

## Maneb; CASRN 12427-38-2

Human health assessment information on a chemical substance is included in the IRIS database only after a comprehensive review of toxicity data, as outlined in the [IRIS assessment development process](#). Sections I (Health Hazard Assessments for Noncarcinogenic Effects) and II (Carcinogenicity Assessment for Lifetime Exposure) present the conclusions that were reached during the assessment development process. Supporting information and explanations of the methods used to derive the values given in IRIS are provided in the [guidance documents located on the IRIS website](#).

### STATUS OF DATA FOR Maneb

**File First On-Line 09/07/1988**

Category (section)	Assessment Available?	Last Revised
<b>Oral RfD (I.A.)</b>	yes	09/07/1988
<b>Inhalation RfC (I.B.)</b>	not evaluated	
<b>Carcinogenicity Assessment (II.)</b>	not evaluated	

## I. Chronic Health Hazard Assessments for Noncarcinogenic Effects

### I.A. Reference Dose for Chronic Oral Exposure (RfD)

Substance Name — Maneb

CASRN — 12427-38-2

Last Revised — 09/07/1988

The oral Reference Dose (RfD) is based on the assumption that thresholds exist for certain toxic effects such as cellular necrosis. It is expressed in units of mg/kg-day. In general, the RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. Please refer to the Background Document for an elaboration of these concepts. RfDs can also be derived for the noncarcinogenic health effects of substances that are also carcinogens. Therefore, it is essential to refer to other sources of

information concerning the carcinogenicity of this substance. If the U.S. EPA has evaluated this substance for potential human carcinogenicity, a summary of that evaluation will be contained in Section II of this file.

### I.A.1. Oral RfD Summary

Critical Effect	Experimental Doses*	UF	MF	RfD
<b>Increased thyroid weight</b>	NOEL: 5 mg/kg/day LEL: 15 mg/kg/day	1000	1	5E-3 mg/kg/day
<b>6-Month Monkey Feeding Study</b>				
<b>Rohm and Haas Co., 1977; Maneb Task Force, 1986</b>				

\*Conversion Factors -- None

### I.A.2. Principal and Supporting Studies (Oral RfD)

Rohm and Haas Company. 1977. MRID No. 00129980; HED Doc. No. 004920. Maneb Data Task Force. 1986. MRID No. 00161552; HED Doc. No. 004920. Available from U.S. EPA. Write to FOI, U.S. EPA Washington, DC 20460.

Groups of 4 male and 4 female rhesus monkeys were fed 0, 100, 300, or 3000 ppm of technical maneb (90% active) for 6 months. At 3000 ppm treatment-related effects consisted of increased thyroid weights, reduced I131 uptake by the thyroid, and lower mean percentage of protein-bound I131. At 300 ppm increased thyroid weights were seen. The NOEL for systemic toxicity was established at 100 ppm, or 5 mg/kg/day.

### I.A.3. Uncertainty and Modifying Factors (Oral RfD)

UF — The UF of 1000 allows for uncertainty in the extrapolation of dose levels from laboratory animals to humans (10A) uncertainty in the threshold for sensitive humans (10H) and uncertainty in the effect of duration on toxicity when extrapolating from subchronic to chronic exposure.

MF — None

#### **I.A.4. Additional Studies/Comments (Oral RfD)**

Although a 1-year dog study showed effects at lower dose levels than the monkey study, the EPA felt that the dog study was not adequate for establishing an RfD because: mongrel dogs were used (source unknown), the age of the animal was not always specified (some were 10-12 years old), only one female dog was used (control group), food consumption data were not presented, and the animals were coprophagic.

Data Considered for Establishing the RfD:

- 1) 6-Month Feeding - monkey: Principal study - see previous description; core grade minimum
- 2) 1-Year Oral - dog: LEL=2 mg/kg/day (edema of spinal nerves with loss of myelin); core grade supplementary (duPont and Co., 1955a)
- 3) 31-Month Feeding - rat: NOEL=15 mg/kg/day; LEL=50 mg/kg/day (decreases in body weight, increases in mean absolute thyroid weight, an increased incidence of bladder epithelial dysplasia); core grade supplementary (Rohm and Haas Co., 1979)
- 4) 2-Year Feeding - rat: NOEL=12.5 mg/kg/day; LEL=125 mg/kg/day (nodule goiter and thyroid adenomas); core grade supplementary (duPont and Co., 1955b)

Data gap(s): Chronic Rat Feeding Study; Chronic Dog Feeding Study; Rat Teratology Study; Rabbit Teratology Study; Rat Reproduction Study

#### **I.A.5. Confidence in the Oral RfD**

Study — Medium

Database — Low

RfD — Low

The quality of the study used for calculating the RfD is good; therefore the study is given a medium confidence rating. Since extensive data gaps exist for maneb, the database and RfD are given low confidence ratings.

#### **I.A.6. EPA Documentation and Review of the Oral RfD**

Pesticide Registration Standard, September 1986

## Pesticide Registration Files

Agency Work Group Review — 12/02/1985, 09/17/1987, 10/14/1987

Verification Date — 10/14/1987

Screening-Level Literature Review Findings — A screening-level review conducted by an EPA contractor of the more recent toxicology literature pertinent to the RfD for Maneb conducted in November 2001 identified one or more significant new studies. IRIS users may request the references for those studies from the IRIS Hotline at [hotline.iris@epa.gov](mailto:hotline.iris@epa.gov) or (202)566-1676.

