

STIMULUS™

BIOSTIMULANT AND ODOR CONTROL

PRODUCT DESCRIPTION

STIMULUS™ is a natural biostimulant, surfactant, and odor control product derived from natural plant extract. It can be used in treatment of wastewater and agricultural waste. STIMULUS™ inhibits the formation of odors while enhancing microbiological activity by supplying bacteria with a food source rich in macro- and micro-elements that encourage the composting process.

The major components of STIMULUS™ can bind ammonia to form complexes and reduce the level of ammonia in waste. The active ingredient in STIMULUS™ also inhibits urease activity, therefore prohibiting the release of ammonia and reducing environmental impact.

PACKAGING & STORAGE

Available in 4x4 L, 20.37 kg, 208.82 kg, and custom packaging.

Store in a cool, dry location. Packaging must be kept intact, dry, and away from sunlight. Please follow the recommendations and use the product before the best before date. Contact Bionetix® with questions. Avoid inhalation and eye contact. Avoid excessive skin contact.



FEATURES AND BENEFITS

- Inhibits the formation of odors
- Controls odors before, during, and after waste processing
- Environmentally safe
- Derived from natural plant extract
- Contains natural components
- Does not contain dyes or fragrances

TYPICAL APPLICATIONS

- Odor control and accelerated decomposition of compost
- Odor control in waste collection areas such as garbage dumps, wastewater treatment plants
- Odor control in ponds and lagoons hosting fisheries
- Binding of free ammonia in compost yards and animal manure
- Reduction of odor and sludge buildup in wastewater
- Deodorization of contaminated concrete, tile, metal, fabric, or wood surfaces (e.g., floors, loading ramps, docks, pilings, walls, dumpsters, carpet)

SPECIFICATIONS

Description	Brown, free-flowing liquid
Stability	Stable
pH	3.5-5.0
Specific Gravity	1.05-1.15
Nutrient Content	Biological nutrients and stimulants

GUARANTEED MINIMUM ANALYSIS

Total Nitrogen (N)	400 mg/L
Phosphorus (P ₂ O ₅)	840 mg/L
Potassium Oxide (K ₂ O)	5,700 mg/L

STIMULUS™

Calcium (Ca)	290 mg/L
Magnesium (Mg)	340 mg/L
Total Sulfides (as S ²⁻)	0.16 mg/L
Iron (Fe)	9.0 mg/L
Boron (B)	1.8 mg/L
Manganese (Mn)	0.9 mg/L

APPLICATION INSTRUCTIONS

Compost — STIMULUS™ effectively controls odors from the decomposition of grass, landscape products, and waste from similar streams. It is effective at landfill operations to control food waste odors.

STIMULUS™ should be applied to the new materials as soon as possible after arrival to prevent odors. If the yard is not going to be tub ground or processed in any way, STIMULUS™ should be applied to the windrow when the material is first set out. If the waste material is to be tub ground or processed in some way, STIMULUS™ should be applied after grinding to eliminate the odors contained in the material. Dilute at a rate of 1 L to 200 L (1 gal to 200 gal) of water. Apply 5-6 L of 1:200 solution per cubic meter (1.0-1.25 gal per yd³) of landscape waste.

Depending on the operator's method of composting, adding another dose of STIMULUS™ after the pile is turned for the first time is recommended to control any buildup of anaerobic bacteria in the center of the pile. Additional applications are usually not required.

Any landscape materials that have been placed in windrows without the benefit of tub grinding should receive an application of STIMULUS™ the day the pile is first turned, as well as at the time of receiving.

- **Wet Conditions (early spring or late fall)** — STIMULUS™ will prevent the development of odors inside the compost pile due to poor operating conditions. A dilution ratio of 1:250 is recommended for application under these conditions. Apply 5-7 L of dilution per cubic meter (1.0-1.5 gal per yd³) of compost as long as this does not raise the moisture content more than 1.0%.
- **Dry Conditions** — During periods of dry weather, the need for moisture and water to maintain moisture levels within the compost pile is increased. These adverse conditions create a situation of low moisture due to high temperatures. The compost can be reactivated with the addition of STIMULUS™ to the processing water. As a natural surfactant, STIMULUS™ will allow the water and oxygen to penetrate deeper into the pile, helping to stabilize the pile to more normal conditions.
- **Leaves** — Over winter storage and composting, leaves may develop strong musty odors from yeast and molds

that form on the leaf surface. Some people are offended by these odors. STIMULUS™ neutralizes these odors.

Atmospheric Spraying — Spray a 2.0-5.0% water solution around retention ponds, compost sites, truck bays, waste processing areas, etc.

Wastewater Odor Control — Apply a 5.0-10.0% water solution spray to open tanks to eliminate odors. Use in mist air applications. Add to waste stream to reduce sludge buildup.

Contact Applications — STIMULUS™ is extremely effective for deodorizing surfaces contaminated by urine, feces, garbage, or other organic substances. STIMULUS™ is diluted 1:200 and sprayed liberally onto the surface. No particular safety equipment is required besides gloves and a fabric mask.

Appropriate contact applications include concrete surfaces such as floors, loading ramps, docks, pilings, or walls; tile surfaces; and metal surfaces such as dumpsters, bins, containers, or other similar areas. Carpeting and cloth surfaces may be deodorized if sufficient STIMULUS™ is applied; although, odors may be trapped in carpet padding, requiring several applications. Wooden surfaces may be effectively deodorized if water contact is not harmful to the surface. When diluted 1:200, STIMULUS™ should not cause staining or discoloration.

