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## Cypermethrin; CASRN 52315-07-8

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 Cypermethrin

**File First On-Line 03/01/1989**

Category (section)	Assessment Available?	Last Revised
Oral RfD (I.A.)	yes	03/01/1989
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 — Cypermethrin  
CASRN — 52315-07-8  
Last Revised — 03/01/1989

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
<b>G.I. tract disturbances</b>	NOEL: 1 mg/kg/day LEL: 5 mg/kg/day	100	1	1E-2 mg/kg/day
<b>1-Year Dog Feeding Study</b>				
<b>ICI Americas, Inc., 1982a</b>				

\*Conversion Factors: Actual dose tested

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

ICI Americas, Inc. 1982a. MRID No. 00112909. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Groups of beagle dogs, 6/sex, were dosed with 0, 1, 5, or 15 mg/kg/day of cypermethrin in corn oil for 52 weeks. The test material was administered by gelatin capsule and the amount administered was based on the current weight of the dog. Males and females in the high dose group, 15 mg/kg/day, displayed signs of nervous system stimulation in the form of body tremors, gait abnormalities and incoordination, disorientation, and hypersensitivity to noise. At all doses, the dogs showed increases in vomiting during the first week and the passing of liquid feces throughout the study. The increased incidence of liquid feces was 10-fold for groups dosed with 5 mg/kg/day and 30-fold for groups dosed with 15 mg/kg/day. A NOEL for systemic effects is 1 mg/kg/day based on the increased incidence of liquid feces observed at 5 mg/kg/day.

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

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

MF — None

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

Data Considered for Establishing the RfD:

- 1) 1-Year Feeding - dog: Principal study - see previous description;
- 2) 3-Generation Reproduction - rat: Systemic NOEL=2.5 mg/kg/day; Systemic LEL=7.5 mg/kg/day (decreased body weight gain in maturing pups); core grade guideline (ICI Americas, Inc., 1982b)
- 3) 3-Generation Reproduction - rat: Systemic NOEL=0.5 mg/kg/day; Systemic LEL=5 mg/kg/day (decrease in pup weight); core grade minimum (ICI Americas, Inc., 1979)
- 4) 2-Year Feeding (oncogenic) - rat: NOEL=7.5 mg/kg/day; LEL=75 mg/kg/day (weight loss, general change in blood elements and cholesterol); core grade guideline (ICI Americas, Inc., 1982c)
- 5) Teratology - rat: Maternal NOEL=17.5 mg/kg/day; Maternal LEL=35 mg/kg/day (decreases in weight); core grade minimum (ICI Americas, Inc., 1978a)
- 6) Teratology - rabbit: Teratogenic and Maternal NOEL=30 mg/kg/day (HDT); core grade minimum (ICI Americas, Inc., 1978b)

Other Data Reviewed:

- 1) 90-Day Feeding - dog: NOEL=500 ppm (12.5 mg/kg/day); LEL=1500 ppm (37.5 mg/kg/day) (diarrhea, anorexia, behavioral signs of nervous system effects); core grade minimum (ICI Americas, Inc., 1977)
- 2) 90-Day Feeding - rat: NOEL=150 ppm (7.5 mg/kg/day); LEL=1500 ppm (75 mg/kg/day) (decreased body weight and possible nerve damage); core grade minimum (ICI Americas, Inc., 1980)

Data Gap(s): None

### **I.A.5. Confidence in the Oral RfD**

Study — High

Database — High

RfD — High

The critical studies are of good quality and are given high confidence ratings. Additional studies are also of good quality; therefore, the data base is given a high confidence rating. High confidence in the RfD follows.

### **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 Files

Agency Work Group Review — 10/12/1988, 01/18/1989

Verification Date — 01/18/1989

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 Cypermethrin conducted in November 2001 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](mailto: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](mailto:hotline.iris@epa.gov) (internet address).

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

Substance Name — Cypermethrin

CASRN — 52315-07-8

Not available at this time.

## II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Cypermethrin  
CASRN — 52315-07-8

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

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III. [reserved]

IV. [reserved]

V. [reserved]

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## VI. Bibliography

Substance Name — Cypermethrin  
CASRN — 52315-07-8

### VI.A. Oral RfD References

ICI Americas, Inc. 1977. MRID No. 00112929. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

ICI Americas, Inc. 1978a. Accession No. 099855. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

ICI Americas, Inc. 1978b. Accession No. 099855. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

ICI Americas, Inc. 1979. MRID No. 00090040. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

ICI Americas, Inc. 1980. Accession No. 099855. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

ICI Americas, Inc. 1982a. MRID No. 00112909. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

ICI Americas, Inc. 1982b. MRID No. 00112912. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

ICI Americas, Inc. 1982c. MRID No. 00112910. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

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### VI.B. Inhalation RfC References

None

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### VI.C. Carcinogenicity Assessment References

None

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## VII. Revision History

Substance Name — Cypermethrin  
CASRN — 52315-07-8

Date	Section	Description
03/01/1989	I.A.	Oral RfD summary on-line
12/03/2002	I.A.6.	Screening-Level Literature Review Findings message has been added.

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## VIII. Synonyms

Substance Name — Cypermethrin

CASRN — 52315-07-8

Last Revised — 03/01/1989

- 52315-07-8
- Agrothrin
- Ambush CY
- Ammo
- Antiborer 3767
- Ardap
- Barricade
- CCN 52
- alpha-Cyano-m-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxylate
- Cymbush
- Cyperil
- Cyperkill
- Cypermethrin
- 3-(2,2-dichloroethenyl)-2,2-dimethyl-Cyclopropanecarboxylic acid, cyano(3-phenoxyphenyl)methyl ester
- EXP 5598
- Fendona
- FMC 30980
- FMC 45497
- FMC 45806
- JF 5705F
- NRDC 149
- NRDC 160
- NRDC 166
- Nurele
- Ripcord
- RU 27998
- Sherpa
- SF 06646
- WL 8517
- WL 43467