NJDEP - Toxicity Factors for Carbazole

These are the human health toxicity data that were used by the Department to derive its health based criteria.

86-74-8

Drinking water

Carcinogen Group:

Oral Slope Factor: (mg/kg/day)$^{-1}$

Oral Reference Dose: (mg/kg/day)

Basis:

Ground water

Carcinogen Group:

Oral Slope Factor: (mg/kg/day)$^{-1}$

Oral Reference Dose: (mg/kg/day)

Basis:

Surface water

Carcinogen Group

Oral Slope Factor: (mg/kg/day)$^{-1}$

Oral Reference Dose: (mg/kg/day)

Basis:

Soil

Oral		Inhalation	
Carcinogen Group	B2	**Carcinogen Group :**	carcinogen
Slope Factor:	0.02 (mg/kg/day)$^{-1}$	**Unit Risk Factor**	0.0000057 (ug/m^3)^1
Reference Dose:	(mg/kg/day)	**Reference Concentration:**	(ug/m)^3
Basis:	HEAST	**Basis:**	HEASToral

** Reference Doses for Group C chemicals are shown with uncertainty factor of 10 for possible carcinogenicity included. These are theReference Doses used to derive criteria for all media. In the Basis and Background documents for these criteria, these Reference Doses may or may not be shown with this uncertainty factor incorporated.*

See additional footnote explanations on last page

Drinking Water - Notes

1. The Reference Doses for the Group C chemicals incorporate an additional uncertainty factor of 10 for possible carcinogenicity.
2. Toxicity factors were developed by the NJDWQI under the A-280 process for the following chemicals, but MCLs were not adopted for unrelated reasons, such as lack of a standardized analytical method for drinking water: Ethylene glycol, formaldehyde, hexane, methyl ethyl ketone, and 2,4,6-trichlorophenol.
3. The New Jersey MCL for 1,4-Dichlorobenzene was adopted from USEPA, but New Jersey did not necessarily agree with the USEPA RfD, so it is not included on this table

Ground Water - Footnotes

a = from USEPA, Health Effects Assessment Summary Tables, FY 1997 Update, OSWER 9200.6.303 (97-1), EPA-540-R-97-036, PB97-921199, July 1997.
b = existing drinking water Maximum Contaminant Level Goal (MCLG) (CFR Part 141 - National Primary Drinking Water Regulations). For beryllium see Section IV-d of the Basis and Background.
c = developed by the Department for calculating ISCs. For details on developing specific RfD, slope factor, or carcinogen class equivalent to USEPA categorization, see support document available by request to the Department.
d = Slope factor and carcinogen group of arsenic are those listed in IRIS under arsenic (inorganic); RfDs of chromium, mercury, and nickel are those listed in IRIS under chromium (VI), mercuric chloride, and nickel (soluble salts), respectively. The RfD for thallium was developed by the Department based on the RfD of thallium(I) sulfate in IRIS.
e = derived by multiplying the IRIS slope factor of B(a)P of 7.3 (mg/kg-day)-1 with the “estimated order of potential potency” for the individual Group B2 PAHs recommended in USEPA “Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons”, Office of Research and Development, EPA/600/R-93/089. The relative potencies based on that of benzo(a)pyrene as 1.0 are as follows: benz(a)anthracene, 0.1; benzo(b)fluoranthene, 0.1; benzo((k)fluoranthene, 0.01; chrysene, 0.001; dibenz(a,h)anthracene, 1.0; indeno(1,2,3-c,d)pyrene, 0.1.
f = Group D categorization of mercury based on USEPA National Primary Drinking Water Regulations; Final Rule. 56 FR 3537, Jan 30, 1991. For detailed discussion on Group D categorization of mercury, see Section IV-o in this Basis and Background.
** = The carcinogen group assigned to acrolein in IRIS is the descriptor, “data are inadequate for an assessment of human carcinogenic potential” which is equivalent to Group D.7

Surface Water - Footnotes

^ The carcinogen group assigned to acrolein in IRIS is the descriptor, “data are inadequate for an assessment of human carcinogenic potential” which is equivalent to Group D.
+ See text on cadmium. For RfD for cadmium, “(w)” stands for water. “(f)”stands for food.
# The BCF for MTBE was derived from its octanol-water partition coefficient of 1.05 (New Jersey Drinking Water Quality Institute. Maximum Contaminant Level Recommendations for Hazardous Contaminants in Drinking Water. September 26, 1994. Appendix A, Health-Based Maximum Contaminant Level Support Documents and Addenda. p. A-32) based on the equations given in the USEPA's Draft Water Quality Criteria Methodology: Human Health. EPA 822-Z-98-001. August 1998.
* The criterion for lead remains unchanged. The criteria for nickel are based on data from 2002 Calculation Matrix updated by the current fish consumption rate of 17.5 g/day.

Soil - Footnotes

1. Carcinogen Classification - All classifications are based on IRIS unless stated otherwise
1999 Cancer Draft Guidelines:
- KNOWN - Known carcinogen
- CANTDET - Can not determine carcinogenic classification
- LIK - Likely to be a human carcinogen
- NLIK - Not likely to be a carcinogen
- INAD - Inadequate data
- ORL - Oral exposure route
- INHL - Inhalation exposure route

1986 Cancer Guidelines:
- Group A - Human carcinogen
- Group B - Probable human carcinogen
- Group B2 - Sufficient evidence from animal studies and inadequate or no data from epidemiologic studies
- Group C - Possible human carcinogen
- Group D - Not classifiable as to human carcinogenicity
- Group E - Evidence on non-carcinogenicity for humans

2. References:
- IRIS - Integrated Risk Information System
- HEAST- Health Effects Assessment Summary Tables
- NCEA - National Center for Environmental Assessment/EPA Provisional Value
- DEP- NJ Department of Environmental Protection
- NR02- EPA National Recommended Water Quality Criteria 2002
- ^ - DEP C Carcinogen Policy: RfD includes an additional safety factor of 10
- A-280 - Chemicals regulated under A-280 Amendments to NJ Safe Drinking water Act (P. L. 1983, c.443)
- Blanks indicate that no information is available
- Mercury* - standard is based on RfD for mercuric chloride (CAS# 007847-94-7)

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See additional footnote explanations on last page