

Allyl alcohol; CASRN 107-18-6

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 Allyl alcohol

File First On-Line 01/31/1987

Category (section)	Assessment Available?	Last Revised
Oral RfD (I.A.)	yes	01/31/1987
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 — Allyl alcohol
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Last Revised — 01/31/1987

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
Impaired renal function and increased liver and kidney weights	NOEL: 50 ppm drinking water equivalent to 4.8 mg/kg/day	1000	1	5E-3 mg/kg/day
Subchronic Oral Rat Study (drinking water) Carpanini et al., 1978	LOAEL: 100 ppm drinking water equivalent to 6.9 mg/kg/day			

*Conversion Factors: based on reported drinking water consumption

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

Carpanini, F.M.B., I.F. Gaunt, J. Hardy, S.D. Gangalli, K.R. Butterworth and H.G. Lloyd. 1978. Short-term toxicity of allyl alcohol in rats. *Toxicology*. 9: 29-45.

Carpanini et al. (1978) exposed groups of Wistar rats (15/sex/dose) to drinking water containing 0, 50, 100, 200, or 800 ppm (mg/L) allyl alcohol for 15 weeks. Based on water consumption data, these concentration were equivalent to dosages of 0, 4.8, 8.3, 14.0, and 48.2 mg/kg/day for males and 0, 6.2, 6.9, 17.1, and 58.4 for females, respectively. Food intake and growth were depressed at the 100, 200, and 800 ppm dose levels. Results of hematologic and clinical chemistry tests were unremarkable. There were no histopathologic lesions attributable to treatment in any of the organs examined; however, the relative organ weights of the liver, kidney, and spleen were significantly increased in a dose-related fashion at all except the 50 ppm level. Several tests of renal function were performed, indicating impaired renal function in males at greater than or equal to 100 ppm (8.3 mg/kg/day) and in females at greater than or equal to 200 ppm (17.1 mg/kg/day).

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

UF — An uncertainty factor of 1000 was used; 10 for interspecies extrapolation, 10 to approximate chronic exposure, and 10 for intraspecies variability in the human population.

MF — None

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

The results of the Carpanini et al. (1978) study are similar to those found by Dunlap et al. (1958) in which rats treated with allyl alcohol in drinking water for 90 days had significantly increased liver and kidney weights at greater than or equal to 250 ppm. Two subchronic inhalation studies were also available in different species (Dunlap et al., 1958; Torkelson et al., 1959) in which dose-related increased liver and kidney damage was observed, but the magnitude of these effects are not necessarily comparable to the oral route.

I.A.5. Confidence in the Oral RfD

Study — Medium

Database — Low

RfD — Low

The study defined a clear NOEL and LOAEL, using a moderate number of animals of both sexes and several dose levels. However, only one species of animal was tested for a subchronic period (15 weeks). The database contains several subchronic oral and inhalation studies which only qualitatively support the findings of the principal study and one supporting subchronic oral study in the same species; however, no chronic or pertinent reproductive data are available. Nor were pertinent epidemiologic studies located. Therefore, a low confidence in the database is recommended. Low confidence in the RfD follows.

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

Source Document — U.S. EPA, 1985

Other EPA Documentation — None

Agency Work Group Review — 02/26/1986

Verification Date — 02/26/1986

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 Allyl alcohol

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)

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Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — Allyl alcohol
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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 — Allyl alcohol
CASRN — 107-18-6

VI.A. Oral RfD References

Carpanini, F.M.B., I.F. Gaunt, J. Hardy, S.D. Gangalli, K.R. Butterworth and H.G. Lloyd. 1978. Short-term toxicity of allyl alcohol in rats. *Toxicology*. 9: 29-45

Dunlap, M.K., J.K. Kodama, J.S. Wellington, H.H. Anderson and C.H. Hine. 1958. The toxicity of allyl alcohol. I. Acute and chronic toxicity. *AMA Arch. Ind. Health*. 18: 303-311.

Torkelson, T.R., M.A. Wolf, R. Oyen and V.K. Rowe. 1959. Vapor toxicity of allyl alcohol as determined on laboratory animals. *Am. Ind. Hyg. Assoc. J.* 20: 224-229.

U.S. EPA. 1985. Health and Environmental Effects Profile for Allyl Alcohol. Prepared by the Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH for the Office of Solid Waste and Emergency Response, Washington, DC.

VI.B. Inhalation RfC References

None

VI.C. Carcinogenicity Assessment References

None

VII. Revision History

Substance Name — Allyl alcohol
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Date	Section	Description
12/03/2002	I.A.6.	Screening-Level Literature Review Findings message has been added.

VIII. Synonyms

Substance Name — Allyl alcohol

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Last Revised — 01/31/1987

- 107-18-6
- AA
- Allyl Al
- Allyl Alcohol
- Allylic Alcohol
- 3-Hydroxypropene
- Orvinylcarbinol
- 1-Propene-3-ol
- Propenol
- 2-Propen-1-ol
- Propenyl Alcohol
- 2-Propenyl Alcohol
- Shell Unkrautted A
- Vinylcarbinol
- 2-Vinylcarbinol
- Weed Drench