

Appendix A : Soil and Groundwater Remediation Criteria

Soil and groundwater criteria used in The Netherlands for contaminated land ("Dutch List")

(Extracted from Appendix IV of ProPECC PN 3/94)

Soil and ground water criteria used in The Netherlands for contaminated land ("Dutch List")

Component	Soil (mg/kg dry soil)			Ground water (ug/L)			
	A	B	C	A	B	C	
1. Metals							
Cr	100	250	800	20	50	200	
Co	20	50	300	20	50	200	
Ni	50	100	500	20	50	200	
Cu	50	100	500	20	50	200	
Zn	200	500	3000	50	200	800	
As	20	30	50	10	30	100	
Mo	10	40	200	5	20	100	
Cd	1	5	20	1	2.5	10	
Sn	20	50	300	10	30	150	
Ba	200	400	2000	50	100	500	
Hg	0.5	2	10	0.2	0.5	2	
Pb	50	150	600	20	50	200	
2. Inorganics							
NH ₄ (as N)	—	—	—	200	1000	3000	
F (total)	200	400	2000	300	1200	4000	
CN	(tot.free)	1	10	5	30	100	
	(tot.comb.)	5	50	10	50	200	
S (total)	2	20	200	10	100	300	
Br (total)	20	50	300	100	500	2000	
PO ₄ (as P)	—	—	—	50	200	700	
3. Aromatics Compounds							
Benzene	0.01	0.5	5	0.2	1	5	
Ethylbenzene	0.05	5	50	0.5	20	60	
Toluene	0.05	3	30	0.5	15	50	
Xylenes	0.05	5	50	0.5	20	60	
Phenols	0.02	1	10	0.5	15	50	
Total	0.1	7	70	1	30	100	
4. Polycyclic Hydrocarbons							
Naphthalene	0.1	5	50	0.2	7	30	
Anthracene	0.1	10	100	0.1	2	10	
Fenanthrene	0.1	10	100	0.1	2	10	
Flouranthene	0.1	10	100	0.02	1	5	
Pyrene	0.1	10	100	0.02	1	5	
1,2-benzopyrene	0.05	1	10	0.01	0.2	1	
Total	1	20	200	0.2	10	40	
5. Chlorinated Hydrocarbons							
<u>Aliphatics</u>							
	(Individual)	0.1	5	50	1	10	50
	(Total)	0.1	7	70	1	15	70
<u>Chlorobenzenes</u>							
	(Individual)	0.05	1	10	0.02	0.5	2
	(Total)	0.05	2	20	0.02	1	5
<u>Chlorophenols</u>							
	(Individual)	0.01	0.5	5	0.01	0.3	1.5
	(Total)	0.01	1	10	0.01	0.5	2
<u>Chlor. PAHs (Tot.)</u>							
		0.05	1	10	0.01	0.2	1
<u>PCB's (Tot.)</u>							
		0.05	1	10	0.01	0.2	1
<u>EOCL (Tot.)</u>							
		0.1	8	80	1	15	70
6. Pesticides							
<u>Chlorinated organics</u>							
	(Individual)	0.1	0.5	5	0.5	0.2	1
	(Total)	0.1	1	10	0.1	0.5	2
<u>Pesticides</u>							
	(Total)	0.1	2	20	0.1	1	5
7. Other Pollutants							
Tetrahydrofuran	0.1	4	40	0.5	20	60	
Pyridine	0.1	2	20	0.5	10	30	
Tetrahydrothiophene	0.1	5	50	0.5	20	60	
Cyclohexanes	0.1	6	60	0.5	15	50	
Styrene	0.1	5	50	0.5	20	60	
Gasoline	20	100	800	10	40	150	
Mineral oil	100	1000	5000	20	200	600	

These values are not "standards" but rather guidelines for use in assessing the significance of contaminated land. A simplified explanation of the ABC levels: A-level implies unpolluted, B-level implies pollution present and further investigation required, C-level implies significant pollution present and cleanup (preferably back to the A-level) required.

Remediation Criteria for Dioxin Containing Soil

USEPA criteria of land contamination remediation target for residential sites: 1 ppb TEQ
i.e., 1 ng/g, Toxicity Equivalent Unit