

Introduction to Session 5

Environmental Biotechnology

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Recent estimates suggest that up to 40% of this decade's \$750 billion costs for environmental remediation will be handled by "biotreatment" technology (1). New and more cost effective technical approaches are under development and the pace should accelerate with \$1.85 million promised by the Clinton administration for development of innovative environmental technology. However, there is plenty of distance between the development of a new bioremediation technology or application, and its widespread implementation at the contaminated sites throughout this country.

Unfortunately, implementation of recently established bioremediation methods are viewed with caution by owners of contaminated sites. This is true even in the face of growing evidence of bioremediation's effectiveness coupled with greatly reduced clean-up costs compared to incineration or land-fill operations. Part of this reluctance is also owing to regulatory hurdles, but these road blocks are being removed with cooperation from the enlightened USEPA. Indeed, previously irreversible Records of Decision (RODs) that promulgate approved clean-up approaches are being reviewed and turned-over to substitute bioremediation even at some Superfund sites in the United States.

Bioremediation technology development is progressing rapidly with exiting advances in rapid detection methods for environmental contaminants, complete anaerobic destruction of chlorinated solvents PCE and TCE, improved complete destruction of potentially carcinogenic polynuclear aromatic hydrocarbons (PAHs), as well as most cost effective approaches for removal of seemingly ubiquitous petroleum hydrocarbons. Application of biotechnology to environmental problems encompasses both bioremediation of existing wastes and pollution prevention programs. The latter

comprises a strong push by industry and government to eliminate environmental contamination at the source by process modifications that eliminate waste streams or, more likely, use the waste stream as an alternate chemical intermediate or source of energy.

This session on Environmental Biotechnology offers, through presentations and poster sessions, a spectrum of exciting recent advances in the development and application of bioremediation and pollution prevention technologies, some of which are already out in the field.

REFERENCES

1. Hoyle, R. (1993), *Bio/Technology* 11, 460-463.