7 BZT® Waste Digester

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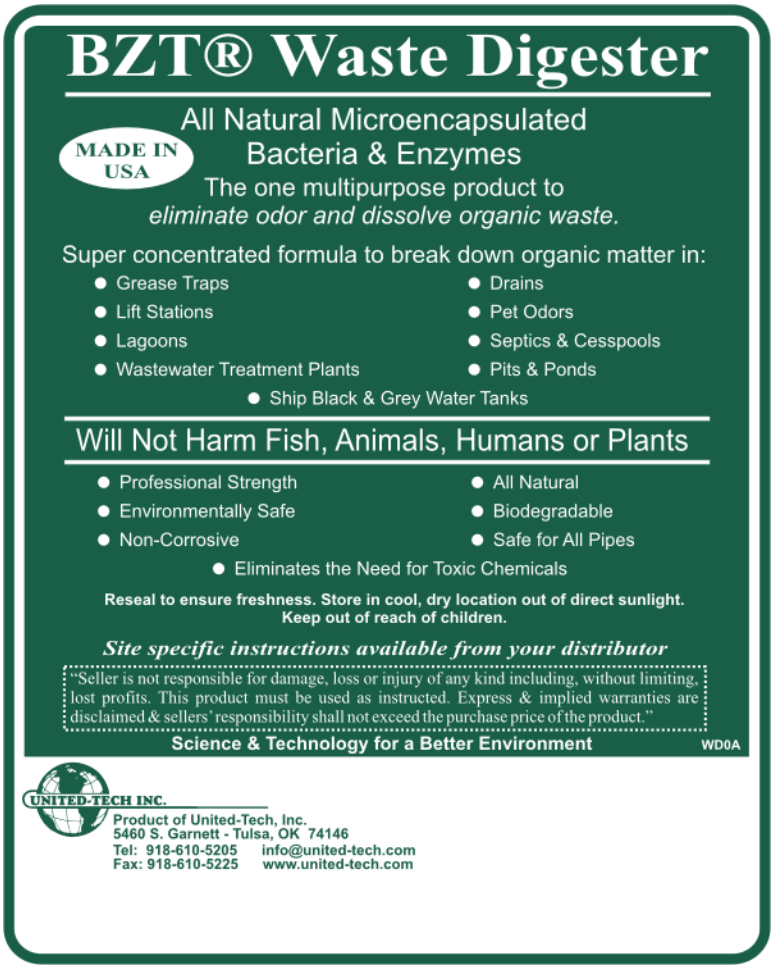
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7.1 Introduction to BZT® Waste Digester



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BZT® Waste Digester Applications & Benefits

Applications	Benefits
❑ Grease Traps	❑ Easy To Use
❑ Drain Lines	❑ Free Flowing Drains
❑ Floor Drains	❑ Breaks Down Fats, Oils & Grease
❑ Trench Drains	❑ Emulsifies & Digests Organic Matter
❑ Septic Tanks	❑ Removes Source of Odors
❑ Cesspools	❑ Reduces Crusting & Scum Mats
❑ Pit Toilets	❑ Reduces Bottom Solids
❑ Porta Potties	❑ Easier Clean Outs
❑ Holding Tanks (RVs & Boats)	❑ Reduces Labor Cost
❑ Boat Bilges	❑ Reduces Drain Field Clogging
❑ Urinals, Toilets, Sink Drains	❑ Environmentally Safe
❑ X-Ray Fluids	❑ Non-Toxic
❑ Garbage Disposals	❑ All Natural Ingredients
❑ Laundry Pre-Soak	❑ Breaks Down Oil & Food Stains
❑ Carpet & Upholstery Stains	❑ Reduces Pumping Costs
❑ Carpet & Upholstery Odors	❑ Eliminates Pet Odors
❑ Pet Odors	❑ Saves Money
❑ Kitty Litter	❑ Oil & Gas Reduction
❑ Poultry	❑ Reduces Grease
❑ Hog/Swine	❑ Helps Achieve Compliance Standards
❑ Dairy & Cattle Operations	❑ Metabolizes Organic Materials
❑ Horse Farms	❑ Increase Storage Capacity
❑ Pits & Ponds	❑ Reduces Suspended Solids
❑ Oil/Grease on Concrete	❑ Reduces H_2S
❑ Municipal Wastewater Lagoons	❑ Reduces Sludge & Solids
❑ Industrial Wastewater Lagoons	❑ Reduces Odors
❑ Wastewater Systems	❑ Increases Water Clarity
❑ Lift Stations	❑ Controls X-Ray Discharge Buildup
❑ Scum Pits	❑ Reduces Ammonia Levels
❑ Trickling Filters	❑ Reduces BOD/COD/TSS
❑ Aerobic Digesters	❑ Reduces Bulking & Foaming
❑ Anaerobic Digesters	❑ Biosolids Reduction
❑ Clarifiers	❑ Odor Control in Barns
❑ Imhoff Tanks	❑ Increases Fertilizer Value
❑ Aeration, SBR's, & RBC's	❑ Enhances Dewatering Properties
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Explaining BZT® Waste Digester

The Viable Choice

BZT® Waste Digester works through its unique combination of highly concentrated enzymes and live bacteria.

Enzymes are essentially organic catalysts. Catalysts are defined as substances that will speed up or alter the rate of chemical reactions without the catalyst (enzyme) being altered or used up in the process. This means that since the enzyme isn't actually used up in the digestion process, even small amounts go a very long way.

The process by which complex organic compounds, in the presence of water and enzymes, are broken down or transformed into simpler compounds is known as digestion or hydrolysis. Enzymes speed up the union of water with a substance, after which the substance breaks up into fragments. Enzyme action is specifically targeted. Protein splitting enzymes will affect only proteins and not fats or carbohydrates.

BZT® Waste Digester contains four major enzymes which enhance the product activity. The key components are starch- digesting amylases, protein-digesting protease, cellulose-digesting cellulase and fat digesting lipase. As the enzymes begin to breakdown the waste products, the live bacteria in BZT® Waste Digester go to work. BZT® Waste Digester contains highly specialized, non-pathogenic strains of bacteria selected for their ability to rapidly digest the bacterial nutrient created by the enzyme digestion. These beneficial microorganisms are facultative so they will function in both aerobic (with oxygen) and anaerobic (without oxygen) conditions and digestion will be assured under a variety of conditions and temperatures. The organisms are harmless, and each batch of BZT® Waste Digester is certified free of salmonella.

When applied as directed, the cultures will multiply rapidly. The continuous growth, in effect, multiplies the digestive capacity of the system. Since bacteria are complex living organisms, microbial stabilizers, preservatives, enzyme activators, and co-factors have been added as an integral part of the BZT® Waste Digester formulation. The latest "state of the art" technology has been used in formulating BZT® Waste Digester.

BZT® Waste Digester is unique in that each ingredient is environmentally friendly and functional, contributing to a more efficient biodegradation process. Whatever the end use may be, from maintaining onsite sewage disposal systems to hydrolyzing specific waste materials, optimum ingredients are always provided. The most effective, active ingredients available have been used.

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Why the need for BZT® Waste Digester in the home, in industrial and commercial facilities?

Some products contain large amounts of acids, lye or other caustic compounds. These may temporarily burn away some of the clogging material, but their use ultimately causes damage. The harsh chemicals kill bacteria on contact, and prevent the liquefying process that systems depend upon. Furthermore, the chemical can loosen chunks of solids that can get caught in the drain pipes and cause blockage. Caustics also kill beneficial microorganisms that render them useless in the job of digesting the seeping liquid flow from the waste disposal systems. Caustics change soil structure, breaking down the soil into finer particles that pack together, reducing the ability of the systems liquids to seep into the soil. When the bacteria within a system are abused or destroyed, a decrease occurs in the digestion of the organic material that go into the waste disposal system.

The use of BZT® Waste Digester eliminates the need for chemical treatment and prevents these upsets - safely, efficiently, and economically.

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BZT® Waste Digester Liquid Formula

United-Tech, Inc., in its continuing efforts to provide all natural, environmentally safe and effective products is now able to offer a liquid product of the quality we are known for.

The BZT® Waste Digester Liquid bacteria and enzyme formula is on the cutting edge of today's technology. It has a finished product minimum viable microorganism shelf life of at least 12 months. BZT® Waste Digester Liquid contains no problem causing carriers such as glycerin, propylene glycol or isopropyl alcohol that most other liquids use.

Prior to this time United-Tech has not recommended a liquid mix because of the numerous problems with carriers such as glycerin, propylene glycol or isopropyl alcohol which create other contamination problems. Other problems have been short microorganism shelf life (sometimes as short as 30 days, with most at 6 months), problems with active ingredients settling out, etc. United-Tech's BZT® Waste Digester Liquid does not have these problems!

BZT® Waste Digester Liquid benefits are:

- Easy to use – No mixing, just pour
- Effective over a broad range of applications
- Long shelf life
- Cost effective

BZT® Waste Digester is now available as a dry powder or liquid – you pick!

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Small Scale Testing vs. Full Scale Testing

Small Scale Test vs. Full Size Field Trials for Wastewater Treatment Products
Why Beaker-sized Trials Are Not Good Indicators of Product Performance

By Ned T. Barden, PhD

Over the last few years commercially-available microbial and enzyme remediation products have become increasingly popular for industrial and food preparation wastewater treatment. These biological products have permitted the successful clean-up of a myriad of organic compounds and waste found in many different types of wastewater. When used properly, the best of these products have been highly effective and economical.

In many instances contaminated wastewater has been cleaned up enough to be safely and legally discharged directly into the environment or to the municipal wastewater treatment system.
In food preparation facilities, drainlines remain free of waste blockages and back-ups.
Often utility bill surcharges, due to excessive waste loads as measured by Biochemical Oxygen Demand (BOD), Total Suspended Solids(TSS), and Oil and Grease (O&G) levels in the wastewater, have been substantially reduced.

As with all new technology, end users want to be assured of the efficacy of the product before buying. Even with a proven tract record, i.e. successful results in previous applications for other customers, a product must often be proven all over again with the next user. In many cases the potential customer himself will want to "try the product out" on a small scale before committing to the sale.

Unfortunately, these hastily set up "small scale" trials do not come close to real world conditions. They are too small, not scientifically set up, and will not stand a chance to duplicate the successful results of previous, full scale field trials. Most often, the small-scale test consists of a beaker or jar with a sample of the waste, e.g. a scoop of fat from the surface blanket found in a grease trap, with a portion of the product to be tested mixed in. After a few days on someone's desk if the fat has not disappeared or been emulsified in the water the product has "failed".

In actuality, these beaker scale tests only favor high surfactant (detergent) or enzyme-only products. A surfactant does not digest the waste, it just emulsifies the fat, i.e. allows it to mix or disperse into the water phase. In a beaker this gives the appearance that digestion is taking place when it really isn't.

In a full-scale wastewater system most of this surfactant treated, emulsified fat would wash through and cause problems for someone else downstream.

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Wastewater treatment facilities have enough problems without more surfactant-carried grease clogging their lift stations and equalization tanks.

Enzyme-only or bacteria-only products also cause problems downstream. With these treatments, fats and oils are only partially digested, allowing them to mix with water. Downstream the resulting undigested material will cause problems worse than the original fat and oil ever could, forming a very sticky, insoluble coating on every surface it comes in contact with. The coating builds up and entraps other solids, eventually leading to odor problems and restricted flow, complete line blockage, or pump and valve failures.

The best products for wastewater treatment are bacteria-enzyme combination products, such as the BZT™ Waste Digester product line developed by United-Tech, Inc., Tulsa Oklahoma. These proven performers are "full service" degraders and use only GRAS listed microorganisms that have not been genetically altered, plus digestive enzymes selected for high activity in a wide range of wastewater treatment situations. The enzymes initiate the digestion of the organic waste, and the bacteria complete the digestion. By using the partially digested waste as food to grow and multiply, the actively metabolizing bacteria excrete harmless carbon dioxide and water. Most of the organic waste is fully digested "on site" and not sent on to cause problems downstream.

An effective combination product must also contain selected bacterial strains with the ability to grow and establish a digestive biofilm on surfaces throughout the wastewater system. To form a functional biofilm the bacteria need adequate nutrients, physical conditions (pH, temperature, dissolved oxygen), and time. It is the actively degrading bacteria in the biofilm that will provide on-going digestion of the organic waste and keep the system free of blockages and back-ups. Fats and oil are reduced along with BOD and TSS, the factors used to assess surcharges by the local wastewater treatment facility.

Knowing what it takes to establish the active cultures in a system, the best evaluation for efficacy of these treatments are full-scale field trials under actual conditions. Beaker trials cannot duplicate the necessary conditions and cannot meet the minimal requirements of the bacteria-enzyme combination products. Thus, tests performed on a small scale are not reliable indicators of a product's true potential. The nutritional factors, the physical parameters, and the time requirement can be met only under actual full scale field conditions.

A proven tract record from a full scale, real world situation will always be more realistic and reliable than any results poured from a beaker. It is also more economical to use an effective, proven bacteria-enzyme combination product than paying less for one that contains a large number of ineffective bacteria. Beware of products sold by numbers of bacteria only. Choose your wastewater treatment product on the basis of proven performance in full-scale situations, not

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just because it shows some results in a beaker test or perhaps has the highest count.

Dr. Barden is an applied microbiologist with over 25 years experience in university research, product development, waste treatment, and President of Applied BioResources, Inc.

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Hospitals, Nursing Homes & Institutions

♦ **Sink Drains**	♦ **Floor Drains**	♦ **Grease Traps**
♦ **Urinals**	♦ **Toilets**	♦ **Carpet & Fabric Stains**
♦ **Septic Tanks**	♦ **Odor Removal**	♦ **Laundry Pre-Soak**
♦ **Urine & Blood**	♦ **X-Ray Fluids**	♦ **Lift Stations**

MULTIPLE USES ALL FROM ONE PRODUCTFEATURES	USES
• All natural bacteria & enzyme formula • Ingredients - FDA-GRAS listed as safe • Safe for employees to use - No injury liability • Contains no harmful chemicals or toxic cleaners • Environmentally safe • Biodegradable • Safe for humans, animals, plants • Stops disruptive service calls & costly service contracts • Dissolves grease, protein & other organic matter	• Carpet and fabric stains and odor removal of all organic matters such as blood, urine, fecal matter, vomit, spaghetti sauces, cosmetics, etc. • Laundry pre-treat spot remover • Kitchen grease trap activation - breaks down grease & fats that build up in and clog drains • All drainlines to keep free flowing - cleans drains of organic matter and scum and prevents their build up which causes slow drains, clogs and stoppages • For additional information on the usage of BZT® Waste Digester see application instructions

SAFE & EASY TO USE - MIX WITH WARM WATER & APPLY
COSTS LESS THAN CHEMICALS

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Clean Up Oil on Concrete

Clean Up Oil On Concrete Easily and Effectively

Degreasers and detergents merely break loose oil and grease on the surface, and at best relocates it. In many cases, there remains an oily film that poses a risk for slips and falls. Then there is the problem with disposal. Oily waste cannot be dumped down the drain, and haul-off can be expensive.

The solution? BZT® Waste Digester is a formulation of living microbes which literally eats the oils and greases off of concrete. Simply spray it on, brush it in, and either mop it up or wash it away. What remains is a clean concrete floor which is safe to walk on. The billions of bacteria and enzymes in BZT® Waste Digester even gets into the porous areas of the concrete and lifts out the oily mess where nothing else can. BZT® Waste Digester converts hydrocarbons to completely safe carbon dioxide and water.

BZT® Waste Digester is not an acid, not a degreaser, and not a detergent. It is the environmentally responsible and safe way of dealing with an unsightly and unsafe problem.

Use BZT® Waste Digester and BZT® Xtra-Wet together on:

Driveways
Fuel pump islands
Manufacturing floors
Truck stops
Quick lube pits Engine repair shops

Use on bare, sealed, or painted surfaces.

Note: For heavy buildup of oil and grease, more than one application may be required to obtain desired results

For oil spills on soil, ask about United-Tech's OBT® Oil Degradation Treatment for quick and cost- effective cleanup.

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Anaerobic Digestion

Anaerobic digestion consists of a series of microbiological processes that convert organic compounds to methane. Methane production is a common phenomenon in several diverse natural environments ranging from glacier ice, sediments, marshes, rumen, and oil fields. The microbiological nature of methanogenesis was discovered more than a century ago. While several types of microorganisms are implicated in aerobic processes, anaerobic processes are driven mostly by bacteria.

Anaerobic digestion has long been used for the stabilization of wastewater sludges. In recent years, however, it has also been used for the treatment of industrial wastewater. This was made possible through a better understanding of the microbiology of this process and through improved reactor designs. Its advantages over aerobic processes are the following:

1. Anaerobic digestion uses readily available CO_2 as an electron acceptor as its oxygen source. It requires no oxygen, the supply of which adds substantially to the cost of wastewater treatment.
2. Anaerobic digestion produces lower amounts of sludge (3 – 20 times less than aerobic processes), since the energy yields of anaerobic bacteria are relatively low. Most of the energy derived from substrate breakdown is found in the final product, CH_4. As regards cell yields, 50% of organic carbon is converted to biomass under aerobic conditions. The net amount of cells produced per metric ton of COD destroyed is 20-150kg [44.1-330.75lbs], as compared to 400-600kg [882-1323lbs] for aerobic digestion.
3. Anaerobic digestion produces a useful gas, methane. This gas contains about 90% of the energy, and can be burned on site to provide heat for digesters or to generate electricity. Little energy (3-5%) is wasted as heat. Methane production contributes to the BOD reduction in digested sludge.
4. Energy required for wastewater treatment is reduced.
5. Anaerobic digestion is suitable for high-strength industrial wastes.
6. It is possible to apply high loading rates to the digester.
7. Anaerobic systems can biodegrade xenobiotic compounds such as chlorinated aliphatic hydrocarbons (e.g., trichloroethylene, trihalomethanes) and recalcitrant natural compounds such as lignin.

Some disadvantages of anaerobic digestion are as follows:

1. It is a slower process than aerobic digestion.
2. It is more sensitive to upsets by toxicants.
3. Start-up of the process requires long periods of time.

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4. As regards biodegradation of xenobiotic compounds by cometabolism, anaerobic processes require relatively high concentrations of primary substrates.

Process Description

Anaerobic digesters are large fermentation tanks provided with mechanical mixing, heating, gas collection, sludge addition and withdrawal ports, and supernatant outlets. Sludge digestion and settling occur simultaneously in the tank. Sludge stratifies and forms the following layers from the bottom to the tip of the tank: digested sludge, actively digested sludge, supernatant, a scum layer and gas. Higher sludge loading rates are achieved in the high-rate version, in which sludge is continuously mixed and heated.

Process Microbiology

Consortia of microorganisms, mostly bacteria, are involved in the transformation of complex high-molecular-weight organic compounds to methane. Furthermore, there are synergistic interactions between the various groups of bacteria implicated in anaerobic digestion of wastes. Although some fungi and protozoa can be found in anaerobic digesters, bacteria are undoubtedly the dominant microorganisms. Large numbers of strict and facultative anaerobic bacteria are involved in the hydrolysis and fermentation of organic compounds. There are four categories of bacteria that are involved in the transformation of complex materials into simple molecules such as methane and carbon dioxide. These bacterial groups operate in a synergistic relationship in as much as group #1 has to perform its metabolic action before group #2 can take over, etc.

Group 1: Hydrolytic Bacteria

Consortia of anaerobic bacteria break down complex organic molecules (proteins, cellulose, lignin, and lipids) into soluble monomer molecules such as amino acids, glucose, fatty acids, and glycerol. The monomers are directly available to the next group of bacteria. Hydrolysis of the complex molecules is catalyzed by extracellular enzymes such as cellulases, proteases, and lipases. However, the hydrolytic phase is relatively slow and can be limiting in anaerobic digestion of waste such as raw cellulolytic wastes, which contain lignin. The use of BZT® Waste Digester can complete this breakdown faster because it contains the necessary bacteria and enzymes groups.

Group 2: Fermentative Acidogenic Bacteria

Acidogenic (i.e., acid-forming) bacteria convert sugars, amino acids, and fatty acids to organic acids (e.g., acetic, propionic, formic, lactic, butyric, or succinic acids), alcohols and ketones (e.g., ethanol, methanol, glycerol, acetone), acetate, CO_2, and H_2. Acetate is the main product of carbohydrate fermentation. The products formed vary with the type of

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bacteria as well as with culture conditions (temperature, pH, redox potential).

Group 3: Acetogenic Bacteria
Acetogenic bacteria convert fatty acids (e.g., propionic acid, butyric acid) and alcohols into acetate, hydrogen, and carbon dioxide, which are used by the methanogens. This group requires low hydrogen tensions for fatty acid conversion; and therefore a close monitoring of hydrogen concentrations is necessary. Under relatively high H_2 partial pressure, acetate formation is reduced and the substrate is converted to propionic acid, butyric acid and ethanol rather than methane.

Group 4: Methanogens
Anaerobic digestion of organic matter in the environment releases 500-800 million tons [453.6 – 725.75 metric tons] of methane per year into the atmosphere and this represents 0.5% of the organic matter derived from photosynthesis. The fastidious methanogenic bacteria occur naturally in deep sediments or in the rumen of herbivores. This group is composed of both gram-positive and gram-negative bacteria with a wide variety of shapes. Methanogenic microorganisms grow slowly in wastewater and their generation times range from 2 days at 35°C [95°F] too as high as 50 days at 10°C [50°F]. About two thirds of methane is derived from acetate conversion by methanogens. The other third is the result of carbon dioxide reduction by hydrogen.

Factors Controlling Anaerobic Digestion
Anaerobic digestion is affected by temperature, retention time, pH chemical composition of wastewater, competition of methanogens with sulfate-reducing bacteria, and the presence of toxicants.

Temperature
Methane production has been documented under a wide range of temperatures. In municipal wastewater treatment plants, anaerobic digestion is carried out in the mesophilic range at temperatures from 25°C [77°F] to up to 40°C [104°F] with the optimum at approximately 35°C [95°F]. Thermophilic digestion operates at temperature ranges of 50-65°C [122°F-149°F]. It allows higher loading rates and is also conductive to greater destruction of pathogens. One drawback is its higher sensitivity to toxicants. Because of their slower growth as compared with acidogenic bacteria, methanogenic bacteria are very sensitive to small changes in temperature, which leads to a decrease of the maximum specific growth rate while the half-saturation constant increases. Thus, a mesophilic digester must be designed to operate at temperatures between 30°C [86°F] and 35°C [95°F] for their optimal functioning.

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Retention Time

The hydraulic retention time (HRT), which depends on wastewater characteristics and environmental conditions, must be long enough to allow metabolism by anaerobic bacteria in digesters. Digesters based on attached growth have a lower HRT (1-10 days). The retention times of mesophilic and thermophilic digesters range between 25 and 35 days but can be lower.

pH

Most methanogenic bacteria function in a pH range between 6.7 and 7.4, but optimally at pH + 7.0–7.2, and the process may fail if the pH is close to 6.0. Acidogenic bacteria produce organic acids, which tend to lower the pH of the bioreactor. Under normal conditions, this pH reduction is buffered by the bicarbonate that is produced by methanogens. Under adverse environmental conditions, the buffering capacity of the system can be upset, eventually stopping the production of methane. Acidity is more inhibitory to methanogens than of acidogenic bacteria. An increase in volatile acid levels thus serves as an early indicator of system upset. Monitoring the ratio of total volatile acids (as acetic acid) to total alkalinity (as calcium carbonate) has been suggested to ensure that it remains below 0.1.

Toxicants

A wide range of toxicants is responsible for the occasional failure of anaerobic digesters. Inhibition of methanogenesis is generally indicated by reduced methane production and increased concentration of volatile acids.

