

Triasulfuron; CASRN 82097-50-5

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 Triasulfuron

File First On-Line 01/01/1991

Category (section)	Assessment Available?	Last Revised
Oral RfD (I.A.)	yes	01/01/1991
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 — Triasulfuron

CASRN — 82097-50-5

Last Revised — 01/01/1991

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
Centrilobular hepatocytomegaly in males	NOEL: 10 ppm (1.2 mg/kg/day)	100	1	1E-2 mg/kg/day
2-Year Mouse Feeding/ Carcinogenicity Study	LEL: 1000 ppm (129 mg/kg/day)			
Ciba-Geigy Corporation, 1988				

*Conversion Factors: Actual dose tested

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

Ciba-Geigy Corporation. 1988. MRID No. 40728316. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Groups of CD-1 albino mice (50/sex/dose) were fed technical triasulfuron at dietary levels of 0, 10, 1000, 5000, and 10,000 ppm (Male: 0, 1.2, 129, 619.6, 1301.3 mg/kg/day; Female: 0, 1.5, 157.5, 792.5, 1473.5 mg/kg/day) for 2 years. All animals were inspected at least twice daily for signs of moribundity and mortality. A detailed examination of individual mice was conducted for physical changes, and mice were palpated for tissue masses weekly. Body weights were recorded weekly from weeks 1 to 13 and every other week thereafter through study week 103. Individual food consumption values were determined weekly for 13 weeks and biweekly thereafter. Ophthalmic examinations were conducted for all animals assigned to this study on day 2 and also on all surviving animals prior to study termination. Clinical chemistry parameters were evaluated at the 6-month interval for 5 animals/sex/group.

There was no toxicological effects on survival, clinical observations, water consumption, hematology, and clinical chemistry parameters. In males and females receiving 5000 or 10,000

ppm, mean body weight and/or body weight gain were marginally depressed below control values; this was accompanied by a decreased food consumption in females. Centrilobular hepatocytomegaly was observed in male mice receiving 1000, 5000, and 10,000 ppm and in females receiving 10,000 ppm. Increased centrilobular degeneration, focal accumulation of inflammatory cells, microgranulomas, and pigment depositions were also observed in the liver of 10,000-ppm males.

The LEL for this study was established at 1000 ppm (129 mg/kg/day) based on centrilobular hepatocytomegaly in males. The NOEL for this study was established at 10 ppm (1.2 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 intraspecies differences.

MF — None

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

Data Considered for Establishing the RfD

1. 2-Year Feeding (carcinogenicity) - mouse: Principal study - see previous description; core grade minimum
2. 1-Year Feeding - dog: Dietary levels tested: 0, 100, 1000, and 5000/10,000 ppm (0, 2.5, 25, 125/250 mg/kg/day); Six beagle dogs/sex/dose were fed triasulfuron in the diet for 1 year. After 10 weeks at 10,000 ppm, the high-dose group was lowered to 5000 ppm due to reduced weight, food intake, and hematological changes. The LEL for systemic toxicity is 1000 ppm (25 mg/kg/day) based on increased relative liver weights in males and increased severity of prostate cystic hyperplasia. Effects seen at 5000 ppm (125 mg/kg/day) include liver vacuolization, Kupffer cell pigment, lymphoid hyperplasia, anemia, increased relative spleen, kidney (F), pituitary (F), and liver weights, and increased severity of prostate cystic hyperplasia. Based on the effects observed at 1000 ppm, the NOEL for systemic toxicity is 100 ppm (2.5 mg/kg/day); core grade minimum (Ciba-Geigy Corp., 1986a)
3. 2-Year Feeding (carcinogenicity) - rat: Dietary levels tested: 0, 10, 1000, and 6000 ppm (Male: 0, 0.3, 32.1, and 220.8 mg/kg/day; Female: 0, 0.4, 42.9, and 274.4 mg/kg/day); Sprague-Dawley rats, 70/sex/dose with a 12-month sacrifice of 10/sex/dose, were fed triasulfuron in the diet for 2 years. Based on a decrease in mean body weight gain in both sexes throughout the study and a decrease in mean absolute heart and testes weight

in males, the LEL for systemic toxicity is 6000 ppm (220.8 mg/kg/day). The NOEL for systemic toxicity is 1000 ppm (32.1 mg/kg/day); core grade supplementary (additional data required) (Ciba-Geigy Corp., 1987)

