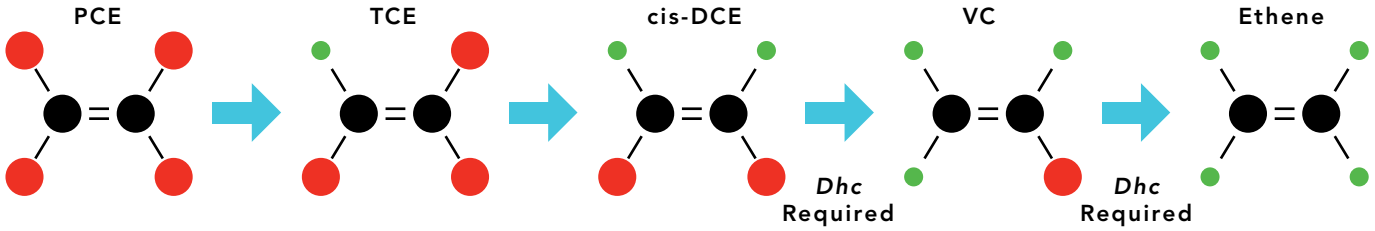
RNAS REMEDIATION PRODUCTS
6712 West River Road, Brooklyn Center, MN 55430
(763) 585.6191 www.RNASinc.com

SDC-9

Bioaugmentation Culture for Groundwater Remediation

SDC-9™ is a field proven, highly effective consortium of microorganisms for in situ bioremediation of chlorinated solvents. SDC-9 contains multiple strains of *Dehalococcoides mccartyi* (*Dhc*), the only species known to completely biodegrade PCE and TCE to non-toxic ethene. For sites where *Dhc* are absent or present at low concentrations bioaugmentation provides the necessary bacteria for complete dechlorination. Even when *Dhc* is present bioaugmentation can provide substantial benefits by increasing dechlorination rates, using electron donor more efficiently and reaching site closure sooner.



Benefits - Higher Dechlorination Rates

SDC-9 contains a natural consortium of bacteria that includes not only dechlorinating microbes but other beneficial bacteria that support *Dhc* growth by supplying required substrates and growth factors. "*Dhc* in mixed cultures exhibit shorter lag times following transfers, grow faster and exhibit higher dechlorination rates than pure *Dhc* cultures" (Bioaugmentation for Groundwater Remediation, 2013).

Benefits - Low pH Tolerant

SDC-9 continues to perform at pH levels as low as 5.5 (Vainberg and Steffan, 2014), although pH levels above 6.0 are recommended for more effective dechlorination.

Application

SDC-9 is commonly injected between rounds of anaerobic water and electron donor, which minimizes exposure to oxygen while mixing SDC-9 throughout the treatment area. Recommended dosing for SDC-9 is $1x10^7$ *Dhc* cells per liter in target zones (Lu et al., 2006).

Contaminants Treated by SDC-9:

Tetrachloroethene (PCE)
Trichloroethene (TCE)
cis-Dichloroethene (cDCE)
trans-Dichloroethene (tDCE)
1,1-Dichloroethene (DCE)
Vinyl Chloride (VC)
Freon 11
Freon 113
1,1,2,2-Tetrachloroethane (TeCA)
1,1,1-Trichloroethane (TCA)
1,1-Dichloroethane (DCA)
Carbon Tetrachloride (CT)
Chloroform (CF)
Dichloromethane (DCM)
Hydrochlorofluorocarbon (HCFC)
Tetrafluoroethene (TFE)

SDC-9 Contains:

Dehalococcoides mccartyi
Dehalogenimonas spp.
Desulfovibrio spp.
Desulfitobacterium spp.
Methanogenic bacteria
Sulfate Reducing bacteria

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Product Characteristics

Parameter	Unit	Specification
Cell Count	*Dhc* Cells/Liter	>1 x 10^{11}
Density	g/cm^3	0.9 - 1.1
pH	Standard Units	6.0 - 8.0
Appearance		Light Greenish, Murky Liquid
Odor		Musty

Packaging

SDC-9 is shipped in 19L stainless steel kegs. Kegs are pressurized with Nitrogen and stored in chilled coolers. Calibrated delivery system (1, 2 or 3.5 L) and fittings are provided. Users will need to provide an inert gas cylinder (Nitrogen or Argon) and regulator.

Storage

Keep containers tightly closed in a cool, well-ventilated area. SDC-9 may be stored for up to 3 weeks at temperature 2-4° C. Avoid freezing conditions. Avoid exposure to oxygen.

Safety

SDC-9 is a non-toxic, non-pathogenic, non-genetically modified, naturally occurring consortium of microbes. No known hazards are associated with exposure to this product. Nevertheless, appropriate Personal Protective Equipment is recommended when handling this product.