

Butane Biostimulation Technologies™

HEALTH AND SAFETY CONSIDERATIONS



- The Butane Injector 2000™ was custom designed in cooperation with the Whitmor Company / Omni-Trol Industries, Inc. of Revere, Massachusetts. The system is UL Listed, Coast Guard approved and complies with all Federal, State, and local laws and regulations pertaining to compressed gas storage and usage.
 - The Butane Injector 2000™ is also equipped with a fire suppression system: the Fireboy Clean Agent FE241 Automatic Fire Extinguisher is designed to automatically discharge the agent FE241, chlorotetrafluoroethane, an Environmental Protection Agency approved alternate to Halon, when heat from a fire melts a lead wick on a discharge actuator at 175 degrees Fahrenheit. The butane system is safer than a barbecue grill or a home heating system (natural gas).
 - Butane is non-toxic. It is used as a general purpose food additive and is used in the food processing industry to extract vital oils and flavors from a variety of food sources. It is also used as an aerosol propellant for health care products that contact the skin.
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- The use of the Butane Biosparging™ system results in an increase of total VOC concentrations in soil vapor of approximately 10 to 30 ppmv. The lower explosive limit for butane is 14,000 ppm to 19,000 ppm (depending on the manufacturer) thus the concentration of butane in soil vapor is significant for microbial degradation but in-significant in terms of flammability.
 - Butane is quickly metabolized by microorganisms in soil and groundwater. Consequently, butane never migrates away from the treatment area.
 - The use of the Butane Bioventing™ system was designed to maintain a vacuum within downgradient vadose zone soils and to recirculate the butane vapor into the treatment area of the site. The process also controls the potential migration of VOCs in soil vapor while also enhancing its degradation by increasing oxygen concentrations and by recirculating the butane gas. Butane Biosparging™ and Butane Bioventing™ can be applied at paved or asphalted sites and near buildings where it is necessary to remove, control, and treat VOC contamination under permanent structures.