



PAIRING REMEDIATION ANALYSES WITH AMENDMENT SOLUTIONS

A guide to selecting
molecular biological tools
by contaminant or
remedial approach

Range of Biodegradable Contaminants by Molecular Biological Tool

Contaminant of Concern	Monitored Natural Attenuation (MNA)			Aerobic Bioremediation			Anaerobic Bioremediation ²			Colloidal Activated Carbon	In Situ Chemical Oxidation ⁴		In Situ Thermal Remediation ⁴
	QuantArray [®] or CENSUS [®] qPCR	SIP	In Situ Microcosm	QuantArray [®] or CENSUS [®] qPCR	SIP	In Situ Microcosm	QuantArray [®] or CENSUS [®] qPCR	SIP	In Situ Microcosm	QuantArray [®] or CENSUS [®] qPCR	QuantArray [®] or CENSUS [®] qPCR	SIP	QuantArray [®] or CENSUS [®] qPCR
BTEX													
Benzene	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Toluene	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ethylbenzene	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Xylenes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Trimethylbenzene	✓	✓ ¹		✓	✓ ¹		✓	✓ ¹		✓	✓	✓ ¹	✓
n-Alkanes	✓	✓ ¹		✓	✓ ¹		✓	✓ ¹		✓	✓	✓ ¹	✓
Fuel Oxygenates													
Methyl tert-butyl ether (MTBE)	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓
Tert-butyl alcohol (TBA)	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓
Polycyclic Aromatic Hydrocarbons (PAHs)													
Naphthalene	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Acenaphthene	✓	✓ ¹		✓	✓ ¹			✓ ¹		✓	✓	✓ ¹	✓
Acenaphthylene	✓			✓						✓	✓		✓
Anthracene	✓			✓						✓	✓		✓
Benzo(a)anthracene	✓			✓						✓	✓		✓
Benzo(a)pyrene	✓			✓						✓	✓		✓
Fluorene	✓			✓						✓	✓		✓
Phenanthrene	✓			✓						✓	✓		✓
Pyrene	✓			✓						✓	✓		✓

Microbial Insights, Inc. has analyzed over 50,000 samples from sites contaminated with chlorinated solvents, petroleum hydrocarbons, emerging contaminants, and more. Contact us today with your contaminant of concern, and we will guide you through which analyses will provide the data you need to meet your remediation goals.

¹ Stable isotope probing (SIP) studies can be conducted with this compound, but synthesis of the ¹³C-labeled compound may be cost prohibitive

² Enhanced anaerobic bioremediation of BTEX and other petroleum hydrocarbons by addition of alternative electron acceptors such as nitrate or sulfate.

³ Enhanced anaerobic bioremediation of chlorinated solvents by addition of electron donor products such as emulsified vegetable oil (biostimulation) or addition of a bioaugmentation culture.

⁴ For assessment of MNA or bioremediation as a follow-up treatment after ISCO or ISTR

Range of Biodegradable Contaminants by Molecular Biological Tool

	Monitored Natural Attenuation (MNA)					Aerobic Bioremediation			Anaerobic Bioremediation ³			Colloidal Activated Carbon	In Situ Chemical Reduction			In Situ Chemical Oxidation ⁴			In Situ Thermal Remediation ⁴
	QuantArray® or CENSUS® qPCR	SIP	CSIA	In Situ Microcosm	Abiotic Panel	QuantArray® or CENSUS® qPCR	SIP	In Situ Microcosm	QuantArray® or CENSUS® qPCR	CSIA	In Situ Microcosm	QuantArray® or CENSUS® qPCR	QuantArray® or CENSUS® qPCR	CSIA	Abiotic Panel	QuantArray® or CENSUS® qPCR	SIP	CSIA	QuantArray® or CENSUS® qPCR
Chlorinated Solvents																			
Tetrachloroethene (PCE)	✓		✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Trichloroethene (TCE)	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Dichloroethene (DCE)	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Vinyl chloride (VC)	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
1,1,2,2-Tetrachloroethane (TeCA)	✓		✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Trichloroethanes (TCA)	✓		✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Dichloroethanes (DCA)	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Chloroethane			✓	✓						✓	✓	✓		✓				✓	✓
Carbon Tetrachloride	✓		✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Chloroform	✓		✓	✓		✓			✓	✓	✓	✓	✓	✓		✓		✓	✓
Dichloromethane (methylene chloride)	✓		✓	✓					✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Chloromethane			✓	✓						✓	✓	✓		✓				✓	✓
1,2-Dichloropropane	✓		✓	✓					✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
1,2,3-Trichloropropane	✓		✓	✓					✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Emerging and Misc. Contaminants																			
1,4-Dioxane	✓	✓		✓		✓	✓	✓								✓			✓
Perchlorate	✓								✓		✓		✓						
Nitrates	✓			✓					✓		✓		✓						
Chlorinated Aromatics																			
Chlorobenzene	✓	✓		✓		✓	✓	✓			✓	✓				✓	✓ ¹		✓
Dichlorobenzene	✓			✓		✓		✓			✓	✓				✓			✓
Trichlorobenzenes	✓					✓						✓				✓			✓
Pentachlorophenol (PCP)	✓	✓				✓	✓		✓			✓	✓			✓	✓ ¹		
Polychlorinated Biphenyls (PCBs)	✓					✓			✓			✓	✓						

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