
	INHALATION: INTERMITTENT	000101-68-8	24 MONTHS	NASAL CAVITY LESIONS	2E-5 300		IRIS		010449
SUBCHRONIC [rfc] COMMENT: THE CHRONIC INHALATION RfC ON IRIS WAS ADOPTED AS THE SUBCHRONIC INHALATION [rfc].									
TRICHLOROETHANE, 1,1,1-									
		000071-55-6							
SUBCHRONIC [RfD] COMMENT: CONTACT THE SUPERFUND HEALTH RISK TECHNICAL SUPPORT CENTER: (513) 569-7300.									
SUBCHRONIC [rfc] COMMENT: CONTACT THE SUPERFUND HEALTH RISK TECHNICAL SUPPORT CENTER: (513) 569-7300.									

REFERENCES FOR HEAST TABLE 1: SUBCHRONIC AND CHRONIC TOXICITY
(OTHER THAN CARCINOGENICITY)

July 1994

ACRYLIC ACID

000079-10-7

005836 BASF. 1993. REPRODUCTION TOXICITY STUDY WITH ACRYLIC ACID IN RATS: CONTINUOUS ADMINISTRATION IN THE DRINKING WATER OVER 2 GENERATIONS (1 LITTER IN THE FIRST AND 1 LITTER IN THE SECOND GENERATION). PROJECT NO. 71R0114/92011. BASF AKTIENGESellschaft, DEPT. OF TOXICOLOGY, RHEIN, FRG.

US EPA. 1994. RfD/RfC WORK GROUP.

010346 MILLER, RR, JA AYERS, GC JERSEY AND MJ MCKENNA. 1981. INHALATION TOXICITY OF ACRYLIC ACID. FUND APPL TOXICOL. 1(3): 271-277.

MILLER, RR, JA AYERS, GC JERSEY. 1979. ACRYLIC ACID 90-DAY VAPOR INHALATION STUDY WITH RATS AND MICE. FINAL REPORT #79RC-1024. TOXICOLOGY RESEARCH LABORATORY, HEALTH AND ENVIRONMENTAL SCIENCE, DOW CHEMICAL COMPANY, MIDLAND, MI.

US EPA. 1990. RfD/RfC WORK GROUP.

AROCLOR 1248

012672-29-6

010940 US EPA. 1993. RfD/RfC WORK GROUP.

AROCLOR 1254

011097-69-1

010963 US EPA. 1994. RfD/RfC WORK GROUP.

CARBON DISULFIDE

000075-15-0

010259 HARDIN BD, GP BOND, MR SIKOR, FD ANDREW, RP BELILES AND RW NIEMEIR. 1981. TESTING OF SELECTED WORKPLACE CHEMICALS FOR TERATOGENIC POTENTIAL. SCAND J WORK ENVIRON HEALTH. 7(SUPPL 4): 66-75.

US EPA. 1985. RfD/RfC WORK GROUP.

010430 TABACOVA S, LA HINKOVA, L BALABAEVA. 1978. CARBON DISULFIDE TERATOGENICITY AND POSTNATAL EFFECTS IN RATS. TOXICOL LETT. 2(3): 129-133.

TABACOVA S, B NIKIFOROV, L BALABAEVA. 1983. CARBON DISULFIDE INTRAUTERINE SENSITIZATION. J APPL TOXICOL. 3(5): 233-239.

US EPA. 1986. HEALTH AND ENVIRONMENTAL EFFECTS PROFILE FOR CARBON DISULFIDE. PREPARED BY THE OFFICE OF HEALTH AND ENVIRONMENTAL ASSESSMENT, ENVIRONMENTAL CRITERIA AND ASSESSMENT OFFICE, CINCINNATI, OH FOR THE OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE, WASHINGTON, DC.

US EPA. 1989. RfD/RfC WORK GROUP.

DIBROMOETHANE, 1,2-

000106-93-4

010854 RATCLIFFE JM, SM SCHRADER, K STEENLAND, DE CLAPP, T TURNER AND RW HORNUNG. 1987. SEMEN QUALITY IN PAPAYA WORKERS WITH LONG-TERM EXPOSURE TO ETHYLENE BROMIDE. BR J IND MED. 44: 317-326.

