

Attachment 9: Sediment sampling and analysis

Parameter monitored	Standard methodology used (EN or ISO standards preferred)	Detection limit (include units)	Is this company accredited for this test?
Sampling	ISO 5667-19:2004		Yes
*Chemical Parameters			
Granulometry	ASTM D422-63 (2007) + ASTM D854-10		Yes
Gravel	ASTM D422-63 (2007) + ASTM D854-10	%	Yes
Sand	ASTM D422-63 (2007) + ASTM D854-10	%	Yes
Pelite (Silt + Clay)	ASTM D422-63 (2007) + ASTM D854-10	%	Yes
Colour	MPI-09-2011 Rev.0	//	No
Odour	MPI-16-2011 Rev.0	//	No
Metals			
Aluminium	UNI EN ISO 13657:2004 + APAT CNR IRSA 3020 Man 29 2003	0,1mg/kg	Yes
Arsenic	UNI EN ISO 13657:2004 + APAT CNR IRSA 3020 Man 29 2003	0,1mg/kg	Yes
Cadmium	UNI EN ISO 13657:2004 + APAT CNR IRSA 3020 Man 29 2003	0,1mg/kg	Yes
Chromium	UNI EN ISO 13657:2004 + APAT CNR IRSA 3020 Man 29 2003	0,1mg/kg	Yes
Mercury	EPA 3051A 2007 + EPA 6010D 2014	0,1mg/kg	Yes
Nickel	UNI EN ISO 13657:2004 + APAT CNR IRSA 3020 Man 29 2003	0,1mg/kg	Yes
Lead	UNI EN ISO 13657:2004 + APAT CNR IRSA 3020 Man 29 2003	0,1mg/kg	Yes
Copper	UNI EN ISO 13657:2004 + APAT CNR IRSA 3020 Man 29 2003	0,1mg/kg	Yes
Vanadium	UNI EN ISO 13657:2004 + APAT CNR IRSA 3020 Man 29 2003	0,1mg/kg	Yes
Zinc	UNI EN ISO 13657:2004 + APAT CNR IRSA 3020 Man 29 2003	0,1mg/kg	Yes
*Polycyclic aromatic hydrocarbon			Yes
Benzo(a)anthracene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8270D 2014	0,01mg/kg	Yes
Benzo(a)pyrene	EPA 3541 1994 + EPA	0,01mg/kg	Yes

	3630C 1996 + EPA 8270D 2014		
Benzo(b)fluoranthene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8270D 2014	0,01mg/kg	Yes
Benzo(k)fluoranthene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8270D 2014	0,01mg/kg	Yes
Benzo(g,h,i)perylene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8270D 2014	0,01mg/kg	Yes
Dibenzo(a,h)anthracene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8270D 2014	0,01mg/kg	Yes
Indeno (1,2,3-c,d) pyrene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8270D 2014	0,01mg/kg	Yes
Acenaphthene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8270D 2014	0,01mg/kg	Yes
Anthracene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8270D 2014	0,01mg/kg	Yes
Fluoranthene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8270D 2014	0,01mg/kg	Yes
Fluorene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8270D 2014	0,01mg/kg	Yes
Phenanthrene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8270D 2014	0,01mg/kg	Yes
Naphthalene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8270D 2014	0,01mg/kg	Yes
Pyrene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8270D 2014	0,01mg/kg	Yes
Chrysene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8270D 2014	0,01mg/kg	Yes
Total Petroleum Hydrocarbons	EPA 5021A 2014 + EPA 8015D 2003 + EPA 3541 1994 + EPA 3620C 2007 + EPA 8015D 2003	1mg/kg	No
Light hydrocarbons C <12	EPA 5021A 2014 + EPA 8015D 2003	0,1mg/kg	Yes
Heavy hydrocarbons C >12 (C12-C40)	EPA 3541 1994 + EPA 3620C 2007 + EPA 8015D 2003	1mg/kg SS	Yes
*Organochlorine Pesticides			
Aldrin	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes

Dieldrin	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
alpha-hexachlorocyclohexane	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
beta-hexachlorocyclohexane	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
gamma-hexachlorocyclohexane	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
2,4-DDD	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
4,4-DDD	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
2,4-DDE	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
4,4-DDE	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
2,4-DDT	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	mg/kg	Yes
2,4-DDE	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
Hexachlorobenzene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
Heptachlor	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
Heptachlor epoxide	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
Oxychlordane	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	No
Cis-chlordane	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
Trans-chlordane	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
Trans-nonachlor	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	No
Cis-nonachlor	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	No