BZT® Waste Digester not only contains the right bacteria and enzyme concentrations to start the whole process faster but can be an invaluable tool to use in normal maintenance to keep the system in balance and to re-establish systems that have experienced upsets.

BZT® Waste Digester provides you a high tech, all natural answer to a more efficient operating system.

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United-Tech, Inc. Formulas vs. Other Products

UNITED-TECH FORMULAS	OTHER PRODUCTS
• Microencapsulated bacteria • (Minimum **2 year** shelf life for dry) • (Minimum 1 year shelf life for liquid)	• Dry products – 2 week half life • Other carriers less shelf life than this
• Combination bacteria and enzymes	• Bacteria only – time lag for enzymes – then if right enzymes – are the bacteria alive!
• Obtains complete breakdown of targeted organic substance	• Enzyme only or bacteria only – Do half the job!
• High bacteria and enzyme counts with the proper strains and enzymes.	• Do they have the right bacteria strains and enzymes and are they in quantities to get the breakdown fast
• United-Tech, Inc. – owns all the formulas. • Did all R & D to obtain the right bacteria and enzymes in the proper – concentrations to do the job • No one else has this!	• Most are distributors who really don't know what they have or the microbiology of how it works
• Formulated, tested and have successfully performed for large companies, municipalities, zoo's, apartment complexes, universities, hospitals, restaurants, hotels, basically all areas of the environment where organic breakdown is necessary	• Spotty results or no results at all! • Partial or incomplete breakdown. • Relying more on surfactants which are in these products. • Perfumes mask odor rather than eliminate them
• United-Tech provides company technicians and sales support (field technicals and 800 tech hotline)	• Limited help at best
• Purified bacteria strains and purified enzymes • Approximately 10 times more efficient than others • No by-product or genetically altered organisms	• Some contain odor producing bacteria which creates other problems
• No pumps or meters necessary just mix in water & pour	• Meters and pumps have to be maintained and can breakdown or complicated mixing instructions
• Dry powder form • Low cost to ship	• Liquids heavy – High freight
• Formulated for broad pH and temperature ranges	• Narrow pH and temperature ranges – great for a lab
• All micro-organisms GRAS listed or AAFCO listed as safe for humans, animals and plants	• Some include caustics or corrosive ingredients • Some human pathogens • Buyer Beware
• Product formulas developed for multiple uses • No need to carry many products to break the same type of organics	• Limited uses or multiple products needed
• Full product line to handle environmental clean-ups	• Not full line
• Constantly developing new products for distribution	• ????????????????????????????
• Safe for use on all surfaces and drainlines including plastic pipes	• Depends on ingredients • Many are not safe for all surfaces!

All safe biological formulas to aid in environmental cleanups is our ONLY business – Not a side line!

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M.S.D.S. BZT® Waste Digester

Material Safety Data Sheet

United-Tech, Inc.
5460 S. Garnett
Tulsa, OK 74146

Date: March 15, 2004
Emergency #: (918) 610-5205

SECTION I IDENTIFICATION

Trade Name: BZT® WASTE DIGESTER

Chemical Family: .....Not applicable
Chemical Name and Synonyms:.....Bacterial/Enzyme Mixture
D.O.T Hazard Class:.....Not applicable
D.O.T. Label(s): .....Not applicable
D.O.T. Proper Shipping Name: .....Chemical not otherwise indexed (NOI), non hazardous

SECTION II HAZARDOUS INGREDIENTS

	% TLV		% TLV
Paints, Preservatives & Solvents	n/a	Alloys & Metallic Coatings	n/a
Pigments	n/a	Base Metal	n/a
Catalyst	n/a	Alloys	n/a
Vehicle	n/a	Metallic Coatings	n/a
Solvents	n/a	Filler Metal	n/a
Additives	n/a	Other	n/a

SECTION III PHYSICAL DATA

State: .....Granular Powder
Appearance and odor: .....Light brown dairy-smelling
Boiling point: .....Not applicable
Vapor pressure (mmHg) : .....Not applicable
Vapor density (air =1) : .....Not applicable
Specific Gravity (H_20=1) :.....Not applicable
% Volatile by Volume:.....Not applicable
Evaporation Rate: .....Not applicable
Solubility in Water: .....Very Soluble

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash point: .....Not applicable
Extinguishing Media:.....Not applicable
Special Fire Fighting Procedure:.....Not applicable
Unusual Fire and Explosion Hazards:.....None

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SECTION V HEALTH HAZARD DATA	
Threshold Limit Value	None established
Effects of overexposure	None Known
Emergency and First Aid Procedures	Wash with plenty of soap and water. Use germicide to disinfect.

SECTION V1 REACTIVE DATA	
Stability:	Stable under normal conditions
Incompatibility (Materials to avoid):	Moisture and heat
Hazardous decomposition products:	None
Hazardous Polymerization:	Will not occur

SECTION VII SPILL OR LEAK PROCEDURES	
Steps to be taken:	Vacuum spilled material and use germicide to disinfect area. For large spills, contain and collect for reuse.
Waste disposal method:	According to local and state regulations. Autoclaving will destroy bacterial activity.

SECTION VIII SPECIAL PROTECTION INFORMATION	
Respiratory protection:	None required under normal conditions of use. NIOSH-MSHA approved dust respirator recommended under conditions which will generate dust.
Ventilation:	Use adequate ventilation.
Protective gloves:	Rubber or latex gloves as needed.
Eye protection:	Safety glasses, goggles, or face shields as needed against dust.

SECTION IX SPECIAL PRECAUTIONS	
Handling and Storage:	Store in cool, dry area in closed container.
Other precautions:	Do not get into eyes. Use adequate ventilation. Wash hands with soap and water after handling.

The information presented herein has been compiled from sources considered to be dependable and is accurate to the best of United-Tech, Inc.'s knowledge; however, United-Tech, Inc. makes no warranty whatsoever, expressed or implied, of merchantability or fitness for the particular purpose, regarding the accuracy of such data or the results to be obtained from the use thereof. United-Tech, Inc. assumes no responsibility for injury to recipient or to third persons or for any damage to any property and recipient assumes all such risks.

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M.S.D.S. BZT® Waste Digester Liquid

Material Safety Data Sheet

United-Tech, Inc.
5460 S. Garnett
Tulsa, OK 74146

Date: March 15, 2004
Emergency #: (918) 610-5205

SECTION I IDENTIFICATION

Trade Name: BZT® WASTE DIGESTER LIQUID

Chemical Family: .....Not applicable
Chemical Name and Synonyms:.....Bacterial/Enzyme Mixture
D.O.T Hazard Class:.....Not applicable
D.O.T. Label(s): .....Not applicable
D.O.T. Proper Shipping Name: .....Chemical not otherwise indexed (NOI), non hazardous

SECTION II HAZARDOUS INGREDIENTS

	% TLV		% TLV
Paints, Preservatives & Solvents	n/a	Alloys & Metallic Coatings	n/a
Pigments	n/a	Base Metal	n/a
Catalyst	n/a	Alloys	n/a
Vehicle	n/a	Metallic Coatings	n/a
Solvents	n/a	Filler Metal	n/a
Additives	n/a	Other	n/a

SECTION III PHYSICAL DATA

State: .....Liquid
Appearance and odor: .....Light brown liquid with bland odor
Boiling point: .....212° F
Vapor pressure (mmHg) : .....Not applicable
Vapor density (air =1) : .....Not applicable
Specific Gravity (H_20=1) :.....1.07
% Volatile by Volume: .....Not applicable
Evaporation Rate: 1.01
Solubility in Water: .....Soluble

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash point: .....Not applicable
Extinguishing Media:.....Not applicable
Special Fire Fighting Procedure:.....This product will not burn or support combustion
Unusual Fire and Explosion Hazards:.....None

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SECTION V HEALTH HAZARD DATA	
Threshold Limit Value	None established
Effects of overexposure	None Known
Emergency and First Aid Procedures	Wash with plenty of soap and water. Use germicide to disinfect.

SECTION V1 REACTIVE DATA	
Stability:	Stable under normal conditions
Incompatibility (Materials to avoid):	Moisture and heat
Hazardous decomposition products:	None
Hazardous Polymerization:	Will not occur

SECTION VII SPILL OR LEAK PROCEDURES	
Steps to be taken:	Vacuum spilled material and use germicide to disinfect area. For large spills, contain and collect for reuse.
Waste disposal method:	According to local and state regulations. Autoclaving will destroy bacterial activity.

SECTION VIII SPECIAL PROTECTION INFORMATION	
Respiratory protection:	None required under normal conditions of use. NIOSH-MSHA approved dust respirator recommended under conditions which will generate dust.
Ventilation:	Use adequate ventilation.
Protective gloves:	Rubber or latex gloves as needed.
Eye protection:	Safety glasses, goggles, or face shields as needed against dust.

SECTION IX SPECIAL PRECAUTIONS	
Handling and Storage:	Store in cool, dry area in closed container.
Other precautions:	Do not get into eyes. Use adequate ventilation. Wash hands with soap and water after handling.

The information presented herein has been compiled from sources considered to be dependable and is accurate to the best of United-Tech, Inc.'s knowledge; however, United-Tech, Inc. makes no warranty whatsoever, expressed or implied, of merchantability or fitness for the particular purpose, regarding the accuracy of such data or the results to be obtained from the use thereof. United-Tech, Inc. assumes no responsibility for injury to recipient or to third persons or for any damage to any property and recipient assumes all such risks.

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Certificate of Origin – BZT® Waste Digester

UNITED-TECH INC.
5460 South Garnett • Tulsa, OK 74146 • (918) 610-5205 Fax (918) 610-5225

Certificate of Origin

This is to certify that:

BZT® Waste Digester is a product of United-Tech, Inc., of Tulsa, Oklahoma, USA

The product is manufactured in the United States and is 100% USA content

The product is an all natural animal feed supplement covered under tariff codes 2309.90.1050

The above is true and correct.

Arthur B. Barnard, Ph.D.
President/CEO
United-Tech, Inc.

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Agricultural – BZT® Waste Digester Features & Benefits

FEATURES	BENEFITS
Complex formulation of specialized bacterial strains and natural enzymes	Formulated to enhance constant and natural fermentation with dramatic increase in your manure systems digestive capacity. Takes control of the biological processes in pits or lagoons.
Environmentally Safe and easy to use	Mixes with lukewarm water, is biodegradable and non-toxic.
Destroys odors and naturally releases entrapped gasses	Odor will be noticeably reduced in as little as 1-2 weeks. Prevents free ammonia gas productivity also prevents build up of methane gas and hydrogen sulfide gas in pit pockets.
Naturally digests crust and accumulated solids when used in difficult pits and lagoons	With increased application rates, you will see difficult surface crust and solids digest in as little as 4-8 weeks.
Begin initial treatment with a near empty system	This will reduce treatment costs to 1/10th of treating a full or problem system.
Properly digested slurry retains excellent fertilizer value, and will significantly reduce fertilizer costs	You will have an uniform free flowing slurry rich in nutrients retaining more of the available N, P and K, easy to pump and distribute on fields.
Take charge of your animal waste management and farm efficiently	Avoid government regulations, high costs of petroleum based fertilizers, and poor waste management practices by using BZT® Waste Digester.

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Agricultural – Liquid Manure Treatment

♦♦♦♦ Customer Satisfaction ♦♦♦♦

BZT® WASTE DIGESTER DOES THE JOB!	
• **REDUCES ODORS**	• **KEEPS MORE FERTILIZER VALUE**
• **ALL NATURAL**	• **KEEPS MORE SOLIDS IN SUSPENSION**
• **BIODEGRADABLE**	• **EASIER AND FASTER UNLOADING**
• **REDUCES CRUSTING**	• **NON TOXIC - NO HARSH CHEMICALS**

BZT® Waste Digester is a complex formulation of specialized bacterial strains, natural enzymes, and fermentation enhancers that will dramatically increase the digestive capacity of manure systems (pits, lagoons, slurrystores, tanks, etc.)

Producers need to handle the problems of animal waste head on before local & state governments decide for them.

Results proven in "On the farm" tests.

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Agricultural - Commonly Asked Questions

1. Why should manure be managed?
Manure is a great natural resource that is wasted at an alarming rate. Mismanaged and misused, less than 20% of all manure nutrients ever find their way back to agricultural lands for crop production. One single hog will produce more than 3,000 lbs. [1362kg] of nutrient rich manure in one year. There are 200 million livestock in the United States. Multiply their manure production by the number of animals and you are looking at big dollars in fertilizer value, yet 80% goes to waste!

2. What is in manure that makes it so valuable?
Think of manure as "recycled feed". The richer in nutrients the feed is, the more valuable the manure will be. Manure contains 75 - 80% of the N, P, and K of the feed, essential organic matter, cellulose, lignin, complex carbohydrates, minor elements and micronutrients. Manure is a complete plant food and soil conditioner. It activates the breakdown of crop residue on the field. Comparisons with chemical fertilizers in terms of N, P, and K value are off base and not telling you the total picture. Chemical fertilizers lack the added benefits of manure, and must be purchased. Manure is produced right on the farm. A farms own digested manure can retain the valuable nutrients.

3. How are manure nutrients lost?
Exposure to air is the biggest reason in storage and handling. Oxidation of nutrient compounds occur every time manure is scraped, pumped, stored or distributed. Nutrient losses in excess of 40% are common even in very efficient storage and handling. Losses in excess of 80 -90% are possible from improper storage and handling. Over 1/2 manure nutrients can be lost in only 4 days if manure is scraped into a thin stack. BZT® Waste Digester is specially formulated to breakdown and retain valuable nutrients in bacterial protoplasm and organic complexes. Nitrogen fixing bacteria prefer neutral pH ranges. BZT® Waste Digester works well over a broad range of temperatures and pH.

4. How does BZT® Waste Digester "take control" of a manure system?
Manure systems are essentially huge vats of chemicals, nutrients and microorganisms in random disorder. All kinds of interactions are taking place, of which many are undesirable. Treating with BZT® Waste Digester places order, sequence and direction to the biological processes which are going on in the manure system. BZT® Waste Digester enzymes target specific substances in the manure, while the bacteria grow rapidly and regulate the environment favorable to their own needs. Regular maintenance applications of BZT® Waste Digester are extremely important to reinforce the beneficial organisms and supporting enzymes that keep the biological process going in the "right direction". BZT® Waste Digester creates an environment that is

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hostile to undesirable organisms who would also like to dominate the biological processes going on in the manure pit or lagoon.

5. How does BZT® Waste Digester retain more manure nutrients?
Manure nutrients are lost in storage, handling, and distribution. Even after surface broadcast, only 50% of the nitrogen is available the first year after application. Soil bacteria must convert the nitrogen (as ammonia and urea) into forms that plants can better utilize. BZT® Waste Digester is already at work in the manure storage system, digesting and converting organic matter and inorganic nutrients into simpler forms. These simple forms are not as water soluble as chemical fertilizers or raw manure, thus they don't leach or wash away easily. Nutrients are converted to forms that stay in place and are released slowly at a rate compatible with plant demand. Nutrients converted by digestion are more readily available and accessible for crop production.

6. How is Nitrogen retained by BZT® Waste Digester ?
The N in urine is soluble, while the N in manure solids is insoluble. Urine contains 2/3 of the nitrogen. Bacteria decompose urinary nitrogen (ammonia) and convert it to nitrates. Ammonia is consumed as a nitrogen food source by bacteria, then stored in insoluble forms in the bacterial protoplasm. Ammonia also breaks down insoluble nitrogen compounds in the solid portion of the manure, making more food for the bacteria to consume. Insoluble nitrogen compounds are stored in the bacteria for later use by plants. As the bacteria die, they decompose and liberate their stored nitrogen. The bacteria are sort of like miniature time released nitrogen capsules. Considering manure is over 30% bacteria by mass, that's a lot of time released capsules. P & K form organic acid complexes.

7. What about foul smells?
Smells indicate that the bacterial breakdown is still going on, and hasn't reached its final goal. Once completed, the bacteria render the manure into an inoffensive product much like composting does. Foul or putrid odors are a result of uncontrolled rotting. Controlled digestion breaks down the organic matter that generates odors, and ties up free ammonia in nitrogen compounds and bacterial protoplasm. Free ammonia smells, bound ammonia has little odor. BZT® Waste Digester bacteria and enzymes do a more thorough job of digesting organic matter and liquid nutrients in the waste, resulting in less odor generated.

8. What about the crust on my pit or lagoon?
Crust is essentially a "lid" on the pit that seals it, and excludes air. The pit is anaerobic or without air. In extreme cases, gases build up in pit pockets since they can't dissipate on the surface due to the crust. The gases produced are mostly carbon dioxide, methane, and hydrogen sulfide in anaerobic conditions. Methane and hydrogen sulfide can be extremely dangerous. Unchecked conditions can result in foul or rotting odors which are

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extremely offensive. BZT® Waste Digester bacteria and enzyme product is specially formulated to digest organic matter and liquefy solids. When added at the pump or through holes punched in the crust, BZT® Waste Digester goes to work digesting the crust. As the crust digests, it begins to collapse under its own weight and "wets up" in the manure slurry. With more surface area exposed to digestion, the bacteria and enzymes break down the solids in the crust to slurry form.

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Agricultural - BZT® Waste Digester Effect on Phosphorus

What effect does BZT® Waste Digester have on phosphorus?
A lot of public concern has been directed at excess phosphorus in lakes, rivers, streams and ponds created by run off into these waterways of animal wastes with its high phosphorus content. BZT® Waste Digester does have a positive effect on phosphorus reduction. BZT® Waste Digester treatment of animal wastes allows the BZT® Waste Digester's bacteria which are very simple organisms that have just two basic functions which are to metabolize/eat and reproduce. These bacteria require phosphorus for their life functions. BZT® Waste Digester bacteria use the phosphorus in their cell mass making it unavailable as a nutrient source in the water- ways. The bacteria utilize phosphorus as a nutrient building block and the enzymes are biological catalysts. Phosphorus is a key component in the make-up of DNA and RNA (the "building blocks" of life), which are necessary for bacterial cell replication.

This is but one more reason to use
BZT® Waste Digester to treat animal wastes.

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Agricultural - Poultry Litter Application

Ammonia is a pervasive and ever-present constituent of the atmosphere in poultry houses. The ammonia is created by the decomposition of excess proteins and uric acid excreted by chickens. Under conditions of heat and high humidity, ambient ammonia levels approaching 50 ppm can be experienced.

High levels of ammonia can be harmful, if not fatal, to chickens. Any adverse effect on the health of the chicken may impair its ability or desire to feed, thus reducing the maximum weight gain that may be expected during the growth cycle.

Historically, atmospheric ammonia in poultry houses has been controlled through the use of ventilation fans and adjustable side curtains. As ammonia concentrations increase, curtains are lowered and the fans are run to pull outside air into the house, forcing the ammonia-laden air out. In the winter, this process also exhausts very expensive heated air.

The formation of ammonia from decomposing protein and uric acid is biologically mediated. Microorganisms in the litter derive energy and cell material from the breakdown of proteins to their constituent amino acids, nitrogen is passed through a biochemical chain of urea, ammonia, nitrite and finally, nitrate. When the majority of the nitrogen in litter reaches the nitrate form, the litter is essentially stabilized and no longer creates a serious ammonia problem.

The rate limiting part of this equation is in the conversion of urea and ammonia to nitrite and nitrate. When moisture levels are high, and litter pH exceeds 7.2 - 7.4, urea is hydrolyzed to ammonia at a faster rate than the ammonia can be converted to nitrite/nitrate. Evolution of gaseous atmospheric ammonia results.

In order to control the release of ammonia from poultry litter, the logical approach is to control the source. Microorganisms "create" the ammonia, and it is the microorganisms that must be controlled to reduce ammonia. This can be accomplished by inoculating the poultry litter with specific bacteria and enzymes, with a known capacity to accelerate and stabilize the rate of protein decomposition. **The product that fills the bill is BZT® Waste Digester.**

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Agricultural - Hog Production Farms

All-Natural Solutions To A Growing Problem

United-Tech, Inc. continues to work with the swine industry in several states developing applications to solve growing problems and nuisances. Utilizing advanced, patented technology, United-Tech is able to achieve optimum results enhancing the environmental conditions at hog production farms. These environmental improvements lead to dramatic odor control, better wastewater quality, enhanced relations with surrounding communities, and most important of all, a healthier end product.

We have found numerous beneficial applications and continue to get positive feedback from our customers for new applications; a few of our successes include:

- Odor control in pits, lagoons, and other areas through controlled biological breakdown of organics, reducing or eliminating hydrogen sulfide & ammonia.
- Wastewater improvements through the reduction/elimination of suspended & bottom solids.
- Lagoon slurry improvements through odor control and solids elimination resulting in faster and easier pumpings.

In addition to the improvements pointed out above, United-Tech offers solutions with the following benefits and advantages:

- All-natural formulations, no chemicals are used.
- Farm operations are not changed.
- The solution is easy, simply mix the product with water and apply.
- No need for additional permitting.
- Applications can be either precautionary or reactionary.

United-Tech works closely with facility personnel, training them in the proper use and maintenance of equipment and product application. United-Tech also monitors quantitative and physical data, adjusting application rates if necessary to insure the most optimum results possible.

All United-Tech, Inc. Formulas Are Safe To Animals, Fish, Humans, And The Environment. All Ingredients Are FDA GRAS and/or AAFCO Listed.

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Agricultural - Manure Pit

My manure pit is a stinky mess!!!

Does this sound like your customers?

- Housewives and neighbors complaining about manure pit odors?
- Pit crust so thick you could walk across it?
- Plants and trees taking root in your pit?
- Heavy solids accumulations?
- Unloading and pump-out problems?

Fortunately, the latest technological breakthrough in manure treatment is now available: **BZT® Waste Digester.** BZT® Waste Digester is custom formulated to win the "bacterial war" being waged in manure pits and lagoons.

BZT® Waste Digester will:

- Destroy odors, release trapped pit gases slowly and safely
- Faster more complete liquification of waste
- Greatly reduce crusting and bottom solids
- Easier and faster unloading
- All Natural, Non-Toxic, Biodegradable Product

SAVE FERTILIZER DOLLARS

Retain your manure's N, P and K fertilizer value along with valuable micronutrients and trace elements.

