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Last updated on Thursday, July 9th, 2009.

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Chlorsulfuron (CASRN 64902-72-3)

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 Reference Dose for Chronic Oral Exposure (RfD)

0027

Chlorsulfuron; CASRN 64902-72-3

Health assessment information on a chemical substance is included in IRIS only after a comprehensive review of chronic toxicity data by U.S. EPA health scientists from several Program Offices and the Office of Research and Development. The summaries presented in Sections I and II represent a consensus reached in the review process. Background information and explanations of the methods used to derive the values given in IRIS are provided in the Background Documents.

STATUS OF DATA FOR Chlorsulfuron

File First On-Line 01/31/1987

Category (section)	Status	Last Revised
Oral RfD Assessment (I.A.)	on-line	01/01/1990
Inhalation RfC Assessment (I.B.)	no data	
Carcinogenicity Assessment (II.)	no data	

I. Chronic Health Hazard Assessments for Noncarcinogenic Effects

I.A. Reference Dose for Chronic Oral Exposure (RfD)

Substance Name — Chlorsulfuron

CASRN — 64902-72-3

Last Revised — 01/01/1990

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 body weight	NOEL: 100 ppm (5 mg/kg/day)	100	1	5E-2 mg/kg/day
2-Year Rat Study Oral Exposure (diet)	LEL: 500 ppm (25 mg/kg/day)			
du Pont, 1980a				

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

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

E.I. du Pont de Nemours & Company, Inc. 1980a. MRID No. 00031419, 00086003. Available from EPA. Write to FOI, EPA, Washington DC 20460.

Three hundred sixty-eight male and 371 female CD rats were received from Charles River Breeding Laboratories. Following a 12-day pretest, 320 rats of each sex were divided into four groups of 80 males and 80 females and housed in pairs. Groups were fed diets containing 0, 100, 500, or 2500 ppm chlorsulfuron for two years. All rats were examined at least once daily during the first 14 weeks of the study and at least twice daily after that for abnormal behavior and clinical signs of toxicity. Three, 6, 12, 18, and 24 months after initiation of the study, 10 rats from each of the study groups were subjected to clinical chemistry, hematologic and urine analytical examinations. The observed results included a mild to moderate reduction in mean body weights and weight gains in male rats fed 500 ppm or 2500 ppm chlorsulfuron.

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

UF — A composite 100-fold UF has been used to compensate for both the interspecies differences in extrapolating to humans, and the expected intrahuman variability to the toxicity of this chemical.

MF — None

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

Data Considered for Establishing the RfD

1. 2-Year Feeding (oncogenic) - rat: Principal Study - see discussion above; core grade guideline
2. 6-Month Feeding - dog: Systemic NOEL=2500 ppm (62.5 mg/kg/day) (HDT); core grade minimum (du Pont, 1980b)
3. 3-Generation Reproduction - rat: Reproductive NOEL=500 ppm (25 mg/kg/day);

Reproductive LEL=2500 ppm (125 mg/kg/day) (decreased fertility indices); Maternal NOEL=500 ppm; Maternal LEL=2500 ppm (decreased mean body weight); core grade guideline (du Pont, 1980c)

4. Teratology - rat: Teratogenic NOEL=2500 ppm (125 mg/kg/day) (HDT); Maternal NOEL=2500 ppm; Fetotoxic NOEL=2500 ppm; core grade minimum (du Pont, 1978)
5. Teratology - rabbit: Teratogenic NOEL=75 mg/kg/day; Fetotoxic NOEL=25 mg/kg/day; Fetotoxic LEL=75 mg/kg/day (increased incidence of resorption); core grade minimum (du Pont, 1980d)

Data Gap(s): None

Other Data Reviewed

1. 2-Year Feeding (oncogenic) - mice: Systemic NOEL=500 ppm (75 mg/kg/day); Systemic LEL=5000 ppm (decreased body weight and food consumption); core grade guideline (du Pont, 1981)
2. 90-Day Feeding - rat: NOEL=100 ppm (5 mg/kg/day) (LDT); LEL=5000 ppm (25 mg/kg/day) (slight decrease in plasma creatinine, slight increased hematocrit); core grade minimum (du Pont, 1980e)

___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 given a high rating. Additional studies are also of good quality, and therefore, the database 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 — 04/08/1986

Verification Date — 04/08/1986

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 Chlorsulfuron conducted in November 2001 did not identify any critical new studies. IRIS users who know of important new studies may provide that information to 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 — Chlorsulfuron
CASRN — 64902-72-3

Not available at this time.

