

1996 Connecticut Remediation Standard Regulations

Derivation of Groundwater Protection Criteria

Groundwater Protection Criteria were designed to establish health-protective concentrations for constituents in groundwater assuming that people use the groundwater as a drinking water resource. The 1996 criteria were modeled upon the risk-based assumptions used to derive federal drinking water standards. These standards focus on the exposure of adults exposed for a 70 year lifespan to potential constituents in drinking water.

For substances that are non-carcinogenic:

$$\text{GWPC (ug/L)} = \frac{(\text{Rfd} \times \text{HI}) \times (\text{BW} \times \text{AT} \times \text{SA})}{(\text{IR} \times \text{EF} \times \text{ED} \times \text{CF})}$$

For substances that are carcinogenic:

$$\text{GWPC (ug/L)} = \frac{\text{Risk}}{\text{CSF}} \times \frac{(\text{BW} \times \text{AT})}{(\text{IR} \times \text{ED} \times \text{EF} \times \text{CF})}$$

Where:

Variable	Description	Value	Units
AT	Averaging Time	25550	days
BW	Body Weight	70	kg
CSF	Cancer Slope Factor	chemical specific	1/mg/kg/d
CF	Conversion Factor	0.001	mg/ug
ED	Exposure Duration	70	years
EF	Exposure Frequency	365	days/year
GWPC	Groundwater Protection Criteria	chemical specific	ug/L
HI	Hazard Index	1	unitless
IR	Ingestion Rate	2	liter/day
RfD	Reference Dos	chemical specific	mg/kg/d
RL	Risk Level	1.00E-06	unitless
SA	Source Allocation	2.00E-01	unitless

Simplified Formulas:

<u>Substance Type</u>	<u>GWPC ug/L</u>
Non-carcinogen	7000 x RfD
Carcinogen	0.035 / CSF