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Septic/Drain - BZT® Waste Digester Benefits

(See Reference Illustrations on following pages)

DRAINLINES, GREASE TRAPS, HOLDING TANKS, SEPTIC TANKS OR CESSPOOLS

BENEFITS	
• Restores Free Flowing Drains & Prevents Build-Up • Breaks Down & Digests Fats, Grease & Other Organic Wastes • Reduces & Eliminates Unpleasant Odors At Their Source • Easy & Economical to Use - Simply Add To Water & Pour • All Natural Bacteria, Enzymes & Starter Nutrients • Contains No Chemicals • Super Concentrated, Professional Strength & Quality Performance	• Highest Concentrations and Proper Strains of Bacteria/enzymes • Increases Septic Tank Effectiveness, Opens Up Pipes and Restores Drain-field Percolation • Reduces Pumping of Septic & Holding Tanks & Need for Drain Cleaning Services • Eliminates Urine Odors In Restrooms • Eliminates Pet Odors • Safe for Humans, Plants, Animals & The Environment

How it works

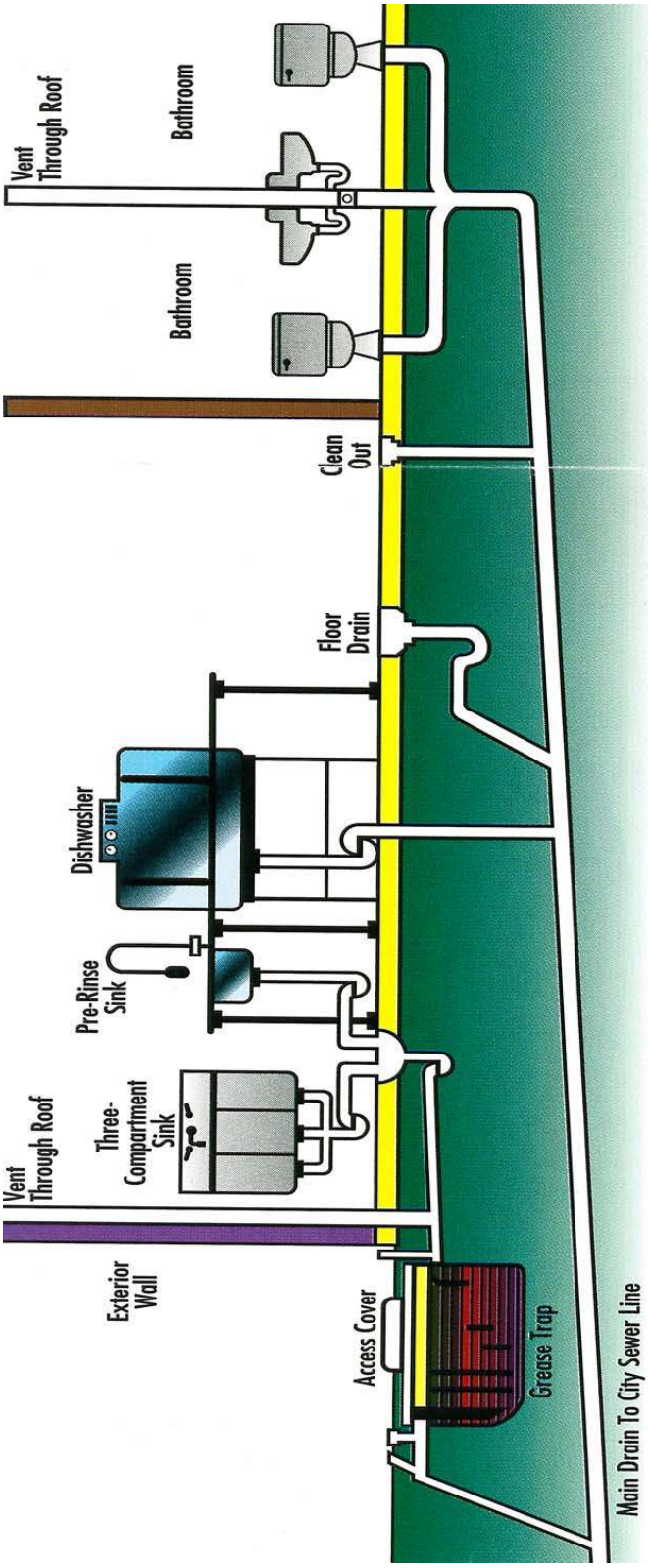
BZT® Waste Digester provides an abundance of natures own “cleaning machines”! The specific strains selected are dependable and work together to be one of the most efficient and effective products of its kind on the market today.

Bacteria and enzymes are nature’s reliable scavengers and thrive on organic wastes. The patented, one of its kind, micro-encapsulation process used in BZT® Waste Digester, guarantees live bacteria and active enzymes and plays a key roll in its effectiveness. When added to water these microbes come out of their suspended animation hungry and ready to do their job day after day! They begin immediately munching and crunching, dramatically dissolving all organic waste they come in contact with. This is nature’s normal process in fast motion!

By following the maintenance schedule, new and hungry microbes are constantly being introduced into the system, reducing and eliminating unpleasant odors and allowing for the continual dissolution of organic wastes that slow and clog drains and preventing future build-up that cause them.

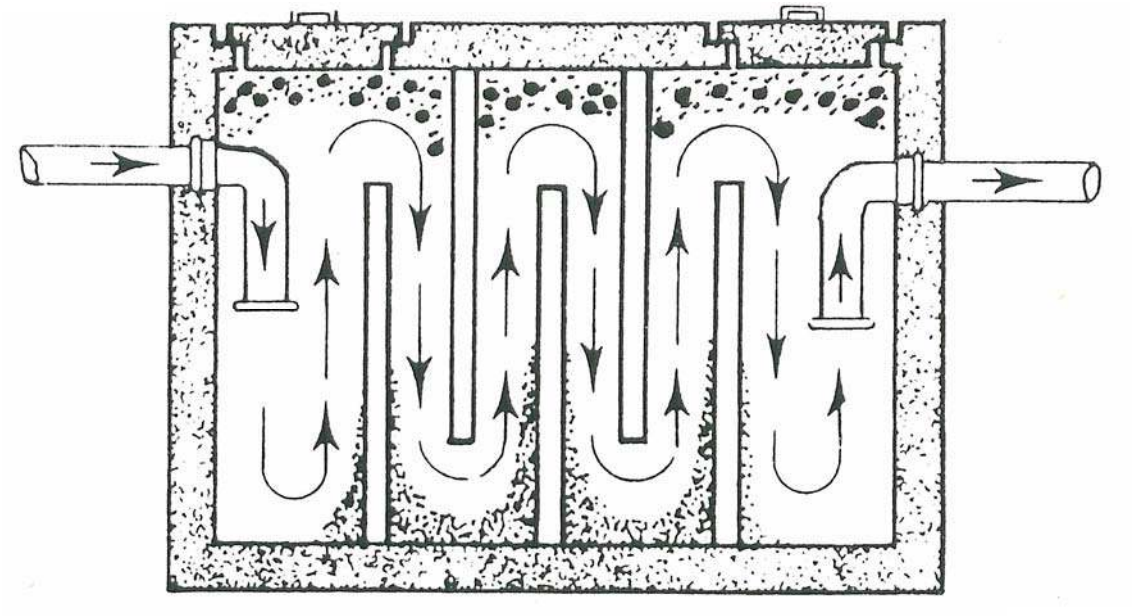
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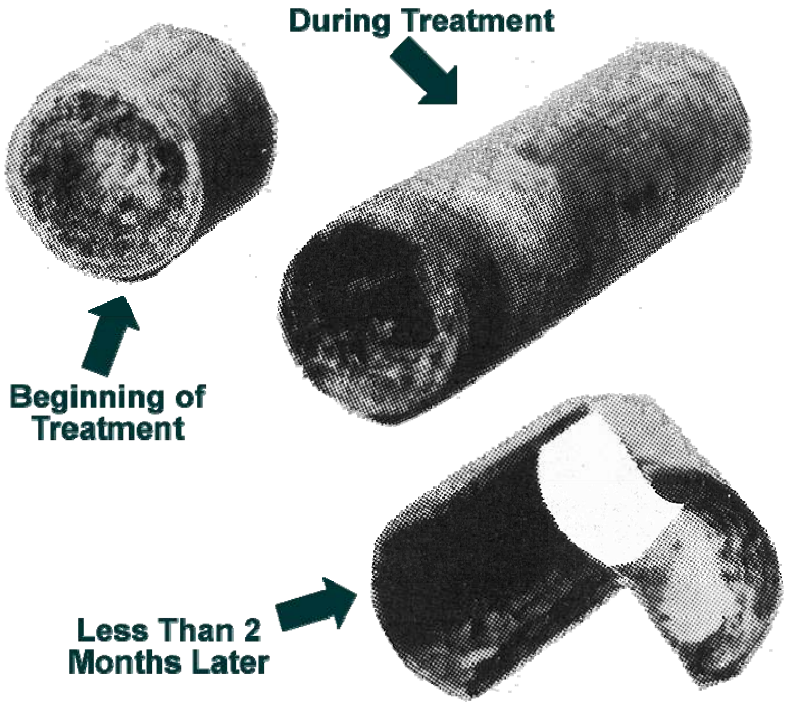
Septic/Drain - Illustration – Grease Trap



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Septic/Drain - Illustration - Grease Trap & Clogged Line





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Septic/Drain – Advantage of Using BZT® Waste Digester

DRAINLINES, GREASE TRAPS, HOLDING TANKS, SEPTIC TANKS OR CESSPOOLS

ADVANTAGES OF USING BZT® WASTE DIGESTER	
• Not only the highest concentrations but also the proper strains of bacteria and enzymes to achieve the fastest breakdown of organic matter. • Non-toxic, safe to use, will not burn, is non-corrosive, and is completely natural, ecologically safe and biodegradable. Will not harm plastic pipe. • Greatly reduces build-up. • Does not interfere with natural bacteria, but instead increases their effectiveness. • Offsets the bactericidal activity of soaps and detergents.	• Has a two-fold effect; emulsifies and digests, dissolves and hydrolyses all organic compounds-greases, meat, paper, starches, sugars…etc. • Removes source of bad odors. • Reduces grease trap and drainline cleaning. • Increases septic tank effectiveness, opens up pipes and restores drain-field percolation. • Inexpensive to use. • Easy to apply – mix with water and pour.

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Septic/Drain – Commonly Asked Questions

The Drain Line and Grease Trap Solution

BZT® Waste Digester is an all natural, proven and effective product for both drain lines and grease traps in commercial and residential drain line applications. Backups are not only unpleasant and unsanitary, but in many cases can slow down or even halt operations. Repeated down time in the your operation can quickly become very costly. BZT® Waste Digester may be your best, most cost effective solution.

1. What causes drain lines to back up?

Food particles, grease, paper, and other organic materials attach to the walls of drain pipes and the buildup begins to snag other materials which pass through the pipe. The accumulation builds up and the reduces the amount of waste water that can pass through. Enough buildup can block the pipe completely, not allowing any waste water to pass through causing the water to back up to the sinks, floor drains, or toilets.

2. What causes my grease trap problems?

In many cases, grease traps are either ignored entirely or not maintained properly. This can cause major grease buildup and blockages both in your drain system and in municipal sewer systems. Grease is trapped and solidifies in the trap. When the trap is full, grease naturally begins to back up in the pipes leading to the trap and passes through the trap into the pipes leading away from the trap. Solidified grease will quickly restrict or stop waste water flow through drains.

3. What can I do about it?

In the past, chemicals have been used as a means of breaking up blockages in drain lines without considering the hazards to both humans and the environment. Millions of dollars are spent trying to solve problems some chemicals have created in our environment. Many times we create new problems in our honest attempts to solve our problems. It is everyone's duty to find alternatives to chemical use. Many states are passing or have already passed laws banning the use of certain chemicals.

4. I want to protect the environment, but what else can I do?

The creator of this world built into the ecological system natural modes to solve many of our problems. Bacteria and enzymes which are already a part of our environment work to decompose specific organic materials in the environment. BZT® Waste Digester is a formulation of naturally occurring bacteria and enzymes which act only on the materials that are normally found in drain lines to quickly decompose and digest the material without harming the environment, pipes, or people.

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5. How does BZT® Waste Digester work?

BZT® is a result of research conducted by United-Tech, Inc. to identify the specific bacteria and enzymes which work on the specific matter normally found in most drain lines and grease traps. Four strains of bacteria and four enzymes were identified. Enzymes start the job by breaking down the material (waste) into simpler forms. The bacteria do not utilize the material in complex form, but thrive on these simpler forms as food which they consume (digest) and begin reproducing very quickly. Bacteria double their population every fifteen minutes! This multiplication of bacteria spreads through the pipes feeding on the material which has built up and caused your problems. Working in combination with the enzymes, the problem can be solved quickly, safely, and naturally. Following a schedule of maintenance applications of BZT® can keep the pipes clean!

6. What about my grease trap?

One of the enzymes included in the BZT® formula is lipase. Lipase works specifically on grease and fats to break down the solidified grease into a simpler form which the bacteria then digests. With the solids liquified, the capacity of the trap is thus increased, and with the digestion, this reduces the number of times the trap needs to be pumped. BZT® will not eliminate the need to pump, but you should not need to pump it as often resulting in significant savings, and the rancid smell associated with the grease is drastically reduced. It is extremely important to follow your grease trap manufacturer instructions to properly maintain your grease trap. However, pumping or expensive equipment will not solve the problem from the drain to the trap. BZT® Waste Digester will solve your drain problems, too!

7. Will the liquified grease re-solidify later?

When the lipase enzyme acts on the solidified grease, it breaks the chemical composition of the grease and it is then, in effect, no longer grease, it becomes a simpler form, fatty acid. BZT® Waste Digester does not just "melt" the grease like hot water does only to re-solidify later. The bacteria feeds on the fatty acid and the by-product is water, carbon dioxide, and biological mass.

8. I don't have any problems right now.

By the time you wished you had, it's too late. By the time the common clog causes stoppage, heroic measures are necessary. Wouldn't it be nice to prevent this messy, smelly, and costly embarrassment? Wouldn't it be nice to be able to avoid the periodic panics, let alone the hassle and frazzle? Aren't you tired of hearing, "The sink's backed up again!" always at the time of peak use when everyone is most impatient? BZT® Waste Digester works to prevent problems as well as solve problems!

9. Is BZT® Waste Digester complicated to use?

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The great news is that BZT® Waste Digester is ridiculously easy to use! BZT® Waste Digester is packaged in either 1 lb. [454g] foil packs, or in a 20 pound [9.08kg] box. The product is a dry powder which is stirred into lukewarm water and poured directly into the drain or grease trap. It can't get much easier than that!

10. Where can I use BZT® Waste Digester?

Anywhere you find a drain or grease trap! Homes, motels, restaurants, nursing homes, hospitals, schools, office buildings, and industrial buildings all have drain lines and some have grease traps. BZT® Waste Digester is also very effective in septic tanks, boat and RV holding tanks, portable toilets, cat litter boxes, animal runs and kennels to digest wastes and eliminate odors!

The natural solution is BZT® Waste Digester! All natural, environmentally safe, it will not harm humans, animals, plants, or fish. Have more questions? Contact your United-Tech Distributor, or call United-Tech, Inc., at 918-610-5205.

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Septic/Drain – Step by Step Keeping Drainlines Clear



BZT® Waste Digester

Keeping drainlines clear of blockages and flowing freely can be done in 4 simple steps.

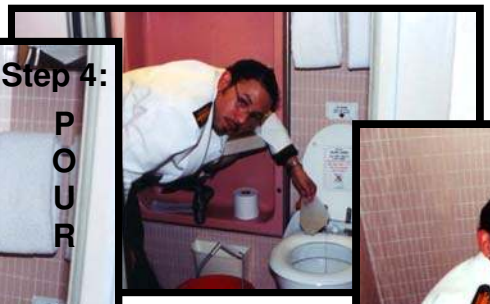














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Septic/Drain – Got Those Backed Up Septic Blues?

Are you tired of "Singing the Blues"?

- Clogged sinks that don't drain and need bailing?
- Toilets that overflow (or won't flush) and leave a messy bathroom floor behind?
- Foul odors that are embarrassing when company arrives, not to mention daily tolerance.

Pumping out your system is the first step, and then you must prevent the conditions that caused these problems from developing in the first place. Regular use of BZT® Waste Digester will add the correct strains of bacteria and enzyme groups to your septic system, to keep it actively fermenting and free flowing.

BZT® Waste Digester Features:

- ***One product*** works throughout the entire system from drain to drainfield, from toilet to septic tank. No need to buy 4 or 5 products.
- ***Contains all 4 enzyme groups*** needed to hydrolyze organic waste; fats, greases, starches, protein, cellulose, meat, paper, etc.
- High concentration of bacteria plus the right bacteria strains to obtain a complete breakdown of organics.
- Removes source of odors.
- Increases tank effectiveness, opens up pipes and restores drainfield percolation.
- Non-Toxic, non-corrosive, no harsh chemicals, environmentally safe and biodegradable.
- Will not harm humans, animals or plants and is safe for all pipes including plastic.

BZT® Waste Digester is the "Viable Choice"

Questions & Answers

1. **Why does the 1 lb [454g] packet of BZT® Waste Digester sell for less than other boxes, canisters or jugs of septic cleaners?**

BZT® Waste Digester is concentrated, the 1 lb [454g] packet treats up to a 3000 gallon [11.5m^3] septic, others treat a 1,000 gallon [3.79m^3] septic per container from one month to six months, making them more expensive than BZT® Waste Digester. Compare not only the price, but also the capacity of the system to treat and for how long the product will treat that system. In addition, compare the active ingredients of each product. Dollar for dollar no

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other product has the active ingredients to perform effectively all the jobs BZT® Waste Digester can.

2. Wouldn't it be easier to just treat a system once every six months or once a year like some products recommend?

WRONG!

You could treat a system once a year if you didn't flush or use your system during that year. But, in the real world we are using our systems every day, draining dish soap, washing machine detergents, household cleaners and other types of cleaners into our septic systems. These detergents, cleaners and other wastes we dump into our septic systems kill beneficial bacteria, that's why we recommend regular usage of BZT® Waste Digester to maintain proper bacterial action to keep your septic operating at its maximum level. It's only common sense that you have to keep replacing bacteria on a regular basis if you are killing bacteria on a regular basis. Once every six months or once a year applications just aren't effective.

3. Other companies have separate products for septic, drains, RV holding tanks, etc., but all their separate products have basically the same ingredients. Why not have just one product?

BZT® Waste Digester is the answer. It is formulated with four different strains of bacteria and four enzyme groups to cover a broad range of applications. BZT® Waste Digester has more active ingredient's than any other product on the market! Why buy separate products for each of these tasks, when BZT® Waste Digester does them all. It's 100% natural, environmentally safe, non-caustic, non-acid and safe for all pipes.

4. Why aren't other septic cleaners recommended for use as a drain cleaner?

All Septic/Drainline cleaners are not formulated equally. The majority of other competitive products are just bacteria or by-product enzyme mixtures with no guarantees of active ingredients. BZT® Waste Digester is formulated using "state of the art" maximum effective bacteria counts and purified enzymes. This makes our product more than ten times more effective. The enzymes we use will break down protein, fats and greases that cause the majority of drain problems. Remember BZT® Waste Digester is effective only on organic buildup. Stoppage due to roots, rags or anything non-organic will not be affected by BZT® Waste Digester. No bacteria or bacteria/enzyme combinations will affect non-organic material.

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Septic/Drain – Septic System Lateral Glazing

(See reference illustrations on following page)

When water is coming to the surface over the drainfield or the septic tank is backing up these problems can be caused by the drainfield glazed by excess oil and grease. To treat this problem, follow these directions:

To check the lateral field, ask if they have a plot plan of the field. Again depending on the area, they may or may not have it. A plot plan is helpful to have, as some fields are hard to see or find.

When there is no plan or you cannot see the field, then it may be necessary to run a line from the tank to locate one or more of the lines on the first junction box. After locating one of the lines, you can work from there to probe using 10 feet [3m] between lines as a guide.

Some problems show up as bleeding up and others show no sign at all. It's best to check a line that is not bleeding up.

After probing and locating a line, move down the line several feet to dig. As you dig the line up, watch the soil for water. The soil can be very wet and still have a problem farther down the line. If water fills into the hole from the soil as you dig, then the soil is full of water and there is little you can do. If the soil is moist or dry as you dig, you may run into very black-looking soil as you near the gravel. After reaching the gravel, if water fills in to the hole there is a grease barrier between the soil and gravel. The gravel will also be black or grey-looking. This can be treated with BZT® Waste Digester.

If, when digging, there is no water all the way to the pipe, there may be some other kind of problem. There could be some kind of stoppage, sludge in the line or a damaged line. With this problem, it is best to locate the tee or junction box. Run the line to determine the type of problem. If sludge it needs to be removed.

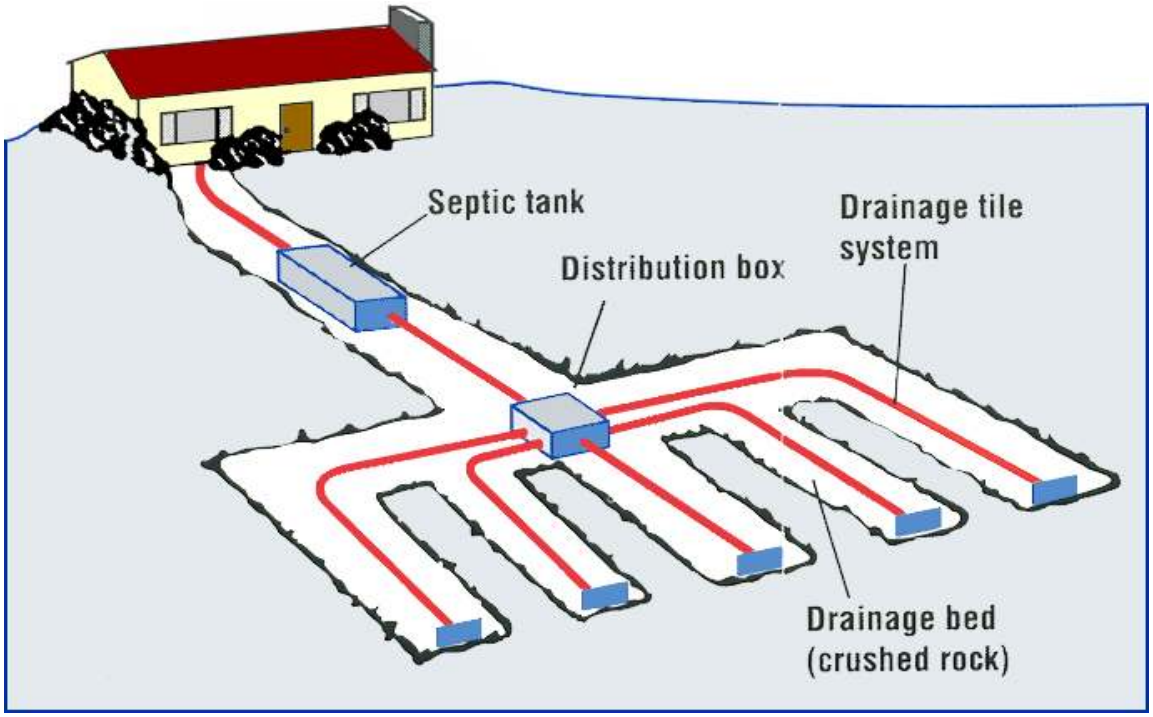
For lines with grease, the system will need to be treated with BZT® Waste Digester. To do this either <u>all</u> junction boxes, tees, and the far end of the lines need to be found to get the BZT® Waste Digester into them.

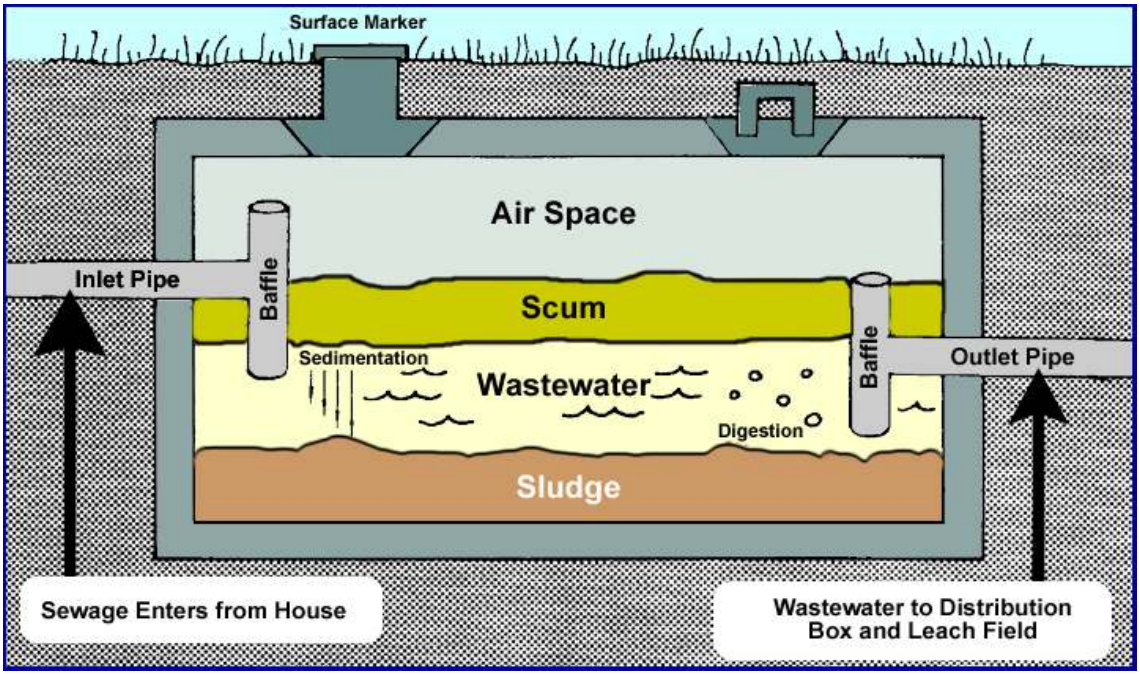
Dosage:

BZT® Waste Digester
Use 10 lbs. [4.54kg]-Pre mix in warm water 2-3 lbs. [908g-1362g] per 5 gal. [18.95L] bucket. Dispense 5 gal. [18.95L] in each box and the line ends.

