

Diflubenzuron; CASRN 35367-38-5

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 Diflubenzuron

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 — Diflubenzuron

CASRN — 35367-38-5

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
Methemoglobin and sulfhemoglobin formation	NOEL: 2 mg/kg/day LEL: 10 mg/kg/day	100	1	2E-2 mg/kg/day
One-Year Dog Feeding Study				
Duphar, 1985				

*Conversion Factors -- none

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

B.V. Duphar. 1985. MRID No. 00146147. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Groups of beagle dogs (6 males and 6 females/dose group, 12 males and 12 females in the control group) were given diflubenzuron in gelatin capsules in doses equal to 0, 2, 10, 50, or 250 mg/kg/day for 52 weeks. All animals were observed daily for toxicity. Food consumption was determined daily, and body weights were measured weekly. Hematology, urinalysis, and clinical chemistry investigations were conducted routinely throughout the study. All animals were subjected to complete gross and histopathologic evaluation, ophthalmologic examination, and organ weight determinations. The percent of methemoglobin and sulfhemoglobin increased significantly at 10 mg/kg/day.

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)

Data Considered for Establishing the RfD:

- 1) 1-Year Feeding - dog: Principal study - see previous description; core grade guideline
- 2) 2-Year Feeding (oncogenic) - rat: NOEL=2 mg/kg/day (for methemoglobin and sulfhemoglobin), LEL=8 mg/kg/day; core grade supplementary (Thompson-Hayward Chemical Co., 1973)
- 3) 2-Year Feeding (oncogenic) - rat: LEL=7.8 mg/kg/day (methemoglobin and sulfhemoglobin formation; core grade guideline [oncogenicity]; core grade supplementary for chronic toxicity (Duphar, 1984)

Note: Together studies 2 and 3 provide sufficient oncogenic and long-term data in rats.

- 4) 13-Week Feeding - dog: NOEL=1 mg/kg/day; LEL=4 mg/kg/day (elevated SGPT and SAP and increased methemoglobinemia); core grade guideline (Thompson- Hayward Chemical Co., 1974)
- 5) 3-Generation Reproduction - rat: NOEL=8 mg/kg/day [HDT]; core grade guideline (Thompson-Hayward Chemical Co., 1975a)
- 6) Teratology - rat: Maternal, Fetotoxic, and Teratogenic NOEL=4 mg/kg/day [HDT]; Maternal, Fetotoxic, and Teratogenic LEL=none; core grade guideline (Thompson-Hayward Chemical Co., 1975b)
- 7) Teratology - rabbit: Maternal, Fetotoxic, and Teratogenic NOEL=4 mg/kg/day [HDT]; Maternal, Fetotoxic, and Teratogenic LEL=none; core grade guideline (Thompson-Hayward Chemical Co., 1975c)

Other Data Reviewed:

- 1) Lifetime Feeding/Oncogenic - mice: NOEL=2.4 mg/kg/day; LEL=12 mg/kg/day (methemoglobin and sulfhemoglobin); core grade guideline

Data Gap(s): None

I.A.5. Confidence in the Oral RfD

Study — High
Database — High
RfD — High

The principal study is of excellent quality and is given a high confidence rating. Other data are very supportive and, therefore, 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 Standard (1985)

Pesticide Registration Files/Data Evaluation Record

Agency Work Group Review — 08/05/1986

Verification Date — 08/05/1986

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 — Diflubenzuron
CASRN — 35367-38-5

Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Diflubenzuron
CASRN — 35367-38-5

Not available at this time.

III. [reserved]

IV. [reserved]

V. [reserved]

VI. Bibliography

Substance Name — Diflubenzuron
CASRN — 35367-38-5

VI.A. Oral RfD References

Duphar, B.V. 1984. MRID No. 00097999. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Duphar, B.V. 1985. MRID No. 00146147. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Thompson-Hayward Chemical Company. 1973. MRID No. 00044329, 0006120, 00064921, 00099712. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Thompson-Hayward Chemical Company. 1974. MRID No. 00038706, 00099687. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Thompson-Hayward Chemical Company. 1975a. MRID No. 00044330. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Thompson-Hayward Chemical Company. 1975b. MRID No. 00044326. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Thompson-Hayward Chemical Company. 1975c. MRID No. 00044327. 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 — Diflubenzuron
CASRN — 35367-38-5

Date	Section	Description
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No entries

VIII. Synonyms

Substance Name — Diflubenzuron
CASRN — 35367-38-5
Last Revised — 09/30/1987

- 35367-38-5
- BENZAMIDE, N-(((4-CHLOROPHENYL)AMINO)CARBONYL)-2,6-DIFLUORO-
- 1-(4-CHLOROPHENYL)-3-(2,6-DIFLUOROBENZOYL)UREA
- Diflubenzuron
- DIFLURON
- DIMILIN
- DU 112307
- ENT 29054

- N-(((4-CHLOROPHENYL)AMINO)CARBONYL)-2,6-DIFLUOROBENZAMIDE
- OMS 1804
- PDD 6040I
- PH 60-40
- TH 6040