Wastewater Treatment — Due to the concentrated nature of wastes from food processing, rendering, and other industrial operations, wastewater treatment components such as clarifiers, ponds, and biological processes may become starved for oxygen, producing organic acids, sulfides, and odors. STIMULUS™ may be added to these components. Operators may find that higher dosages will be required to achieve desired process optimization and odor reduction (e.g., maintenance dosages of 10 ppm of stock STIMULUS™ to industrial effluent flow may be needed in aerated pond systems).

Sewers and Lift Stations — In some urban area, sewers and lift stations generate strong smells due to hydrogen sulfide generation on slime-coated concrete surfaces or putrefying wastewater. Diluted or stock STIMULUS™ may be sprayed onto concrete surfaces of lift station structures to help control these odors. Stock STIMULUS™ may also be metered into lift station and sewage flows at rates of 1-5 ppm to reduce sewage odors. If wet scrubbers using caustic or chlorine are used for lift station air treatment, a 1:200 solution of STIMULUS™ may be substituted with scrubber blowdown discharge directly into the sewage flow. Use of STIMULUS™ may reduce or eliminate the need for active carbon in lift station odor treatment, producing substantial savings.

Grit Chambers — Grit chambers and screens are typically employed at sewage plants to remove very large and heavy grit from sewage flows before pumping to aeration basins. Since these areas accumulate large quantities of garbage, hair, and other odorous materials, they are commonly the source of many odors in these plants. Stock or diluted STIMULUS™ may be metered directly into grit chambers, sprayed onto screens with automatic spraying equipment, or metered into the sewage plant influent prior to these processes. Typical metering dosages are 3–5 ppm of stock STIMULUS™ for effective odor control. Diluted or stock STIMULUS™ may also be applied to screenings as they are removed and used to deodorize surfaces and equipment on a regular basis.

Aeration Chambers and Ponds — Most sewage plants in the U.S. utilize stabilization ponds, aerated ponds, or aerated activated sludge-type biological secondary treatment plants to digest sewage organics into excess bacterial sludge. Since the processes rely on efficient aerobic metabolism of the treatment microorganisms, STIMULUS™ has been used to increase process microbe activity and reduce odors from aerosol formation. STIMULUS™ application may also help to control filamentous organisms, which produce foaming and poor settling. A dosage of 3–5 ppm of stock STIMULUS™ into the sewage flow is effective. Treatment ponds or chambers should first be treated with a one-time “shock dose” of 10–15 ppm stock formulation to acclimatize the aerobic biomass to the effects of the product. Following the shock dose treatment, regular “maintenance doses” of 3–5 ppm of stock formulation should be added daily into the headworks or directly into the basins or chambers.

Final Clarifiers, Sludge Thickeners — STIMULUS™ may be added as 3–5 ppm of stock formulation to the sewage flow in final clarifiers and sludge thickeners, and may also be sprayed in stock or diluted form onto concrete weirs, metal launders, and other components which may harbor sulfide-producing slime growths.

Anaerobic Sludge Digesters — STIMULUS™ has been proven to control volatile fatty acid buildup in anaerobic sludge digesters. This increases process stability, reduces odors in sludge discharge, improves methane gas production, and reduces or eliminates the need for supplemental caustics such as lime, which can precipitate in digester tanks. A shock dose of 15 ppm and maintenance doses of 3–5 ppm stock

STIMULUS™ is recommended. Aerobic sludge digesters will also benefit from a 3–5 ppm daily maintenance program.

Sludge Dewatering, Drying — Sludge dewatering and drying beds or processes typically produce the strongest and most objectionable odors at municipal treatment plants. STIMULUS™ may be mixed into the sludge prior to dewatering at a 10 ppm dosage to help control odors. A 1:200 solution of stock STIMULUS™ formulation may be spray applied onto the surface of sludge in drying beds to further reduce odors. Also, a 10 ppm dosage may be applied to the sludge prior to mechanical dewatering via belt press or centrifuge, and equipment may be washed down with a 1:200 solution of STIMULUS™ during cleanup procedures. STIMULUS™ may be used during land application of sludges by mixing 10 ppm of stock STIMULUS™ into sludge prior to injection or surface spreading.

For further information on application, contact your BIONETIX® technical representative.

CASE STUDY

BP80™ (5 kg [11 lbs]) and STIMULUS™ (20 L [5.3 gal]) were applied to manure slurry lagoons composed of 30% rainwater (which causes separation to occur relatively quickly). Within two days there was a marked reduction in odor, and one week later the odor had disappeared. Within 14 days, only 10% of surface scum was left, and the remainder disappeared shortly thereafter with no subsequent recurrence. Sludge digestion was also observed, and five months later, it was confirmed that no sludge sedimentation had occurred in the lagoon.

Odor Concentration and Intensity Before and After Treatment

Compound	Before Treatment		Three Days After Treatment	
	Concentration	Odor Intensity (0-5)	Concentration	Odor Intensity (0-5)
Hydrogen Sulfide	10.1 ppm	5 (intense odor)	0.04 ppm	2.5 (weak odor)
Methyl Mercaptan	0.2 ppm	5 (intense odor)	0 ppm	0 (odorless)
Ammonia	45.0 ppm	5 (intense odor)	8 ppm	3.5 (detectable odor)

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