



## TECHNICAL DATE SHEET

TZBI-103

**FORMULATED FOR BIOREMEDIATION OF SOIL CONTAMINATED BY PETROLEUM HYDROCARBONS AND RELATED WASTES.**

### SPECIFICATIONS

Description	Tan colour, free-flowing granular powder
Packaging	250g water-soluble packages; 10kg plastic pail
Stability	Max. Loss of 1 log/yr
pH	6.0 – 8.5
Bulk Density	0.5 – 0.61 g/cm <sup>3</sup>
Moisture Content	15%
Nutrient Content	Biological nutrients and stimulants
Plate Count	5 billion per gram
Storage and Handling	DO NOT FREEZE! Store in a cool dry location. Do not inhale dusts. Avoid excessive skin contact. See MSDS.

### APPLICATION INSTRUCTIONS

**Land Treatment** – There is no standard protocol for the bioremediation of contaminated soils. However, there are several guidelines that should be followed to obtain the optimum degradation rates of the organic contaminants. Bioremediation of contaminated soils may take place in a lined treatment cell so that the runoff resulting from the degradation of the wastes can be collected.



The soil is typically treated in lifts of 20cm to 30cm to allow maximum oxygen transfer through the soil for the microorganisms. This transfer is usually accomplished by tilling, which provides for the essential intimate contact needed between the bacterial cultures and the organic contaminants.

To clean up small areas : use TZBI-103 at the rate of 1kg/20m<sup>2</sup> of contaminated soil. Rake or till the soil. Maintain the area as if growing a lawn and repeat application as necessary.

For larger projects : use 100kg TZBI-103 plus 200L of STIMULUS per 1500m<sup>3</sup> of soil. For deeper contaminated sites, use 100kg/300m<sup>3</sup> of soil. Repeated applications may be needed for heavily contaminated soil.

TZBI-103 can be applied to the soil with any appropriate fertilizer or seed spreading equipment. Dry or wet application can be used.

**Direct Injection** - Direct injection of the bacteria and nutrient solutions can be used for treatment. This method is site specific and an experienced contractor should be contacted.

Application of TZBI-103 should be mixed with clean warm water for a minimum of two hours before injection. Use in accordance with all Federal and State regulations. Results will depend upon soil types and climate conditions.

Soil pH, nutrient levels, oxygen availability, and moisture content are critical to the success of bioremediation. All of the requirements will vary according to the soil, weather conditions (humidity, temperature, rainfall amounts), indigenous microbial population, contaminants involved, the concentration of those contaminants, and the amount of time allowed for cleaning up the site.