

## PROVTECT-OX2™ TECHNOLOGY DESCRIPTION

Provect-OX2™ is easily deployed via groundwater wells using the Provectus® Sleeve delivery system to oxidize residual organic compounds in impacted groundwater including chlorinated solvents, petroleum hydrocarbons, and pesticides. Provect-OX2™ is a unique mixture of reagents combined into a single product that provides immediate oxidation and manages rebound. Benefits are outlined below:

- ◆ Utilization of sulfate and iron as terminal electron acceptors
- ◆ Reduction of Fe(III) to Fe(II) for continued persulfate activation
- ◆ Terr-OR™ pH buffer to manage acidity
- ◆ Capitalizes on the lower solubility of potassium persulfate for controlled and extended oxidant release

Notably, Provect-OX2™ utilizes Fe(III) to activate persulfate which requires a lower activation energy while not consuming the persulfate oxidant. As the generated ferrate ions are consumed, the resulting ferric species can act as a terminal electron acceptor for biological attenuation. This is true also for the generated sulfate ion which may further remediate the targeted compounds in groundwater and soils.

## BENEFITS OF ISCO SLEEVES

- ◆ Significant cost savings due to ISCO approach that promotes oxidative, biotic, and abiotic degradation mechanisms.
- ◆ All the field proven benefits of Provect-OX2™.
- ◆ Estimated longevity of 3 to 6 months.
- ◆ Unique formulation does not require additional activator.
- ◆ Substantial time savings in the field because the reusable ISCO Sleeves (PVC) are easy to insert and retrieve from the well (see picture).
- ◆ Ease of determining the exact depth at which the ISCO Sleeve is deployed.
- ◆ Sleeves available for 2" and 4" wells.
- ◆ Even material distribution over the length of the ISCO Sleeve because the canister will not collapse.

## ISCO Sleeve for Plume Management and Routine Deployment



*Provectus® ISCO Sleeve*

## PROVTECTUS® ISCO SLEEVE FAQs

- ◆ **What are the main application scenarios for ISCO Sleeves?** The ISCO Sleeve is most conducive to physically challenging situations where a continual release of oxidant is needed. For example, ISCO Sleeves can be used in deep well settings, PRBs that require routine amendment, and strategic placement into "problem" well locations.
- ◆ **What contaminants are amenable to ISCO Sleeve treatment?** Chlorinated solvents, petroleum hydrocarbons, pesticides, VOCs, SVOCs, PAHs, MAHs, etc.
- ◆ **How often should I replace my ISCO Sleeves?** The ISCO Sleeves are typically replaced every 3 to 6 months. However, various site-specific factors will influence the effective lifetime of the Sleeve including contaminant type and concentration, geochemistry, and hydrogeology.
- ◆ **Do I need to install new wells?** No. The ISCO Sleeves are designed to fit standard 2-inch and 4-inch diameter groundwater wells.
- ◆ **Is the technology applicable to free product treatment?** No. ISCO Sleeves are not intended for free product remediation.
- ◆ **Can specialty ISCO Sleeves be developed?** Yes, please contact Provectus Environmental to discuss site-specific construction and Sleeve content.