

Tetrachlorovinphos; CASRN 961-11-5

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 Tetrachlorovinphos

File First On-Line 03/31/1987

Category (section)	Assessment Available?	Last Revised
Oral RfD (I.A.)	yes	03/31/1987
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 — Tetrachlorovinphos

CASRN — 961-11-5

Last Revised — 03/31/1987

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
Reduced body weight gain, increased liver and kidney weights, and RBC ChE inhibition	NOEL: 125 ppm (diet) (3.13 mg/kg/day)	100	1	3E-2 mg/kg/day
	LEL: 2000 ppm (diet) (50 mg/kg/day)			
Two-Year Dog Feeding Study				
Shell Chemical Co., 1968				

*Dose Conversion Factors & Assumptions: 1 ppm = 0.025 mg/kg/day (assumed dog food consumption)

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

Shell Chemical Company. 1968. MRID No. 00077819; HED Doc. No. 002607. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Five groups of six purebred beagle dogs (3 males and 3 females) were maintained on diets containing 0, 5, 25, 125 and 2000 ppm of tetrachlorovinphos for 104 weeks. At weeks 2, 4, 13, 26, 52, 78 and 103, clinical tests were performed. At week 104, animals were sacrificed and gross autopsy performed. Erythrocyte and plasma cholinesterase was depressed at 2000 ppm. A decrease in body weight gain and an increase in the organ/body weight ratios for the kidney and liver were observed at 2000 ppm.

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

UF — An uncertainty factor of 100 was used to account for inter- and intraspecies differences.

MF — None

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

None.

Data Considered for Establishing the RfD:

- 1) 2-Year Feeding - dog: Principal study - see previous description; core grade minimum
- 2) 2-Year Feeding/Oncogenic - rat: Systemic and ChE NOEL=6.25 mg/kg/day; Systemic and ChE LEL=100 mg/kg/day [reduced body weight (systemic) and RBC ChE inhibition]; core grade minimum (Shell Chemical Co., 1966a)
- 3) 3-Generation Reproduction - rat: NOEL=16.5 mg/kg/day; LEL=50 mg/kg/day; weanling liver size increased); core grade minimum (Shell Chemical Co., 1966b)
- 4) Teratology - rabbit: Fetotoxic NOEL=150 mg/kg/day; Fetotoxic LEL=350 mg/kg/day (reduction in viable fetuses); core grade minimum (Diamond Shamrock Agricultural Chemicals, 1982)

Data Gap(s): Teratology - Rat

I.A.5. Confidence in the Oral RfD

Study — Medium

Database — Medium

RfD — Medium

The critical study is of good quality and is given a medium confidence rating. Additional studies are supportive; therefore, confidence in the database can be considered medium to high. Confidence in the RfD can also be considered medium to high.

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

Pesticide Registration Files

Agency Work Group Review — 09/02/1986

Verification Date — 09/02/1986

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 tetrachlorovinphos 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 — Tetrachlorovinphos

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Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Tetrachlorovinphos

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Not available at this time.

III. [reserved]

IV. [reserved]

V. [reserved]

VI. Bibliography

Substance Name — Tetrachlorovinphos

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VI.A. Oral RfD References

Diamond Shamrock Agricultural Chemicals. 1982. MRID No. 00127831; HED Doc. No. 003661. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Shell Chemical Company. 1966a. MRID No. 00077803, 00112525; HED Doc. No. 002607. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Shell Chemical Company. 1966b. MRID No. 00043486, 00077802, 00112522; HED Doc. No. 002607. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Shell Chemical Company. 1968. MRID No. 00077819; HED Doc. No. 002607. 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 — Tetrachlorovinphos

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

VIII. Synonyms

Substance Name — Tetrachlorovinphos

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Last Revised — 03/31/1987

- 961-11-5
- BENZYL ALCOHOL, 2,4,5-TRICHLORO-alpha-(CHLOROMETHYLENE)-, DIMETHYL PHOSPHATE
- 2-CHLORO-1-(2,4,5-TRICHLOROPHENYL)VINYL DIMETHYL PHOSPHATE
- 2-CHLORO-1-(2,4,5-TRICHLOROPHENYL)VINYL PHOSPHORIC ACID DIMETHYL ESTER
- IPO 8
- NCI C00168
- O,O-DIMETHYL-O-2-CHLOR-1-(2,4,5-TRICHLOROPHENYL)-VINYL-PHOSPHAT
- PHOSPHORIC ACID, 2-CHLORO-1-(2,4,5-TRICHLOROPHENYL)ETHENYL DIMETHYL ESTER
- PHOSPHORIC ACID, 2-CHLORO-1-(2,4,5-TRICHLOROPHENYL)VINYL DIMETHYL ESTER
- Tetrachlorovinphos
- TETRACHLORVINPHOS
- 2,4,5-TRICHLORO-alpha-(CHLOROMETHYLENE)BENZYL PHOSPHATE