Eldrin	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	No
Mirex	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
Methoxychlor	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
*Organotin Compounds			
Organotin Compounds	UNI EN ISO 23161:2011	0,1mg/Kg Sn	Yes
*Polychlorinated Biphenyl Congeners			
PCB28	EPA 3545A 2007 + EPA 1668C 2010	20ng/Kg	Yes
PCB52	EPA 3545A 2007 + EPA 1668C 2010	20ng/Kg	Yes
PCB77	EPA 3545A 2007 + EPA 1668C 2010	20ng/Kg	Yes
PCB81	EPA 3545A 2007 + EPA 1668C 2010	20ng/Kg	No
PCB101	EPA 3545A 2007 + EPA 1668C 2010	20ng/Kg	Yes
PCB118	EPA 3545A 2007 + EPA 1668C 2010	20ng/Kg	Yes
PCB126	EPA 3545A 2007 + EPA 1668C 2010	20ng/Kg	Yes
PCB128	EPA 3545A 2007 + EPA 1668C 2010	20ng/Kg	Yes
PCB138	EPA 3545A 2007 + EPA 1668C 2010	20ng/Kg	Yes
PCB153	EPA 3545A 2007 + EPA 1668C 2010	20ng/Kg	Yes
PCB156	EPA 3545A 2007 + EPA 1668C 2010	20ng/Kg	Yes
PCB169	EPA 3545A 2007 + EPA 1668C 2010	20ng/Kg	Yes
PCB180	EPA 3545A 2007 + EPA 1668C 2010	20ng/Kg	Yes
*Dioxins and Furans			
Summation PCDD + PCDF I-TEQ (WHO)	EPA 3545A 2007 + EPA 1613B 1994 + UNEP/POPS/COP.3/I NF/27 11/04/2007 WHO 2005 TEF	0,1ng/Kg	Yes
*Chlorobenzenes			
1,2,4-Trichlorobenzene	EPA 3541 1994 + EPA 3620C 2007 + EPA 8270D 2014	0,01mg/kg	Yes
1,2,4,5-Tetrachlorobenzene	EPA 3541 1994 + EPA 3620C 2007 + EPA 8270D 2014	0,01mg/kg	Yes
Pentachlorobenzene	EPA 3541 1994 + EPA	0,01mg/kg	Yes

	3620C 2007 + EPA 8270D 2014		
Hexachlorobenzene	EPA 3541 1994 + EPA 3630C 1996 + EPA 8081B 2007	0,001mg/kg	Yes
Total Organic Carbon (TOC)	UNI EN 13137:2002	0,01% s.s.	Yes
Phosphorus	UNI EN ISO 13657:2004 + APAT CNR IRSA 3020 Man 29 2003	0,01% S.S.	Yes
Nitrogen	CNR IRSA 6 Q 64 Vol 3 1985	0,01% S.S.	Yes
*Microbiological Parameters			Yes
Enumeration of Fecal Coliforms (Escherichia coli)	CNR IRSA 3.2 Q 64 Vol 1 1983	ufc/g	Yes
Enumeration of Faecal Enterococci	CNR IRSA 3.3 Q 64 Vol 1 1983	MPN/g s.s.	Yes
Search Salmonella spp	CNR IRSA 3.5 Q 64 Vol 1 1983	1Pres. - Ass.	Yes
Enumeration of Clostridium spores of sulphite-reducing clostridia	CNR IRSA 3.4 Q 64 Vol 1 1983	ufc/g s.s.	Yes
Enumeration of Coagulase positive Staphylococci at 37 ° C (Staphylococcus aureus and other species)	UNI EN ISO 6888-1:2004	ufc/g	No
Enumeration of Mycetes and Yeasts	CNR IRSA 5 Q 64 Vol 1 1983	MPN/g s.s.	Yes
Ecotoxicological Parameters			
Evaluation of acute toxicity to bioluminescent bacteria (Vibrio fischeri)	ISO 21338:2010	0,01% inib	Yes
Inhibition of growth of the unicellular marine algae Phaeodactylum tricornutum	UNI EN ISO 10253:2006	0,01% inib	Yes
Determination of the chronic toxicity to rotifer Brachionus calyciflorus	ISO 20666:2008	EC50 24h %	Yes

***subcontracted**