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Pirimiphos-methyl; CASRN 29232-93-7

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 Pirimiphos-methyl

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 — Pirimiphos-methyl

CASRN — 29232-93-7

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
Transient plasma ChE depression	NOEL: 0.25 mg/kg/day LEL: None	25	1	1E-2 mg/kg/day
56-Day Human Feeding Study				
ICI Americas, 1976a				
Borderline ChE depression	NOEL: 0.25 mg/kg/day LEL: none			
28-Day Human Feeding Study				
ICI Americas, 1974a				

*Dose Conversion Factors and Assumptions -- none

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

ICI Americas Inc. 1976a. MRID No. 00080732; HED Doc. No. 005105. ICI Americas Inc. 1974a. MRID No. 00080747; HED Doc. No. 005105. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Three male and four female humans (age 21 to 49) were given pirimiphos-methyl daily in a gelatin capsule at a level of 0.25 mg/kg/day, for 56 days. A recovery period of 28 days followed treatment (ICI Americas, 1976). RBC and plasma ChE were determined before treatment, during treatment, and in the recovery period. RBC ChE levels were not affected throughout the study. Plasma ChE was not affected in the 3 males and 2/4 females. The two other females showed a

minimal and transient plasma ChE depression after approximately 30 days of treatment. These findings are also corroborated by the 28-day feeding study (gelatin capsule) with human volunteers (five males) where one individual showed a borderline reaction (ChE depression) on day 28 (ICI Americas, 1974).

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

UF — A 10-fold uncertainty factor has been used to account for the intraspecies difference in sensitivity among the human population. An additional UF of 2.5 was used because the human studies did not clearly establish an unequivocal NOEL for all subjects, and the sensitivity of the brain ChE to pirimiphos-methyl observed in the dog was of concern with regard to the human experience. Dogs and humans seem equally sensitive to pirimiphos-methyl.

MF — None

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

Data Considered for Establishing the RfD:

1. 56-Day Oral Administration - humans (both sexes): Principal study - see previous description
2. 28-Day Oral Administration - humans (males): Principal study - see previous description;
3. 2-Year Feeding - dog: ChE LEL=0.5 mg/kg/day (LDT) (brain ChE inhibition); Systemic NOEL=2.0 mg/kg/day; core grade guideline (ICI Americas, Inc., 1973)
4. 2-Year Feeding/Oncogenic - rat: ChE NOEL=10 ppm (0.5 mg/kg/day); ChE LEL=50 ppm (2.5 mg/kg/day) (inhibition of plasma ChE); Systemic NOEL=300 ppm (15 mg/kg/day) (HDT); Systemic LEL=none; core grade minimum (ICI Americas, Inc., 1974b)
5. Teratology - rat: Maternal NOEL=15 mg/kg/day; Maternal LEL=150 mg/kg/day (abnormal gait, urinary incontinence, piloerection, body tremors, decreased body weight gain and decreased food consumption); Developmental toxicity NOEL=150 mg/kg/day; LEL=none; core grade guideline (Imperial Chemical Industries, Ltd., 1985)
6. Teratology - rabbit: Teratogenic NOEL=16 mg/kg/day (HDT); LEL=none; core grade minimum (ICI Americas, Inc., 1974c)
7. 3-Generation Reproduction - rat: NOEL=100 ppm (5 mg/kg/day) (HDT); LEL=none; core grade minimum (ICI Americas, Inc., 1974b)

Data Gap(s): None

I.A.5. Confidence in the Oral RfD

Study — High
Database — High
RfD — High

The principal study appears to be of good quality and is, therefore, given a high confidence rating. Additional studies are of fair to good quality, and support the toxicological endpoint chosen for the RfD; thus, the database is given a high confidence rating. High confidence in the RfD follows.

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

Pesticide Registration Files

Agency Work Group Review — 04/22/1986, 08/19/1986

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 Pirimiphos-methyl 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 — Pirimiphos-methyl
CASRN — 29232-93-7

Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Pirimiphos-methyl
CASRN — 29232-93-7

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 — Pirimiphos-methyl
CASRN — 29232-93-7

VI.A. Oral RfD References

ICI Americas Inc. 1973. MRID No. 00080746, 92147014; HED Doc. No. 003582. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

ICI Americas Inc. 1974a. MRID No. 00080747; HED Doc. No. 005105. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

ICI Americas Inc. 1974b. MRID No. 00081912, 92147035; HED Doc. No. 003582, 005105. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

ICI Americas Inc. 1974c. MRID No. 00080734, 92147017; HED Doc. No. 003582. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

ICI Americas Inc. 1976a. MRID No. 00080732; HED Doc. No. 005105. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

ICI Americas Inc. 1976b. MRID No. 00080736, 92147018; HED Doc. No. 003582. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Imperial Chemical Industries, Ltd. 1985. MRID No. 00151623, 92147016; HED Doc. No. 004828. 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 — Pirimiphos-methyl
CASRN — 29232-93-7

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

VIII. Synonyms

Substance Name — Pirimiphos-methyl
CASRN — 29232-93-7
Last Revised — 09/30/1987

- 29232-93-7
- ACTELIC
- ACTELLIC
- ACTELLIFOG
- BLEX

- 2-DIETHYLAMINO-6-METHYLPYRIMIDIN-4-YL DIMETHYL PHOSPHOROTHIONATE
- ENT 27699GC
- METHYLPIRIMIPHOS
- O-(2-(DIETHYLAMINO)-6-METHYL-4-PYRIMIDINYL)O,O-DIMETHYL PHOSPHOROTHIOATE
- PIRIMIFOSMETHYL
- Pirimiphos-methyl
- PP511
- PYRIDIMINE PHOSPHATE
- PYRIMIPHOS METHYL
- SILOSAN

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