

Technical Note 1

TECHNICAL BACKGROUND

Extensive research since the 1980s has shown that a wide range of organic substrates can be used to encourage generation of the anaerobic conditions required for reductive dechlorination. For example, injection of molasses has been shown to rapidly create the correct conditions but the effect is short lived which means that multiple injections are likely to be required. Other substrates used successfully include alcohols, organic acids and even molecular hydrogen, although like molasses most of these substrates are rapidly consumed and require frequent re-injections.

Emulsified vegetable oils have been identified as being particularly effective over a long time period – typically up to several years. This means that just a single injection may be required for full scale site remediation. The naturally slow rate of biodegradation that occurs at the oil-water interface of the oil globules forms a naturally occurring time release mechanism resulting in continued release of hydrogen, and creation of the correct anaerobic conditions, over an extended time period.

Telluric Land Remediation has been carrying out site remediation by *in-situ* anaerobic bioremediation for a number of years and using a number of proprietary remediation products available on the market. In 2009 we identified a need for a cost effective alternative with improved storage and handling characteristics. This led to the award of significant funding from Welsh Government's Single Investment Fund and the Convergence European Regional Development Fund allowing extensive research and development and resulting in the launch of DCL Biosolv in June 2013.

DCL Biosolv has several key features:

- Storage stable at ambient temperature without the need for chemical preservatives, sterile packaging or pasteurisation.
- Very easy to disperse in water prior to its injection.
- Promotes rapid establishment of conditions optimum for the degradation of targeted contaminants.
- Buffered to resist pH changes which may result from metabolic acids arising from fermentation of the injected product.