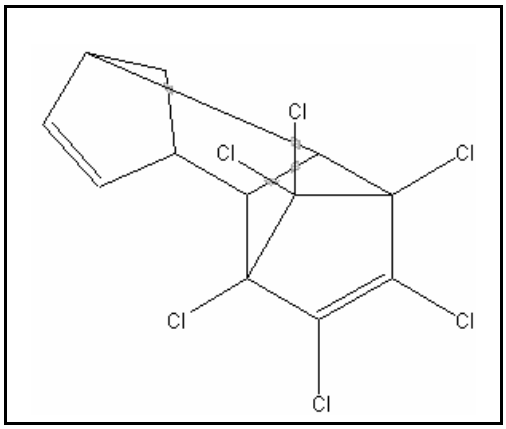
**Indiana Department of Environmental Management**
**Office of Water – Water Quality Standards Section**

# TIER II HUMAN HEALTH CANCER VALUES

## ALDRIN

| | |
|---|---|
| CAS RN: | 309-00-2 |
| Water Solubility: | 0.18 mg/L |
| Log $K_{ow}$: | 6.496 |
| Risk Associated Dose: | 5.9 x $10^{-7}$ mg/kg/day |
| Carcinogenicity Weight-of-Evidence Classification: | Class B2; Probable human Carcinogen |




### Standard

The human health cancer aldrin value for drinking water sources is 2.4 x $10^{-6}$ µg/L. The human health cancer value for nondrinking water sources is 2.4 x $10^{-6}$ µg/L.

### Calculations

Bioaccumulation Factor: BAF predicted based on Log $K_{ow}$ (from Stephan 1993)

Log $K_{ow}$ = 6.496 (slow-stir method), $K_{ow}$ = 3,133,286

Trophic level 3 FCM = 13.662; trophic level 4 FCM = 24.604

$f_{fd} = 1/(1+(0.00000024\ kg/L)(K_{ow})) = 0.571$

Baseline $BAF_{T3}$ = (FCM)($K_{ow}$) = (13.662)(3,133,286) = 42,806,953

Baseline $BAF_{T4}$ = (24.604)(3,133,286) = 77,091,369

Human health $BAF_{T3}$ = [(42,806,953)(0.0182)+1](0.571) = 444,859

Human health $BAF_{T4}$ = [(77,091,369)(0.0310)+1](0.571) = 1,364,595

Risk Associated Dose:

From the IRIS database:

$RAD = 0.00001/q1^{*} = 0.00001/17$
$= 5.882 \times 10^{-7}$

Where:

RAD = Risk Associated Dose (mg/kg/day)
$q1^{*}$ = Cancer Slope Factor

Calculation of Criteria:

**Non Drinking Water HCV**=$[(5.882 \times 10^{-7})(70)]/0.01+[(0.0036)(444,859)+(0.0114)(1,364,595)]$

$= \mathbf{2.4 \times 10^{-6}\ \mu g/L}$

**Drinking Water HCV** = $[(5.882 \times 10^{-7})(70)]/2+[(0.0036)(444,859)+(0.0114)(1,364,595)]$

$= \mathbf{2.4 \times 10^{-6}\ \mu g/L}$

## References


1. Stephen, C.E. 1993. Derivation of Proposed Human Health and Wildlife Bioaccumulation Factors for the Great Lakes Initiative. Environmental Research Laboratory, Office of Research and Development, U.S. EPA, Duluth, MN.

2. USEPA 1993. Integrated Risk Information System (IRIS database) chemical file for aldrin (309-00-2).

3. de Bruijn, J., F. Busser, W. Seinen, and J. Hemens 1989. Determination of octanol/water partition coefficients for hydrophobic organic chemicals with the "slow-stirring" method. Environ. Toxicol. Chem. 8: 449-512. (Reference for the Log $K_{ow}$ value)


## Acronyms

| | |
|---|---|
| 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

July 9, 1997 - Values first developed
March 23, 2000 – Values reviewed (no modifications made). Fact sheet updated.

## Contact Information

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