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Septic/Drain - Illustration - Septic System





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Wastewater – Treatment General Information

Micro Encapsulated Bacterial Cultures, Enzymes and Nutrients

A selected blend of all natural bacterial cultures, enzymes and starting nutrients that are very effective as a seed or maintenance culture for biodegradation of a wide range of municipal/industrial organic wastes, to include animal, fecal and plant wastes, pulp and paper spent liquids, proteins and fats.

BZT® Waste Digester cultures, enzymes and nutrients are used to improve biotreatment performance and reduce BOD/COD loads in municipal and industrial water treatment clarifiers, trickling filters, ponds, lagoons, activated sludge systems and aerobic and anaerobic digesters. They are also an ideal blend for quickly destroying grease and fat buildup in drains, sewer lines and lift stations. Periodic use of BZT® Waste Digester will also:

- Reduce overall sludge volume in clarifiers and treatment lagoons through enhanced biodegradation and heightened floc formation with good settling characteristic.
- Provide optimized degradation of organic wastes, including fecal, blood and fats from animal slaughterhouses, meat, poultry and produce processors.
- Metabolize organic sediments in stagnant lagoons or treatment ponds, even under low oxygen conditions.
- Reduce the population of hydrogen sulfide forming bacteria and the odors associated with them, through species competition.

The Right Culture
The one variable in biological wastewater treatment plants that has traditionally been outside operator control is quality of the plant biomass. Bacteria and protozoa in both municipal and industrial biological systems may be negatively impacted by low operating temperatures, toxic chemicals, high substrate loadings, or variable waste streams. Plant start-up and upset recovery require rapid response to maintain the stringent limits imposed by environmental permits. Special environmental problems require environmentally sound biological solutions instead of traditional off-site disposal.

Bioaugmentation
A well-designed and operated biological wastewater treatment plant provides an optimum environment for a microbial population to become acclimated to the incoming wastewater. As long as the basic requirements as described are met, along with a controlled food source, the treatment objectives can usually be met.

Problems arise when the plant becomes overloaded with a particular waste component (e.g., oil & grease) to which the indigenous or native population cannot acclimate. This often results in erratic performance or a plant upset.

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High organic loadings or periodic shock loads may also contribute to poor plant stability. Finally a deficiency in any of the basic requirements, or periodic toxic or inhibitory conditions, may threaten the health of the microbial population with resulting poor effluent quality.

Bioaugmentation puts the operator in control of the waste treatment plant by allowing a shift in both the diversity and quality of the microbial population.

Selectively adapted strains can target particular waste compounds, improve the treated effluent quality, maintain plant stability, and reduce plant operating costs. Bioaugmentation can also be used for biological remediation of environmental problems ranging from grease deposition in collection systems to H_2S formation in collection systems.

Basic Requirements
A biological wastewater treatment plant's goal is to provide an optimum environment for the microbial population. The primary environmental factors include:

- **Dissolved Oxygen (DO)**: Critical to the maintenance of efficient aerobic conditions a minimum DO of 2 mg/L is recommended in all areas of an aeration basin or treatment process.

- **Nutrients:** Macro nutrients nitrogen and phosphorus must be present in sufficient quantities to support biological growth. The recommended BOD:N:P ratio of 100:5: 1 (based on influent loadings) is the minimum to support good treatment.

- **pH:** Influent to the biological treatment should be maintained at a pH of 6.8-8.2 at all times during the treatment process. Nitrification is optimized at a pH of 7.6-8.2 and should be closely monitored.

- **Temperature:** Biological growth occurs at operating temperatures of 45°F [7.2°C] to 140°F [60°C] with optimum growth rate at 70°F [21.1°C] to 90°F [32.2°C].

Applications and Solutions

- **Organic Overloads** — Upsets can be minimized with BZT® bioaugmentation preventing permit excursions or lost productivity.
- **Treatment of Specific Compounds** — Difficult to treat industrial compounds (such as surfactants) can be targeted with selectively adapted BZT® microorganisms.
- **Poor Clarification/Settleability** — BZT® establishes a high quality biomass and lower effluent BOD/COD that will provide a sludge with better settling characteristics.

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- **Fats, Oil, & Grease** — Compounds of plant, animal, or petro chemical origin can result in serious operational problems as well as permit excursions. BZT® can target these compounds.
- **Aeration Basin/Filamentous** — Filamentous organisms can be minimized with a targeted bioaugmentation program using BZT®.
- **Scum Pits** — BZT® cultures can effectively cut grease skimmings traditionally sent to anaerobic digesters or off-site disposal.
- **Collection System Maintenance** — BZT® cultures can eliminate grease accumulation and H_2S in sewer lines and lift stations, drastically reducing maintenance costs.
- **Plant Start-Up** — BZT® can accelerate and optimize plant start-up.
- **Lagoon Treatment** — Odor reduction and performance of aerobic and facultative lagoons can be drastically improved using BZT® cultures.
- **Overcoming Marginal Operating/Design Conditions** — Plants often experience difficulty in maintaining basic requirements for optimum operation. BZT® cultures can help overcome marginal conditions and improve performance.
- **Ammonia Removal** — Plants can achieve biological nitrification with BZT® culture.

Steps to Implement a Bioaugmentation Program

Dosage recommendations for augmenting biological wastewater treatment plants fall into two broad categories: stability related applications and upset recovery or plant start-up. BZT® dosage programs are designed to rapidly achieve results through two phases of culture addition: seeding and maintenance. Dosages are calculated on both organic loading (COD/BOD) and flow rate. During the seeding phase (days 1-7) a high initial inoculum will compensate for the lag phase seen in all bacterial growth. The maintenance phase is designed to sustain the benefits of BZT® selectively adapted cultures once the desired microbial population is established.

Where to Apply BZT® Waste Digester Cultures

Aeration/SBR's/RBC's Basins
Equalization Tanks
Imhoff Tanks
Clarifiers
Digester, Sludge Tanks
Oxidation Tanks
Lift Stations
Trickling Filters
Lagoons
Gravity and Feeder Lines

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Wastewater – Treatment Systems

Sewage is the wastewater released by residences, businesses and industries in a community. It is 99.94 percent water, with only 0.06 percent of the wastewater dissolved and suspended solid material. The cloudiness of sewage is caused by suspended particles, which in untreated sewage ranges from 100 to 250 mg/l. A measure of the strength of the wastewater is biochemical oxygen demand, or BOD_5. The BOD_5 measures the amount of oxygen microorganisms required in five days to break down sewage. Untreated sewage has a BOD_5 ranging from 100 mg/1 to 300 mg/1. Pathogens or disease-causing organisms are present in sewage. Coliform bacteria are used as an indicator of disease-causing organisms. Sewage also contains nutrients (such as ammonia and phosphorus), minerals, and metals. Ammonia can range from 12 to 50 mg/l and phosphorus can range from 6 to 20 mg/l in untreated sewage.

Sewage treatment is a multi-stage process to renovate wastewater before it reenters a body of water, is applied to the land or is reused. The goal is to reduce or remove organic matter, solids, nutrients, disease-causing organisms and other pollutants from wastewater. Each receiving body of water has limits to the amount of pollutants it can receive without degradation. Therefore, each sewage treatment plant must hold a permit listing the allowable levels of BOD_5, suspended solids, coliform bacteria and other pollutants. The discharge permits are called NPDES permits, which stands for the National Pollutant Discharge Elimination System.

Preliminary Treatment

Preliminary treatment to screen out, grind up, or separate debris is the first step in wastewater treatment. Sticks, rags, large food particles, sand, gravel, toys, etc., are removed at this stage to protect the pumping and other equipment in the treatment plant. Treatment equipment such as bar screens, comminutors (a large version of a garbage disposal), and grit chambers are used as the wastewater first enters a treatment plant. The collected debris is usually disposed of in a landfill.

Primary Treatment

Primary treatment is the second step in treatment and separates suspended solids and greases from wastewater. Waste-water is held in a quiet tank for several hours allowing the particles to settle to the bottom and the greases to float to the top. The solids drawn off the bottom and skimmed off the top receive further treatment as sludge. The clarified wastewater flows on to the next stage of wastewater treatment. Clarifiers and septic tanks are usually used to provide primary treatment.

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Secondary Treatment
Secondary treatment is a biological treatment process to remove dissolved organic matter from wastewater. Sewage microorganisms are cultivated and added to the wastewater. The microorganisms absorb organic matter from sewage as their food supply. Three approaches are used to accomplish secondary treatment: fixed film, suspended film and lagoon systems.

Fixed Film Systems
Fixed film systems grow microorganisms on substrates such as rocks, sand or plastic. The wastewater is spread over the substrate, allowing the wastewater to flow past the film of microorganisms fixed to the substrate. As organic matter and nutrients are absorbed from the wastewater, the film of microorganisms grows and thickens. Trickling filters, rotating biological contactors, and sand filters are examples of fixed film systems.

Suspended Film Systems
Suspended film systems stir and suspend microorganisms in wastewater. As the microorganisms absorb organic matter and nutrients from the wastewater, they grow in size and number. After the microorganisms have been suspended in the wastewater for several hours, they are settled out as a sludge. Some of the sludge is pumped back into the incoming wastewater to provide "seed" microorganisms. The remainder is wasted and sent on to a sludge treatment process. Activated sludge, extended aeration, oxidation ditch, and sequential batch reactor systems are all examples of suspended film systems.

Lagoon Systems
Lagoon systems are shallow basins that hold the waste-water for several months to allow for the natural degradation of sewage. These systems take advantage of natural aeration and microorganisms in the wastewater to renovate sewage.

Final Treatment
Final treatment focuses on removal of disease-causing organisms from wastewater. Treated wastewater can be disinfected by adding chlorine or by using ultraviolet light. High levels of chlorine may be harmful to aquatic life in receiving streams. Treatment systems often add a chlorine-neutralizing chemical to the treated wastewater before stream discharge.

Advanced Treatment
Advanced treatment is necessary in some treatment systems to remove nutrients from wastewater. Chemicals are sometimes added during the treatment process to help settle out or strip out phosphorus or nitrogen. Some examples of nutrient removal systems include coagulant addition for phosphorus removal and air stripping for ammonia removal.

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Sludges
Sludges are generated through the sewage treatment process. Primary sludges, material that settles out during primary treatment, often have a strong odor and require treatment prior to disposal. Secondary sludges are the extra microorganisms from the biological treatment processes. The goals of sludge treatment are to stabilize the sludge and reduce odors, remove some of the water and reduce volume, decompose some of the organic matter and reduce volume, kill disease-causing organisms and disinfect the sludge.

Untreated sludges are about 97 percent water. Settling the sludge and decanting off the separated liquid removes some of the water and reduces the sludge volume. Settling can result in a sludge with about 96 to 92 percent water. More water can be removed from sludge by using sand drying beds, vacuum filters, filter presses, and centrifuges resulting in sludges with between 80 to 50 percent water. This dried sludge is called a sludge cake. Aerobic and anaerobic digestion are used to decompose organic matter to reduce volume. Digestion also stabilizes the sludge to reduce odors. Caustic chemicals can be added to sludge or it may be heat treated to kill disease-causing organisms. Following treatment, liquid and cake sludges are usually spread on fields, returning organic matter and nutrients to the soil.

Wastewater treatment processes require careful management to ensure the protection of the water body that receives the discharge. Trained and certified treatment plant operators measure and monitor the incoming sewage, the treatment process and the final effluent.

Waste Water Treatment Regulations
Clean water has been a concern nationwide since the early 1970's. In 1972, the U.S. Congress adopted the Clean Water Act to protect the waters of the nation. Through this act, the U.S. Environmental Protection Agency and corresponding state agencies were given the responsibility to regulate activities that threaten the quality of the nation's water resources.

In the Federal Clean Water Act, Congress adopted a comprehensive water policy for the nation and set as a national goal the elimination of pollutant discharges to the navigable waters of the U.S. by 1985. An interim goal was set to insure that all navigable waters would be fishable and swimmable by 1983.

To reach these goals, the U.S. Congress established a regulatory framework:

- No one has the right to pollute the navigable waters of the United States. Dischargers are required to obtain permits.
- Permits shall set limits on the concentration of the pollutants being discharged. A violation of the limits carries a penalty of fines or imprisonment.

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- The best technology available shall be used to control the discharge of pollutants.

Each state, through a designated regulatory agency, issues discharge permits and enforces the discharge limits.

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Wastewater – Treatment Plants

(See reference illustrations on following page)

We have had a lot of questions about time frames for noticeable results when treating municipal and industrial wastewater treatment plants (WWTP) with BZT® Waste Digester.

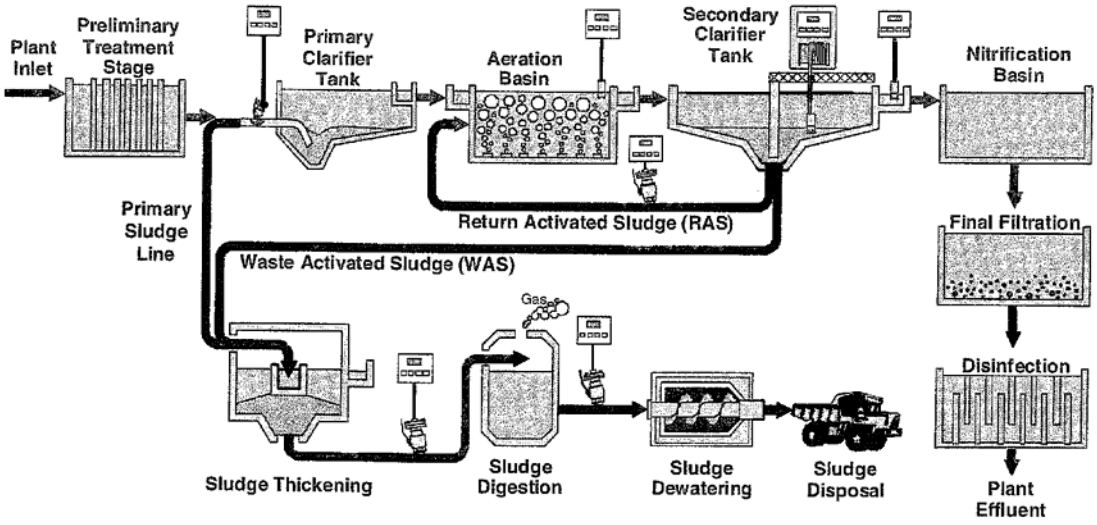
First of all, we are dealing with microorganisms. We are not dealing with the quick fix of chemicals and remember that they destroy biological growth. Microorganisms must take control of the WWTP system and become established. This process takes time. As the microorganisms take control and form a strong biomass in the WWTP system, operators can observe a number of the changes taking place:

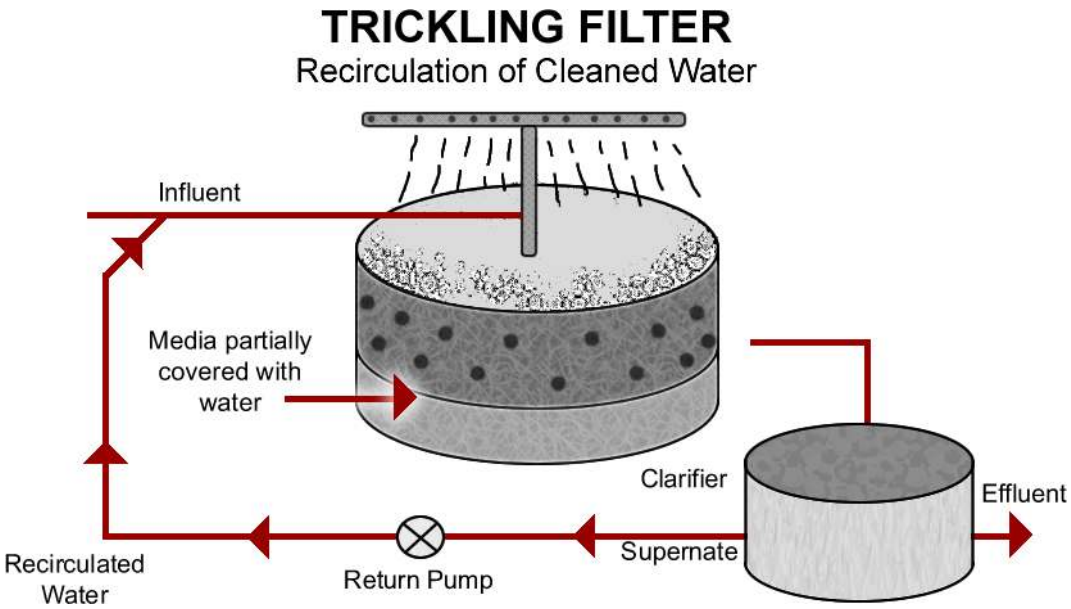
- Settled solids will not go septic and settling will improve in secondary clarifiers.
- Reduced effluent Total Suspended Solids (TSS).
- Faster solids settling on a 30 minute settling test.
- Breakdown of filamentous organisms improving settling and reducing bulking.
- Reduction in offensive odors.
- Reduction in BOD.
- Reduction/elimination of foaming.
- Return Activated Sludge (RAS) and Waste Activated Sludge (WAS) concentrations to improve with improved settling.
- Over time, the dewatering operation will see improvements leading to reduced use of polymers and/or belt press operation.
- Trickling filters, SBR and RBC will have a more effective biomass established within 60 day time frame enabling them to be able to withstand sudden toxic shocks and also assist in keeping trickling filter orifices and end gates clear reducing maintenance and filter fly larvae breeding areas.
- “Lava Lamping” – As the biomass is being established, a cleaning of the system will start with carbon dioxide tying up in the solids, causing the solids to break loose and float to the surface. All of these “lava lamping” solids will breakdown. During this time, there could be a slight increase in turbidity and/or TSS. After this cleansing period, there will be better solids settling.
- MLSS levels may increase after the start of the treatment program as BOD is being converted to biomass in the aeration basin.

Remember using BZT® Waste Digester is not a quick fix but rather an environmentally safe, cost effective long-term solution to wastewater treatment plant problems.

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Wastewater - Illustration - Wastewater Treatment Plant





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Wastewater – Sewage Lift Stations

The most serious concern facing many sewage lift station owners is dealing with the constant accumulation of fats, oils, and greases (FOG) within their systems. FOG's low specific gravity keeps it floating on top of the water. These materials are hydrophobic and sticky, and will cling to any solid object in the flow. This material bulks up in the system, will accumulate floating covers, "caps", reduces the capacity of pipes and tanks, fouls the sensors and plugs the pumps.

The typical method of treatment for large containment facilities is the physical removal of the FOG's, a short-lived, labor intensive, costly, dangerous, and temporary solution.

"Are you looking for an inexpensive, environmentally safe solution? A user-friendly solution?"

United-Tech has perfected a creative, cost-effective all natural bacteria/enzyme treatment program to clean up the FOG accumulation in your system. This program will control/prevent future buildup of FOG's within your lift/wet-well stations.

The treatment program is fast and easy to do, with the added benefit of being an environmentally friendly solution.

The successes of using our biological formula range from as small as restaurant grease traps up to and including large six million gallon [22,710m^3] tanks and complete wastewater treatment plants.

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Wastewater – Urine Scale Formation in Wastewater Systems

The Problem
Urine, human waste, and other organic matter such as kitchen waste, in combination with the minerals in seawater or hard water, cause the gradual build-up of a thick, hard layer on the inside of wastewater pipes. This layer restricts the smooth flow of both liquid and solid wastes, eventually leading to severely restricted flow or blockages.

The problem with urine scale is often multiplied in marine systems that use small flush volumes or in freshwater systems that use very hard water. The urine is either not diluted adequately or readily forms urine crystals with the hard water minerals, thus contributing to faster, more solid build-up. Solid wastes are not completely flushed through drainlines. Blockages occur frequently, often requiring drastic treatment with corrosive and hazardous-to-handle mineral acids, or with expensive physical means.

The Solution
United-Tech, Inc.'s BZT® Waste Digester, an all natural bacteria and enzyme formula, will eliminate or greatly reduce the ability for the waste layer to build-up and cause blockages. Using microbes originally isolated from natural sources and selected for their film-forming and organic digesting abilities, these products form a thin, continuous biofilm that lines the entire wastewater pipe and holding tank system. The highly digestive microbes remain imbedded in the biofilm and actively breakdown the organic wastes. BZT® Waste Digester not only provides these bacteria, but also has:

- Purified enzymes that degrade and break down organic waste.
- Release small quantities of organic acid during their metabolism, which prevents the build-up of mineral waste such as urine stone and limestone scale.
- Provide and release enzymes which break down uric acid, reducing its ability to produce urine stone

The biofilm is self-sealing, resistant to chemicals such as chlorine bleach, and survives temperatures over 200°F [93.3°C].

BZT® Waste Digester is a unique, non-toxic microbial product formulated to prevent the build-up of organic matter, urine stone, and limestone scale in blackwater pipe systems, wastewater drainlines, and holding tanks. Then used as a routine treatment as recommended, it replaces the need to use corrosive and damaging mineral acids or physical means to prevent or open blockages. BZT® Waste Digester is non-corrosive and safe to handle. It is easy to store, easy to handle, and has a 24 month shelf life.

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Wastewater – Hydrogen Sulfide and Foaming

Waste Water Treatment Technical Bulletin

We have received many questions about two issues; one is hydrogen sulfide (H_2S) odors and the second about foaming in wastewater treatment systems.

Hydrogen Sulfide (H_2S)
The microorganisms in BZT® Waste Digester will create oxidation of sulfur compounds reducing hydrogen sulfide (H_2S) odors and will enhance and accelerate the sulfur cycle converting the sulfur compounds into elemental sulfur (S) and water (H_2O).

Foaming
Filamentous bacteria, in particular, the Nocardia species, cause the majority of foaming and sludge bulking in wastewater treatment systems. These bacteria thrive in an environment of excessive gas production and excessive lipids (fats/greases) in a WWTP. The microorganisms in BZT® Waste Digester outcompetes filamentous bacteria for food to use as nutrients and breaks down lipids reducing the filamentous bacteria and the associated foaming thorough natural selection.

These are just two more of the advantages of using BZT® Waste Digester.

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Wastewater – The Treatment Process

Treatment of Wastewater Treatment Plant

1. Fill out complete Facility Data Sheet (found in Section 10 – Application Data Sheets) to obtain all the basic information you need including a plant layout, flow diagram with capacities of all holding tanks, lagoons, etc.

2. Figure seed treatment volume based off "Wastewater Treatment Guidelines". *(Wastewater Treatment – Municipal & Industrial)*. Seed every holding tank, lagoon, etc. in the complete system. Unit by unit.

3. Maintenance rates are figured using the flow rate charts in the "Wastewater Treatment Guidelines". *(Wastewater Treatment – Municipal & Industrial)*. Weekly maintenance rate amounts are best if done on a daily or minimum two-time a week frequency.

