



DO YOU NEED TO BE PROACTIVE ABOUT TREATING 1,4-DIOXANE OR DO YOU NEED TO MEET NEW MCL'S?

ISOTEC Technology Effectively Treats 1,4-Dioxane

Table 1: Laboratory Test (results in µg/L)

Final Oxidant Conc.	0%	0.5%
No. of Doses	0	1
1,4-Dioxane	26,500	ND<55.1

ISOTEC, with nearly two decades of ISCO experience, has successfully demonstrated treatment of 1,4-dioxane in laboratory experiments. An initial laboratory test produced a 99%+ reduction in a field sample spiked with 1,4-dioxane (see table 1). The result suggested that ISOTEC's patented Modified Fenton's Reagent (MFR) technology can achieve similar reductions under field conditions. An international environmental consultant,



encouraged by the initial laboratory test, commissioned a comparative bench-scale test using a client's soil sample that contained concentrations of VOC's, lindane and 1,4-dioxane (see table 2). The results of this laboratory test confirmed the previous test results and concluded that the ISOTEC MFR process is successful in treating 1,4-dioxane to levels below regulatory MCL's.

Table 2: Bench-Scale Test (results in µg/kg)

Final Oxidant Conc.	0%	0.5%	1.0%	3.0%
No. of Doses	0	1	2	3
1,4-Dioxane	330	21	ND<1.1	ND<1.1
Total VOCs	2,616	734	470	523
Pesticides (Lindane)	87	NA	20	NA

1,4-Dioxane, an emerging contaminant of concern, has been historically used as a stabilizer for 1,1,1-trichloroethane (TCA) in various industrial applications. U.S. EPA has listed 1,4-dioxane as a probable human carcinogen based on results of animal studies. Colorado, the first state to adopt an MCL for this contaminant (6.1 µg/L) was quickly followed by New

Hampshire in adopting a ground water and drinking water quality standard of 3 µg/L. California has recently instituted a health based advisory level of 3 µg/L. 1,4-Dioxane does not respond to air stripping, activated carbon treatment or biodegradation in subsurface environments. Other treatment techniques that have demonstrated success are phytoremediation which is limited in treatment depth and advanced oxidation processes involving ozone, ultraviolet light and hydrogen peroxide which require ex-situ systems.

The ISOTEC laboratory results suggest that in-situ field treatment using the ISOTEC MFR process will be successful in meeting the strictest regulatory clean-up standards for this contaminant. To find out more about how ISOTEC can be part of a strategy to meet your regulatory requirements for 1,4-dioxane and other COC's, contact **Will Caldicott** (wcaldicott@insituoxidation.com) or **Ashley Fehn** (afehn@insituoxidation.com).