Thiobencarb; CASRN 28249-77-6

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 Thiobencarb

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)

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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
Decrease in body weight, increase in BUN **2-Year Rat Feeding Study** **Chevron Chemical, 1984a**	NOEL: 20 ppm diet (1 mg/kg/day) LEL: 100 ppm diet (5 mg/kg/day)	l00	1	1E-2 mg/kg/day

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

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

Chevron Chemical Company. 1984a. MRID No. 00148570, 00150139, 00150894, 00154506, 92182035; HED Doc. No. 004291, 004556. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Thiobencarb was administered to rats (60 per sex/dose) in the diet for 2 years at 0, 20, l00, and 500. Significant decreases in food consumption and body weight gains as well as increases in BUN levels were observed at the two highest dosage levels (l00 and 500 ppm). The systemic NOEL was established at 20 ppm (l mg/kg/day; lowest dose tested).

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

UF — Based on a chronic exposure study, an uncertainty factor of l00 was used to account for inter- and intraspecies differences. Although the reproduction study is low quality, a new rat reproduction study is not expected to provide a more sensitive toxicological endpoint.

MF — None

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

Data Considered for Establishing the RfD:

l) 2-Year Feeding/Oncogenic - rat: Principal study - see previous description; core grade minimum

2) l-Year Feeding - dog: NOEL=8 mg/kg/day; LEL=64 mg/kg/day (significant alterations in hematology and kidney and liver weights); Plasma ChE NOEL=1 mg/kg/day; Plasma LEL=8 mg/kg/day; core grade minimum (Chevron Chemical Co., 1985)

3) Teratology - rat: Maternal NOEL=25 mg/kg/day; Maternal LEL=l50 mg/kg/day (decreased body weights); Fetotoxic NOEL=25 mg/kg/day; Fetoxic LEL=125 mg/kg (runting, lower body weights); teratogenic NOEL=150 mg/kg/day (HDT); LEL=none; core grade guideline (Chevron Chemical Co., 1981)

4) 2-Generation Reproduction - rat: NOEL=2 mg/kg/day; LEL=l0 mg/kg/day (increased swelling of the centrilobular hepatocytes); core grade supplementary (Chevron Chemical Co., 1984b)

5) Teratology - rabbit: Data inadequate to determine NOEL or LEL (supplementary) (Chevron Chemical Co., 1983)

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

I.A.5. Confidence in the Oral RfD

Study — Medium
Database — Medium
RfD — Medium

The study on which the RfD is based is of good quality and of sufficient duration (2 years) for species tested (rats); it garners a medium confidence rating. In addition, there are generally good toxicology studies available (l-year dog, teratology rat, and oncogenicity mouse); but the lack of acceptable reproductive and second species teratology studies indicates a medium confidence in the database. Medium confidence in the RfD follows.

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

Pesticide Registration Files

Agency Work Group Review — 08/05/1986, 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 Thiobencarb conducted in September 2002 did not identify any critical new studies. IRIS users who know of important new studies may provide that information to 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 — Thiobencarb
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Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Thiobencarb
CASRN — 28249-77-6

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

III. [reserved]
IV. [reserved]
V. [reserved]

VI. Bibliography

Substance Name — Thiobencarb
CASRN — 28249-77-6

VI.A. Oral RfD References

Chevron Chemical Company. 1981. MRID No. 00086873, 00115248, 92182039; HED Doc. No. 004291, 004556. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Chevron Chemical Company. 1983. MRID No. 00138166; HED Doc. No. 004238, 004735. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Chevron Chemical Company. 1984a. MRID No. 00148570, 00150139, 00150894, 00154506, 92182035; HED Doc. No. 004291, 004556. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Chevron Chemical Company. 1984b. MRID No. 00149780, 00154507; HED Doc. No. 004556. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Chevron Chemical Company. 1985. MRID No. 00144742, 92182036; HED Doc. No. 004737. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

VI.B. Inhalation RfD References

None

VI.C. Carcinogenicity Assessment References

None

VII. Revision History

Substance Name — Thiobencarb
CASRN — 28249-77-6

Date	Section	Description
12/03/2002	I.A.6.	Screening-Level Literature Review Findings message has been added.

VIII. Synonyms

Substance Name — Thiobencarb
CASRN — 28249-77-6
Last Revised — 09/30/1987

- 11099-66-4
- 28249-77-6
- B 3015
- Benthiocarb
- Bolero
- Bolero 8EC
- Carbamic acid, diethylthio-, NM=S-(p-chlorobenzyl) ester
- Carbamothioic acid, diethyl-, NM=S-((4-chlorophenyl)methyl) ester
- p-Chlorobenzyl diethylthiolcarbamate
- p-Chlorobenzyl N,N-diethylthiolcarbamate
- IMC 3950
- Saturn
- S-(4-Chlorobenzyl) diethylthiocarbamate
- S-p-Chlorobenzyl diethylthiocarbamate
- S-(4-Chlorobenzyl) diethylthiolcarbamate
- S-(4-Chlorobenzyl) N,N-diethylthiocarbamate
- S-(p-Chlorobenzyl) N,N-diethylthiocarbamate
- S-4-Chlorobenzyl N,N-diethylthiolcarbamate
- S-(p-Chlorobenzyl) N,N-diethylthiolocarbamate
- Thiobencarb
- alpha-Toluenethiol, p-chloro-, diethylcarbamate