

# Laboratory Studies

In the early development of bioremediation applications for ORC, several independent laboratories and universities participated in proof-of-concept studies. Some of the major conclusions of these studies are as follows:

This first study confirms the oxygen-releasing capacity of ORC, which enhances microbial growth and in turn remediates hydrocarbons.

—**Corning's Enseco Laboratory Division (Orange, CA)**

Laboratory characterization of the oxygen-releasing properties of ORC, show:

1. The patented technology is capable of a dramatically decreased rate of oxygen release.
2. All of the oxygen will eventually be released from the molecule; the use of smaller particle sizes whose stability is facilitated by the patented process.
3. The release kinetics of ORC consist of a short first order phase followed by a dominant zero order phase. (See Figure 1).

—**University of Southern California (Los Angeles, CA)**

—**Applied Power Concepts, Inc. (Orange, CA)**

When ORC was applied to microbial populations engaged in phenol metabolism, a degradation that will not occur in the absence of oxygen or oxidized compounds, ORC successfully degraded the organic compound. Since phenol metabolism is strictly aerobic, this proves that ORC facilitates oxygen-mediated bioremediation processes.

—**Vanderbilt University (Nashville, TN)**

ORC treatment resulted in a decrease in PCE and TCE contamination by an undetermined aerobic mechanism – possibly via direct elimination reactions or co-metabolic processes.

—**Retec Corporation (Seattle, WA)**

Figure 1