4. 2-Generation Reproduction - rat: Dietary levels tested: 0, 10, 1000, and 5000 ppm (0, 0.5, 50, and 250 mg/kg/day); Sprague-Dawley rats, 30/sex/dose, were fed triasulfuron over two generations. Slight, sporadically significant, decreases in body weight were observed in high-dose F0 and F1 animals, particularly in males. The body weights of high-dose F0 dams were lower than that of control animals during gestation and lactation, but decreases were not observed for high-dose F1 dams. Slight decreases in food consumption were also observed in high-dose F0 and F1 males. Significant decreases in body weight were observed in the high-dose F1a pups at birth and in mid- and high-dose F1a pups on day 7 of lactation. A significant dose-related decrease trends in body weight at birth ($p < 0.01$) and on day 7 of lactation ($p < 0.05$) for the F1a generation was also observed. Reductions in body weight were less obvious in F1b progeny and for the subsequent generation (F2a). Decreases in body weight were observed in high-dose F1b and F2a pups. Based on slight decreases in body weight and food consumption at 5000 ppm, the NOEL and LEL for parental toxicity are 1000 and 5000 ppm (50 and 250 mg/kg/day), respectively. Based on a reduction in F1a, F1b, and F2a pup weights at birth and during lactation at the high dose, the NOEL and LEL for reproductive toxicity are 1000 and 5000 ppm (50 and 250 mg/kg/day), respectively; core grade minimum (Ciba-Geigy Corp., 1986b)
5. Developmental toxicity - rat: Dose levels tested: 0, 100, 300, and 900 mg/kg/day; Groups of 24 pregnant Tif:RAIF(SPF) rats received triasulfuron orally by gavage from day 6 to day 15 of gestation. Body weights of the dams were significantly lower than the control group for the mid and high dose from day 8 to 16 of gestation. Body weight gain was significantly depressed by treatment in the mid- and high-dose group from day 6-11 and day 6-16 of gestation, respectively. Decreased body weight gain was accompanied by a depression in food consumption in the mid- and high-dose groups from day 6-11 and day 6-16 of gestation, respectively. Body weights of both male and female fetuses of the high-dose group were depressed by treatment. A significant increase in dumbbell-shaped thoracic vertebrae was also observed at the high dose. Based upon the depressed body weights and body weight gain during gestation at 300 mg/kg/day, the NOEL and LEL for maternal toxicity are 100 and 300 mg/kg/day, respectively. Based on the effects noted in fetuses, the NOEL and LEL for developmental toxicity are 300 and 900 mg/kg/day, respectively; core grade minimum (Ciba-Geigy Corp., 1986c)
6. Developmental toxicity - rabbit: Dose levels tested: 0, 40, 120, and 240 mg/kg/day; Groups of 20 pregnant rabbits (chinchilla) received triasulfuron daily by oral intubation from day 6 to day 18 of gestation. From day 6-10 of treatment there was a statistically significant decrease in body weight gain in the does of the HDT. The decrease in body weight gain was the only treatment related effect seen in the does. Therefore, the NOEL and LEL for maternal toxicity are 120 and 240 mg/kg/day, respectively. No

developmental effects were observed at any dose tested; core grade minimum (Ciba-Geigy Corp., 1986d)

Other Data Reviewed:

1. 90-Day Feeding - rat: Dietary levels tested: 0, 200, 10,000, and 20,000 ppm (0, 10, 500, and 1000 mg/kg/day); Sprague-Dawley rats, 15/sex/dose for controls and high dose, 10/sex/dose for low and mid doses, were fed triasulfuron in the diet for 90 days. Rats in the mid- and high-dose groups weighed significantly less and ate significantly less than controls. High-dose females showed increased neutrophils, creatinine, and phosphorus; decreased urinary pH and bilirubin; a marginal increase in occult blood; and increased kidney atrophy, basophilia, and epithelial hyperplasia. High-dose males had decreased neutrophils, monocytes, and increased lymphocytes; increased A/G ratios; decreased protein, bilirubin, potassium, calcium, BUN, LDH, and SGOT; decreased urinary pH, protein, and ketone levels, and an increase in specific gravity. Mid-dose males had decreased serum protein, bilirubin, potassium, and calcium; and decreased urinary protein and ketones. While many of these changes are consistent with kidney damage and occult blood, most are within control ranges for rats. Males showed no significant changes in histopathology. Based on reduced body weight and kidney toxicity observed at 10,000 ppm, the NOEL and LEL for systemic toxicity are 200 and 10,000 ppm (10 and 500 mg/kg/day); core grade guideline (Ciba-Geigy Corp., 1985)

Data Gap(s): Chronic Rat Feeding (current study may be upgraded)

I.A.5. Confidence in the Oral RfD

Study — Medium
Data Base -- High
RfD — High

The critical study is of adequate quality and is given a medium confidence rating. Additional studies are also of adequate 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 — 08/22/1990

Verification Date — 08/22/1990

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 Triasulfuron 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 — Triasulfuron
CASRN — 82097-50-5

Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Triasulfuron
CASRN — 82097-50-5

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

VI. Bibliography

Substance Name — Triasulfuron
CASRN — 82097-50-5

VI.A. Oral RfD References

Ciba-Geigy Corporation. 1985. MRID No. 40271947. Available from EPA. Write to FOI, EPA, Washington, DC 20460

Ciba-Geigy Corporation. 1986a. MRID No. 40271965, 4052401, 40887601. Available from EPA. Write to FOI, EPA, Washington, DC 20460

Ciba-Geigy Corporation. 1986b. MRID No. 40271950, 40728317. Available from EPA. Write to FOI, EPA, Washington, DC 20460

Ciba-Geigy Corporation. 1986c. MRID No. 40271948. Available from EPA. Write to FOI, EPA, Washington, DC 20460

Ciba-Geigy Corporation. 1986d. MRID No. 40271949. Available from EPA. Write to FOI, EPA, Washington, DC 20460

Ciba-Geigy Corporation. 1987. MRID No. 40728318. Available from EPA. Write to FOI, EPA, Washington, DC 20460

Ciba-Geigy Corporation. 1988. MRID No. 40728316. 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 — Triasulfuron
CASRN — 82097-50-5

Date	Section	Description
01/01/1991	I.A.	Oral RfD summary on-line
12/03/2002	I.A.6.	Screening-Level Literature Review Findings message has been added.

VIII. Synonyms

Substance Name — Triasulfuron
CASRN — 82097-50-5
Last Revised — 01/01/1991

- 82097-50-5
- Amber
- CGA 131036
- Logran
- Triasulfuron