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Cornell Research is Key:
New Company Promises to
Detoxify Pollutants with Plant
Biologicals

by L. McCandless

GENEVA, NY: A company formed as a spin-off of research conducted at Cornell University, the University of Surrey and the University of Naples, Italy, will provide biological systems to detoxify heavily contaminated soil and water.

“Our goal is to develop biological products with broad capabilities for the detoxification of polluted soils, sediments and waters,” said Cornell University horticultural scientist Gary Harman, one of the founding partners of the new company. “These products will provide low cost alternatives to commonly used chemical or physical cleanup methods. Biological methods for the remediation of soils or sediments or waters contaminated with heavy metals or arsenic or toxic compounds such as cyanide or coal tars, have been implemented on a very limited scale,” said Harman, who works at the New York State Agricultural Experiment Station, in Geneva, NY.

The new company, Phytobials, LLC, combines the best attributes of phytoremediation (i.e., using plants), and microbial control methods-hence, the name. Other founders include Dan Berler, PhD, MBA, president and CEO; James Lynch, head of the School of Biomedical and Life Sciences of the University of Surrey; Matteo Lorito of the University of Naples (Italy); and senior research associate Terry Spittler, of Cornell University.

The systems incorporate microbes that form robust and stable associations with plant roots, the most useful of which is *Trichoderma harzianum* strain T22. T22 increases plant root depth and density and fosters the formation of fine roots, thus enhancing uptake of nutrients and minerals required for plant growth. T22 and similar organisms, in synergy with plants that hyper-accumulate heavy metals and arsenic, are expected to remove these toxicants from soils or water.

The company has agreements with major companies that possess cutting edge phytoremediation technology and intellectual property. The same microbes also produce enzymes that degrade cyanide when associated with plant roots. Other systems proprietary to the company are expected to use T22 or other microbes to degrade toxic and carcinogenic polycyclic aromatic hydrocarbons in old coal gas production sites or petroleum spills. In addition, tests demonstrate that Phytobial systems degrade and remove phenolic contaminants from waste-water streams, such as highly polluted waters produced during olive oil processing.

T22 has been used in the past decade in agriculture (see www.bioworksbiocntrol.com), where it has been shown to be a plant symbiont. Extensive testing required by the US Environmental Protection Agency has revealed no toxicity or pathogenicity to plants or vertebrates. T22 is listed for use in organic agriculture. Extensive use and formal testing indicate that T22 is safe and nontoxic.
Phytobial licenses intellectual property from Cornell and Surrey and includes proprietary materials from its Naples participant.

Phytobial technologies were introduced and displayed at International Clean Up, an international exhibit and symposium held April 8-10, 2003, in Birmingham, UK.

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