

Thiram; CASRN 137-26-8

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 Thiram

File First On-Line 09/30/1987

Category (section)	Assessment Available?	Last Revised
Oral RfD (I.A.)	yes	09/30/1987
Inhalation RfC (I.B.)	not evaluated	
Carcinogenicity Assessment (II.)	not evaluated	

I. Chronic Health Hazard Assessments for Noncarcinogenic Effects

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

Substance Name — Thiram

CASRN — 137-26-8

Last Revised — 09/30/1987

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
Neurotoxicity	NOEL: 100 ppm diet (5 mg/kg/day)	1000	1	5E-3 mg/kg/day
2-Year Rat Feeding	LEL: 300 ppm diet			
Study duPont, 1954	(15 mg/kg/day)			

*Conversion Factors -- 1 ppm = 0.05 mg/kg/day (assumed rat food consumption)

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

E.I. duPont de Nemours & Co., Inc. 1954. MRID. No. 0045162. HED Doc. No. 004550.
Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Twenty four rats/dose were fed 0, 100, 300, 1000, and 2500 ppm of thiram for 2 years. Observations and tests for effects included body weight, mortality, clinical signs, neurological examination, and microscopic examination of tissues. Weakness, ataxia, varying degrees of hind limb paralysis, and calcified masses in the basal ganglia and in the cerebellum were noted at 300, 1000, and 2500 ppm levels.

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

UF — An uncertainty factor of 100 was used to account for inter- and intraspecies differences. An additional UF of 10 was used to account for the severity of effect and the questionable quality of the database.

MF — None

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

Data Considered for Establishing the RfD:

- 1) 2-Year Feeding - rat: Principal study - see previous description; no core grade
- 2) 2-Year Feeding - dog: NOEL=200 ppm (5 mg/kg/day) (HDT); core grade supplementary (sex, age, histopathology and chemistry report not provided); (duPont, 1957)
- 3) Reproductive - rat: LEL=30 mg/kg/day (LDT) (reduced number of implants in pregnant females); (Short et al., 1976)
- 5) 80-Week Feeding - rat: NOEL=6.1 mg/kg/day; LEL=25.5 mg/kg/day (alopecia, a higher dose caused ataxia and hindlimb paralysis); (Lee and Peters, 1976)

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

I.A.5. Confidence in the Oral RfD

Study — Low
Database — Low
RfD — Low

The principal study is of low quality and is given a low confidence rating. Since the database on chronic exposure toxicity is incomplete, confidence in the database can be considered low to medium. Confidence in the RfD can also be considered low to medium.

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

Source Document — This assessment is not presented in any existing U.S. EPA document.

Other EPA Documentation — Pesticide Registration Standard, 1984; Pesticide Registration Files

Agency Work Group Review — 01/28/1987, 02/18/1987, 04/15/1987

Verification Date — 04/15/1987

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 thiram conducted in August 2003 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 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 (internet address).

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

Substance Name — Thiram
CASRN — 137-26-8

Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Thiram
CASRN — 137-26-8

Not available at this time.

III. [reserved]

IV. [reserved]

V. [reserved]

VI. Bibliography

Substance Name — Thiram
CASRN — 137-26-8
Last Revised — 07/01/1992

VI.A. Oral RfD References

E.I. duPont de Nemours and Company, Inc. 1954. MRID. No. 0045162. HED Doc. No. 004550. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

E.I. duPont de Nemours and Company, Inc. 1957. MRID. No. 00129609. HED Doc. No. 004550, 004551. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Lee, C.C. and P.J. Peters. 1976. Neurotoxicity and behavioral effects of thiram in rats. Environ. Health Perspect. 17: 35-43.

Short, R.D., Jr., J.Q. Russel, J.L. Minor and C.C. Lee. 1976. Developmental toxicity of ferric dimethyldithiocarbamate and bis(dimethylthiocarbamoyl) disulfide in rats and mice. Toxicol. Appl. Pharmacol. 35(1): 83-94.