4. Refer to "Wastewater Treatment Plants" *(Wastewater – Treatment Plants)*, which describes results to watch for. This is a good bulletin to leave with the wastewater treatment plant operator as it answers a lot of questions.

If you have any questions contact the United-Tech, Inc. Technical Support Department.

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Media Article – Finally an All Natural Drain Treatment That Works!

Finally…

An All Natural Drain That Works !!!

- **Biodegradable – All Natural**
- **Breaks Down Fat, Grease, Hair**
- **Restores Free-Flowing Drains**
- **Prevents Build-Up**
- **Eliminates Odors**
- **End Product is CO_2, and H_2O**
- **Be Easy To Use**
- **2 Year Shelf Life**
- **Available in Liquid or Powder**

For Use In:

- **Drainlines**
- **Grease Traps**
- **Septic Tanks**
- **Lift Stations**
- **Wastewater Lagoons**

UNITED-TECH INC.

Toll Free: 1-888-999-0545 (918-610-5205)
Fax: (918) 610-5225
5460 S. Garnett, Tulsa, OK 74146

"The most effective and Profitable all natural digester that I've seen in my 30 plus years in the business."
Roto-Rooter, Tulsa

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Media Article – New Biotech Product Removes Organic Solids

NEWS RELEASE

For Release: Immediately

NEW BIOTECH PRODUCT REMOVES ORGANIC SOLIDS

A new all-natural biotech product designed to digest and liquefy organic solids while eliminating odors at their source is now on the market.

BZT® Waste Digester is non-toxic, non-corrosive, biodegradable, and eliminates the need for harsh chemical treatments. It is designed for a variety of applications, including drain lines, grease traps, septic tanks, pits, ponds, waste lagoons and cesspools. It is also effective in breaking down animal wastes and eliminating their odors.

The product is made from natural microorganisms that have not been genetically altered. All of its ingredients are FDA-GRAS (Generally Regarded As Safe) or AAFCO listed as safe for plants, animals and humans.

Since it has the highest bacteria and enzyme count in the industry, less product is required to meet assigned tasks.

A patented microencapsulation process enables stabilization of the bacteria for a minimum of two years and a money-back guarantee of satisfaction is offered on initial applications.

For more information, contact Bio-Form L.L.C., 5460 South Garnett, Tulsa, OK 74146 or call (918) 610-5205.

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Application Parameters

All Bacteria, whether indigenous or commercially prepared, require certain basic nutritional needs and environmental conditions to grow, just as we as human beings have basic nutritional and environmental requirements. These conditions in turn dictate the efficiency of degrading the targeted substance and dosage rates.

The following physical and chemical parameters have been proven best for accelerated growth:

DISSOLVED OXYGEN (DO): DO levels of at least 2 mg/l are required. If an aeration system is used this will normally fulfill this requirement. United-Tech, Inc. formulas contain facultative bacterial strains that will function with or without oxygen but will metabolize or biodegrade the targeted substance 5 to 7 times faster in the presence of oxygen.

pH LEVELS: A range of 6 to 9 are the minimum and maximum levels. Optimum growth will occur from 6.6 to 7.4.

TEMPERATURE: A range of 50ºF [10ºC] to 140ºF [60ºC] are the limiting ranges with 70ºF [21ºC] to 90ºF [32ºC] the optimum. Temperatures above 140ºF [60ºC] will cause cell death. Below 50ºF [10ºC] cell growth will slow and stop but this will not kill the cells.

NITROGEN: United-Tech's cultures require at least 5ppm nitrogen (approximately 50 pounds per acre foot[22.7kg/1,234m^3]) for growth. Doubling time will be most effective at a nitrogen content of about 20 ppm.

SALINITY: United-Tech's cultures have been proven effective in both marine and fresh water.

TOXIC SHOCK: United-Tech microorganisms have proven to be quite resistant to toxic chemical shocks including sudden influxes of petroleum hydrocarbons, chlorinated compounds, cyanides, and heavy metals. When chemicals of known bactericidal activity are present in a contaminate contact United-Tech before treatment.

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All of the above listed requirements can be tested for using very inexpensive test kits. Your United-Tech, Inc. representative can provide you with information on purchasing these kits.

Specific areas to check for within different matrixes:

SOIL:	Temperature, pH, nitrogen, till soil for aeration, toxic chemical contaminates, moisture (damp sponge wet).
WATER:	Temperature, pH, dissolved oxygen (DO), bactericidal components or heavy metals.

These parameters are basic needs and must be monitored and met to have a successful treatment program. If you have any questions, don't hesitate to call your United-Tech, Inc. representative or the company direct.

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7.2 Application Instructions - BZT® Waste Digester

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Commercial (Non-Restaurant)

Homes, Hotels/Motels, Apartments and Office Complexes

Initial Treatment: Apply BZT® Waste Digester to each drain the first day. If a specific drain remains sluggish, extend treatment a few more days before going to maintenance schedule.

Floor Drains - Apply one level tablespoon [15g] mixed with 1 pint [.5L] of water for each inch [2.54cm] of pipe diameter.

Example: 4" [10cm] diameter pipe = 4 tablespoons [60g] = 4 pints [2L] of water
2" [5cm] diameter pipe = 2 tablespoons [30g] = 2 pints [1L] of water

All Other Drains – 1 level tablespoon [15g] per 1 pint [.5L] of warm water per drain

Lukewarm water is most desirable - never hot water.

Maintenance Treatment

COMMERCIAL MAINTENANCE CHART
(Without Grease Traps)

Mix proper amount of BZT® Waste Digester in one 8 oz. [250ml] glass of warm water before applying	
Drain Type	**Amount of BZT® Waste Digester**
Bath & Shower	1 Tbl. per month [15g]
Kitchen Sink	1 Tbl. per month [15g]
Lavatory	1 Tbl. per month [15g]
Toilet	1 Tbl. into bowl per month [15g]
Laundry	1 Tbl. per month [15g]
Floor Drains	1 Tbl. per month [15g] (per drain)

Tbl. = Tablespoon (15ml)

Special Circumstances

- **For High Rise Buildings that have accessible roof vents**, determine the amount, divide the number of floors by 4. This number times the vent pipe diameter equals the number of tablespoons for the initial treatment. Use one quart [1L] water per tablespoon [15g] unless problem is in main sewer away from building; then double or triple water.
- **If a drain is not flowing**, cable drain first. If it cannot be cabled then add 1 tablespoon [15g] mixed with a pint [.5L] of water each day until the bacteria eat through the stoppage. This process can take several days or longer depending upon the blockage.

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- **Building on septic system**, follow directions in *"Septic Tanks/Cesspools"* first. Then start with building treatment.
- **For buildings on a septic system having garbage disposal, dishwasher, or clothes washer**, one tablespoon [15g] of BZT® Waste Digester mixed with 8 oz. [250ml] warm water should be added each week to each of these drains.
- **Very hard water causes slime in toilet tanks.** Add ½ tablespoon [8g] to bowl as needed to eliminate slime. Do not flush for several hours.
- **Garbage Disposal Odors:** Mix 1 tablespoon [15g] BZT® Waste Digester with 1 pint [.5L] water. Turn on disposal. Dump mixture in, and quickly turn off disposal. Do not use for several hours. Repeat as needed.
- **Hair Clogged Drains:** Hair digests very slowly, and sometimes builds up great quantities in the drains of bathtubs and lavatories. Severe build up in these drains may require daily treatment for up to two weeks, unless the bulk of the blockage is first removed manually. Once removed manually or with extended treatment, regular maintenance applications will keep these materials from forming. If extended treatment or use of mechanical aid does not restore full flow, you almost certainly have some other obstruction that is an inorganic solid (toy, glass, toothbrush or bobby pins) in the trap or line, which will have to be removed manually.
- **Roots:** Although BZT® Waste Digester will not attack live tissue, its use will discourage root growth by eliminating waste buildup (their food). If roots are known to exist within the sewer pipes, enough root killer for the length of line should be used before trees start new growth in spring. Allow one week before re-starting the use of BZT® Waste Digester.

Multiple Drain Applications

Where there are multiple drains to be treated or multiple application areas for BZT® Waste Digester, the use of a 1 to 2 gallon [3.79-7.6L] pump type sprayer to mix a quantity of BZT® Waste Digester solution makes the application faster and easier.

- **Calibrate the sprayer:** Fill the sprayer with water. Spray water into a measuring cup that has eight (8) ounce [250ml] graduations on it. Time how long it takes in seconds to fill the measuring cup to the eight (8) ounce [250ml] level. This will be the length of time you spray the BZT® Waste Digester mix into each drain, shower, sink, etc.

- To each gallon [3.79L] of warm water you put into the sprayer, add eight (8) ounces [227g] of BZT® Waste Digester and stir or shake to mix.

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- Go to each drain location and spray the BZT® Waste Digester mix into the drain for the same amount of time it took to fill the eight (8) ounce [250ml] measuring cup. This procedure will give you eight (8) ounces [250ml] of mix (1 tablespoon) [15g] of BZT® Waste Digester per drain or location.

- During application, shake the sprayer regularly to ensure a good product water mix.

- Do not mix up more BZT® Waste Digester than you will use in two (2) hours.

- When complete, clean the sprayer out with fresh, clean water.

Each gallon [3.79L] of mix will give you sixteen (16) eight (8) ounce [15 of 250ml] applications (1 tablespoon [15g] BZT® Waste Digester to 8 oz. [250ml] of water).

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Commercial – Manufacturing, Restaurants and Hospitals

Initial Treatment
Treat each drain the first day. If a specific drain remains sluggish, extend treatments a few more days before going to maintenance schedule.

Floor Drains and Mop Sinks - Apply one (1) level tablespoon [15g] mixed with one (1) pint [.5L] of water for each inch [2.54cm] of pipe diameter. (4"[10cm] = 4 tablespoons [60g], 2"[5cm] = 2 tablespoons [30g], etc.).

All other drains: 1 level tablespoon [15g] each. Follow dosage with water or mix with water at the rate of 1 pint [.5L] of water per tablespoon [15g] used. *Lukewarm water is most desirable - **never hot**.*

Maintenance Treatment

Commercial Maintenance Chart
Restaurants or where Grease Traps are used

Every Other Day Treatments **Mix proper amount of BZT® with 8 oz. [250ml] of warm water before applying**		**Weekly Treatments** **Mix proper amount of BZT® with 8 oz. [250ml] of warm water before applying**	
Garbage Disposal	1 Tbl. [15g]	**Urinals**	2 Tbl.[30g] per week or ½ Tbl.[8g] per day
Dishwasher	1 Tbl. [15g]	**Toilet**	1 Tbl. per week [15g]
Kitchen Sink	½ Tbl. [8g]	**Bar Drain**	1 Tbl. per week [15g]
Cooker Drain	1 Tbl. [15g]	**Cold Drink Dispenser**	1 Tbl. per week [15g]
Mop Sink	½ Tbl. [8g]	**Waitress Station**	1 Tbl. per week [15g]
Pot & Pan Sink	1 Tbl. [15g]	**Tub or Shower**	1 Tbl. per week [15g]
High Use Floor Drain	1 Tbl. [15g]	**Floor Drains**	1 Tbl. per week [15g]

- Floor drains in kitchens that are mopped instead of hosed down should be flushed with two gallons [7.58L] of water prior to treatment.
- Drain pipe maintenance should be performed weekly for all drains that go to the grease trap.

Special Circumstances

- **24 hour operation**: BZT® must be applied wet. Choose 3 + hours when dishwasher, sinks, etc. do not have to be used or are at the lowest flow rate. Mix required amounts of BZT® and warm water, stir thoroughly and pour into drains.
- **Grease Traps** - Follow instructions in *"Grease Traps"*.

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- **Septic System** - First, treat tank according to *"Septic Tanks/Cesspools"*, then start initial treatment in building.
- **Urinals** - Initial treatment is the same as sink drains. Do not use chemicals or tablets while using BZT®. To eliminate odor from ceramic or concrete area around urinals, mix BZT® and lukewarm water (1 tablespoon [15g] to 1 pint [250ml] water). Wet down affected area 5 to 10 minutes ahead of application time. Pour mixture on affected area and do not squeegee off or mop up. Repeat as necessary for control.

Trench Drains

For treatment of 500 ft [152.5m] of typical 2' x 2' drain [.61m x .61m drain]

Initial Treatment: - Mix two pounds [908g] of BZT® with eight gallons [30.3L] of warm water. Pour the mixture into
the drains at the various high points of the trench drain. This will ensure even coverage throughout the drain system. Apply this twice, three days apart.

Maintenance Treatment: - Mix one pound [454g] of BZT® with four gallons [15.2L] of warm water and distribute throughout the system weekly.

X-Ray Fluid

Drain Treatment: - See *"Floor Drains and Mop Sinks"* above.
Double the floor drain application rate for X-ray fluid drains.

Sump Treatment: - See *"Grease Traps"* Treatment Schedule.
Treatments should be based upon volume of sump.

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Grease Traps

Initial Treatment
All grease traps must have initial treatment of BZT® directly into trap. It is most desirable to clean the trap and apply BZT® when no new waste water will be coming into the trap for several hours.

a. First determine the size of the trap and the amount of BZT® required. Mix with warm (not hot) water and let stand while cleaning trap.
b. For best results grease **and liquid** should be removed.
c. Pour mixture into cleaned trap. Fill trap to normal level with warm water and replace lid.

Note: If crust is present, punch a hole in it and pour BZT® into grease trap.

Trap Size		Amount BZT®	Amount Water
up to 20 gal.	[75L]	4 oz. [114g]	1 quart [945ml]
20 - 40 gal.	[75L-151L]	6 oz. [171g]	1 quart [945ml]
40 - 100 gal.	[151L-379L]	8 oz. [227g]	1 gallon [3.79L]
100 - 500 gal	[.379m³-1.9m³]	16 oz. [454g]	2 gallons [7.58L]
500 - 1,000 gal.	[1.9m³-3.79m³]	20 oz. [568g]	2 gallons [7.58L]

Note:
For each additional 500 gallons [1895L or 1.9m³] of trap capacity add an additional 4 oz. [114g] of BZT® Waste Digester with ½ gallon [1.9L] of water.

The initial application is the only time it is necessary to add BZT® Waste Digester directly to the trap. After the initial application, weekly maintenance applications are needed to maintain the viable strains of microbes active within the trap. The maintenance applications can be accomplished by adding directly to all openings/drain lines discharging into the grease trap.

Important

- A grease trap is close to a dishwasher that uses preheated rinse must be allowed time to cool or be flushed with cold water before applying BZT®. Temperatures over 140 degrees F [60ºC]. destroy some microorganisms.
- If grease traps are connected to septic systems, it is doubly important that BZT® is used on a regular maintenance schedule to prevent grease from stopping percolation in the absorption field.

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- Visible evidence of results may take a few days depending on build-up.

Maintenance Treatment

- It will not be necessary to re-apply BZT® directly into trap if adequate amounts are regularly applied to drains going into the trap.
- See Commercial Maintenance Schedule

Exceptions

- Do not drain juice from pickles into drains that go into grease traps. Pickle juice will result in an acid concentration that kills bacteria.
- If straws, plastic pieces or other inorganic items build up in trap and make removal of contents necessary, then re-apply initial amount in the same manner to re-start.

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Septic Tanks/Cesspools

Initial Treatment

- Apply one initial treatment of BZT® which is 8 oz. [227g] for each 1,500 gallons [5685L or 5.7m³].
- Initial treatment should be mixed with lukewarm water.
- **Ratio:** 8 oz.[227g] with ½ gallon [1.9L] water. Mix up the mixture and pour directly into tank or cesspool, or into drain or drains going into tank.

Maintenance Treatment

- After initial treatment of tank, re-application will not be necessary **provided the building drains are given initial treatments and followed by periodical maintenance treatments.**
- See Home Maintenance Chart

If Tank Has Quit Working

- If septic tank or cesspool has backed up into sanitary lines, determine if there is a build up restricting flow at the front baffle in the tank, or if the tank is full of solids. If the tank is full of solids, have it pumped before treating.

- If the cap (solids on the top of the waste in the septic tank) is gray in color or has a hard crust approximately 12 inches [30.5cm] thick, the septic tank or cesspool should be pumped before starting to use BZT®. If there is a thin crust, break up thoroughly and slosh initial treatment over the top.

- If the sludge or ash buildup at the bottom of the septic tank is twelve inches [30.5cm] or more in thickness, the septic tank or cesspool should be pumped before starting to use BZT® (Ash is the remains of completed biological digestion of the wastes that have gone through the septic tank, or inorganic material precipitated from the organic wastes. This buildup will accumulate at the rate of about one inch [2.54cm] per year for an average home with a properly sized tank.)

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Drain Field Restoration
(Water standing in the leachate field)

- If there are distribution boxes, the absorption field can be restored faster if you pre-mix 3 lbs. [1.36kg] of BZT® in 5 gallons [19L] of water and poured into each distribution box.

- For water standing in the leachate field, mix 8 ounces [227g] of BZT® with two gallons [7.58L] of water for every 100 linear feet [30.5m] of standing water or saturated ground above the leachate field. Pour the mixture into a field pump sprayer and spray directly onto the standing water evenly along the leachate field. This treatment will increase the porosity and absorption capability of the field and reduce the associated odors. Be sure to also treat the distribution boxes as outlined above.

Special Note

- Cesspools require twice the normal septic tank maintenance amount.
- Absorption fields that have water coming to the surface may require 2 weeks to 1 month of treatment to fully restore percolation.
- Biodegradable cleaners and washing compounds, particularly organic cleaners, are highly desirable with either septic or cesspool.
- Conservative and occasional use of bowl cleaners & bleaches is compatible.
- Your system depends upon bacteria. If you kill them with chemicals the action stops and trouble results.

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Animal Wastes and Odor Control

Cat Litter and Animal Boxes
After putting new litter in cat box, lightly cover entire surface area with dry BZT®. The BZT® will be worked into the litter by the natural actions of the cat and will be activated by the natural addition of moisture.

Calf Huts
Sprinkle 6 tablespoons [85.7g] of BZT® over bedding to eliminate odor. Repeat as odor recurs.

Poultry
Mix four (4) ounces [114g] of BZT® in one gallon [3.79L] of warm water. Spray evenly over the area to be treated at the rate of one gallon [3.79L] of solution for every 400 square feet [37.2m²]

Hog/Swine, Feed Lots, Cattle & Horse Barns, Dog Runs, Animal Cages
Mix four (4) ounces [114g] of BZT® in two (2) gallons [7.6L] of warm water. Spray evenly over the area to be treated at the rate of one gallon [3.79L] of solution for every 500 square feet [46.5m²]

To remove odors from concrete runs, mix 4 oz. [114g] BZT® with 1 gallon [3.79L] of warm water for each 500 sq. ft. [46.5m²] of floor area. Plan ahead so that hosing down has just been completed before application time. Pour mixture with sprinkling can or pump sprayer over wet affected area. Do not squeegee. Let floor dry naturally.

When odors start to reappear, repeat process outlined above.

Trash Receptacles
For odor control on an average sized dumpster, mix four (4) ounces [114g] of BZT® with one gallon [3.79L] of warm water, spray the mixture into or on the receptacle and let dry.

For Best Results

- Distribute uniformly.
- Don't under treat.
- Mix BZT® with warm water.
- Follow these directions carefully for best performance.
- **AT TEMPERATURES UNDER 50ºF [10ºC], DOUBLE THESE DOSES.**

Conditions vary from location to location and from state to state. The operation should experiment with the smallest dose that will bring the desired results.

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Motor Homes, RV's, Boats, Outhouses, Pit Toilets & Porta-Potties

Motor Homes, Boats
Mix three (3) ounces [85.1g] into one (1) pint [.5L] of warm water and pour it into the toilet and flush, or pour it directly into the holding tank. Fill balance of tank with water, and let stand for two (2) days. Drain tank and flush out with water (until the water runs clear). This will clean the tank.

When toilet is used again, add two (2) tablespoons [30g] of BZT® in one (1) cup [250ml] of warm water to toilet and flush. This will reactivate the digestion of the tank. This should be sufficient until the toilet facilities are emptied.

Note: If odor happens to reoccur before dumping, add an additional two (2) tablespoons [30g] of BZT® mixed in one (1) cup [250ml] of warm water to the tank.

Outhouses

Initial Treatment
Mix 8 ounces [227g] of BZT® with 2 gallons [7.58L] of water to form a slurry which may be distributed over the mass of waste material with a sprinkling can or sprayer set for coarse spray. Since the microorganisms must have moisture to work, waste should be kept wet by spraying periodically with clean water after the application of BZT®.

Maintenance Treatment
Following initial application, thoroughly mix 2 ounces [57g] of BZT® in one gallon [3.79L] of water and distribute over waste material once a month. This treatment will promote the biological reduction of the solid waste and will provide effective odor control.

Pit Toilets

Initial Treatment
Mix 8 ounces [227g] of BZT® with 2 gallons [7.58L] of water to form a slurry which may be distributed over the mass of waste material with a sprinkling can or sprayer set for coarse spray. This will apply for pits up to 1,500 gallons [5685L or 5.7m^3]

Maintenance Treatment
Following initial application, thoroughly mix 4 ounces [114g] of BZT® in ½ gallon [1.9L] of water and distribute over waste material weekly or bi-

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monthly. The timing on applications is solely dependent upon frequency of usage and volume of solids buildup. This treatment will promote the biological reduction of the solid waste and will provide effective odor control.

Porta-Potties & Portable Toilets

Setup

Mix ¼ cup [56.7g] of BZT® with 1 pint [.5L] of warm water when toilet is first used. This will reduce odors and provide a more pleasant facility to use.

If odor is noticed before the toilet is emptied, an additional 2 tablespoons [30g] of BZT® mixed in 1 (one) cup [250ml] of warm water will be sufficient.

Pleasure Boat Bilges

Note: *BZT® will work in both fresh and salt-water environments.*

The capacity and the volumes to be treated are related and will determine the amount of BZT®. We recommend that you consider the amount of oil, grease, and/or fuel to be treated and then use this amount to determine a starting point for your program.

For General Application

Use ½ oz.[14.2g] of BZT® for each gallon [3.79L] of bilge water. If the treatment is working the water will become milky colored. If the milky color does not appear, add more BZT®.

For commercial boating, contact a United-Tech, Inc. Technical Representative for a treatment program.

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Linens, Carpet and Upholstery Stain & Odor Removal

Carpet & Upholstery Treatment Steps

- Blot up or remove as much of the solids or liquids as possible and vacuum thoroughly.
- Test a small hidden portion of the fiber to determine the effect of BZT® solution on dyes and fiber.
- Mix four (4) ounces [114g] of BZT® Waste Digester with one (1) quart [1L] of warm water.
- Wet the stained area with the BZT® mixture. Completely penetrate the fibers by spraying or pouring.
- Cover the stained area with a warm, moist towel to accelerate the performance of BZT® Waste Digester.
- Allow the application to stand for one (1) to two (2) hours.
- After two (2) hours, blot area thoroughly using a clean white terry cloth towel or absorbent white blotting material. Always use white towel and white materials when working with stains. Continue shifting to clean dry areas of towel while applying downward pressure.
- Sponge rinse the area with clean water and extract all residue.
- Dry the spot. Use an absorbent towel, hair dryer, fan, or open a window to allow air circulation.
- If stains persist, repeat cleaning steps.

Notice
Wicking! Wicking of a stain is one of the most common mystery stains. After removing a spot, the carpet surface may dry faster than the wet pad underneath it, causing the spot to reappear.

Solution
Re-apply and thoroughly blot the area using body weight. Then quickly fan dry the area. You may have to repeat this procedure to remove the stain from the underlying pad.

