

2-Chlorophenol; CASRN 95-57-8

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 2-Chlorophenol

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 — 2-Chlorophenol

CASRN — 95-57-8

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
Reproductive effects	NOAEL: 5 mg/kg/day (50 ppm)	1000	1	5E-3 mg/kg/day
Rat Subchronic Drinking Water Study	LOAEL: 50 mg/kg/day (500 ppm)			
Exon and Koller, 1982				

*Conversion Factors: Assuming a rat drinks a daily amount of water equal to 10% of its body weight, 50 mg/L x 0.1 L/kg/day = 5 mg/kg/day and 500 mg/L x 0.1 L/kg/day = 50 mg/kg/day

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

Exon, J.H. and L.D. Koller. 1982. Effects of transplacental exposure to chlorinated phenols. Environ. Health Perspect. 46: 137-140.

Groups of 12-20 weanling female Sprague-Dawley rats were exposed to 0, 5, 50 or 500 ppm of 2-chlorophenol in the drinking water. The rats were bred after 10 weeks of 2-chlorophenol treatment. Treatment was continued during breeding, gestation and weaning. Parameters evaluated included percent conception, litter size, birth weight, weaning weight, number of stillbirths and hematology (hematocrit, hemoglobin levels, red and white cell counts and mean corpuscular volume) in weanling rats. An increase in the conception rate and in the number of stillborns as well as a decrease in the size of the litters was observed in the rats exposed to 500 ppm, the LOAEL. No effects were observed at 50 ppm, which can be converted to a dosage of 5 mg/kg/day. Dividing the NOAEL of 5 mg/kg/day by an uncertainty factor of 1000 yields the RfD of 0.005 mg/kg/day, or 0.4 mg/day for a 70 kg human.

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

UF — 10 to account for interspecies extrapolation, 10 for intraspecies variability and 10 for the use of subchronic data.

MF — None

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

No chronic or subchronic oral or inhalation toxicity studies of 2-chlorophenol were available to support the NOEL. 2-Chlorophenol has not been studied for teratogenicity.

I.A.5. Confidence in the Oral RfD

Study — Low

Database — Low

RfD — Low

Confidence in the study is low because, although it was a subchronic oral study, it evaluated only reproductive and hemotological effects. The data base is rated as low because no other subchronic, chronic, carcinogenicity or teratogenicity studies were available. Because of the low confidence in the study and database, the level of confidence in the RfD is low.

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

Source Document — U.S. EPA, 1986a,b

U.S. EPA, 1986a received extensive Agency-wide and limited external review, 1986.

U.S. EPA, 1986b received ECAO-CIN Internal Review and limited Agency Review, 1986.

Other EPA Documentation — None

Agency Work Group Review — 12/15/1987, 01/20/1988

Verification Date — 01/20/1988

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 2-Chlorophenol 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 — 2-Chlorophenol
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Not available at this time.

II. Carcinogenicity Assessment for Lifetime Exposure

Substance Name — 2-Chlorophenol
CASRN — 95-57-8

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 — 2-Chlorophenol
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VI.A. Oral RfD References

Exon, J.H. and L.D. Koller. 1982. Effects of transplacental exposure to chlorinated phenols. Environ. Health Perspect. 46: 137-140.

U.S. EPA. 1986a. Drinking Water Criteria Document for Chlorophenols. Prepared by the Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH for the Office of Drinking Water, Washington, DC.

U.S. EPA. 1986b. Health Effects Assessment for Selected Chlorinated Phenols. Prepared by the Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH for the Office of Emergency and Remedial Response, Washington, DC.

VI.B. Inhalation RfC References

None

VI.C. Carcinogenicity Assessment References

None

VII. Revision History

Substance Name — 2-Chlorophenol
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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 — 2-Chlorophenol

CASRN — 95-57-8

Last Revised — 08/22/1988

- 95-57-8
- Chlorophenol, 2-
- o-chlorophenol, liquid
- o-chlorophenol
- o-chlorophenol, solid
- o-chlorphenol
- phenol, 2-chloro-
- phenol, o-chloro-
- RCRA waste number U048
- UN 2020
- UN 2021