

BiOWiSH-Odor™

Environmentally friendly **Waste Management** treatment



Capped Landfills

BiOWiSH-Odor™ can be used as a permanent solution to odour emissions from capped landfill sites. Contact our technical support team for the recommended one month treatment program.

Introduction

Waste management practice is critical to quality of life in modern society. It is a health, safety, environmental, social, political and economic issue of the highest priority. It is estimated that over 2 billion tons of municipal solid waste was generated globally in 2006 and this figure continues to rise*.

Key considerations for waste management professionals include management of the environment, in particular odour emissions, pollution of ground water and efficiency of land use. In addition, gaseous emissions from waste disposal contribute significantly to the release of greenhouse gases and global warming.

Contemporary waste management is a wholistic solutions based approach including:

- Waste elimination/disposal/reduction at source
- Reuse and recycling
- Composting
- Energy recovery
- Landfill
- Incineration without energy recovery

As many organisations are attempting to find efficient, cost effective and environmentally friendly means of treating both organic and inorganic wastes, BiOWiSH Technologies is proud to offer an ecologically friendly, waste management solution using our revolutionary microbial enzyme based technology.

From large scale municipal landfills to waste transfer and handling sites. BiOWiSH-Odor™ is designed to address odour control, occupational health and safety, leachate treatment, waste volume reduction, biogas increase, protection of the environment - waste management challenges at every stage of the waste cycle.

What is BiOWiSH-Odor™?

BiOWiSH-Odor™ is a revolutionary combination of human friendly active microbials, beneficial enzymes, super catalysing co-enzymes and co-factors. It is a natural 100% organic culture without harsh chemicals.

BiOWiSH-Odor™ rapidly digests waste products, comprising of oils, fats, grease, proteins, carbohydrates, cellulose and denatures many chemicals at the molecular level reducing them to their basic elementary compounds.

BiOWiSH-Odor™ reacts bio-chemically with waste molecules, catalysing their transformation into smell-free non-toxic end products which are consumed in nature. Rapidly accelerating achievement of full decomposition.

BiOWiSH-Odor™ has dual action (gaseous and substrate) and begins working in minutes.

BiOWiSH-Odor™ has been tested by independent laboratories and confirmed to be non-toxic, non-irritating, non-flammable, non-pathogenic and non-hazardous.

For more information, refer to our BiOWiSH Odour, Waste Management and Enzyme Fact Sheets which can be downloaded from www.biowishtechnologies.com

* Source: Key Note 2006

BiOWiSH-Odor™ has the following benefits:

- Fast acting
- Removes rather than masks odour
- Cost effective
- Operative at low dosage rates
- Wide range of operative conditions
- Long residual effective period
- Natural anti-microbial action – sanitises as it works
- 100% organic
- Non-toxic, non-chemical, non-pathogenic
- Harmless to humans and the environment

BiOWiSH-Odor™ has the following specialised waste management benefits:

- Rapid reduction in volume of waste
- Elimination of odour issues
- Treatment of leachate water
- Anti-microbial – reducing common pathogens including E. Coli, Coliforms, Cholerae, Salmonella, Staphylococcus
- Increase in biogas production
- Reduction in carbon dioxide off-gassing
- Grease trap cleaning and sludge breakdown
- Increased system capacity, because additional waste can be processed more completely in less time
- Air and water emission standards will be improved, helping to meet environmental industry standards and community expectations.

You might also be interested in...

BiOWiSH-Cleaner/Degreaser™

This unique product is used for cleaning, sanitation and the complete breakdown of fats, oils and grease. It also effectively eliminates odour.

For information about these products please contact us or visit our website: www.biowishtechnologies.com

BiOWiSH-Odor™ delivers benefits through every stage of the waste management cycle

Garbage Bins and Garbage Collection Areas

- Eliminates offensive odour in the bins and garbage areas
- Effective within minutes of first application
- Non-toxic, non-chemical and safe for humans
- Removes harmful pathogens that spread and cause disease
- Removes amine compounds that attract flies, cockroaches and other insects



Vehicle and Waste Transfer Stations

- Odour removal and sanitation
- Eliminates odour at a molecular level by reducing common causes such as ammonia, hydrogen sulfide and other odours associated with organic waste
- Digests residual wastes including oils, fats and grease assisting in cleanliness and occupational health and safety



Biogas

BiOWiSH-Odor™ increases biogas production and significantly reduces carbon dioxide release. Methane (CH₄) the primary combustible biogas is produced via a bio-chemical process that includes 3 steps as shown in the table below. BiOWiSH-Odor™ increases the rate of hydrolysis, changes the phase transformation and provides optimum operating conditions for the methane phase bacteria. The result is an increase in CH₄ of up to 40% and a reduction in CO₂ of up to 55% depending on waste composition and environmental conditions.

3 Step Process

Hydrolysis

Enzymes cleave very large molecules into smaller components

Acid Phase

Acid forming bacteria digest fat, carbohydrate and protein to CO₂, H₂, NH₃

Methane Phase

Fermentation of acids and alcohols in presence of CO₂ and H₂ yield CH₄



Odour Management/Sanitation

BiOWiSH-Odor™ fully digests the compounds that cause most noxious smells including ammonia, hydrogen sulphide, amines and mercaptans. Odour treatments can be applied at any stage of the waste cycle including newly added waste or even to capped landfills where a permanent reduction in odour emissions can be achieved economically.