Bedding, Clothes, Washable Items Treatment Steps

- Manually scrape or rub off as much of the dried solids from the stained area.
- **Pre-Treat** - Rinse the stained area, apply a paste of BZT® Waste Digester and warm water, rub gently and wash as usual.
- **Pre-Soak** - First check for colorfastness (see test below). If garment passes the test, soak for one hour using four (4) ounces [114.28g] of BZT® Waste Digester per gallon [3.79L] of warm water in a bucket or

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washing machine on the pre-soak cycle. Use warmest water as recommended on garment care label. Drain the washing machine and wash as usual.

- **Colorfastness Test:** Dip a hidden corner of fabric in BZT® Waste Digester and warm water mix. Rinse and let dry. Proceed if color is unchanged.

Common stain removal:
Code:

1 - Rinse in cold water **2 - Pre-Treat** **3 - Pre-Soak**

After using treatment 1, 2 or 3 above wash as usual.

Blood.....1,3	Grass stains.....3
Car grease 3	Greasy food stains.....2
Chocolate.....2	Ink.....3
Coffee, Tea 3	Ketchup, tomato sauce 2
Cosmetics, lipstick 1,2	Medicines 3
Feces, Vomit, Urine 3	Milk, baby formula.....3
Food coloring 3	Mud.....2

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Floor Cleanup – Oil & Grease Removal

Usage Rates

For lightly soiled floors: Mix eight (8) ounces [227g] of BZT® Waste Digester and four (4) ounces [114g] of BZT® Xtra-Wet in four (4) gallons [15.2L] of warm water to treat 1,000 sq. ft. [92.9 m^2] of floor area.

For heavier soiled floors or first application: Use sixteen (16) ounces [454g] of BZT® Waste Digester and four (4) ounces [114g] of BZT® Xtra-Wet in four (4) gallons [15.2L] of warm water to treat 1,000 sq. ft. [92.9 m^2] of floor area.

Mixing BZT® Xtra-Wet with BZT® Waste Digester allows maximum floor clean-up.

Application Instructions

1. Power Floor Scrubber Application
   - Using stiff bristle brushes – Pour BZT® Waste Digester and water solution into the power scrubber reservoir tank.
   - Turn off vac and raise squeegee for this application.
   - Apply BZT® Waste Digester solution to the desired area, using the power scrubber
2. Hand Application
   - Pre-mix BZT® Waste Digester and water solution in separate pail and pour into a hand pump sprayer.
   - Wet the area well with the BZT solution and agitate the sprayer to ensure proper mixing and eliminate settling.
   - Brush in with stiff bristle brush (street broom).
3. Every fifteen (15) minutes agitate the mixture on the floor surface with either the power floor scrubber or a stiff bristle brush.
4. Area should be kept wet during the entire treatment time using the BZT® Waste Digester and water mixture. **Do not let area dry out**.
5. After one (1) hour, pick up solution on floor using the power floor scrubber with vacuum on, or a wet/dry vacuum, or rinse off with a water hose.
6. It may be necessary to reapply BZT® Waste Digester a second time or the next day for the initial treatment of heavily soiled floors.
   Note: For heavily soiled floors, more than one application may be necessary.
7. Let the floor air-dry.
8. After the floor is dry, mop with clear water or a water-soluble degreaser and water mix.

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Cautions

- Store BZT® Waste Digester in a cool, dry location. Do not open until ready to use.
- Do not mix more BZT® Waste Digester than will be used in a 4 hour period.
- Mix BZT® Waste Digester with warm, **NOT HOT**, water.
- The temperature of the treatment area has to be above 50º F [10ºC]. Temperatures above 65º F [18.3ºC] are best.

Note: On very lightly soiled areas, BZT® Xtra-Wet alone may work. Mix BZT® Xtra-Wet at the rate of one (1) oz. [30g] of BZT® Xtra-Wet per gallon [3.79L] of water.

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Manure Systems, Pits, Lagoons, Tanks and Slurrystore

It requires a lot less BZT® to start the treatment when the system has been emptied. After initial treatment, the system is treated weekly to guarantee maximum activity and effectiveness. Mix BZT® one (1) pound [454g] to one (1) gallon [3.79L] of warm water, and distribute evenly in the system. Never under treat, as activity will be slowed down or stop.

Freshly Pumped Manure System

- When emptying allow approximately 4" - 6" [10cm -15cm] of liquid to remain in the system. Make sure the crust is gone or increase the application rate by 10% to compensate for the crust.
- Start application with five (5) pounds [2.26kg] of BZT® mixed with five (5) gallons [19L] of warm water and distribute mixture evenly over the entire area of the lagoon or pit. If possible, agitate the system to ensure a good distribution of the treatment.
- Weekly treatment is two (2) pounds [908g] of BZT® for up to the initial 200,000 gallons [757m³] plus one-half (½) pound [227g] for every added 100,000 gallons [379m³] of waste. Mix BZT® one (1) pound [454g] to one (1) gallon [3.79L] of warm water or five (5) pounds [2.27kg] to five (5) gallons [19L] of water, etc. and distribute evenly throughout the system. Don't dump it all in just one or two places. To keep your system active, you must treat for the total amount of waste in the system each week. Maintenance treatment should be doubled if feed, hay, bedding materials or detergents and disinfectants enter the system.
- Continue an agitation program, as oxygen is important for maximum microbial activity.

Manure System With Waste In It Or Problems

To treat a system prior to emptying or to eliminate problems such as surface crust, odor, or solid accumulation. It is necessary to increase the application rates to take control of the system, which will take approximately 4 to 8 weeks.

- The surface should be open to air. If a crust has formed, punch holes every 8 - 10 feet [2.4m – 3m] around the perimeter. A larger diameter (3" [7.62cm] or more) PVC or metal pipe will work for this job.
- Insure there is oxygen present in the system, agitation is the best and easiest method to accomplish this.
- Initial treatment is twenty-five (25) pounds [11.3kg] for up to the first 200,000 gallons [757m³] and ten (10) pounds [4.54kg] for each additional 100,000 gallons [379m³]. Distribute evenly to get equal coverage throughout the system.

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- Weekly, add three (3) pounds [1.36kg] of BZT® for every 100,000 gallons [379m³] in storage until the problem is corrected. Then go to the lower maintenance levels.

Routine Applications Empty System		
	(Lb) [grams] BZT®	**(Gallons [Liters] Water)**
Total Volume In System		
up to 200,000 gal. [757m³]	2 [908g]	2 [7.6L]
up to 300,000 gal. [1,136m³]	2.5 [1.1kg]	2.5 [9.5L]
up to 400,000 gal. [1,514m³]	3 [1.4kg]	3 [11.4L]
up to 500,000 gal. [1,893m³]	3.5 [1.6kg]	3.5 [13.3L]
up to 600,000 gal. [2,271m³]	4 [1.8kg]	4 [15.2L]
For each additional 100,000 gal. [379m³] add 0.5 lb. [227g] BZT® in 0.5 gal [1.9L] water.		

Systems Containing Waste/Problem 1st Week Applications		
	(Lb) [kilograms] BZT®	**(Gallons [Liters] Water)**
Total Volume In System		
up to 200,000 gal. [757m³]	25 [11.33kg]	25 [94.75L]
up to 300,000 gal. [1,136m³]	35 [15.87kg]	35 [132.7L]
up to 400,000 gal. [1,514m³]	45 [20.41kg]	45 [170.6L]
up to 500,000 gal. [1,893m³]	55 [24.95kg]	55 [208.5L]
up to 600,000 gal. [2,271m³]	65 [29.48kg]	65 [246.5L]
For each additional 100,000 gal. [379m³] add 10 lbs [4.54kg] BZT® in 10 gallons [37.9L] of warm water. Return to routine rates when problems are corrected or system is emptied.		

Systems Containing Waste/Problem After 1st Week Applications		
	(Lb) [kilograms] BZT®	**(Gallons [Liters] Water)**
Total Volume In System		
up to 200,000 gal. [757m³]	6 [2.72kg]	6 [22.75L]
up to 300,000 gal. [1,136m³]	9 [4.1kg]	9 [34.2L]
up to 400,000 gal. [1,514m³]	12 [5.5kg]	12 [45.5L]
up to 500,000 gal. [1,893m³]	15 [6.8kg]	15 [57L]
up to 600,000 gal. [2,271m³]	18 [8.2kg]	18 [68.2L]
For each additional 100,000 gal. [379m³] add 3 lbs [1.36kg] BZT® in 3 gallons [11.4L] of warm water. Return to routine rates when problems are corrected or system is emptied.		

For Best Results:

- Distribute uniformly.
- Treat total volume weekly.
- Agitate system frequently.
- Don't under treat.
- If crust has formed, punch holes in crust perimeter.

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- Mix BZT® with warm water.
- Double application rates when adding high amounts of solids to system (hay, bedding, detergent, or disinfectants).
- Follow these directions carefully for best performance.
- **AT TEMPERATURES UNDER 50ºF [10ºC], DOUBLE THESE DOSES.**

Conditions vary from location to location and from state to state. The operation should experiment with the smallest dose that will bring the desired results.

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Wastewater Treatment – Municipal & Industrial

Setup Rates
Where the specific treatment involves the "holding" reservoir or tank, the system should be "seed" treated to correspond to the holding capacity. Calculate amounts per below table:

Lagoon: 10 lb.[4.54kg] for 1st 100,000 gallons [379m³]
3 lb.[1.36kg] / 100,000 [379m³] over that

Holding Tank: 15 lb.[6.8kg] for 1st 100,000 gallons [379m³]
4 lb.[1.8kg] / 100,000 [379m³]over that

Maintenance Rates
After seeding the weekly maintenance dose should then be based on the daily flow rate:

LIFT STATIONS: The below amounts are subject to grease build up on floats, valves, switches; surface scum accumulation; and odors

MAIN SYSTEM – Heavy Flow Rates

Flow (MGD & CMD)		Weekly Dose (lb.&kg) BZT®	
< 0.5	[1,895m³]	5.0	[2.27kg]
0.5 – 2	[1,895m³ – 7,580m³]	7.5	[3.4kg]
2 – 5	[7,580m³ – 18,950m³]	10.0	[4.54kg]
5 – 10	[18,950m³ – 37,900m³]	15.0	[6.8kg]
> 10	[>37,900m³]	15 / 10 Million	[6.8kg/37,900m³]

BRANCH SYSTEM – Normally Smaller Flow Rates

Flow (MGD & CMD)		Weekly Dose (lb.& g) BZT®	
< 0.1	[379m³]	2.0	[908g]
0.1 – 0.2	[379m³ – 758m³]	3.0	[1.36kg]
0.2 – 0.5	[758m³ – 1,895m³]	4.0	[1.8kg]
0.5 – 1.0	[1,895m³ – 3,790m³]	5.0	[2.27kg]
> 1.0	[>3,790m³]	5.0 / Million	[2.27kg/3,790m³]

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SCUM PITS: - Subject To Scum Solidification and Line Blockages.

Solids (lb. & kg)		Weekly Dose (lb. & g) BZT®	
Up to 1,000	[454kg]	1.0	[454g]
1,000 – 2,000	[454kg – 908kg]	1.5	[681g]
2,000 – 5,000	[908kg – 2,270kg]	2.0	[908g]
5,000 – 10,000	[2,270kg – 4,540kg]	2.5	[1135g]
> 10,000	[>4,540kg]	2.0 / 5,000 lb.	[908g/2,270kg]

EQUALIZATION TANKS: - Subject To Scum Accumulation; Non-Settling Solids; Odors.

Flow (MGD & CMD)		Weekly Dose (lb. & kg) BZT®	
Up to 0.5	[1,895m³]	5.0	[2.27kg]
0.5 – 2	[1,895m³ – 7,580m³]	7.5	[3.4kg]
2 – 5	[7,580m³ – 18,950m³]	10.0	[4.54kg]
5 – 10	[18,950m³ – 37,900m³]	15.0	[6.8kg]
> 10	[37,900m³]	15 / 10 Million	[6.8kg/37,900m³]

IMHOFF TANKS: - Subject To Scum Accumulation; Non-Settling Solids, Turbidity, Odors, Excessive BOD Effluent. Spread Evenly Over Top And Agitate Mass By Water Pressure Or Paddle.

For Gas Vent Compartment:

Solids (lb. & g)		Weekly Dose (lb. & g) BZT®	
Up to 1,000	[454kg]	1.0	[454g]
1,000 – 2,000	[454kg – 908kg]	1.5	[681g]
2,000 – 5,000	[908kg – 2270kg]	2.0	[908g]
5,000 – 10,000	[2270kg – 4540kg]	2.5	[1135g]

For Settling Compartment:

Flow (MGD & CMD)		Weekly Dose (lb. & g) BZT®	
< 0.1	[< 379m³]	2.0	[908g]
0.1 – 0.2	[379m³ – 758m³]	3.0	[1.36kg]
0.2 – 0.5	[758m³ – 1,895m³]	4.0	[1.8kg]
0.5 – 1.0	[1,895m³ – 3,790m³]	5.0	[2.27kg]
> 1.0	[> 3,790m³]	5.0 / Million	[2.27kg/3,790m³]

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PRIMARY CLARIFIERS: - Subject To Scum Accumulation; Non-Settling Solids, Turbidity, Odors.

Flow (MGD & CMD)		Weekly Dose (lb. & kg) BZT®	
Up to 0.5	[1,895m^3]	5.0	[2.27kg]
0.5 – 2	[1,895m^3 – 7,580m^3]	7.5	[3.4kg]
2 – 5	[7,580m^3 –18,950m^3]	10.0	[4.54kg]
5 – 10	[18,950m^3 – 37,900m^3]	15.0	[6.81kg]
> 10	[> 37,900m^3]	15 / 10 Million	[6.81kg/37,900m^3]

AERATION, SBR'S, OXIDATION TANKS: - Subject To Excessive BOD, Suspended Solids, Foaming.

Flow (MGD & CMD)		Weekly Dose (lb. & g) BZT®	
< 0.1	[< 379m^3]	2.0	[908g]
0.1 – 0.2	[379m^3 – 758m^3]	3.0	[1.36kg]
0.2 – 0.5	[758m^3 – 1,895m^3]	4.0	[1.8kg]
0.5 – 1.0	[1,895m^3 – 3,790m^3]	5.0	[2.27kg]
> 1.0	[> 3,790m^3]	5.0 / Million	[2.27kg/3,790m^3]

TRICKLING FILTERS: - Subject To Excessive BOD and Suspended Solids; Restricted Flow, Ponding.

Flow (MGD & CMD)		Weekly Dose (lb. & g) BZT®	
< 0.1	[< 379m^3]	2.0	[908g]
0.1 – 0.2	[379m^3 – 758m^3]	3.0	[1.36kg]
0.2 – 0.5	[758m^3 – 1,895m^3]	4.0	[1.8kg]
0.5 – 1.0	[1,895m^3 – 3,790m^3]	5.0	[2.27kg]
> 1.0	[> 3,790m^3]	5.0 / Million	[2.27kg/3,790m^3]

ROTATING BIOLOGICAL CONTACTORS (RBC'S): - Subject To Slow BOD and Suspended Solids Removal; Slow Growth, Sluggish Oxidation.

Flow (MGD & CMD)		Weekly Dose (lb. & g) BZT®	
< 0.1	[< 379m^3]	2.0	[908g]
0.1 – 0.2	[379m^3 – 758m^3]	3.0	[1.36kg]
0.2 – 0.5	[758m^3 – 1,895m^3]	4.0	[1.8kg]
0.5 – 1.0	[1,895m^3 – 3,790m^3]	5.0	[2.27kg]
>1.0	[> 3,790m^3]	5.0 / Million	[2.27kg/3,790m^3]

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LAGOONS (aerobic and static): - Subject To Scum Accumulation; Non-Settling Solids, Turbidity, Odors, Excessive BOD Effluent.

Flow (MGD & CMD)		Weekly Dose (lb. & kg) BZT®			
		AEROBIC		**STATIC***	
< 0.5	[< 1,895m³]	5.0	[2.27kg]	7.5	[3.4kg]
0.5 – 2	[1,895m³ - 7,580m³]	7.5	[3.4kg]	10.0	[4.54kg]
2 – 5	[7,580m³ – 18,950m³]	10.0	[4.54kg]	12.5	[5.7kg]
5 – 10	[18,950m³ – 37,900m³]	12.5	[5.7kg]	15.0	[6.8kg]
> 10	[> 37,900m³]	12.5 / 10 Million	[5.7kg/37,900m³]	15 / 10 Million	[6.8kg/37,900m³]

*Static = Anaerobic or Facultative

Note - For small daily flows (<0.5 MGD [1,895m³]) that are diluted into relatively large lagoons special application rates should be used to treat the accumulated lagoon sludge. Contact United-Tech, Inc. for these recommended application rates.

SECONDARY CLARIFIERS: - Subject To Scum Accumulation; Non-Settling Solids, Turbidity, Odors, Excessive BOD Effluent.

Flow (MGD & CMD)		Weekly Dose (lb. & kg) BZT®	
< 0.5	[< 1,895m³]	5.0	[2.27kg]
0.5 – 2	[1,895m³ – 7,580m³]	7.5	[3.4kg]
2 – 5	[7,580m³ – 18,950m³]	10.0	[4.54kg]
5 – 10	[18,950m³ – 37,900m³]	12.5	[5.7kg]
> 10	[> 37,900m³]	12.5 / 10 Million	[5.7kg/37,900m³]

DIGESTERS, SLUDGE TANKS: - Subject To Solidification; Line Blockages.

Solids (tons. & kg)		Weekly Dose (lb. & kg) BZT®	
Up to 5	[4,536kg]	5	[2.27kg]
6 – 25	[5,443kg – 22,676kg]	10	[4.54kg]
26 – 50	[23,583kg – 45,352kg]	12.5	[5.7kg]
51 – 75	[46,259kg – 68,028kg]	15	[6.8kg]
76 – 100	[68,935kg – 90,720kg]	20	[9.08kg]
> 100	[> 90,720kg]	20 / 100 tons	[9.08kg/90,720kg]

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GRAVITY AND FEEDER LINES: - Treat Downstream Sections First. For Up To 500 ft – Treat Daily For 4 Days. Treat During Periods of Low Flow.

For each 500' of line (diameters below)		Daily Dose (lb.& g)BZT®	
4 to 6 inch line	[10cm – 15cm]	½ lb. daily	[227g]
8 to 10 inch line	[20cm – 25.4cm]	1 lb. daily	[454g]
12 to 14 inch line	[30.5cm – 35.6cm]	1 ½ lb. daily	[681g]
16 to 18 inch line	[40.6cm – 45.7cm]	2 lb. daily	[908g]
20 to 24 inch line	[50.8cm – 61cm	3 lb. daily	[1.36kg]

Once clean will treat up to ½ mile [.8km] of line. Treat 2 times a month. For trouble spots increase frequency of treatment.

Note: As with all biological augmentation protocols, system variables may require changes in standard rates.

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Residential Septic & Drain Line

BZT® Waste Digester is an all-natural bacteria/enzyme formulation designed to liquefy & digest organic matter. All the strains of bacteria present in BZT® Waste Digester are FDA GRAS (Generally Regarded As Safe) listed and not genetically altered in any way. By following the recommended application and maintenance instructions, household drain lines & septic systems will remain free flowing and in good working order, eliminating or decreasing the number of visits from your local plumber or septic tank service.

Food particles, grease, paper, and other organic materials attach to the walls of drainpipes, septic tank leachate fields and settle into the system-causing backup throughout the entire system. In the past, chemicals have been used to break up the blockages in drain lines without considering the hazards to both humans and the environment. In addition, these chemicals along with household cleaners, etc. offset the naturally occurring balance of bacteria in a system. Therefore, products that claim only annual treatments are necessary would only be effective if you used your system annually. By utilizing BZT® Waste Digester throughout your household, you will eliminate organic build-up, the cause of 99% of all back-ups and septic related problems.

Septic Tanks - Apply one initial treatment of BZT® Waste Digester, which is 8oz [227g] for each 1,500 gallons [5.67m³] of septic tank capacity. Mix 8oz [227g] with 1/2 gallon [1.9L] warm water. Stir up the mixture and pour directly into tank, or into drain or drains going into tank.
Septic Tank Maintenance - After initial treatment of tank, re-application will not be necessary provided the household drains are given initial treatments and followed by periodical maintenance treatments.

Home Maintenance Chart

Bath & Shower	1 Tbl. Per Month [15g]
Kitchen Sink	1 Tbl. Per Month [15g]
Lavatory	1 Tbl. Per Month [15g]
Toilet	1 Tbl. Per Month [15g]
Floor Drains	1 Tbl. Per Month [15g]

Apply BZT® Waste Digester initially by mixing with warm water (1 Tbl. [15g] In 8 oz. [250ml] warm water) and pouring directly into drain or toilet. If a specific drain remains sluggish, extend treatment a few more days before going to maintenance schedule.

For specific circumstances, please refer to the detailed instruction sheet for BZT® Waste Digester or call your distributor. Always keep BZT® Waste Digester in a cool, dry place.

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Oil & Grease Buildup (Combined with BZT® Xtra-Wet)

BZT® Xtra Wet is a powerful and totally biodegradable wetting agent that breaks the surface tension of water, allowing better coverage in sloped areas as well as areas of extreme build up. We have found that BZT® Xtra Wet is beneficial when used in these extreme cases. Once the build up has been brought back into control, normal applications of the BZT® Waste Digester have been able to keep the build up under control.

BZT® Xtra Wet is a dry powder that is used in conjunction with the normal application instructions for BZT® Waste Digester floor cleaning. Four ounces [114g] of the BZT® Xtra Wet are added to the 4 gallons [15.2L] of water containing 8oz [227g] of BZT® Waste Digester. This is enough solution for approximately 1,000 square feet [92.9 square meters] of floor area.

When BZT® Waste Digester & BZT® Xtra Wet are mixed with water and applied, brushed in, the active microbes and enzymes immediately begin breaking down oils and greases that can after 5-10 minutes be either hosed off, vacuumed up with a wet/dry vacuum or mopped up. After the area is allowed to dry, the result is a clean, non-slippery floor. BZT® Xtra Wet enhances the breakdown of oils and greases by increasing the moisture retention between the microbes and their targeted food source, oils and greases.

Any questions regarding this information or any of United-Tech's products and applications contact the United-Tech Inc. Technical Services Dept.

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Large Lagoon (10M Gallons Plus) – Seed Rates

BZT® Waste Digester Technical Bulletin

Large lagoon, 10 million gallon [37,900m³] capacity and above seed rates.

We have experienced remarkable results using BZT® Waste Digester in various types of lagoon conditions. After numerous observations and evaluations we have determined that using BZT® Waste Digester in larger lagoon situations ranging from 10 million gallons (MG) [37,900m³] and higher the initial seed rates can be adjusted downward from the normal start up seed rates as listed in the wastewater treatment guidelines.

- Seed rates can be calculated and adjusted in accordance to the table below.
- The maintenance rates remain unchanged from our treatment guidelines, but should still be compensated for in the case of low flow into large capacity lagoons. In these low flow rate situations; contact United-Tech, Inc. for the recommended maintenance rates.

Setup Rates for Seed:
Lagoon: 10 lbs.[4.54kg] for first 100,000 gallons [379m³]
3 lbs.[1.36kg] for each additional 100,000 gallons [379m³]

Lagoon Capacity Million Gallons (MG) Million Liters (ML)	***Regular Seed Rate***	***% Reduced***	***Adjusted Seed Application Rate per Lagoon***
10 MG [37,900m³]	307 lbs. [139.2kg]	10%	277 lbs. [126kg]
20 MG [75,700m³]	607 lbs. [275.3kg]	20%	486 lbs. [221kg]
30 MG [113,550m³]	907 lbs. [411.4kg]	30%	635 lbs. [288kg]
40 MG [151,400m³]	1207 lbs. [547.4kg]	40%	725 lbs. [329kg]
50 MG & up [189,250m³ & up]	1507 lbs. [683.5kg]	50%	754 lbs. [342kg]
Above 50 MG [189,250m³] – 50% of normal seed rate (50% reduction is the maximum seed reduction no matter how big the lagoon.)			