_II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Chlorsulfuron
CASRN — 64902-72-3

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 — Chlorsulfuron
CASRN — 64902-72-3
Last Revised — 01/01/1990

_VI.A. Oral RfD References

E.I. du Pont de Nemours & Company, Inc. 1978. MRID No. 00031424. Available from EPA. Write to FOI, EPA, Washington DC 20460.

E.I. du Pont de Nemours & Company, Inc. 1980a. MRID No. 00031419, 00086003. Available from EPA. Write to FOI, EPA, Washington DC 20460.

E.I. du Pont de Nemours & Company, Inc. 1980b. MRID No. 00031420. Available from EPA. Write to FOI, EPA, Washington DC 20460.

E.I. du Pont de Nemours & Company, Inc. 1980c. MRID No. 00031423. Available from EPA. Write to FOI, EPA, Washington DC 20460.

E.I. du Pont de Nemours & Company, Inc. 1980d. MRID No. 00086827. Available from EPA. Write to FOI, EPA, Washington DC 20460.

E.I. du Pont de Nemours & Company, Inc. 1980e. MRID No. 00031421. Available from EPA. Write to FOI, EPA, Washington DC 20460.

E.I. du Pont de Nemours & Company, Inc. 1981. MRID No. 00090030. 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 — Chlorsulfuron
CASRN — 64902-72-3

Date	Section	Description
03/31/1987	IV.	Regulatory Action section on-line
01/01/1990	I.A.	Principial study year corrected
01/01/1990	VI.	Bibliography on-line
01/01/1992	IV.	Regulatory action updated
04/01/1997	III., IV., V.	Drinking Water Health Advisories, EPA Regulatory Actions, and Supplementary Data were removed from IRIS on or before April 1997. IRIS users were directed to the appropriate EPA Program Offices for this information.
12/03/2002	I.A.6.	Screening-Level Literature Review Findings message has been added.

_VIII. Synonyms

Substance Name — Chlorsulfuron
CASRN — 64902-72-3
Last Revised — 01/31/1987

- 64902-72-3
- BENZENESULFONAMIDE, 2-CHLORO-N-(((4-METHOXY-6-METHYL-1,3,5-; TRIAZIN-2-YL)AMINO) CARBONYL)-
- 2-CHLORO-N-((4-METHOXY-6-METHYL-1,3,5-TRIAZIN-2-YL)AMINOCARBONYL)-BENZENE SULFONAMIDE

- 1-((o-CHLOROPHENYL)SULFONYL)-3-(4-METHOXY-6-METHYL-s-TRIAZIN-2-YL)UREA
- CHLORSULFON
- Chlorsulfuron
- DPX 4189
- GLEAN
- UREA, 1-((o-CHLOROPHENYL)SULFONYL)-3-(4-METHOXY-6-METHYL-s-TRIAZIN-2-YL)-

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Chronic Health Hazards for Non-Carcinogenic Effects

Reference Dose for Chronic Oral Exposure (RfD)

- Oral RfD Summary
- Principal and Supporting Studies
- Uncertainty and Modifying Factors
- Additional Studies/Comments
- Confidence in the Oral RfD
- EPA Documentation and Review

Reference Concentration for Chronic Inhalation Exposure (RfC)

- Inhalation RfC Summary
- Principal and Supporting Studies
- Uncertainty and Modifying Factors
- Additional Studies/Comments
- Confidence in the Inhalation RfC
- EPA Documentation and Review

Carcinogenicity Assessment for Lifetime Exposure

Evidence for Human Carcinogenicity

- Weight-of-Evidence Characterization
- Human Carcinogenicity Data
- Animal

Carcinogenicity
Data

- Supporting Data
for
Carcinogenicity

**Quantitative
Estimate of
Carcinogenic Risk
from Oral Exposure**

- Summary of Risk
Estimates
- Dose-Response
Data
- Additional
Comments
- Discussion of
Confidence

**Quantitative
Estimate of
Carcinogenic Risk
from Inhalation
Exposure**

- Summary of Risk
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Synonyms