VI.B. Inhalation RfD References

None

VI.C. Carcinogenicity Assessment References

None

VII. Revision History

Substance Name — Thiram
CASRN — 137-26-8

Date	Section	Description
10/28/2003	I.A.6	Screening-Level Literature Review Findings

VIII. Synonyms

Substance Name — Thiram
CASRN — 137-26-8
Last Revised — 09/30/1987

- 137-26-8
- AATAACK
- ACCELERATOR THIURAM
- ACETO TETD
- alpha,alpha'-DITHIOBIS(DIMETHYLTHIO)FORMAMIDE
- ARASAN
- ARASAN 70
- ARASAN 75
- ARASAN-M
- ARASAN 42-S
- ARASAN-SF
- ARASAN-SF-X
- AULES
- BIS((DIMETHYLAMINO)CARBONOTHIOYL) DISULPHIDE
- BIS(DIMETHYL-THIOCARBAMOYL)-DISULFID
- BIS(DIMETHYLTHIOCARBAMOYL) DISULFIDE
- BIS(DIMETHYLTHIOCARBAMOYL) DISULPHIDE
- BIS(DIMETHYLTHIOCARBAMYL) DISULFIDE
- CYURAM DS
- DISOLFURO DI TETRAMETILTIOURAME
- DISULFURE DE TETRAMETHYLTHIOURAME

- EKAGOM TB
- FALITIRAM
- FERMIDE
- FERNACOL
- FERNASAN
- FERNASAN A
- FERNIDE
- FLO PRO T SEED PROTECTANT
- FORMAMIDE, 1,1'-DITHIOBIS(N,N-DIMETHYLTHIO-
- HERMAL
- HERMAT TMT
- HERYL
- HEXATHIR
- KREGASAN
- MERCURAM
- METHYL THIRAM
- METHYL THIURAMDISULFIDE
- METHYL TUADS
- NA 2771
- N,N'-(DITHIODICARBONOTHIOYL)BIS(N-METHYLMETHANAMINE)
- N,N,N',N'-TETRAMETHYLTHIURAM DISULFIDE
- N,N-TETRAMETHYLTHIURAM DISULPHIDE
- NOBECUTAN
- NOMERSAN
- NORMERSAN
- PANORAM 75
- POLYRAM ULTRA
- POMARSOL
- POMARSOL FORTE
- POMASOL
- PURALIN
- RCRA WASTE NUMBER U244
- REZIFILM
- ROYAL TMTDSADOPLON
- SPOTRETE
- SPOTRETE-F
- SQ 1489
- TERAMETHYL THIURAM DISULFIDE
- TERSAN
- TERSAN 75
- TETRAMETHYLDIURANE SULPHITE
- TETRAMETHYLENETHIURAM DISULPHIDE
- TETRAMETHYLTHIOCARBAMOYLDISULPHIDE
- TETRAMETHYLTHIORAMDISULFIDE
- TETRAMETHYL-THIRAM DISULFID

- TETRAMETHYLTHIURAM
- TETRAMETHYLTHIURAM BISULFIDE
- TETRAMETHYLTHIURAM DISULFIDE
- TETRAMETHYL THIURANE DISULFIDE
- TETRAMETHYLTHIURUM DISULFIDE
- TETRAPOM
- TETRASIPTON
- TETRATHIURAM DISULFIDE
- THILLATE
- THIMER
- THIOSAN
- THIOTEX
- THIOTOX
- Thiram
- THIRAM 75
- THIRAMAD
- THIRAM B
- THIRAME
- THIRASAN
- THIULIX
- THIURAD
- THIURAM
- THIURAM D
- THIURAM DISULFIDE, TETRAMETHYL-
- THIURAMIN
- THIURAM M
- THIURAMYL
- THYLATE
- TIRAMPA
- TIURAM
- TIURAMYL
- TMTD
- TMTDS
- TRAMETAN
- TRIDIPAM
- TRIPOMOL
- TTD
- TUADS
- TUEX
- TULISAN
- USAF B-30
- USAF EK-2089
- USAF P-5
- VANCIDA TM-95
- VANCIDE TM

- VUAGT-I-4
- VULCAFOR TMTD
- VULKACIT MTIC
- VULKACIT THIURAM
- VULKACIT THIURAM/C