

## Captafol; CASRN 2425-06-1

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 Captafol

**File First On-Line 09/30/1987**

Category (section)	Assessment Available?	Last Revised
<b>Oral RfD (I.A.)</b>	yes	09/30/1987
<b>Inhalation RfC (I.B.)</b>	not evaluated	
<b>Carcinogenicity Assessment (II.)</b>	not evaluated	

## I. Chronic Health Hazard Assessments for Noncarcinogenic Effects

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

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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
<b>Kidney and bladder toxicity</b>	NOEL: None LEL: 2 mg/kg/day	1000	1	2E-3 mg/kg/day
<b>One-Year Dog Feeding Study</b>				
<b>Ortho-Chevron, 1985a</b>				

\*Conversion Factors -- none

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

Ortho-Chevron Chemical Company. 1985a. MRID No. 00149488, 00155196. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Captafol was administered daily in capsules at 0, 2, 40, and 250 mg/kg bw/day to male and female beagle dogs for 12 months.

Signs of toxicity occurred primarily at the high dose and were noted in both sexes, except where specified: emesis, soft compound colored feces, body weight gain depression (mid and high doses), decreased BUN (males), decreased LDH (males), decreased inorganic phosphorus (males), decreased albumen (mid and high doses, males), slight increase in centrolobular hepatic inflammation (males), and ballooning degeneration/vacuolation of the transitional epithelium of the kidney and bladder (low, mid and high doses, females). The incidence and severity of the transitional epithelial lesion was dose-related. Although there was no NOEL, and this lesion occurred at the lowest dose tested, 2 mg/kg/day will be considered the LEL for this effect and the study as a whole because the incidence and frequency decreased to minimal in the lowest dose.

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

UF — The UF of 100 includes uncertainties in the extrapolation from laboratory animals to humans and to protect sensitive individuals. An additional UF of 10 was used to account for the fact that the RfD is based on the LEL from the chronic dog study rather than a NOEL.

MF — None

### **I.A.4. Additional Comments (Oral RfD)**

Data Considered for Establishing the RfD:

- 1) 1-Year Feeding - dog: Principal study - see previous description; core grade guideline
- 2) 2-Year Feeding (oncogenic) - rat: Systemic NOEL=2.8 mg/kg/day bw\*; Systemic LEL=12.0 mg/kg/day\* (hyperplasia of renal transitional epithelium and altered gastric mucosa); core grade minimum (Chevron Chemical, 1985b)
- 3) Teratology - rabbit: Maternal NOEL=4 mg/kg/day; Maternal LEL=16 mg/kg/day (decreased weight gain and food consumption); Fetotoxic NOEL=16.5 mg/kg/day; LEL=50.0 mg/kg/day (increased minor skeletal abnormalities and resorptions); core grade minimum (Chevron Chemical, 1984)
- 4) Teratology - rat: Maternal NOEL=30 mg/kg/day; Maternal LEL=200 mg/kg (mortality, gastric lesions, decrease in body weight, weight gain, and food consumption); Fetotoxic NOEL=30 mg/kg/day; Fetotoxic LEL=200 mg/kg/day (decreased fetal weight and ossification sites); core grade minimum (Chevron Chemical, 1983a)
- 5) 2-generation Reproduction - rat: Maternal NOEL=13 mg/kg/day; LEL=60 mg/kg/day (lower mean body weight); Fetotoxic NOEL=60 mg/kg/day (HDT); Fetotoxic LEL=none; core grade minimum (Chevron Chemical, 1983b)

\* average measured captafol concentration

Other Data Reviewed:

- 1) 2-Year (oncogenic) - mice: Systemic NOEL=15 mg/kg/day; Systemic LEL=50 mg/kg/day (decreased body weight, atrophy of pancreas, testicles, spleen, bone marrow, and kidney; core grade minimum (Chevron Chemical, 1985c)

Data Gap(s): None

### **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 confidence rating. Additional studies are of fair to good quality, and there are no data gaps; therefore, the database is given a high confidence rating. High confidence in the RfD follows.

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

Pesticide Registration Standard, September 1986

Pesticide Registration Files

Agency Work Group Review — 04/22/1986, 05/20/1987

Verification Date — 05/20/1987

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 Captafol 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](mailto: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](mailto:hotline.iris@epa.gov) (internet address).

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### **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 — Captafol  
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Not available at this time.

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**III. [reserved]**

**IV. [reserved]**

**V. [reserved]**

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## VI. Bibliography

Substance Name — Captafol  
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### VI.A. Oral RfD References

Ortho-Chevron Chemical Company. 1983a. MRID No. 00132556. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Ortho-Chevron Chemical Company. 1983b. MRID No. 00119072. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Ortho-Chevron Chemical Company. 1984. MRID No. 00160970. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Ortho-Chevron Chemical Company. 1985a. MRID No. 00149488, 00155196. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Ortho-Chevron Chemical Company. 1985b. MRID No. 00129987, 00144563. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

Ortho-Chevron Chemical Company. 1985c. MRID No. 00144564, 00150103, 00150108. Available from EPA. Write to FOI, EPA, Washington, DC 20460.

## VI.B. Inhalation RfD References

None

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## VI.C. Carcinogenicity Assessment References

None

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## VII. Revision History

Substance Name — Captafol

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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 — Captafol

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Last Revised — 09/30/1987

- 2425-06-1
- Captafol
- CAPTATOL
- CAPTOFOL
- 4-CYCLOHEXENE-1,2-DICARBOXIMIDE, N-((1,1,2,2-TETRACHLOROETHYL)THIO)-
- DIFOLATAN
- DIFOSAN
- FOLCID
- N-(1,1,2,2-TETRACHLORAETHYLTHIO)-CYCLOHEX-4-EN-1,4-DICARBOXIMID
- N-(1,1,2,2-TETRACHLORAETHYLTHIO)-TETRAHYDROPHTHALAMID

- N-1,1,2,2-TETRACHLOROETHYLMERCAPTO-4-CYCLOHEXENE-1,2-CARBOXIMIDE
- N-((1,1,2,2-TETRACHLOROETHYL)SULFENYL)-cis-4-CYCLOHEXENE-1,2-DICARBOXIMIDE
- N-(1,1,2,2-TETRACHLOROETHYLTHIO)-4-CYCLOHEXENE-1,2-DICARBOXIMIDE
- ORTHO 5865
- SANSPOR
- SULFONIMIDE
- SULPHEIMIDE