

Amitraz; CASRN 33089-61-1

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 Amitraz

File First On-Line 08/22/1988

Category (section)	Assessment Available?	Last Revised
Oral RfD (I.A.)	yes	08/22/1988
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 — Amitraz

CASRN — 33089-61-1

Primary Synonym — BTS 27 419

Last Revised — 08/22/1988

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
Increased mean blood sugar concentration; slight hypothermia	NOEL: 0.25 mg/kg/day LEL: 1.0 mg/kg/day	100	1	2.5E-3 mg/kg/day
2-Year Dog Oral Feeding Study				
Upjohn Co., 1972a				

*Conversion Factors -- 1 ppm = 0.025 mg/kg/day (assumed dog food consumption)

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

Upjohn Company. 1972a. MRID No. 00030493, 00040856. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Groups of 8 beagle dogs (4/sex/dose level) were given 0.1, 0.25, and 1 mg/kg/day of amitraz for 2 years. All eight dogs given 1 mg/kg/day exhibited signs of slight CNS depression 3 hours after dosing on days 1 and 2, and all appeared normal again by the following morning. One male receiving 1 mg/kg/day had a slight subnormal temperature at 3 hours which returned to normal within 24 hours. All dogs in this group appeared clinically normal, except one female that was slightly hypothermic 3 hours after dosing during weeks 52 and 79. Blood samples were collected during weeks 40 and 53 showed significant increase in mean blood sugar concentration 3 hours after dosing in the 1 mg/kg/day group. No clinical reactions to treatment were seen in dogs at lower dosages.

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

UF — An uncertainty factor of 100 was used, 10 each 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 - dog: Principal study - see previous description; core grade minimum
- 2) 2-Year Feeding - rat: Systemic NOEL=50 ppm (2.5 mg/kg/day); Systemic LEL=200 ppm (10 mg/kg/day) (HDT; temporarily depressed food intake, depressed growth rate, nervous, aggressive, excitable); core grade minimum (Upjohn Co., 1973a)
- 3) 3-Generation Reproduction - rat: NOEL=15 ppm (1.6 mg/kg/day); Systemic LEL=50 ppm (5 mg/kg/day) (increase mortality during suckling period; decreased litter size); core grade minimum (Boots Hercules Agrochemicals Co., 1980)
- 4) Teratology - rat: NOEL=12 mg/kg/day (HDT); core grade minimum (Upjohn Co., 1973b)
- 5) Teratology - rabbit: Teratogenic NOEL=25 mg/kg/day (frank maternal toxicity at higher levels precluded a teratogenic assessment); Maternal NOEL=25 mg/kg/day; Maternal LEL=50 mg/kg/day (mortality); Fetotoxic NOEL=25 mg/kg/day; Fetotoxic LEL=50 mg/kg/day (mortality); no core grade (Boots Hercules Agrochemicals Co., 1973)
- 6) Teratology - rabbit: Teratogenic NOEL=25 mg/kg/day (HDT); Teratogenic LEL=none; Fetotoxic NOEL=1 mg/kg/day; Fetotoxic LEL=5 mg/kg/day (one cleft palate, meningocoele associated with small ears and displaced toe); no core grade (Upjohn Co., 1973c)

Other Data Reviewed:

- 1) 90-Day Feeding - dog: NOEL=0.25 mg/kg/day; LEL=1 mg/kg/day (CNS depression, decreased rectal temperature, decreased pulse, increased blood sugar, neutrophilia in bone marrow, slight enlargement of central and midzonal hepatocytes, hyperplasia of zona glomerulosa with decrease in zona fasciculata and reticularis); core grade minimum (Upjohn Co., 1973d)

2) 90-Day Feeding - rat: NOEL=3 mg/kg/day; LEL=12 mg/kg/day (depressed body weight gain, increased brain to body weight ratio); core grade supplementary (Upjohn Co., 1971)

3) 90-Day Feeding - mouse: NOEL=3 mg/kg/day; LEL=12 mg/kg/day (decreased body weight gain, increased heart weight); core grade minimum (Upjohn Co., 1972b)

Data Gap(s): None

I.A.5. Confidence in the Oral RfD

Study — Medium

Database — Medium

RfD — Medium

The critical study is of adequate quality and is given a medium confidence rating. Additional studies are supportive and of fair quality and therefore the database is given a medium confidence rating. Medium 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 — 10/14/1987

Verification Date — 10/14/1987

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 Amitraz conducted in September 2002 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 — Amitraz
CASRN — 33089-61-1
Primary Synonym — BTS 27 419

Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Amitraz
CASRN — 33089-61-1
Primary Synonym — BTS 27 419

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 — Amitraz
CASRN — 33089-61-1
Primary Synonym — BTS 27 419

VI.A. Oral RfD References

Boots Hercules Agrochemicals Company. 1973. MRID No. 00029961. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

Boots Hercules Agrochemicals Company. 1980. MRID No. 00029960, 00029962. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

Upjohn Company. 1971. MRID No. 00051784. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

Upjohn Company. 1972a. MRID No. 00030493, 00040856. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

Upjohn Company. 1972b. MRID No. 00072818, 00133930. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

Upjohn Company. 1973a. MRID No. 00041197, 00044585. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

Upjohn Company. 1973b. MRID No. 00040856. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

Upjohn Company. 1973c. MRID No. 00040860. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

Upjohn Company. 1973d. MRID No. 00040345. Available from EPA. Write to FOI, EPA, Washington D.C. 20460.

VI.B. Inhalation RfD References

None

VI.C. Carcinogenicity Assessment References

None

VII. Revision History

Substance Name — Amitraz

CASRN — 33089-61-1

Primary Synonym — BTS 27 419

Date	Section	Description
08/22/1988	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 — Amitraz

CASRN — 33089-61-1

Primary Synonym — BTS 27 419

Last Revised — 08/22/1988

- 33089-61-1
- Amitraz
- amitraze
- amitraz estrella
- azadieno
- BAAM
- Boots BTS 27419
- BTS 27 419
- 1,5-di(2,4-dimethylphenyl-3-methyl-1,3,5-triazapenta-1,4-diene
- ENT 27967
- methanimidamide, N'-(2,4-dimethylphenyl)-N-(((2,4- dimethylphenyl)imino)methyl)-N-methyl-
- 2-methyl-1,3-di(2,4-xylylimino)-2-azapropane
- mitaban
- mitac

- N'-(2,4-dimethylphenyl)-N-(((2,4-dimethylphenyl)imino)methyl)-N-methylmethanimidamide
- N-methyl-bis(2,4-xylyliminomethyl)amine
- N-methyl-N'-2,4-xylyl-N-(N-2,4-xylylformimidoyl)formamidine
- N,N-bis(2,4-xylyliminomethyl)methylamine
- N,N-di-(2,4-xylyliminomethyl)methylamine
- N,N'-((methylimino)dimethylidyne)di-2,4-xylidine
- R.D. 27419
- taktic
- triatox
- U-36059
- Upjohn U-36059
- 2,4-xylidine, N,N'-(methyliminodimethylidyne)bis-