Decomposition Accelerant/Compost Aid

- BiOWiSH-Odor™ rapidly increases the rate of decomposition and has shown to reduce municipal waste volume by between 20-30% in 30 days
- Composting time is reduced from 6 months to as little as 30 days with less requirement for turning of compost and no odorous releases. Final compost is improved in its bio-availability and will carry natural resistance to soil borne and fungal diseases in plants
- Improves leachate and water quality



Landfill & Biogas Sites

BiOWiSH-Odor™ rapidly digests the compounds that cause organic odour. Effect is within minutes and has a 30 days effective period (new waste added will require localised application). Following recommended treatments, older capped sites many never require further treatment. BiOWiSH-Odor™ can be applied via spray systems and is much more effective than traditional approaches such as oils or masking agents.

- Volume reduction of solid waste on municipal waste has been shown to be 20-30% in 30 days due to rapid decomposition
- Leachate quality is improved with substantial reductions in COD, BOD, TDS, oil, grease and nutrient load
- Sanitisation. BiOWiSH-Odor™ is a very effective anti-microbial controlling most pathogenic bacteria (E.coli, Salmonella, Staphylococcus, Cholera etc)
- Reduces compounds that attract flies and many other vermin (ammonia & amines)
- Dosages are low and easily applied using existing equipment
For example 1kg of BiOWiSH-Odor™ will treat 500 -1,000 tons of waste



Water Treatment

- Leachates from land fills, composting and related processing facilities have the potential to pollute groundwater and surface water bodies which causes dispersion of contaminants and a high biological oxygen demand (BOD) and chemical oxygen demand (COD). BiOWiSH-Odor™ very effectively sanitises leachate reducing BOD and COD and removes nutrient sources such as phosphorous, ammonia, nitrates, common pathogens and contaminants including herbicides and pesticides
- Results from reinjection are improved due to potent microbial population. BiOWiSH-Odor™ achieves this at low dosages and is far more effective than chemical products
- The ability to remove soluble oil and grease



What is green at BiOWiSH?

BiOWiSH Technologies helps you create a clean, healthy and safe environment.

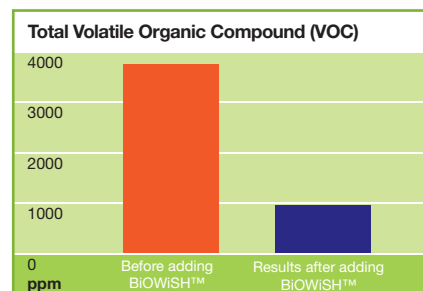
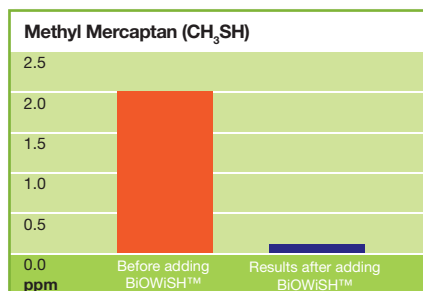
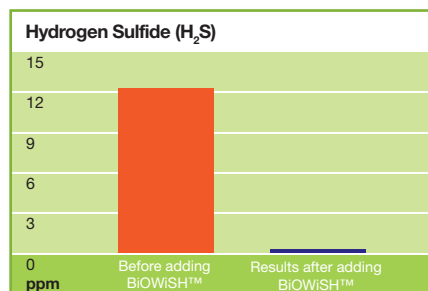
Our products are 100% organic reinforcing our commitment to protecting our environment.

By choosing to use our products you will have a distinct competitive advantage as BiOWiSH-Odor™ offers the complete organic waste management solution and reduces the following waste problem areas to below regulatory levels:

Odour, BOD, COD, Oils and Grease, Nitrates, Ammonia, Hydrogen Sulfide, Methyl Mercaptan and VOC's.

Results using BiOWiSH-Odor™

BiOWiSH-Odor™ demonstrates effective odour removal as highlighted in the graphs below which measure the air quality from the garbage fermenting tanks of the Department of Public Cleaning, Bangkok Metropolitan Administration on January 19, 2006, by the index of Hydrogen Sulfide, Methyl Mercaptan and total VOC's before and after adding BiOWiSH-Odor™.



BiOWiSH-Odor™

Application

This table provides general directions for use. For further application advice please contact one of our technical support team by calling or emailing techsupport@biowishttechnologies.com. You can also visit our website and use our online calculator.

METHOD	EXAMPLE	INSTRUCTIONS
Spray	Landfill, waste transfer sites, vehicles and bins.	Mix BiOWiSH-Odor™ in water. Spray after 15 minutes. Use filter bag for fine spray applications.*
	Composting.	As above.
In-situ misters Ventilation Stack/	Ventilation stack.	Add BiOWiSH-Odor™ to filter bag and add to reservoir.
Bio-Filter Additive	Bio-Filter in odours air-stream.	Add BiOWiSH-Odor™ to bio-filter medium by spray or mixing.

* Filter bags suitable for BiOWiSH-Odor™ in fine spray applications are available from BiOWiSH technologies.

Follow-Up Treatment

Effect will last up to 30 days dependent on environmental conditions and substrate. Apply daily if new waste is added.

Warranty

BiOWiSH-Odor™ is warranted for a shelf life of 3 years from date of manufacture.

Storage

Store in a cool dry location out of direct sunlight. Once opened BiOWiSH-Odor™ must be kept in a dry and airtight container to prevent activation. Once in a solution BiOWiSH-Odor™ has an effective shelf life of 24-48 hours in the absence of a nutrient source.

Effective life in solution can be extended up to 7 days if solution is stored at < 5°C.

Compatibility

BiOWiSH-Odor™ will not operate effectively in the presence of some chemical products such as disinfectants. Discontinue use of chemical products 3 days prior to using or phase in BiOWiSH-Odor™, full effect will not occur until chemicals are removed.

Safe to Use

BiOWiSH-Odor™ is very safe to use, download our MSDS form at www.biowishttechnologies.com



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