MegaMicrobes® Liquid
Usage Guide for
Industrial | Institutional | Municipal Applications

MegaMicrobes® Liquid (MML) is a patented natural bacterial product that can directly improve your bottom line and help you tackle your toughest organic waste treatment problems. MML is comprised of a synergistic blend of naturally occurring stabilized strains of *Pseudomonas* strains of bacteria with exceptionally high degradation capabilities. MML has been successfully applied to improve the wastewater treatment system or in clean-up operations of hazardous and nonhazardous wastes in the following types of operations:

- Chemical and Solvent Manufacturers
- Collection Systems and Lift Stations
- Textile Mills and Textile Product Manufacturers
- Meat and Poultry Producers
- Food Processors
- Grease Traps and Oil Water Separators
- Oil Reclaimers and Refineries
- Vehicle/Truck Wash
- Military Installations
- Utilities
- Municipalities
- Industrial Laundries
- Washwater/Reclaim/Recycle Systems

These are just a few of the applications for MegaMicrobes Liquid. Here is how MML can benefit your operation:

- Increased environmental restrictions set in motion by the Federal Pollution Control Act Amendments of 1972 have pushed the current wastewater treatment plant technology to the upper limits of its capabilities. As a result, local, state, and national environmental protection agencies are imposing severe end-of-pipe surcharges to industries in violation of their pretreatment standard permits. Industrial users are finding that a routine application program of MML enhances their systems' efficiency, resulting in low BOD and TSS levels and lower surcharge bills.
- Wastewater treatment facilities are getting heavier loads and are receiving greater volumes of difficult to degrade and sometimes toxic industrial organic wastes.
- MML offers a cost effective alternative to improving existing facilities and can postpone or even prevent the need to expand or rebuild treatment facilities to accommodate increasing governmental pressures.

- Improved efficiency of operation means improved cost of operation. No matter how efficiently the treatment system may appear to be functioning, MML is designed to complement even the best systems. Measurable improvements will show up where it really counts — on the bottom line. MML has been field-proven extremely effective in remediation operations where government regulations require contaminated soils, sludge and groundwater areas be returned to acceptable background levels. Applying MML speeds up clean-up time and saves man hours. MML has an exceptional ability to degrade oils and petroleum hydrocarbon products.

MML is an alternative technology for disposal of hazardous organics that are generated during laboratory or industrial activities and are currently being barreled for shipment to incinerator or hazardous waste landfill sites.

- **MML Targets Tough Organics** – The strains of bacteria present in MML are among nature's most powerful and useful degraders. Osprey Biotechnics' scientists have selected these strains for their exceptional abilities to oxidize a wide range of stubborn organics and priority pollutants.
- **Reduces BOD and TSS*** - The exceptional point-of-use viability of MML assures the addition of billions of bacteria at the peak of their activity cycle with very versatile and sophisticated appetites. They provide enhanced removal efficiency of common wastewater organics. This increased efficiency not only allows higher organic loading, but also reduces effluent discharge of BOD and TSS.
- **Degrades Fats, Oils and Greases** – The excellent fat and oil oxidizing capabilities of MML reduce operational difficulties due to build up. The sludge-settling and dewatering characteristics will be improved, and effluent discharge levels will be reduced. MML has also demonstrated effectiveness in reducing fat and protein accumulation in lift stations and grease traps.
- **Reduces Toxicity** – Many regulatory agencies are adapting toxicity tests of wastewater discharges using fish and other aquatic life forms as the test animals. MML degrades many toxic organics commonly found in industrial effluent streams, thereby reducing the impact on the aquatic species used in these toxicity tests.
- **Shock Recovery** – A program of regularly scheduled treatments with MML will establish high numbers of hardy and versatile bacteria which will diminish the effects of shock upsets, as well as provide quick recovery to acceptable operation parameters.
- **Odor Control** – MML bacteria will out-compete and replace common odor producing microbes, thereby reducing or eliminating overall odor production.
- **Grows in up to 5% Saline Solution** – This will allow for applications in brackish water, coastal marine industries and seafood industries including brined food production effluent and seagoing vessel holding tank effluent treatment.

***BOD: Biological Oxygen Demand**
TSS: Total Suspended Solids

PRODUCT USAGE GUIDELINES – MegaMicrobes® Liquid

MegaMicrobes® Liquid (MML) is available as a safe, easy-to-handle liquid; shipped in 5 gallon containers, 64-ounce bottles, and 55 gallon drums on special order.

Cell Counts: 1E8/ml
Shelf Life: Over 1 year plus @ 35˚F to 95˚F (2˚C to 35˚C)
Process Parameters: Environmental conditions for effective treatment
pH 5.0 - 9.0 (6.5 - 7.5 optimum)
Temperature 55 - 95°F (65 - 75°F optimum)
Salinity 0 - 5% (<5% optimum)
Dissolved Oxygen > 0.5 ppm (1-8 ppm optimum)
APPLICATION / USAGE:
Bio-augmentation for industrial wastewater treatment plants, DAF tanks, separators and skimmers, aeration basins, lagoons, ponds, bioreactors. Using point-source application via a dosing pump, or manually, add MML in the following amounts according to your unique application(s):

- **Wastewater Treatment Plants -** Average daily flow to 1 MGD – Add 5 gallons daily, week 1. Add 0.5 gallons daily thereafter. Average daily flow above 1 MGD - Add 5 ppm daily (5 gal. for each MGD flow) week one. Add 0.5 ppm thereafter (1/2 gallons for each MGD flow).
- **Collection Systems** - Per 100,000 GPD Flow: Add 1 gallon daily week 1. Add one-half (0.5) gallons weekly thereafter.
- **Lagoons** - Per 1 million GPD Flow: Add 2 gallons daily week 1. Add 0.5 gallons daily thereafter.
- **Ponds -** Per million gallons of volume: Add five (5) gallons initially. Add 5 gallons per month thereafter.
- **DAF Systems -** Add 5 ppm daily.
- **Oil/Water Separators & Skimmers -** Add 5 ppm daily.

APPLICATION	CONTAMINANT	RECOMMENDED LINE
BOD/TSS FOG Odor Food Processing Waste Animal Waste Organic Solvents Petroleum Hydrocarbons	Dichlorobenzene Dichlorotoluene (2.5-) Methyl Ethyl Ketone Metyhylene Chloride Napthalene Benzene Oil & Grease (food) Fatty Acids Toluene Xyene Crude Oils/Sludges Petroleum	MegaMicrobes Liquid Blue EPA Formula

DOSING PARAMETERS – MegaMicrobes® Liquid

MegaMicrobes® inoculation rates are based upon average daily flow and organic load. As a starting point for domestic wastes with a BOD of around 250 ppm, add one gallon of MML per day for each 250,000 gallons of flow per day.

For industrial wastewater treatment systems, use the following guidelines for MML addition:

BOD = 200 ppm Add one gallon per 20,000 gpd flow
BOD = 500 ppm Add one gallon per 10,000 gpd flow
BOD = 1000 ppm Add one gallon per 5,000 gpd flow
Because each wastewater treatment system has its own unique characteristics, your inoculation rate may differ from the above recommendation.

To insure best results:
1) Control pH between 6-8
2) Retention time of at *least* 8-12 hours
3) Aeration
4) Dissolved oxygen of at least 1 ppm

SAFER CHOICE
Meets U.S. EPA Safer Product Standards
epa.gov/dfesaferchoice

USDA CERTIFIED BIOBASED PRODUCT
PRODUCT 53%