

Propanil; CASRN 709-98-8

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 Propanil

File First On-Line 03/31/1987

Category (section)	Assessment Available?	Last Revised
Oral RfD (I.A.)	yes	03/01/1988
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 — Propanil

CASRN — 709-98-8

Last Revised — 03/01/1988

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 relative spleen weight in females	NOEL: 100 ppm (5 mg/kg/day)	1000	1	5E-3 mg/kg/day
2-Year Rat Feeding Study	LEL: 400 ppm (20 mg/kg/day)			
Rohm and Haas Co., 1964a				

*Dose Conversion Factors & Assumptions: 1 ppm diet = 0.05 mg/kg/day

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

Rohm and Haas Company. 1964a. MRID No. 00015419, 00134002, 00036089; HED Doc. No. 000418, 000422. Available from EPA. Write to FOI, EPA, Washington, D.C. 20460.

Groups of 25 male and 25 female Wistar rats were fed 0, 100, 400, and 1600 ppm of propanil in the diets for 2 years. At 400 ppm, there was increased relative spleen weight in females. There were no compound related histological effects, however numerous animals were not examined.

Additional evidence for considering the spleen and liver as target organs in rodents can be seen in the 90-day mouse study and 90-day rat study. At the LEL of 200 ppm (30 mg/kg/day) in mice, histologic effects in the liver and spleen were observed. At higher levels [1600 ppm (240 mg/kg/day) and 12,800 ppm (1920 mg/kg/day)] histologic effects, increased liver and spleen weights, cyanosis, and methemoglobinemia were observed. The NOEL for the study was 25 ppm (3.75 mg/kg/day). In the 90-day rat study, at the LEL of 1000 ppm (50 mg/kg/day), there was increased relative spleen weight in females and decreased hemoglobin males. The NOEL was 330 ppm (16.5 mg/kg/day).

Additionally, in the 2-year dog study, the liver is indicated as the target organ by increased SGOT and SAP values. Therefore both short term and long term data support the conclusion that the spleen and liver are target organs. The increased relative spleen weight in females at 400 ppm (20 mg/kg/day) in the 2-year rat study could be correlated with histological effects in that organ in other studies.

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. An additional UF of 10 was used to account for the lack of an adequate toxicity database.

MF — None

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

During review of the chronic mouse feeding study, as part of the Propanil Registration Standard, it was observed that the 85.4% technical produced increased incidences of moderate to severe bilateral retinal degeneration in both males and females of the 180 ppm group. The same dose level (180 ppm) of a higher purity technical did not produce this effect in females, and caused a less severe effect in males. Additional data are required to clarify this issue.

Data Considered for Establishing the RfD:

- 1) 2-Year Feeding - rat: Principal study - see previous description; core grade supplementary
- 2) 2-Year Feeding - dog: NOEL=600 ppm (15 mg/kg/day); LEL=4000 ppm (100 mg/kg/day) (decreased body weight and increase in SGOT and SAP); core grade supplementary (Rohm & Haas, 1964b)
- 3) 3-Generation Reproduction - rat: NOEL=300 ppm (15 mg/kg/day); LEL=1000 ppm (50 mg/kg/day) (decreased parental body weight); core grade minimum (Rohm & Haas, 1966)
- 4) Teratology - rat: NOEL=20 mg/kg/day; LEL=100 mg/kg/day (decreased pup size, delayed ossification); core grade minimum (Rohm & Haas, 1980a)
- 5) Teratology - rabbit: Developmental NOEL=20 mg/kg/day; Developmental LEL=100 mg/kg/day; core grade minimum (Rohm & Haas, 1980b)

Data Gaps: 1) Chronic Rat Feeding Study; 2) Chronic Dog Feeding Study

I.A.5. Confidence in the Oral RfD

Study — Medium
Database — Medium
RfD — Medium

The critical study appears to be of fair quality and is given a medium confidence rating. Since the database on chronic toxicity lacks an adequate chronic rat and dog feeding study, confidence in the database can be considered medium to low. Medium confidence in the RfD follows.

I.A.6. EPA Documentation and Review of the Oral RfD

Registration Files

Registration Standard, August 1987

Agency Work Group Review — 09/02/1986, 08/12/1987

Verification Date — 08/12/1987

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 Propanil conducted in September 2002 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 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 — Propanil
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Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Propanil
CASRN — 709-98-8

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 — Propanil
CASRN — 709-98-8

VI.A. Oral RfD References

Rohm and Haas Company. 1964a. MRID No. 00015419, 00134002, 00036089; HED Doc. No. 000418, 000422. Available from EPA. Write to FOI, EPA, Washington, D.C. 20460.

Rohm and Haas Company. 1964b. MRID No. 00036090, 00132749; HED Doc. No. 000418, 000422. Available from EPA. Write to FOI, EPA, Washington, D.C. 20460.

Rohm and Haas Company. 1966. MRID No. 00036091; HED Doc. No. 000418, 000422. Available from EPA. Write to FOI, EPA, Washington, D.C. 20460.

Rohm and Haas Company. 1980a. MRID No. 00029940, 00134002, 00029941, 00058588; HED Doc. No. 000425. Available from EPA. Write to FOI, EPA, Washington, D.C. 20460.

Rohm and Haas Company. 1980b. MRID No. 00058589; HED Doc. No. 000425. Available from EPA. Write to FOI, EPA, Washington, D.C. 20460.

VI.B. Inhalation RfC References

None

VI.C. Carcinogenicity Assessment References

None

VII. Revision History

Substance Name — Propanil

CASRN — 709-98-8

Date	Section	Description
03/01/1988	I.A.	Oral RfD summary replaced - RfD changed
12/03/2002	I.A.6.	Screening-Level Literature Review Findings message has been added.

VIII. Synonyms

Substance Name — Propanil

CASRN — 709-98-8

Last Revised — 03/31/1987

- 709-98-8
- BAY 30130
- CHEM RICE
- CRYSTAL PROPANIL-4
- DCPA
- 3',4'-DICHLOROPHENYLPROPIONANILIDE
- DICHLOROPROPIONANILIDE

- 3,4-DICHLOROPROPIONANILIDE
- DIPRAM
- DPA
- FARMCO PROPANIL
- FW 734
- GRASCIDE
- HERBAX TECHNICAL
- MONTROSE PROPANIL
- N-(3,4-DICHLOROPHENYL)PROPANAMIDE
- N-(3,4-DICHLOROPHENYL)PROPIONAMIDE
- PROPANAMIDE, N-(3,4-DICHLOROPHENYL)-
- PROPANEX
- PROPANID
- PROPANIDE
- Propanil
- PROPIONANILIDE, 3',4'-DICHLORO-
- PROPIONIC ACID 3,4-DICHLOROANILIDE
- PROP-JOB
- RISELECT
- ROGUE
- ROSANIL
- S 10165
- STAMPEDE
- STAMPEDE 3E
- STAM SUPERNOX
- STREL
- SUPERNOX
- SURCOPUR
- SURPUR
- VERTAC