

Bidrin; CASRN 141-66-2

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 Bidrin

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
Decreased pup survival	NOEL: 2 ppm diet (0.1 mg/kg/day)	1000	1	1E-4 mg/kg/day
3-Generation Rat Reproduction Study	LEL: 5 ppm diet (0.25 mg/kg/day)			
Shell Chemical, 1965a				

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

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

Shell Chemical Company. 1965a. MRID No. 00013446, 00066340. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Bidrin was dissolved in water and mixed with powdered rat food to produce concentrations of 2, 5, 15, and 50 ppm. The study was conducted in two parts. In part one, weanling Long-Evans rats were assigned (10 males and 20 females) to groups receiving 0, 5, 15, or 50 ppm bidrin. In part two, weanling Long-Evans rats were assigned (10 males and 20 females) to groups receiving 0 and 2 ppm bidrin. Sections of brain, heart, lung, liver, spleen, pancreas, kidney, and testes were preserved for histologic examination. Reproductive toxicity (decreased pup survival) was observed at 5 ppm. Other effects (weakness, emaciation, and CNS effects) were seen at 50 ppm. No effects were observed at 2 ppm.

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

UF — An uncertainty factor of 1000 was used to account for the inter- and intraspecies differences, and to account for the fact that the chronic toxicity database is incomplete.

MF — None

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

Data Considered for Establishing the RfD:

- 1) 3-Generation Reproduction - rat: Principal study - see previous description; core grade supplementary
- 2) 2-Year Feeding (oncogenic) - rat: ChE NOEL=none; ChE LEL=0.05 mg/kg/day (plasma ChE inhibition); core grade supplementary; interim report (Shell Chemical, 1967a)
- 3) 2-Year Feeding - dog ChE NOEL=0.04 mg/kg/day; ChE LEL=0.4 mg/kg/day (RCB and plasma ChE inhibition); core grade supplementary; interim report (Shell Chemical, 1967b)
- 4) Teratology - rat: Embryotoxic NOEL=2.5 mg/kg/day; Embryotoxic LEL=5 mg/kg/day (decreased implantation sites); core grade supplementary; preliminary report (Shell Chemical, 1965b)
- 5) Teratology - rabbit: Maternal NOEL=4 mg/kg/day; Maternal LEL=8 mg/kg/day (salivation and tremors); no core grade (Shell Chemical, 1973)

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

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. Additional studies are also of low quality and, therefore, the database is given a low confidence rating. Low confidence in the RfD follows.

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

Pesticide Data Evaluation Record and Registration Standard

Agency Work Group Review — 08/19/1986, 09/02/1986

Verification Date — 08/19/1986

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 Bidrin conducted in September 2002 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 — Bidrin
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Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Bidrin
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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 — Bidrin

CASRN — 141-66-2

VI.A. Oral RfD References

Shell Chemical Company. 1965a. MRID No. 00013446, 00066340. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Shell Chemical Company. 1965b. MRID No. 00013447, 00141908. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Shell Chemical Company. 1967a. MRID No. 00013563, 00013966. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Shell Chemical Company. 1967b. MRID No. 00013564, 00013966. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Shell Chemical Company. 1973. Accession No. 111367. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

VI.B. Inhalation RfC References

None

VI.C. Carcinogenicity Assessment References

None

VII. Revision History

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

VIII. Synonyms

Substance Name — Bidrin
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Last Revised — 09/30/1987

- 141-66-2
- BIDIRL
- Bidrin
- C 709
- CARBICRON
- CIBA 709
- cis-2-DIMETHYLCARBAMOYL-1-METHYLVINYL DIMETHYLPHOSPHATE
- cis-3-HYDROXY-N,N-DIMETHYLCROTONAMIDE
- CROTONAMIDE, 3-HYDROXY-N,N-DIMETHYL-, cis-, DIMETHYL PHOSPHATE
- CROTONAMIDE, 3-HYDROXY-N,N-DIMETHYL-, DIMETHYL PHOSPHATE, (E)-
- DIAPADRIN
- DICROTOFOS
- DICROTOPHOS
- 3-(DIMETHOXYPHOSPHINYLOXY)-N,N-DIMETHYL-cis-CROTONAMIDE
- 3-(DIMETHOXYPHOSPHINYLOXY)-N,N DIMETHYLISOCROTONAMIDE
- 3-(DIMETHYLAMINO)-1-METHYL-3-OXO-1-PROPENYL DIMETHYL PHOSPHATE
- DIMETHYLCARBAMOYL-1-METHYLVINYL DIMETHYLPHOSPHATE, cis-2-
- 2-DIMETHYL cis-2-DIMETHYL-CARBAMOYL-1-METHYLVINYL PHOSPHATE
- EKTAFOFOS
- ENT 24,482
- ESTER
- ESTER, (E)-
- 3-HYDROXYDIMETHYL CROTONAMIDE DIMETHYL PHOSPHATE

- HYDROXY-N,N-DIMETHYLCROTONAMIDE, cis-3-
- 3-HYDROXY-N,N-DIMETHYL-cis-CROTONAMIDE DIMETHYL PHOSPHATE
- O,O-DIMETHYL-O-(2-DIMETHYL-CARBAMOYL-1-METHYL-VINYL)PHOSPHAT
- O,O-DIMETHYL-O-(1,4-DIMETHYL-3-OXO-4-AZA-PENT-1-ENYL)FOSFAAT
- O,O-DIMETHYL-O-(1,4-DIMETHYL-3-OXO-4-AZA-PENT-1-ENYL)PHOSPHATE
- O,O-DIMETHYL-O-(1-METHYL-2-N,N-DIMETHYL-CARBAMOYL)-VINYL-PHOSPHAT
- O,O-DIMETHYL O-(N,N-DIMETHYLCARBAMOYL-1-METHYL VINYL)PHOSPHATE
- O,O-DIMETIL-O-(1,4-DIMETIL-3-OXO-4-AZA-PENT-1-ENIL)-FOSFATO
- PHOSPHATE DE DIMETHYLE ET DE 2-DIMETHYLCARBAMOYL 1-METHYL VINYLE
- PHOSPHORIC ACID 3-(DIMETHYLAMINO)-1-METHYL-3-OXO-1-PROPENYL DIMETHYL
- PHOSPHORIC ACID, DIMETHYL 1-METHYL-N,N-(DIMETHYLAMINO)-3-OXO-1-PROPENYL
- SD 3562
- SHELL SD-3562