Note: For lagoons with million gallon [3,790m³] capacities between the capacities listed above, apply a percent reduction in relation to lagoon capacity (MG) [m³] you are dealing with. *(I.E.: 12-MG lagoon, reduce seed rate by 12%; 17-MG lagoon, reduce seed rate by 17%.)*

In summary, as organic mass and volumes increase in the lagoon systems the bacteria in BZT® Waste Digester are so efficient in digesting the organics that application rates for seed can be reduced and still provide a viable, high microorganism count to achieve the targeted objectives.

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BZT® Waste Digester provides you a high tech, all natural answer to a more efficient operating system.

If in doubt, contact United-Tech, inc. for technical information concerning the reduction in the recommended application rates for setup (seed) and remember maintenance rates do not change – just the seed rate.

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Deceased Animal Hauling Truck Cleanup

Equipment and Materials

- 1 – Minimum 3.0 gallon clean bucket
- 1 – 2.0-5.0 gallon pump type sprayer
- 1 – 1lb. pack of BZT® Waste Digester

1. In the clean bucket put 3.0 to 4.0 gallons of warm, not hot water.
2. Empty one foil pouch (1.0 lb.) of BZT® Waste Digester into the warm water.
3. Stir well to thoroughly mix BZT® Waste Digester into the warm water.
4. Pour the water/BZT® Waste Digester mix from the bucket into the 2.0-5.0 gallon pump sprayer.
5. Spray down and saturate the truck bed before starting the day.
6. At each designated stop for dead animal pick up, spray the BZT® Waste Digester/water mix on each layer of dead animals as they are collected from each stop.
7. Once the hauling truck has been completely filled with the daily load of dead animals and has returned to the rendering plant to empty its load, immediately spray down the pile of animal remains with BZT® Waste Digester/water mix to further control and reduce production of obnoxious odors.
8. If large volumes of animal remains are being dumped at the rendering plant, mix another 1.0 lb. of BZT® Waste Digester with warm water (same ratio as mentioned above) and thoroughly saturate the pile to further control odors from emitting from the pile.

Note:

- Shake sprayer before using at each pickup to get an evenly mixed spray.
- Once the BZT® Waste Digester is mixed in the water it is effective for up to 6.0 hours.
- Following the aforementioned steps for both the scented and unscented BZT® Waste Digester. Use separate trucks for testing and comparisons between scented and unscented BZT® Waste Digester.

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Brochure – BZT® Waste Digester Agricultural Uses

MANURE SYSTEMS, PITS, LAGOONS, TANKS, SLURRYSTORES

It requires a lot less BZT® Waste Digester to start the treatment when the system has been emptied. After initial treatment, the system is treated weekly to guarantee maximum activity and effectiveness. Mix BZT® one (1) lb [454g] to one (1) gal [3.79L] of warm water, and distribute evenly in the system. Never under treat, as activity will be slowed down or stop.

Freshly Pumped Manure System

- When emptying allow approximately 4" - 6" [10cm -15cm] of liquid to remain in the system. Make sure the crust is gone or increase the application rate by 10% to compensate for the crust.
- Start application with five (5) lbs [2.26kg] of BZT® mixed with five (5) gals [19L] of warm water and distribute mixture evenly over the entire area of the lagoon or pit. If possible, agitate the system to ensure a good distribution of the treatment.
- Weekly treatment is two (2) lbs [908g] of BZT® for up to the initial 200,000 gals [757m³] plus one-half (½) lb [227g] for every added 100,000 gals [379m³] of waste. Mix BZT® one (1) lb [454g] to one (1) gal [3.79L] of warm water or five (5) lbs [2.27kg] to five (5) gals [19L] of water, etc. and distribute evenly throughout the system. Don't dump it all in just one or two places. To keep your system active, you must treat for the total amount of waste in the system each week. Maintenance treatment should be doubled if feed, hay, bedding materials or detergents and disinfectants enter the system.
- Continue an agitation program, as oxygen is important for maximum microbial activity.

Manure System With Waste In It Or Problems

To treat a system prior to emptying or to eliminate problems such as surface crust, odor, or solid accumulation. It is necessary to increase the application rates to take control of the system, which will take approximately 4 to 8 weeks.

- The surface should be open to air. If a crust has formed, punch holes every 8-10 feet [2.4m–3m] around the perimeter. A larger diameter (3" [7.62cm] or more) PVC or metal pipe will work for this job.
- Insure there is oxygen present in the system, agitation is the best and easiest method to accomplish this.
- Initial treatment is twenty-five (25) lbs [11.3kg] for up to the first 200,000 gals [757m³] and ten (10) lbs [4.54kg] for each additional 100,000 gals [379m³]. Distribute evenly to get equal coverage throughout the system.
- Weekly, add three (3) lbs [1.36kg] of BZT® for every 100,000 gals [379m³] in storage until the problem is corrected. Then go to the lower maintenance levels.

M4 - WD -Brochure - AG - Agriculture 101 #6/DOC
Revised 1/9/03

ROUTINE APPLICATIONS

EMPTY SYSTEM

Total Volume in System	(Lb)[grams] *BZT®*	(Gallons)[Liters] *Water*
up to 200,000 gal. [757m³]	.....2 [908g]	..... 2 [7.6L]
up to 300,000 gal. [1,136m³]	.....2.5 [1.1kg]	..... 2.5 [9.5L]
up to 400,000 gal. [1,514m³]	.....3 [1.4kg]	..... 3 [11.4L]
up to 500,000 gal. [1,893m³]	.....3.5 [1.6kg]	..... 3.5 [13.3L]
up to 600,000 gal. [2,271m³]	.....4 [1.8kg]	..... 4 [15.2L]

For each additional 100,000 gal. [379m³] add 0.5 lb. [227g] BZT® in 0.5 gal [1.9L] water.

SYSTEMS CONTAINING WASTE / PROBLEM

1ST WEEK APPLICATIONS

Total Volume in System	(Lb)[kilograms] *BZT®*	(Gallons) [Liters] *Water*
up to 200,000 gal [757m³]	.....25 [11.33kg]	.... 25 [94.75L]
up to 300,000 gal [1,136m³]	.....35 [15.87kg]	..... 35 [132.7L]
up to 400,000 gal [1,514m³]	.....45 [20.41kg]	..... 45 [170.6L]
up to 500,000 gal [1,893m³]	.....55 [24.95kg]	..... 55 [208.5L]
up to 600,000 gal [2,271m³]	.....65 [29.48kg]	..... 65 [246.5L]

For each additional 100,000 gal. [379m³] add 10 lbs [4.54kg] BZT® in 10 gals [37.9L] of warm water. Return to routine rates when problems are corrected or system is emptied.

SYSTEMS CONTAINING WASTE / PROBLEM

AFTER 1ST WEEK APPLICATIONS

Total Volume in System	(Lb)[kilograms] *BZT®*	(Gallons) [Liters] *Water*
up to 200,000 gal [757m³]	..... 6 [2.72kg]	..... 6 [22.75L]
up to 300,000 gal [1,136m³]	..... 9 [4.1kg]	..... 9 [34.2L]
up to 400,000 gal [1,514m³]	..... 12 [5.5kg]	..... 12 [45.5L]
up to 500,000 gal [1,893m³]	..... 15 [6.8kg]	..... 15 [57L]
up to 600,000 gal [2,271m³]	..... 18 [8.2kg]	..... 18 [68.2]

For each additional 100,000 gal. [379m³] add 3 lbs [1.36kg] BZT® in 3 gals [11.4L] of warm water. Return to routine rates when problems are corrected or system is emptied.

AGRICULTURAL USES

BZT® WASTE DIGESTER

- Destroys odors
- Faster, more complete liquification of waste
- Reduces crusting and bottom solids buildup
- Easier and faster pumping
- All natural
- Biodegradable
- Environmentally Safe
- Non Toxic - no harsh chemicals

FOR MORE INFORMATION OR TO ORDER CONTACT:

UNITED-TECH, INC.

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BZT® Waste Digester is the most advanced scientific formulation of specialized bacterial strains, natural enzymes, and fermentation enhancers that will dramatically increase the digestive capacity of your manure system (Pits, Lagoons, Slurrystores, Tanks). The result is degraded manure that is an excellent fertilizer with less odor and reduced ammonia discharge.

According to the University of Wisconsin, one-third of available manure in the U.S. is spread on pastures, lots and lands. University scientists further added that because of inefficient handling, only one-third of the plant nutrients achieve their potential as fertilizer.

Slurry can supply significant amounts of the basic nutrients required by growing plants. For example, one acre [4047m^2]of 150 bu [5286L]corn requires 185 lbs [84kg] of N, 80 lbs [36.3kg] of P, and 215 lbs [97.5kg] of K if fully utilized. The waste from one 1,400 lb [635kg] cow could supply all the N and nearly two-thirds of the P and K required for one acre [4047m^2] of such a crop, significantly reducing the need for purchased fertilizer.

Structures for liquid manure storage, allow for extreme dilution of wastes and extensive loss to the atmosphere of nitrogen (N), while phosphorus (P), and potassium (K), may be held in sludge on the bottom. Basically the manure system is a means of disposing of manure rather than storing it for later use as fertilizer. Confined gases, from pits and lagoons, are dangerous to both animals and humans. The foul odor created when these partially digested wastes are spread on the field is a clear signal of what has gone wrong. As a result, there is growing pressure from neighbors, environmentalist and government agencies to reduce unpleasant odors and ground water contamination.

Producers need to handle the problems of animal waste head on. If not, local and state governments are going to decide for them.

BZT® will turn your pit or lagoon into a high tech biological digester. It will systematically attack, breakdown, digest, and liquefy manure. It is tremendously powerful, but at the same time environmentally safe, biodegradable, and non-toxic. No other product is as effective as BZT®.

Taking biological control of a lagoon or manure pit means literally fighting a bacterial war. BZT® will supply the necessary bacteria, enzymes and support ingredients necessary to take control of the digestive processes that are taking place. The BZT® bacteria will rapidly reproduce to create an environment hostile to undesirable organisms. That's why it becomes so important to follow maintenance applications once it is in place. This allows for constant reinforcement of highly reproductive, beneficial organisms and support agents necessary to maintain biological control, plus a readily pumpable slurry rich in natural nutrients.

M4 - WD -Brochure - AG - Agriculture 101 #6.DOC
Revised 1/9/03

BENEFITS OF BZT® WASTE DIGESTER

1. Odors will start to reduce after approximately three weeks, as the microorganisms in BZT® start digesting the solids in the system, eliminating 60% - 90% of odors.
2. BZT® treatment costs less than 1 penny per 100 treated gals [3.79L] - the producer realizes easy return on his investment.
3. Crust on the top will get wet and break-up or sink.
4. Increases fertilizer value of manure requiring less synthetic fertilizer for crops.
5. Hazardous pit gas pockets (methane and hydrogen sulfide) will break open and be released safely which improves animal and family health.
6. Accumulated solids from months or years of system use will take time to digest, but with regular treatment the system will start functioning properly and these solids will be reduced.
7. The system pumps out easier, decreases fuel, equipment, labor and utility costs. Less need for agitators, pumps or power equipment to run them.
8. Completely safe for humans, animals and plant life. Is non-corrosive.
9. BZT® is a proprietary bacteria and enzyme formulation that chemically changes the source of the odor - does not just mask or hide the odor.
10. BZT® is environmentally compatible, non-caustic, non-corrosive and harmless to humans, pets, and plant life.

FOR BEST RESULTS

* **Distribute uniformly.**
* **Treat total volume weekly.**
* **Agitate system frequently.**
* **Don't under treat.**
* **Below 50 degrees F. [10°C] double application rates.**
* **If crust has formed, punch holes in crust perimeter.**
* **Mix BZT® with warm water.**
* **Double application rates when adding high amounts of solids to system (hay, bedding, detergent or disinfectants).**
* **Follow these directions carefully for best performance.**

CONDITIONS VARY FROM LOCATION TO LOCATION AND FROM STATE TO STATE. THE OPERATOR SHOULD EXPERIMENT WITH THE SMALLEST DOSE THAT WILL BRING THE DESIRED RESULTS

BZT® WASTE DIGESTER USES

BZT® is not only effective for use in waste treatment systems but can also be used for additional applications.

ANIMAL WASTES AND ODOR CONTROL

Cat Litter and Animal Boxes

- After putting new litter in cat box, lightly cover entire surface area with dry BZT®. The BZT® will be worked into the litter by the natural actions of the cat and will be activated by the natural addition of moisture.

Calf Huts

- Sprinkle 6 tablespoons [85.7g] of BZT® over bedding to eliminate odor. Repeat as odor recurs.

Poultry

- Mix four (4) oz [114g] of BZT® in one gallon [3.79L] of warm water. Spray evenly over the area to be treated at the rate of one gal [3.79L] of solution for every 400 square feet [37.2m^2]

Hog/Swine, Feed Lots, Cattle & Horse Barns, Dog Runs, Animal Cages

- Mix four (4) oz [114g] of BZT® in two (2) gal [7.6L] of warm water. Spray evenly over the area to be treated at the rate of one gal [3.79L] of solution for every 500 square feet [46.5m^2]
- To remove odors from concrete runs, mix 4 oz [114g] BZT® with 1 gal [3.79L] of warm water for each 500 sq. ft.[46.5m^2] of floor area. Plan ahead so that hosing down has just been completed before application time. Pour mixture with sprinkling can or pump sprayer over wet affected area. Do not squeegee. Let floor dry naturally.
- When odors start to reappear, repeat process outlined above.

Trash Receptacles

- For odor control on an average sized dumpster, mix four (4) oz [114g] of BZT® with one gal [3.79L] of warm water, spray mixture into or on the receptacle and let dry.

SEPTIC TANKS, CESSPOOLS

Step 1. Initial treatment Apply one initial treatment of BZT® which is 8 oz [227g] for each 1,500 gal [5685L or 5.7m^3].

- Initial treatment should be mixed with lukewarm water.
- **Ratio:** 8 oz [227g] with ½ gal [1.9L] water. Mix up the mixture and pour directly into tank or cesspool, or into drain or drains going into tank.

Step 2. Maintenance After initial treatment of tank, re-application will not be necessary provided the building drains are given initial treatments and followed by periodical maintenance treatments. For further information, contact United-Tech, Inc. or your distributor.

TOC 7.2 – Application Instructions BZT® Waste Digester – Pg. 32
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Version 013

7.3 Treatment Summary - BZT® Waste Digester

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Odor, Grease & Drain Line Blockage – Commercial Cruise Line

(**Effluent Discharge Reduction)**

Biological Treatment Summary

BZT® Waste Digester

The Situation

A major cruise line had many problems on one of its many cruising vessels.

- The company was facing astronomical surcharges and penalties for non-compliant effluent discharge and increasing numbers of obnoxious odors, drain line blockages, and grease build up were making sailing guests very unhappy.
- The Environmental Protection Agency was very concerned with out of compliance discharge limits from the ship within the three-mile territorial boundary of the United States.
- Obnoxious odors were emanating from organic waste build up in drain lines as well as drain line blockage from grease build up within the drain lines causing disturbing complaints by sailing guests.
- Excessive numbers of calls for plumbers by sailing guests to clear back-flowing drains was becoming tiresome for the ship's crew.

The company was becoming very distraught with the arising problems and needed a pragmatic environmental solution to resolve this dilemma.

The Solution

United-Tech proposed a biological treatment program that consisted of the addition and utilization of BZT® Waste Digester. It was proposed that an initial seed application be performed followed by regular maintenance application into three predetermined designated sections of the ship. The treatment program was designed to:

- Significantly reduce or eliminate fats, oils and greases in the main grease trap and grey water filter, which would also reduce costs and labor in cleaning the units.
- Significantly reduce or eliminate emanating odors coming from drain lines throughout the entire ship.

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The Results

- Within seven (7) days, all obnoxious odors were gone.
- The FOG problems in the grease traps and grey water filters were eliminated.
- The drains back up problems in the galleys and cabins were reduced by 98%.

Because of the success of this program, United-Tech is now expanding this treatment program in the fleet.

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Waste Stream Processing – Cruise Line

Biological Treatment Summary

BZT® Waste Digester

The Situation

A cruise line company with midsize cruising vessels was seeking an all-natural solution to enhance their waste stream processing and allow for an environmentally friendly discharge from their cruising vessels.
Organic solids and other waste accumulated throughout the waste stream, which resulted in an overall reduction in the flow of the waste stream.
Repeated problems with fats, oils, and greases that accumulated in their grease trap caused the trap to function improperly and required labor intensive cleaning.
The company wanted an easy, cost effective and all-natural treatment alternative that would allow them to manage, stabilize, and reduce the build up in their waste stream and grease trap.

The Solution

United-Tech Inc. proposed a biological treatment program using BZT® Waste Digester. The treatment program consisted of an initial seed application, followed by regular maintenance applications where BZT® Waste Digester was mixed with water and poured directly into the vessels' drainlines, black and gray water tanks, and grease trap unit. The treatment program was designed to reduce the overall volume of organic solids, fats, oils and greases in the waste stream, and improve the flow rate in the system.

The Result

Within days of the initial seed application, there was a dramatic decrease in organic solids in the black and gray water tanks. Overall flow improved significantly within the first week of the treatment program. Additionally, since the first treatment, the grease trap unit has not required any expensive and time consuming clean outs. By using this environmentally friendly product, the company has been able to accomplish their targeted goals of improving efficiency in the waste stream. The success of this biological treatment program has pleased the company so extensively, that they are now incorporating the BZT® Waste Digester treatment program among other vessels in their fleet.

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Oil & Grease Buildup – Manufacturing Floors

Biological Treatment Summary

BZT® Waste Digester

The Situation

A Tubular manufacturing company closed down one of their plants and had to clean up the grounds and plant area before putting it up for sale. This consisted of cleaning up the floors in a 20,000 square feet [1858m²] building plus over 10,000 square feet [929m²] of outside walkway and access road areas. These areas had accumulated oil and grease build-up from years of use. At first, degreasers were tried with little or no effect.

The Solution

United-Tech implemented a program using BZT® Waste Digester sprayed on the contaminated concrete following the BZT® Waste Digester concrete clean-up instructions.

The Results

After the first application of BZT® Waste Digester, you could visually watch as the oil and grease build up was being broken down. After the second application of BZT® Waste Digester, they were right down to the bare concrete on the factory floors, walkways and access roads.

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Oil & Grease Buildup on Floors – Equipment Service

Biological Treatment Summary

BZT® Waste Digester

The Situation

A nationwide quick lube chain was searching for an effective means of removing oil & grease build up on their lower bay floors. The company had tried several different types of degreasers with little to no results. The degreasers that the company had tried left a film behind that was causing slips and falls. The company had faced millions of dollars in workmans comp claims as a result of the falls.

The Solution

United-Tech performed a demonstration of the cleaning capabilities of BZT® Waste Digester for corporate officials at a store described as a "worst case" scenario. The officials were so impressed with the results that they immediately began placing BZT® Waste Digester at locations nationwide.

The Results

Store employees enjoy the ease of use with BZT® Waste Digester. Employees simply mix the product with water, spray it on the floor, brush it in, and mop it up after an hour. The result is a clean, dry floor that is free of oil. Several stores also use the BZT® Waste Digester in sinks, urinals, and septic systems.

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Oil & Grease in Wastewater Reduction – Commercial Laundry

Biological Treatment Summary

BZT® Waste Digester

The Situation

A commercial laundering facility faced compliance issues with the local wastewater treatment facility. The oil & grease levels in the company's wastewater discharge were well over acceptable limits. The company's wastewater treatment consisted of several, small volume holding sumps.

The Solution

United-Tech recommended a biological treatment protocol that treated the trench leading to the sumps as well as the individual sumps.

The Results

Since beginning the treatment protocol, the company has been within oil & grease permit standards. In addition, the company is experimenting with utilizing BZT® Waste Digester in the pre-soak portion of the wash cycle.

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Wastewater Recycling and Pre-treatment – Commercial Truck Washing Operation

Biological Treatment Summary

BZT® Waste Digester

The Situation

A large commercial truck washing operation was in need of a wastewater recycling and pre-treatment system. This truck wash consists of (8) wash bays, four full-service and four self-service. Flow rates from their 13 hand held high-pressure washing systems (5 gpm ea.) can reach 65 gpm. The customer was discharging 100% of their wastewater to sanitary sewer.

The local P.O.T.W. was surcharging them for excess TSS, BOD and several heavy metals costing thousands per month. With water costs rising frequently and a worsening drought it made sense to the owners to recycle as much water as possible.

Wastewater recycling systems in car and truck washes is generally an extremely fertile environment for naturally occurring bacteria to form. Ozone, hydrogen peroxide and chlorine disinfectants are usually used. Over time these destroy the customers vehicles and car washing equipment.

The Solution

A wastewater treatment system, model “Extreme Clean,” was installed. The Extreme Clean is capable of providing recycled water back to the washing equipment at sufficient flow rates. Filtration methods include after solids settling, oil coalescing, active skimming and dual filter media polishing. BZT® Waste Digester was seed dosed into the system at a rate of 1 lb. Per 1000 gallons of water volume

Maintenance doses are provided in stabilized liquid form using an automatic dosing system. Maintenance rates were set at – one 3 oz. dose per 500 gallons of water volume each day.

The Results

The system has been in operation for five months with no smell. Resulting water tests are shown below.

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PARAMETER	BEFORE	AFTER	PERCENTAGE REDUCTION
Biological Oxygen Demand, mg/L	324	94.4	70.86%
Total Suspended Solids, mg/L	8770	219	97.50%
Oil and Grease, mg/L	46	24.4	46.96%
Petroleum Based Oil and Grease, mg/L	22.7	11.5	49.34%
Silver, mg/L	0.06	0.004	93.33%
Aluminum, mg/L	153	1.8	98.82%
Arsenic, mg/L	0.998	0.046	95.39%
Cadmium, mg/L	0.26	0.001	99.62%
Chromium, mg/L	0.284	0.013	95.42%
Copper, mg/L	7.56	0.4	94.71%
Molybdenum, mg/L	0.015	0.005	66.67%
Nickel, mg/L	0.466	0.035	92.49%
Lead, mg/L	1.76	0.039	97.78%
Selenium, mg/L	0.19	0.015	92.11%
Zinc, mg/L	8.45	0.31	96.33%
Mercury, mg/L	0.0079	0.0001	98.73%

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Drain Line Stoppages – Major World Renowned Hotel

Biological Treatment Summary

BZT® Waste Digester

The Situation

For the past 35 years, this Hotel in Hong Kong has been consistently rated one of the world's top ten Hotels, often number one. The hotel was having problems with slow and plugged drainlines and in particular, the bathtub/sink drains in their guest rooms.

The Solution

United-Tech developed an ongoing treatment program to treat the drain lines with BZT® Waste Digester.

The Results

The Hotel maintenance staff started by treating some of the guest room drains. After a short period of time the improvements in drain line flow was very impressive.

Today the hotel utilizes BZT® Waste Digester throughout the entire hotel and consistently experiments with it for other uses.

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Paper/Pulp Sludge Reduction – Paper Manufacturing

Biological Treatment Summary

BZT® Waste Digester

The Situation

A paper manufacturer faced the constant dredging of three settling ponds. The dredging was so prevalent that a contractor is on-site year round performing the dredging.

The Solution

United-Tech proposed a bioaugmentation program that consisted of the addition of BZT® Waste Digester. It was proposed that a seed application be performed followed by regular maintenance applications. The treatment program was designed to decrease the overall sludge volume, expanding the time frame between dredging.

The Results

Physical and quantitative data clearly shows that the sludge volume was decreased.