SCHRADER SM, TW TURNER AND JM RATCLIFFE. 1988. THE EFFECTS OF ETHYLENE BROMIDE ON SEMEN QUALITY: A COMPARISON OF SHORT-TERM AND CHRONIC EXPOSURE. REPROD TOXICOLOGY. 2: 191-198.

US EPA. 1992. RfD/RfC WORK GROUP.

REFERENCES FOR HEAST TABLE 1: SUBCHRONIC AND CHRONIC TOXICITY
(OTHER THAN CARCINOGENICITY)

July 1994

DIMETHYLPHTHALATE

000131-11-3

010267 US EPA. 1994. RfD/RfC WORK GROUP.

010894 US EPA. 1990. RfD/RfC WORK GROUP.

METHYLENEDIPHENYL ISOCYANATE, 4,4- / (DIPHENYLMETHANE DIISOCYANATE) 000101-68-8

010449 REUZEL PGJ, JHG ARTS, MHM KUYPERS, ET AL. 1990. CHRONIC TOXICITY/CARCINOGENICITY INHALATION STUDY OF POLYMERIC METHYLENEDIPHENYL DIISOCYANATE AEROSOL IN RATS. FINAL REPORT. PREPARED BY CIVO INSTITUTE FOR THE INTERNATIONAL ISOCYANATE INSTITUTE.

REUZEL PGJ, JHG ARTS, LG LOMAX, ET AL. 1998. CHRONIC INHALATION AND CARCINOGENICITY STUDY OF RESPIRABLE POLYMERIC METHYLENE DIPHENYL DIISOCYANATE (POLYMERIC MDI) AEROSOL IN RATS. FUND APPL TOXICOL. 22: 195-210.

US EPA. 1993. RfD/RfC WORK GROUP.

HEAST TABLE 3: CARCINOGENICITY

July 1994

CHEMICAL	ROUTE	EXPERIMENT LENGTH SPECIES	TARGET	CANCER	[EPA GROUP]	[SLOPE FACTOR]		[UNIT RISK]		REFERENCE
						ORAL (mg/kg/day) ⁻¹	INHALATION (mg/kg/day) ⁻¹	ORAL (ug/L) ⁻¹	INHALATION (ug/cu m) ⁻¹	
BIS(2-CHLORO-1-METHYLETHYL) ETHER	ORAL: GAVAGE	2 YEARS MOUSE	000108-06-1 LIVER LUNG	TUMORS TUMORS	C	7E-2	3.5E-2	2E-6	1E-5	005079

INHALATION [SLOPE] COMMENT: BASED ON ROUTE TO ROUTE EXTRAPOLATION (50% RESPIRATORY ABSORPTION). SEE APPENDIX A-II: DOSE CONVERSIONS ON HEAST.
 GENERAL COMMENT: COMPOUND TESTED CONTAINED 70% BIS(2-CHLORO-1-METHYLETHYL)ETHER AND 30% BIS(2-CHLOROISOPROPYL)ETHER. ALSO SEE HEAST TABLE 1:
 SUBCHRONIC AND CHRONIC TOXICITY (OTHER THAN CARCINOGENICITY).

DIMETHYLHYDRAZINE, 1,2-		000540-73-8			B2					010962
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REFERENCES FOR HEAST TABLE 3: CARCINOGENICITY

July 1994

BIS(2-CHLORO-1-METHYLETHYL) ETHER

000108-06-1

005079 NTP (NATIONAL TOXICOLOGY PROGRAM). 1982. CARCINOGENIC BIOASSAY OF BIS(2-CHLORO-1-METHYLETHYL) ETHER (70%) CONTAINING 2-CHLORO-1-METHYLETHYL(2-CHLOROPROPYL) ETHER (30%) IN B6C31 MICE (GAVAGE STUDY). NCI CARCINOGEN TECH REP SER NO 239. 105 P. ALSO PUBL AS DHHS (NIH) 83-1795

US EPA. 1987. HEALTH AND ENVIRONMENTAL EFFECTS DOCUMENT FOR HALOETHERS. PREPARED BY THE OFFICE OF HEALTH AND ENVIRONMENTAL ASSESSMENT, ENVIRONMENTAL CRITERIA AND ASSESSMENT OFFICE, CINCINNATI, OH FOR THE OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE, WASHINGTON, DC.

DIMETHYLHYDRAZINE, 1,2-

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