

Endrin Human Health Non Cancer Calculations for Grand Portage Reservation Water Quality Standards – Tier 2

Endrin

CAS RN:	72-20-8	
Carcinogenicity Weight-of-evidence Classification:	Class D; Not classifiable	
NOEL:	0.025mg/kg/day	US EPA IRIS as of March 2006
Uncertainty Factor (UF):	100	US EPA IRIS as of March 2006
Relative Source Contribution (RSC):	0.2	US EPA, MN Department of Health
Human Body Weight (BW):	70 kg	40 CFR 132
Water Consumption (WC):	2.01 l/day	40 CFR 132 (the sum of drinking water 2.0 l/day and incidental ingestion 0.01 l/day)
Log K _{ow} :	5.6	US EPA Primary Drinking Water Regulations
Food Chain Multiplier Trophic Level III (FCM t13):	7.096	40 CFR 132 appendix B., Table B-1
Food Chain Multiplier Trophic Level IV (FCM t14):	8.551	40 CFR 132 appendix B., Table B-1

Endrin Criteria Calculations:

ADE:	.00025	= NOEL / UF; 0.025/100
Log K _{ow}	5.6	
K _{ow} :	398,107	
F _{fd} :	0.9127871	= ((1/1+(0.00000024)*(K _{ow})) = ((1/1+(0.00000024)*(398107))
Baseline BAF Trophic Level III:	2,824,968	= (K _{ow} *FCM t13) = (398107*7.096)
Baseline BAF Trophic Level IV:	3,404,214	= (K _{ow} *FCM t14) = (398107*8.551)
Human Health BAF Trophic Level III:	46,931	= ((Baseline BAF t13)*(0.0182)+1)*(F _{fd}) = ((2824968)*(0.0182)+1)*(0.9127871)

Human Health BAF
 Trophic Level IV: 96,328 = ((Baseline BAF t14)*(0.031)+1)*(F_{fd})
 = ((3404214)*(0.031)+1)*(0.9127871)

Grand Portage

Human Health Criteria:
 = (ADE*RSC*BW)/((WC+((FCt13*HH BAF t13)+(FCt14*HH BAF t14)))
 = (0.00025*0.2*70)/(2.01+((0.0356*46931)+(0.1068*96328)))
 = 2.93E-07 mg/L
 = **2.93E-04 µg/L**

Grand Portage human health noncancer Endrin criterion for drinking water sources is .000293 µg/l.

Where:

- ADE - Acceptable daily exposure
- RSC - Relative Source Contribution
- NOEL - No observable effect level
- UF - Uncertainty factor
- BW - Body weight
- WC - Water consumption, drinking and incidental exposure
- Tl3 - Trophic level 3
- Tl4 - Trophic level 4
- FCt13 - Fish consumption trophic level 3
- FCt14 - Fish consumption trophic level 4
- HH BAF - Human health bioaccumulation factor
- F_{fd} - Fraction freely dissolved
- K_{ow} - n-octanol-water partition coefficient

Method D was selected in calculating baseline bioaccumulation factor.