

**Brief Biography for Randall von Wedel, Ph.D. – CytoSol/ Biosolvent
CytoCulture International, Inc., Point Richmond, CA**

Randall von Wedel is the founder and Principal Biochemist for CytoCulture International, an environmental laboratory and consulting firm on the San Francisco Bay. Dr. von Wedel graduated from Dartmouth College and received his Doctorate in Biochemistry from the University California Medical Center in San Francisco. After a career in basic medical research, teaching and the biotechnology industry, he applied his science to working on environmental clean-up technologies and bioremediation.

In 1989, he teamed with Sybron Corporation to develop and commercialize *in situ* bioremediation technologies for cleaning petroleum-contaminated aquifers and soil. These technologies evolved into a commercial bioremediation service using continuous flow bioreactors to treat and clean contaminated sites throughout the state through 1999.

In the laboratory, he pioneered the development of aerobic and anaerobic bacteria treatment systems to breakdown phenol for refineries, chlorinated solvents (TCE, PCE), and MTBE (with TBA) at fuel release sites for Chevron Technology USA. The laboratory today continues to monitor aerobic and anaerobic populations of specialized hydrocarbon-degrading bacteria at contaminated sites all over the country. Dr. von Wedel provides consulting services for groundwater/soil bioremediation.

In an attempt to solubilize more recalcitrant contaminants from weathered fuel oil spills, Dr. von Wedel began experimenting in 1993 with the solvent properties of methyl esters derived from vegetable oils as part of a bioremediation strategy for pipeline spills in California. When the Berman Barge oil spill occurred along the coast of his hometown of San Juan, Puerto Rico on January 6, 1994, he immediately began to work on a method for extracting weathered fuel oil from oiled sand samples from those beaches. Within two weeks he had worked out the chemistry and strategy that today is the 'CytoSol Process'. Oil cleaning demonstrations with NOAA and the US Coast Guard followed a week later in San Juan, and, with their encouragement, led to federal funding of the research for the next 6 years.

Dr. von Wedel was awarded a series of USDA grants administered through the United Soy Board to research and develop 'CytoSol Biosolvent' as an effective technology to clean oiled beaches and ecologically sensitive shorelines. The federal research was extended to include field demonstrations in California, Alaska, Puerto Rico and Japan (1997 oil spill). The process was also illustrated at the *Prestige* spill in Spain in 2003 and again in the field trials to clean oiled rocky shorelines of San Francisco Bay, 1996/2007. The US Coast Guard used the *CytoSol* Biosolvent to clean the oiled interior compartments of a stranded ship in Oregon.

Research investigations during the last 16 years have included studies to support the efficacy and degradation of the product (listed on US EPA's NCP Schedule of Products, 1997), toxicology studies (aquatic and marine for EPA, CA Dept Fish & Game), as well as documented field trials for treating oil-impacted pristine rivers, streams and marsh plants of SF Bay. He published research papers with the CA Office of Oil Spill Prevention & Response (1997-98) and Texas A&M (Corpus Christi wave tank study, 1999). He presented papers at the International Oil Spill Conference, the Freshwater Spill Conference, two Arctic Marine Oil Spill and Prevention Conferences, the International Oil Chemists Society Conference, and the International Marine Biotechnology Conference.

The State of California (OSPR) licensed the *CytoSol* Biosolvent in 1997 as a Shoreline Cleaning Agent that has been permitted for use in coastal remediation and cleaning oiled vessels in the water of the SF Bay (without dry docking ships).

In 1999, the United Soybean Board awarded Dr. von Wedel the "Meritorious Research Award" for his pioneering and commercial development of the *CytoSol* Process.