### **I.A.7. EPA Contacts (Oral RfD)**

Please contact the IRIS Hotline for all questions concerning this assessment or IRIS, in general, at (202)566-1676 (phone), (202)566-1749 (FAX) or [hotline.iris@epa.gov](mailto:hotline.iris@epa.gov) (internet address).

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### **I.B. Reference Concentration for Chronic Inhalation Exposure (RfC)**

Substance Name — Maneb

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Not available at this time.

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## **II. Carcinogenicity Assessment for Lifetime Exposure**

Substance Name — Maneb

CASRN — 12427-38-2

This substance/agent has not undergone a complete evaluation and determination under US EPA's IRIS program for evidence of human carcinogenic potential.

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**III. [reserved]**

**IV. [reserved]**

**V. [reserved]**

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## **VI. Bibliography**

Substance Name — Maneb  
CASRN — 12427-38-2

### **VI.A. Oral RfD References**

E.I. duPont de Nemours and Company, Inc. 1955a. MRID No. 00083292; HED Doc. No. 004806. Available from U.S. EPA. Write to FOI, U.S. EPA Washington, DC 20460.

E.I. duPont de Nemours and Company, Inc. 1955b. MRID No. 00083292; HED Doc. No. 004806. Available from U.S. EPA. Write to FOI, U.S. EPA Washington, DC 20460.

Maneb Data Task Force. 1986. MRID No. 00161552; HED Doc. No. 004920. Available from U.S. EPA. Write to FOI, U.S. EPA Washington, DC 20460.

Rohm and Haas Company. 1977. MRID No. 00129980; HED Doc. No. 004920. Available from U.S. EPA. Write to FOI, U.S. EPA Washington, DC 20460.

Rohm and Haas Company. 1979. MRID No. 00129979, 00130305, 401250101, 40559201; HED Doc. No. 004969. Available from U.S. EPA. Write to FOI, U.S. EPA Washington, DC 20460.

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### **VI.B. Inhalation RfD References**

None

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### **VI.C. Carcinogenicity Assessment References**

None

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## VII. Revision History

Substance Name — Maneb  
CASRN — 12427-38-2

Date	Section	Description
09/07/1988	I.A.	Oral RfD summary on-line
12/03/2002	I.A.6.	Screening-Level Literature Review Findings message has been added.

## VIII. Synonyms

Substance Name — Maneb  
CASRN — 12427-38-2  
Last Revised — 09/07/1988

- 12427-38-2
- AAMANGAN
- AKZO CHEMIE MANEB
- BASF-MANEBSPRITZPULVER
- CARBAMIC ACID, ETHYLENEBIS(DITHIO-, MANGANESE SALT
- CHEM NEB
- CHLOROBLE M
- CR 3029
- DITHANE M 22
- DITHANE M 22 SPECIAL
- ENT 14,875
- 1,2-ETHANEDIYLBIS(CARBAMODITHIOATO)(2-)-MANGANESE
- 1,2-ETHANEDIYLBISCARBAMODITHIOIC ACID, MANGANESE(2+) SALT
- 1,2-ETHANEDIYLBISCARBAMODITHIOIC ACID, MANGANESE COMPLEX
- 1,2-ETHANEDIYLBISMANEB, MANGANESE (2+) SALT
- ETHYLENEBISDITHIOCARBAMATE MANGANESE
- ETHYLENEBIS(DITHIOCARBAMATO), MANGANESE

- ETHYLENEBIS(DITHIOCARBAMIC ACID), MANGANESE SALT
- ETHYLENEBIS(DITHIOCARBAMIC ACID) MANGANOUS SALT
- 1,2-ETHYLENEDIYLBIS(CARBAMODITHIOATO)MANGANESE
- F 10
- GRIFFIN MANEX
- KYPMAN 80
- LONOCOL M
- MANAM
- Maneb
- MANEB 80
- MANEBA
- MANEBE
- MANEBE 80
- MANEBGAN
- MANEB ZL4
- MANESAN
- MANEX
- MANGAAN (II)-(N,N'-ETHYLEEN-BIS(DITHIOCARBAMAAT))
- MANGANESE ETHYLENE BIS-DITHIOCARBAMATE
- MANGANESE ETHYLENE-1,2-BISDITHIOCARBAMATE
- MANGANESE, (ETHYLENEBIS(DITHIOCARBAMATO))-
- MANGANESE (II) ETHYLENE DI(DITHIOCARBAMATE)
- MANGAN(II)-(N,N'-AETHYLEN-BIS(DITHIOCARBAMAT)
- MANGAN (II)-(N,N'-AETHYLEN-BIS(DITHIOCARBAMATE))
- MANGANOUS ETHYLENEBIS(DITHIOCARBAMATE)
- MANZATE
- MANZATE 200
- MANZATE D
- MANZATE MANEB FUNGICIDE
- MANZEB
- MANZIN
- M-DIPHAR
- MEB
- MnEBD
- NEREB
- NESPOR
- N,N'-ETHYLENE BIS(DITHIOCARBAMATE MANGANEUX)
- N,N'-ETILEN-BIS(DITIOCARBAMMATO) DI MANGANESE
- PLANTIFOG 160M
- POLYRAM M
- REMASAN CHLOROBLE M
- RHODIANEBE
- SOPRANEBE
- SUP 'R FLO
- TERSAN-LSR

- TRIMANGOL
- TRIMANGOL 80
- TUBOTHANE
- UN 2210
- UN 2968
- UNICROP MANEB
- VANCIDE MANEB 80