

Talking about Remedial Additives

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INTRODUCTION

It's mid-October, and many of us just watched the dramatic rescue of the Chilean miners. Less than a month ago there was a different sigh of relief when the "relief well" for the Deepwater Horizon oil well was completed, ending a chapter of the story that started on April 20 when the off shore platform exploded. The uncontrolled oil release continued for almost four months, releasing, by at least one estimate, 185 million gallons of crude oil (or 4.9 million barrels) into the Gulf of Mexico before the cap could be installed on July 15. In the meantime, untold gallons of a controversial remedial additive ("dispersants") were applied.

In June, our article focused on oil, and concluded with the MCP definition and some requirements pertaining to Remedial Additives here in Massachusetts. This month, we'll present some of the inquiries and responses on Remedial Additives .

Over the years, BWSC has received a number of questions about remedial additives through BWSC.Regulations. Some of these questions involve issues that may apply to many sites.

INQUIRING MINDS WANT TO KNOW

As you may recall, a Remedial Additive is defined in the MCP as:

any aqueous, gaseous or solid phase agent that is designed to treat or enhance the treatment of, soil and/or groundwater. The term shall include oxidizing agents, encapsulants, sequestering agents, non-pathogenic microbes, enzymes, nutrients, surfactants and anti-fouling agents used to inhibit microbial growth in remedial treatment systems and monitoring wells.

The MCP regulations pertaining to remedial additives start at 310 CMR 40.0040. As stated in the recent Remediation Waste training, and in the June article, there are certain situations (listed at 310 CMR 40.0046(3)) which *require* specific *written* approval from MassDEP/BWSC for the application of remedial additives. Since the June article focused on the regulations, this article will focus on some general applications of the regulations.

Remedial Additives in Monitoring and/or Recovery Wells

One question that has been asked concerns whether it is appropriate to use monitoring data from wells that have been used for remedial additive injection? In this situation, MassDEP does not have specific guidance. In general terms, there would be concern if the disposal site groundwater data was limited to *only* those wells used for amendment injection. The results from the injection wells may only be indicative of a localized effect with respect to diminished contaminant concentrations and would not necessarily be representative of the larger site or

aquifer. While samples from the injection wells may be *considered*, they should not be the sole or primary source of information on the site-wide groundwater quality.

Another inquiry concerned the use of sodium hypochlorite (bleach) to remove biologic growth in a recovery well and whether it would be considered a remedial additive. While in this particular case the wells would ultimately be pumped to the treatment system and sanitary sewer, the bleach would nevertheless be allowed to remain in the wells while the treatment system was being upgraded. MassDEP responded that the sodium hypochlorite is a remedial additive, consistent with the definition at 310 CMR 40.0006 which includes "...anti-fouling agents used to inhibit microbial growth in remedial treatment systems and monitoring wells," and therefore the requirements at 310 CMR 40.0040 apply to its use at the site.

Proprietary Formulas

Another question concerned Remedial Additives that are proprietary formulations. MassDEP was asked whether the composition, volume, and concentration of proprietary formulations may be reported as "cumulative values" applied over the course of each application event that may last several days, rather than reported for each individual application that might last only several hours..."

The primary concern with the application of Remedial Additives is to know of potentially hazardous or other ingredients that could result in risk, if not managed properly, or environmental degradation (e.g., phosphates). MassDEP in general does not want to be told of proprietary formations. Generalized or cumulative descriptions that meet the documentation requirements will usually suffice.

Pre-Application and Sampling Periods

A question was raised about the Remedial Additives provisions that require the collection and analysis of soil and/or groundwater samples prior to the initial and subsequent applications of Remedial Additives, as well as after the application of Remedial Additives. At some sites, applications of Remedial Additives may be made on a continuous and/or regular basis (e.g., weekly or monthly). Although a 3 month sampling interval is allowed for post-application sampling, there is no language in 40.0046 about the pre-application sampling interval. Please explain.

For purposes of 40.0046(4), the "application period" for continuous or regular applications of Remedial Additives can be considered 3 months. This means that a quarterly sampling program can suffice for both the pre- and post- application monitoring requirement.

Related Regulations

Finally, questions were raised about Groundwater Discharge Permits (314 CMR 5.00) and the need to meet the effluent limitations specified at 314 CMR 5.10, including potentially the Massachusetts Drinking Water Standards (310 CMR 22.00) at 21E sites.

The groundwater discharge regulations and the MCP are structured such that an equivalent level of environmental protection is achieved wherever there is overlapping jurisdiction. Thus, while discharges resulting from a response action conducted or performed in accordance with the provisions of M.G.L. c. 21E and 310 CMR 40.0000 do not require a groundwater discharge permit under 314 CMR 5.05(16), the MCP provides parallel performance standards for such discharges. (The effluent limitations, or “standards”, that are described at 314 CMR 5.10 are requirements specified in discharge permits.)

The MCP distinguishes between upgradient discharges where there is hydraulic containment of the contaminated groundwater (310 CMR 40.0045(4)), and downgradient discharges needing to meet more stringent requirements, including any applicable effluent limits (Ground Water Quality Standards, formerly listed at 314 CMR 6.00). The comparison of concentrations of treated groundwater to applicable effluent limits is meant to apply primarily to site related constituents of concern (COCs) and not to other constituents not related to the site. Accordingly, when discharging treated groundwater, consider the following:

- For Site COCs, concentrations in treated groundwater should be *below* applicable effluent limits; and
- For non-COCs (e.g., background metals like iron), concentrations in treated groundwater should be consistent with, or less than, concentrations in groundwater where the treated water will be discharged.