

생태계의 균형과 오염
유해성 물질과 환경호르몬

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1. 의심되는 환경호르몬 물질

- 다이옥신, PCBs
- 농약류: 2,4-D, DDT, DDT분해산물
- 펜타 ~노닐 페놀
- 비스페놀 A
- 프탈레이트
- 스타이렌 다이머, 트라이머
- 벤조A 파이렌
- 중금속:카드뮴, 납, 수은

Concentrations ($\mu\text{g/g}$) of polycyclic aromatic hydrocarbons in South Korean soils

Polycyclic aromatic hydrocarbon										
	1	2	3	4	5	6	7	8	9	10
Naphthalene	-+	0.04	-	-	-	-	-	-	-	-
Acenaphthylene	0.04	0.05	0.01	0.03	0.02	tr	tr	0.04	0.05	0.07
Acenaphthene	0.03	0.04	0.01	0.01	-	0.01	-	0.03	0.01	0.01
Fluorene	0.02	-	-	-	-	-	-	-	-	-
Phenanthrene	0.05	0.05	0.03	0.06	0.06	0.04	-	0.06	0.02	0.08
Anthracene	0.59	0.30	0.12	0.12	0.31	0.02	-	0.01	-	0.26
Fluoranthene	0.08	0.09	0.05	0.06	0.09	0.04	-	0.14	-	-
Pyrene	0.29	0.02	0.03	0.03	-	-	-	0.14	-	0.06
Chrysene	-	0.02	0.01	-	0.01	0.01	-	0.07	0.01	0.03
Benzo[a]anthracene	0.09	0.07	0.04	-	0.07	0.02	-	0.04	0.04	0.07
Benzo[b]fluoranthene	0.06	0.06	0.03	0.05	0.06	0.02	-	0.11	0.03	0.05
Benzo[k]fluoranthene	-	0.04	0.04	0.04	-	0.03	-	0.07	0.02	0.05
Benzo[a]pyrene	-	0.01	-	0.02	-	-	-	0.06	-	-
Indeno[1,2,3-cd]pyrene	-	0.04	0.02	0.03	-	0.06	0.04	0.04	-	-
Benzo[ghi]perylene	0.07	0.08	0.11	0.12	-	-	-	-	0.04	-
Dibenzo[a,b]anthracene	-	0.17	0.07	0.07	-	-	-	0.03	-	-
Total	1.32	1.08	0.20	0.64	0.62	0.25	0.04	0.84	0.22	0.68

* See Table 1 for site locations

+ Values below detection limit ($0.01 \mu\text{g/g}$) indicated as (-)

Concentrations (ng/g) of organochlorine pesticides in samples

Pesticide										
	1	2	3	4	5	6	7	8	9	10
B-HCH	0.80	-+	-	-	0.36	0.32	-	0.25	-	-
g-HCH	-	-	-	-	0.18	0.17	0.20	0.94	0.39	0.56
d-HCH	0.77	2.97	2.36	0.76	0.93	0.85	0.96	-	-	1.09
Heptachlor	-	-	-	-	-	-	-	1.34	1.14	2.80
Aldrin	0.79	-	-	-	-	0.34	-	-	-	-
Heptachlor-epoxide	38.2	48.0	42.0	30.4	23.2	22.1	13.0	1.38	-	32.3
Endosulfan-1	-	0.64	-	-	-	-	-	-	-	-
Dieldrin	-	0.42	0.49	0.45	0.36	0.32	-	-	-	-
4,4'-DDE	-	-	-	-	-	0.34	-	-	-	-
Endosulfan-2	-	0.89	-	-	-	-	-	-	-	-
4,4'-DDD	-	-	0.48	-	-	-	-	-	-	-
Endrin sulphate	-	-	-	0.60	0.92	-	-	-	-	-
TOTAL	40.56	52.92	45.33	32.21	25.95	24.44	14.16	3.91	1.53	36.75

* See Table 1 for site locations

+ Values below detection limit (0.1 ng/g) indicated as (-)Table 3.

Concentration($\mu\text{g/g}$) of EDC in sewage sludge.

EDC	Sample Type	
	Industrial Sludge* (Z-1)	Domestic Sludge* (Z-2)
Octylphenol	3.25 \pm 0.07	none
Nonylphenol	1168 \pm 36	10.8 \pm 0.1
Di-octylphthalate	1172 \pm 57	80 \pm 62

* Values as mean of 3 determinations \pm standard deviation

환경 호르몬 물질(내분비계장애물질 분석결과)

Analysis of Han river samples

단위:ug/l(ppb)

성분	nonylphenol	octylphenol	Bisphenol-A	Di-Octylphthalate
ST-1	0.0828	nd	2.681	9.082
ST-2	0.0691	nd	8.042	14.582
ST-3	0.0748	nd	3.846	4.882

Analysis of Tap Water in Korea

	NP	OP	BIS-A	DOP
서울	0.15	ND	0.06	3.90
안동	0.14	ND	0.038	1.26
유성	0.05	ND	0.019	1.45
포항	0.07	ND	0.027	1.80
수원	0.11	ND	?	1.88
전주	0.15	ND	0.04	0.62