



ESMS – MICRO NUTRIENT BIO-STIMULANT

ESMS is a non bacterial, concentrated formulation derived from natural plant extracts, and designed to stimulate microbial activity in both aerobic and anaerobic environments. **ESMS** is an environmentally safe, broad spectrum product for use in waste water treatment plants, manure lagoons, oil spill cleanup sites, sewage treatment plants, sewage lagoons, municipal landfills, hydrocarbon bioremediation projects, composting facilities, etc. In waste treatment environments, biological activity is a function of the micronutrients and bio-stimulants available to sustain and develop healthy biomass.

LANDFILLS:

When solid waste is deposited into a landfill a number of physical, chemical and bio-chemical reactions occur that result in the production of leachate. Leachate is a liquid, and is a direct result of rain sinking into the wastes and picking up chemicals as it seeps downward. Leachate characteristics are significantly affected by the presence of both aerobic and anaerobic bacteria.

In the initial stages of land filling, the decomposition process is initiated by aerobic bacteria which readily metabolize the biodegradable component in organic waste. The resulting by-product consists of carbon dioxide, small quantities of water, low molecule fatty acids and heat. During these early stages, leachate strength is relatively low and odour is practically non-existent.

As land filling progresses the landfill goes through a transition. During this transition period, the aerobic microbes are depleted and the anaerobic microbes become dominant, resulting in a period of facilitative microbial activity. Typically, the transition is characterized by a sharp reduction in pH accompanied by an increase in BOD and COD. This sharp reduction in pH results in the solubilisation and mobilization of metals and their accompanying anions. Typical observations of leachate at this juncture, reveal increased levels of hardness and dissolved solids as well as metals. Generally, iron concentrations are characteristically high during this period. This imbalance results in the emission of foul odour and a leachate flow that, aside from being thick and dark in color, emits strong foul odour. Generally, fly, insect and pest infestations increase during this period.

ESMS can control odour, accelerate the decomposition of the biodegradable component in organic waste, reduce fly and insect infestations and increase the useful life of a landfill by a substantial period. **ESMS** is highly concentrated and must be diluted with water.

BENEFITS OF ESMS:

- Environmentally Safe
- Non-toxic, non-caustic, non-corrosive, non-flammable
- Derived from natural plant extracts, no chemicals, dyes or perfumes
- Effective & easy to apply
- Requires only common sense safety equipment
- Unlike bacterial treatments, **ESMS** is not adversely affected by low temperatures

HOW TO USE:

Dilute at a rate of 1:20 to 1:100 and apply to waste when it is deposited in the landfill and again when it is spread. Application is carried out with the aid of a conventional sprayer or spray boom mounted on packer.

*Typical Application Rate: 1 litre (quarts) diluted solution / 1 cubic metre (yard) of waste

**Apply in a fine spray. Operators may need to adjust application rates, and/or frequency of application depending on substrate, composting method, management process and results required.

SAFETY:

ESMS is produced in accordance with NOSB (National Organic Standards Board) guidelines. The materials used in the production process are derived from naturally occurring and sustainable sources and are consistent with organic principals and the National List of Allowed Substances. **ESMS** does NOT contain synthetic chemicals, animal components, and animal by products, manure or manure by-products. **ESMS** is environmentally safe and is not harmful to animals, plants and humans.

COMPLIANCE:

Fully complies with EPA Toxic Substance Control Act (TSCA) and the rules, orders and regulations promulgated there under including:

- a) Sections 4, 5, 6 & 7; Title 40 Chapter 1, 707.20 thru 707.75;
- b) 40 CFR Sections 704.3. 710.2(e) and 720.3(c); and
- c) Sections 5 and 13, reference 42FR64583
- d) Does not contain marine pollutants as defined in 49 CFR 171.8.

STORAGE & HANDLING:

Do **NOT** freeze. Store in a cool location away from direct sunlight - No special handling required

PACKAGING:

2 Litre Jug

20 Litre (5 gallon) HDPE Pail

205 Litre (45 gallon) Barrel

1000 Litre Tote