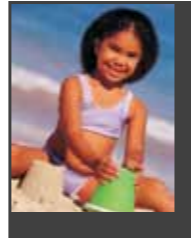


# Sludge and soil



## Sludge

Parameter	As	Cd	Cr	Cu	Hg	Ni	Pb	Zn	K	Total N	Total P	Loss on ignition
VKI Reference Material	CONCENTRATION LEVELS											
Unit	mg/kg Dry wt.								g/kg Dry wt.			
QC MUNICIPAL SLUDGE A		1	25	350	0.5	25	50	700	5	50	25	600
QC LOAM SOIL B	5	0.3	50	20	0.1	10	100	50	1			30

## Sludge

VKI REFERENCE MATERIAL QC ORGANIC COMPONENTS IN MUNICIPAL SLUDGE																									
Individual components																		Sum parameters							
Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo[a]pyrene	Benzo[ghi]perylene	Benzo[b+ghi]fluoranthene	Chrysene	Dibenz[a,h]anthracene	Flouranthene	Flourene	Indeno[1,2,3-cd]pyrene	Phenanthrene	Pyrene	Di[2-ethylhexyl]phthalat (DEHP)	Nonylphenol	Nonylphenolmonoethoxylat	Nonylphenoldiethoxylat	C <sub>10</sub> -LAS	C <sub>11</sub> -LAS	C <sub>12</sub> -LAS	C <sub>13</sub> -LAS	LAS	ΣPAH	NPE	DEHP
CONCENTRATION LEVELS (mg/kg)																									
0.1	0.05	0.5	0.5	0.5	0.2	1	0.5	<0.1	1	0.2	0.5	1	1	20	100	5	2	50	500	1000	500	2000	5	100	20
VKI REFERENCE MATERIAL QC ENDOCRINE DISRUPTORS IN MUNICIPAL SLUDGE																									
CONCENTRATION LEVELS (mg/kg)																									
														20	100	5	2							100	20

## Soil

VKI REFERENCE MATERIAL QC OIL IN SOIL	
OIL FRACTIONS	CONCENTRATION LEVELS
Unit	mg/kg Dry wt.
>nC <sub>10</sub> - nC <sub>25</sub>	100
>nC <sub>25</sub> - nC <sub>35</sub>	150
Sum of carbonhydrates	250



# Certified Reference Materials



VKI Certified Reference Materials consist of a broad range of certified reference materials that are used to improve and document the analytical quality of environmental laboratories.

Certified reference materials provide more reliable and traceable documentation than in-house produced control samples or reference materials that are not certified. The purpose is to control the execution of environmental chemical analyses to ensure and document that the analytical results have the expected and necessary level of quality.

VKI Certified Reference Materials (CRM) are produced and certified according to international standards and guidelines (ISO Guide 30-35 + ISO/REMCO N337), by the use of international standard analytical methods.

The certified values are obtained from external documentation by the use of selected laboratories. The certified values, analytical methods and the uncertainty of the certified value, are all given in the certificate that accompanies each material.



### Wastewater

- General water quality parameters
- Nutrients
- Trace elements/metals



### Surface water, fresh water and marine water

- Nutrients
- Trace elements/metals
- Nutrients in natural marine water



### Drinking water and groundwater

- Major components drinking water
- TOC in natural water
- Trace elements/metals
- Bromide and Iodide



### Sludge and Soil

- Trace elements/metals
- Organic contaminants
- Mineral oil hydrocarbons

# Wastewater



## General water quality parameters and nutrients (1L prepared reference material per ampoule)

VKI Reference Material	Unit	NO <sub>3</sub> -N	NH <sub>4</sub> -N	PO <sub>4</sub> -P	TN	TP	COD <sub>Cr</sub>	BOD	TOC (NVOC)	SS
CONCENTRATION LEVELS										
QC WW1B	mg/L	5	1	0.5						
QC WW2.1	mg/L		10	5						
QC WW2.2	mg/L	1								
QC WW3	mg/L				7.5	1.5				
QC WW4	mg/L						500		200	
QC WW4A	mg/L						50		20	
QC WW5	mg/L							200		
QC WW6 *	mg/L									240

\*: 83 mL prepared reference material per bottle

## Trace elements/Metals

VKI Reference Material	Unit	Ag	Al	As	Ba	Cd	Co	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	V	Zn	Prepared reference material per ampoule	
CONCENTRATION LEVELS																							
QC LL1	µg/L		200	20				15	15					15	15				20	15	35	1L	
QC LL2	µg/L	5			100	2	50			200		50			20	50	100		50			1L	
QC LL3	µg/L										5											1L	
QC LL3A	µg/L										0.5											1L	
QC HL1	mg/L		2							3		2	10		10				10			0.5	0.25L
QC HL2	mg/L	2			2	1	0.5	4	4						2							0.25L	

# Surface water, Fresh water and marine water



## Nutrients (1L prepared reference material per ampoule)

VKI Reference Material	Unit	NO <sub>3</sub> -N	NH <sub>4</sub> -N	PO <sub>4</sub> -P	TN	TP
KONCENTRATION LEVELS						
QC RW1	µg/L	100	100	100		
QC RW2	µg/L				250	200

## Trace elements/metals

VKI Reference Material	Unit	Ag	Al	As	Ba	Cd	Co	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	V	Zn	Prepared reference material per ampoule
CONCENTRATION LEVELS																						
QC LL1	µg/L		200	20				15	15					15	15				20	15	35	1L
QC LL2	µg/L	5			100	2	50			200		50			20	50	100		50			1L
QC LL3	µg/L										5											1L
QC LL3A	µg/L										0.5											1L

# Nutrients in natural marine water (100 mL)

VKI Reference Material	Unit	NH <sub>4</sub>	NO <sub>2</sub>	NO <sub>2+3</sub>	TN	PO <sub>4</sub>	TP	SiO <sub>4</sub>
CONCENTRATION LEVELS								
QC SW3.1	µM	11	2	1	10	15		
QC SW3.2	µM	11					2	2
QC SW4.1	µM	35	2	0.2	5	12		
QC SW4.2	µM	35					1	1

# Drinking water and groundwater



## Major components (1L prepared reference material)

VKI Reference Material	Na	K	Ca	Mg	Cl	F	SO <sub>4</sub>	HCO <sub>3</sub>	K <sub>25</sub>	pH	TS
CONCENTRATION LEVELS											
Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mS/m	-	mg/L
QC DWB	50	5	25	5	60	1	60	60	45	8	250

## TOC in drinking water

VKI Reference Material	TOC	
	LEVEL	Volume
Unit	mg/L	mL
QC DW4	2.5	14

## Bromide and Iodide

VKI Reference Material	Br	I	Volume
Unit	µg/L	µg/L	mL
RM Grumo-N	10	80	20
RM Grumo-P	50	150	20

## Trace elements/metals

VKI Reference Material	Unit	Ag	Al	As	Ba	Cd	Co	Cr	Cu	Fe	Hg	Li	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Tl	V	Zn	Prepared reference material per ampoule
CONCENTRATION LEVELS																								
QC LL1	µg/L		200	20				15	15					15	15				20			15	35	1L
QC LL2	µg/L	5			100	2	50			200			50			20	50	100		50				1L
QC LL3	µg/L										5													1L
QC LL3A	µg/L										0.5													1L
RM Grumo-K	µg/L	0.2	2	0.5		0.1	1	0.5				15	0.5	0.2		0.5	1		1900	0.3	3	5		250 mL