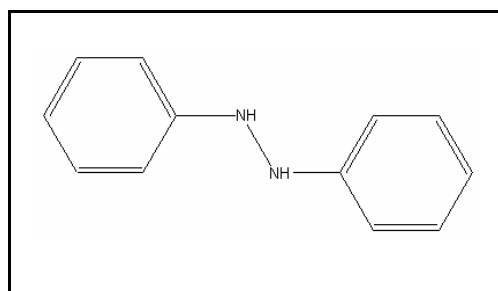




## TIER I HUMAN HEALTH CANCER CRITERIA

### 1,2-DIPHENYLHYDRAZINE

CAS RN:	122-66-7
Water Solubility:	68 mg/L
Log $K_{ow}$ :	2.97 <sup>P</sup>
Risk Associated Dose:	$1.3 \times 10^{-5}$ mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class B2; Probable human Carcinogen



### Standard

The human health cancer 1,2-diphenylhydrazine criterion for drinking water sources is 0.36  $\mu\text{g/L}$ . The human health cancer criterion for nondrinking water sources is 2.1  $\mu\text{g/L}$ .

### Calculations

#### Bioaccumulation Factor:

BAF predicted based on Log  $K_{ow}$

$$\text{Log } K_{ow} = 2.97 \text{ (CLOGP)}, K_{ow} = 933.3$$

$$\text{Trophic level 3 FCM} = 1.028; \text{ trophic level 4 FCM} = 1.007$$

$$f_{fd} = 1/(1+(0.00000024 \text{ kg/L})(K_{ow})) = 1.0$$

$$\text{Baseline BAF}_{T3} = (\text{FCM})(K_{ow}) = (1.028)(933.3) = 959.4$$

$$\text{Baseline BAF}_{T4} = (1.007)(933.3) = 939.8$$

$$\text{Human health BAF}_{T3} = [(959.4)(0.0182)+1](1.0) = 18.46$$

$$\text{Human health BAF}_{T4} = [(939.8)(0.0310)+1](1.0) = 30.13$$

### Risk Associated Dose:

From the IRIS database:

$$\begin{aligned} \text{RAD} &= 0.00001/q1^* = 0.00001/0.8 \\ &= 1.3 \times 10^{-5} \end{aligned}$$

Where:

$$\begin{aligned} \text{RAD} &= \text{Risk Associated Dose (mg/kg/day)} \\ q1^* &= \text{Cancer Slope Factor} \end{aligned}$$

### Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HCC} &= [(1.3 \times 10^{-5})(70)]/0.01+[(0.0036)(18.46)+(0.0114)(30.13)] \\ &= \mathbf{2.1 \mu\text{g/L}} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HCC} &= [(1.3 \times 10^{-5})(70)]/2+[(0.0036)(18.46)+(0.0114)(30.13)] \\ &= \mathbf{0.36 \mu\text{g/L}} \end{aligned}$$

## References

1. USEPA 1991. Integrated Risk Information System (IRIS database) chemical file for 1,2-diphenylhydrazine (CASRN 122-66-7).
2. Leo, A. and D. Weininger 1997. Daylight Software CLogP Version 3.15+ for Unix Pomona Medical Chemistry Project, Pomona College, Claremont, CA. Distributed by Daylight Chemical Information Systems, Inc., 3952 Claremont St., Irving, CA 92714 (Reference for the Log  $K_{ow}$ ).

## Acronyms

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ADE	Acceptable Daily Exposure
BAF	Bioaccumulation Factor
CAS RN	Chemical Abstract Service Registry Number
FCM	Food Chain Multiplier
IRIS	Integrated Risk Information System
$K_{ow}$	Octanol-Water Partition Coefficient
LOAEL	Lowest observed adverse effect level
NOAEL	No observed adverse effect level
P (superscript)	Predicted value
UF	Uncertainty factor

## Revision History

June 22, 1999 - Criteria first developed

April 18, 2000 – Fact sheet updated. No modifications made to criteria.

## Contact Information

David B. Kallander  
Water Quality Standards Section  
Indiana Department of Environmental Management  
100 North Senate Ave., P.O. Box 6015  
Indianapolis, IN 46206-6015  
(317) 233-2472  
Email: [dkalland@dem.state.in.us](mailto:dkalland@dem.state.in.us)