United-Tech's program is designed to begin the treatment of each pond immediately after dredging is performed with the ultimate goal of decreasing the on-site contractor's responsibilities. The company anticipates tremendous savings following the treatment guideline.

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Odor Reduction – Logging Operation Lagoon

Biological Treatment Summary

BZT® Waste Digester

The Situation

A logging operation in northwest Oregon cured cut logs by placing them on a wash pad and sprayed then with water. This process flushed wood tar and large amounts of pulp from the pad into a 300,000-gallon lagoon. Water from this lagoon was recycled back into the spraying operation.

During the twenty years of operation, the lagoon's only maintenance was periodic dredging. However, none of the current employees recalled the last time the lagoon was actually dredged. Consequently, three to four feet of solids had accumulated in the lagoon. Accompanying this was a very strong and offensive odor caused by the rotting bottom solids. Citizens of a town almost two miles away often complained about the odor and began threatening legal action.

The Solution

United-Tech, Inc. recommended the lagoon be treated with BZT® Waste Digester to eliminate the odor and reduce bottom solids. Seed and maintenance dosages were provided to the client and treatment was initiated immediately.

The Results

Within one week of seed application, the offensive, acrid, odor had disappeared: and in two weeks, the water began clearing. After four weeks, the water was so clear the bottom, five feet below, could now be seen. After ninety days, bottom solids were reduced by 50%. The client and the surrounding community were very satisfied with the results.

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Odor Reduction – Hog Farm

Biological Treatment Summary

BZT® Waste Digester

The Situation

A major hog producer with a "Deep-Pit Barn" type waste collection system wanted to reduce odors emanating from the waste collection pit under the barn. The owner recognized that lower Ammonia and H_2S levels in the barn would result in cleaner air and cleaner air would result in a healthier hog.

Facts:

- The pit size was 41' x 326' x 8' [12.5m x 99.4m x 2.4m]
- The pit will fill up over 11 months
- The pit is pumped once per year leaving approximately 75,000 gallons [284m^3] in the pit
- Prior to pumping, the pit must be mixed and agitated
- Weekly influent rate is 10,000 GPW [37.85m^3PW]
- The facility is a "grow-out" facility

The Solution

United-Tech developed an on-going biological treatment program utilizing BZT® Waste Digester.

Facts:

- No bactericides are to be used
- Temperature of liquid will remain between 50-90º F [10-32.2°C]
- pH range is 6 – 9.

Control: To ensure the results could be quantified a control barn was chosen to provide an exact comparison but no treatments were made.
The control and treated barns had:

- Hogs with the same genetics
- The water supply supplying each barn was the same
- The quality of each operator was rated to be the same
- All daily operations were to be the same
- Comparison of herd health and harvest weights were to be measured
- Comparisons of water depth, sludge depth, sludge consistency and fertilizer values were to be completed

Air quality measurements were conducted both inside and outside the barns with ammonia and H_2S levels being the principle measure.

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The Results

Air quality greatly improved over the first two months. This was substantiated by operator personnel as well as the local UPS deliveryman who stated "that he used to be able to smell the site before he saw it, now he only smells it when he leaves his truck at the barn door."

Approximately 2 ½ months into the agreed upon treatment program, the barn operator personnel were changed and the program was interrupted. The new operator was not of the same quality as the outgoing, nor did he maintain the treatment program per the protocol. Due to this treatment problem, the barn went back to "smells as usual".

The first 2 ½ - 3 months, the Ammonia and H_2S measurements indicated improvement in air quality. After the program lapsed because of the operation, it was very difficult to do comparisons due to the many changes that occurred.

Upon completion, the study did show a measurable higher harvest weight for the treated barn and sludge that did not have to be mixed and agitated for pumping.

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BOD_5 & Sludge Reduction Coupled with Ammonia Reduction

Poultry Processing, Rendering and Deli Plant
Wastewater Treatment Plant

Biological Treatment Summary

BZT® Waste Digester & BZT® Aquaculture

The Situation

One of the largest poultry processing, rendering and deli plants in the United States was coming face to face with the State Regional Water Control Board and their concerns with organic sludge accumulation, increasing BOD_5 and Ammonia levels occurring throughout the facility's secondary lagoon system. Three years earlier, the facility was forced to dredge their two aerobic headwater lagoons for sludge removal and disposal, costing in excess of $2 million dollars. Now, just three years later, the facility is once again faced with the sludge dilemma and the enormous cost to dredge and dispose of the sludge. In addition to the sludge dilemma, the facility was also facing non-compliant issues with Ammonia levels in their land application discharges.

The Solution

The facility wanted a treatment program developed for comparative purposes in sludge reduction between their two aerobic headwater lagoons. United-Tech designed an experimental sampling program to include a "control" lagoon, which had no treatment application, and an "experimental" lagoon, which would be treated with BZT® Waste Digester and BZT® Aquaculture. The "control" lagoon consists of 10 MG in total volume, while the "experimental" lagoon has a 13 MG total volume. A bio-augmentation treatment program was proposed to include the addition of BZT® Waste Digester and BZT® Aquaculture for BOD_5 and Sludge reduction coupled with Ammonia reduction in the 13 MG lagoon. Both of the lagoons were sampled in sequential order prior to the initial *"seed"* applications and again at 30-day intervals using identical sample and data collecting methods.

The Results

Within one month of the initial seed application, there were sensational decreases in BOD_5, COD, TOC, TSS and Ammonia levels.

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	Initial *"Seed"* Application May 15, 2001 (parts per million)	One Month Later June 27, 2001 (parts per million)
TKN	65	46
Ammonia	48	35
Nitrite	ND	ND
Nitrate	ND	ND
TOC	74	9.3
TSS	270	70
Total Phosphorus	20	2.9
BOD_5	360	39

Sludge depth readings were collected prior to the initial seed and again at 30-day intervals. Within the first month of treatment, sludge reduction showed > 60% of the overall total sludge volume had been reduced and later data continues to show a consistent decrease in overall sludge volume and the comprised waste constituents from the waste stream. The "control" lagoon continues to show a significant increase in all areas of the waste constituents and accumulation of sludge from the waste stream.

The facility views this program as a remarkable achievement and a complete success. In fact, the company is in the process of implementing the BZT® Waste Digester and BZT® Aquaculture treatment program throughout their entire secondary treatment system, which consists of 12 secondary lagoons ranging from 8.6 MG to 31.6 MG in total volume.

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COD and TSS Reduction – Industrial Treatment Facility

Biological Treatment Summary

BZT® Waste Digester

The Situation

One of the leading professional waste treatment professionals in the state of Arkansas, now working as an industry consultant, had spend eight months attempting to get a small industrial treatment facility into compliance. He employed very conventional method of treatment available for such a situation: and he had achieved significant improvements in its operations status. However, the plant is not large enough to handle the volume of waste that is generated by the local feed mill; and even minor fluctuations in the waste stream was creating such a major "upset" condition that compliance seemed unattainable without expansion of the plant.

The Solution

The plant consists of a small aeration basin, clarifier, sludge holding tank and a UV radiation station at the discharge portal. Our treatment with BZT® Waste Digester commenced on February 19th; but a major acid upset occurred at the feed mill on the following day. So, we re-seeded on February 22nd and, since that time, "half-size" maintenance application have been conducted twice weekly.

The Results

The results to date are as follows:

		COD	TSS	Fecal
Permit Levels:	Monthly Avg.	50	20	1000
	Daily Max.	75	30	2000
Lab Analysis:	1/24/02	105.0	46.0	1560
	2/28/02	52.2	33.5	132
	3/14/02	26.3	12.4	Unk.

Both the customer and the consultant are ecstatic over the results we have achieved. We accomplished in a few weeks what previously had been unattainable for months: and we did it without any plant expansion. We are confident that the success of this endeavor will create opportunities for us to assist this national agriculture & food production company with future projects.

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Odor & Sludge Reduction – Wastewater Treatment Rendering Facility

Biological Treatment Summary

BZT® Waste Digester

The Situation

A major rendering facility was experiencing problems with its Wastewater Treatment Plant because of high influent loading during the summer season. Odor from the plant was headlined in news articles and foaming attributed to filamentous bacteria, which plugged pumps and decreased the plant's efficiency.

The Solution

United-Tech proposed a bioaugmentation program that consisted of the addition of BZT® Waste Digester to the system. It was proposed that an initial seed application be performed followed by regular weekly maintenance applications. The treatment program was designed to:

- Reduce solids
- Enhance Stability
- Reduce/eliminate odor
- Breakdown H_2S
- Reduce the total overall sludge volume
- Increase plant capacity and efficiency
- Increase plant ability to handle upsets and shocks

The Results

Within one month, solids were reduced by up to 20%. The odors had all but disappeared. The foaming and filamentous problems were greatly reduced after two months, and eliminated after three months. The program provided positive payback within three months, attributed to:

- Reduction in hauling costs
- Reduction in polymer usage
- Elimination of chlorine

The program has demonstrated the broad ranging effects of BZT® Waste Digester and its ability to reduce the odor in the surrounding community and save thousands of dollars.

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Biobed Anaerobic Reactor – Aeration Basin – Ethanol Plant

Biological Treatment Summary

BZT® Waste Digester

The Situation

An ethanol plant was experiencing upsets in its biobed reactor and the biological activity of the bed was being seriously impaired. The plant was also experiencing heavy foaming and was overcome by filamentous bacteria throughout the wastewater treatment plant.

The Solution

United-Tech proposed a bioaugmentation program that consisted of the addition of BZT® Waste Digester to the biobed and the aeration basin.

The treatment was designed to provide the hydrolytic breakdown of the starches, proteins and the cleaning solutions that were used in the plant cleanup operations, all of which were causing upsets in the various stages of wastewater.

The Results

The addition of BZT® Waste Digester increased the heartiness of the biobed allowing it to survive upsets. The filamentous problem has been eliminated along with the solids being greatly reduced.

Since starting the maintenance program the facility has not had the need to purchase-activated sludge. This savings has more than offset the cost of the program.

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Oil & Grease, Odor and Sludge Reduction

Poultry Rendering Plant Facultative Lagoon

Biological Treatment Summary

BZT® Waste Digester

The Situation

A poultry-rendering facility had problems with its facultative wastewater lagoon.

- Sludge build up had completely taken over the lagoon, decreasing lagoon capacity and creating effluent problems.
- The oil and grease cap had taken over the lagoon.
- The belt filter press was operating at capacity
- BOD was up over 1,000; TSS was over 24,000

The company felt it's only alternative was to dredge the lagoon and dispose of the sludge at a substantial financial and labor cost.

The Solution

United-Tech, Inc. developed a program for this plant that consisted of four different steps:

1. A seed application of United-Tech's BZT® Waste Digester a bacteria, enzyme, micronutrient formulation to establish biological control over the entire system.
2. A series of secondary seed applications over the next four weeks to ensure biological control. (The treatment program was more intense than usual because of the situation faced and the fact that it's mighty cold in Maryland in the middle of winter.)
3. An aggressive maintenance application period of 12 weeks during which United-Tech personnel trained the facility employees to balance operations and fine-tune the application process.
4. An on-going maintenance application to maintain the system and continue sludge reduction.

The Results

Within six weeks BOD and TSS levels were coming down and they gained two inches [5.08cm] back on "freeboard". The cap on the facultative pond was breaking up and odors were reduced.

Significant Long-Term Value - Approximately 90 days after treatments started they were able to shut down the belt filter press. Odors had all but disappeared; they had gained a full 18 inches [45.72cm] of capacity in

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their ponds. This is especially remarkable considering the volume of sludge in the ponds prior to beginning the treatment program.

Among the benefits now being realized are:

- BOD levels as low as 4
- TSS levels as low as 100
- The elimination of lagoon stress
- Tremendous time savings in treating problems
- The virtual elimination of odors
- Significant time and money savings in operating the filter press
- Cost savings from eliminating the need for offsite solids disposal of pressed solids

Much to their delight, the sludge blanket is now completely broken down and pumpable. They can now pump when they want.

The benefits listed here are obvious. But, just for good measure, Mother Nature added another eye-opener. During Hurricane Floyd, the area in and around the plant received over 12 inches [30.48cm] of rain. Because of the additional capacity the treatment program provided, the plant was able to contain all of this rainfall and still maintain compliance within discharge permit limits. Had the storm hit before the program was begun, the same may not have been true.

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Sludge Reduction Through Bioaugmentation – Fertilizer Manufacturer

Biological Treatment Summary

BZT® Waste Digester

The Situation

A nitrogen fertilizer manufacturing company was faced with potential compliance problems due to a high accumulation of bottom solids in their 3.8 MG settling lagoon. The system was designed to have a retention time of 7 days under peak flow conditions (550,000 gallons per day). However, the excessive accumulation of bottom solids, ranging from 1-2' in thickness, effectively reduced the retention time in the system so that an incomplete treatment of the wastes was occurring.

The Solution

United-Tech proposed an implemented a biological treatment program using BZT® Waste Digester. Prior to implementing the program, 5 randomly selected points within the lagoon were sampled to establish the baseline thickness of the bottom solids. The treatment program for this facility consisted of an initial high-dose seed treatment followed by regular maintenance treatments to ensure through biological control of the system.

The Results

After 2 months, the same points in the lagoon were sampled a second time. The results showed an average of 34% of the bottom solids in the lagoon had been eliminated. The additional retention time provided by the increase in lagoon capacity allowed for a more thorough treatment of the wastes. In addition to reducing the level of bottom solids in the lagoon, the TSS and BOD levels in the effluent are now at all-time lows.

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Sludge Reduction Through Bioaugmentation – Public Utility Company

Biological Treatment Summary

BZT® Waste Digester

The Situation

A principle utility provider was faced with the excessive accumulation of bottom solids in their 5.5' deep, 2.3 MG sanitary lagoon. The solids in the lagoon had reached a depth of several feet and significantly reduced the capacity within the system. Company officials felt that the only way to remediate the situation was to dredge the lagoon, at a cost of over $100,000.

The Solution

United-Tech was contacted by a representative of the company seeking a cost-effective alternative to dredging the system. United-Tech proposed a biological treatment program using BZT® Waste Digester that was designed to degrade and eliminate the excessive solids on the lagoon bottom. Prior to initiating the program in August of 2001, 5 randomly selected sites in the lagoon were sampled to quantify the thickness of the bottom solids.

The Results

At the conclusion of a 90-day trial period, the same points in the sanitary lagoon were again sampled. The results showed that nearly 50% of the bottom solids in the lagoon had been eliminated. Company officials are pleased not only with the effectiveness of BZT® Waste Digester, but also with the substantial cost savings achieved over dredging the lagoon.

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BOD_5 & Sludge Reduction – Wastewater Treatment Lagoon

Biological Treatment Summary

BZT® Waste Digester

The Situation

A municipality faced many issues with their WWTP. The WWTP was out of compliance with BOD and TSS levels leaving the facility. The WWTP lagoons were operating at reduced capacity due to 3-8 feet [.91m-2.44m] of sludge build-up. The plant odors were felt throughout the community. Foaming and filamentous bacteria were a constant problem. A local beverage bottling company also sent a very high BOD waste stream to the WWTP. The municipality faced fines from the state DEQ, struggled with the consulting engineer's recommendation for capital improvements, and the cost of sludge removal/dredging of the lagoons.

The Solution

United-Tech proposed a bioaugmentation program that consisted of the addition of BZT® Waste Digester to the entire system. It was proposed that an initial seed application be performed followed by regular weekly maintenance applications. The treatment program was designed to

- Bring the plant into compliance
- Reduce BOD and TSS to permit level
- Enhance stability
- Reduce/eliminate ammonia
- Reduce the total overall sludge volume
- Increase plant capacity and efficiency
- Increase plant ability to handle upsets and shocks

The Results

Within one month the WWTP's BOD and TSS levels were lower than they had been in over two years. The odors had all but disappeared. The foaming and filamentation problems were greatly reduced.

At six months the plant was operating at levels of BOD and TSS at the lowest levels ever. There were no odors. The total sludge volume had been reduced by over 35%. The WWTP upsets produced by the bottling company were non-events, even though during this time the bottling companies waste stream discharges were at all time high BOD and TSS levels. The program has

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demonstrated the broad ranging effects of BZT® Waste Digester and its ability to save thousands of dollars.

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Reduction of Fishmeals, Oils, Greases and Proteins

Manufacturer of Pelleted Fish Feed Extrusion Plant

Biological Treatment Summary

BZT® Waste Digester

The Situation

A major manufacturer of fish feed for the aquaculture industry faced numerous problems within one of their extrusion plants.

- Large volumes of organic waste and spill over from the processed fish feeds were being washed down the plants' drain line each night after the daily cleaning regiment. Organic solids and other waste were accumulating in and throughout the waste stream resulting in an overall reduction in the flow of the waste stream.
- Fishmeals, oils, greases and proteins were clogging the drain lines and accumulating in the septic tanks and in the basket screen.
- The septic tanks and basket screen required regular labor intensive clean outs. The septic tanks also required expensive pump and haul off costs every three months.
- The company wanted an all-natural treatment alternative that would be cost effective and allow them to manage, stabilize, and reduce the organic build up in their waste stream as well as being non-labor intensive for applications.

The Solution

United-Tech technical personnel proposed a biological treatment program that consisted of the addition of BZT® Waste Digester throughout the drain and septic system in the plant. United-Tech proposed that an initial seed application be performed followed by regular weekly maintenance applications. The treatment program was designed to reduce the overall volume of organic solids, fishmeals, oils and greases in the waste stream, and improve the flow rate in the system. Prior to the initial seed application, the company pumped out and cleaned the entire basket screen and septic system under United-Tech's general guidelines and suggestions for a successful biological treatment program utilizing BZT® Waste Digester.

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The Result

The BZT® Waste Digester provided a safe and easy method for maintenance applications. Maintenance applications in the plant were conducted each night at the end of the final cleaning process. Applications only required pouring the mix directly into the plants' main drain line, which in turn, treated the whole system and allowed for non-labor intensive applications. The lateral line and drain field improved within one week after initial application and alleviated the need and cost to dig out the entire drain field and manually clean and replace the piping assemblies. This achievement alone saved the company thousands of dollars for the cost to revamp the drain field.

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Oil & Grease in Wastewater Reductions – Food Processing

Biological Treatment Summary

BZT® Waste Digester

The Situation

A food company that manufactures fried chicken and fried steak patties faced compliance issues with the local wastewater treatment facilities. Oil & Grease levels were constantly above the allowable limits. In addition, grease tended to solidify downstream causing frequent back ups.
City pump trucks were called out weekly to pump grease from manholes and lift stations. The company's wastewater system consisted of a large grease trap followed by a skimmer.

The Solution

United-Tech recommended a biological treatment protocol that treated both the grease trap and the skimmer unit. The biological product that the company had used historically was replaced with BZT® Waste Digester.

The Results

Since beginning the treatment protocol in June 1998, the company has been well within Oil & Grease limits. In addition, the city has not had to pump manholes down the line since the treatment was started.

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Oil & Grease in Wastewater Reductions – Food – Baking

Biological Treatment Summary

BZT® Waste Digester

The Situation

A food company that manufactures buttermilk biscuits on a mass scale, faced compliance issues with the local pretreatment program. Oil & Grease levels in the company's wastewater discharge were at levels 3-10 times the allowable limits. The company's wastewater discharge system was a series of above ground tanks that transferred wastewater into a large grease trap. The company was forced to have the massive grease trap pumped twice per week.

The Solution

United-Tech recommended a treatment protocol that treated each above ground holding tank during the filling stage. A recommendation was also made to treat the grease trap directly.

The Results

The company has gone two years without any compliance issues.

The grease trap only requires periodic pumping, saving the company much labor, time and money.

The savings associated with the grease trap pumpings have paid for all product used and the company is now actually saving money.

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Oil & Grease, Odor & Sludge Reduction – Rendering Plant

Biological Treatment Summary

BZT® Waste Digester

The Situation

A rendering facility faced numerous issues with its series of wastewater lagoons.

- Sludge build up had begun to take over the lagoon, decreasing lagoon capacity and putting regulatory limits in jeopardy.
- Oil and grease caps had taken over two of the lagoons, limiting their ability to aerate the system.
- Local businesses and residents complained about the odor generating from the lagoons.
- The company's only known solution was to dredge the lagoons and dispose of the sludge.

The Solution

United-Tech personnel proposed a bioaugmentation program that consisted of the addition of BZT® Waste Digester throughout the lagoon system. United-Tech proposed that an initial seed application be performed followed by regular weekly maintenance applications. The treatment program was designed to decrease the overall sludge volume, decrease oils and greases, and keep odors under control.

The Result

No odors, no sludge, no grease caps.

Within days of the initial seed applications, there was a dramatic decrease in the odor generating from the lagoons and the oil and grease cap had been taken under control. Eventually, the odors from the lagoons were eliminated.

Sludge depth readings were taken at 60 days and 120 days. The initial readings (60 days) showed an average sludge reduction of 45% across all the lagoons. The sludge depth readings taken at 120 days showed 3-6" [7.62-15.24cm] of sludge left in lagoons 2 and 3, with sludge reductions of over 60% in lagoons 4 and 5. Please note that the treatment program was not as aggressive for lagoons 4 and 5 as it was for lagoons 2 and 3.

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The company continues to rely on BZT® Waste Digester for its performance and benefits. The corporate headquarters of the subject company is now introducing BZT® Waste Digester and United-Tech to many of its other facilities nationwide.

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Restaurant Grease Trap

Biological Treatment Summary

BZT® Waste Digester

The Situation

Two side by side sit down restaurants located in a major shopping mall, with high customer volume, were experiencing grease build up in their grease traps. The grease traps were being pumped every three months with a one to two foot [30.5cm-61cm] grease caps and heavy bottom solids in both grease traps.

The Solution

United-Tech proposed a bioaugmentation program of adding BZT® Waste Digester to decrease the grease cap and bottom solids.

For this program, only one of the restaurants grease traps were treated while leaving the other restaurants grease traps untreated to be used for a control comparison.

The Results

After three months both grease traps were pumped. The untreated grease trap had a two-foot [61cm] grease cap and heavy bottom solids as before. The BZT® Waste Digester treated grease trap had only a slight grease sheen on top of the liquid and had no bottom solids.

This program proved that treating a grease trap with BZT® Waste Digester not only reduces grease caps and bottom solids but also provides the benefits of a faster, easier, more pumpable slurry and increases the capacity and efficiency of the grease trap by breaking down the grease cap and bottom solids.

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Grease and Drainlines Treatment Traps – Major University

Biological Treatment Summary

BZT® Waste Digester

The Situation

A major University was "out of compliance" on grease emissions into the city sewer systems. The major source of grease was coming from the main cafeterias on campus.

The Solution

United-Tech proposed an ongoing treatment program using BZT® Waste Digester to treat the drainlines and grease traps in all of the cafeterias.

The Results

- The University immediately came into compliance for grease emissions.
- Because of this success in the cafeterias, the University is now treating all drainlines and bathrooms in all of the residence halls and student housing campus wide, which has dramatically decreased plumbing calls for plugged drains.
- Since the treatment program was started, the University cafeterias have gone over two years without any grease emission compliance problems.

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Aerobic Digester – Wastewater Treatment Facility

Biological Treatment Summary

BZT® Waste Digester

The Situation

United-Tech in conjunction with a company who specializes in the privatization of wastewater treatment facilities and, responsible for the operation of a municipal wastewater treatment facility performed a test application on a 1MG [3,785m³] aerobic digester. During the treatment, physical and quantitative data was measured. Similar measurements were performed on another aerobic digester on site for comparative purposes. During the course of the project, the company's contract was not renewed and the project had to be halted. Although the project was not carried out to completion, several key benefits were noted.

The Results

1. Odor was greatly reduced and nearly eliminated within 24 hours of the initial application. Odor control was maintained throughout the course of the project.
2. BOD & COD levels dropped at a rate that had never been seen at the facility.
3. Physical testing indicated that the solids were being reduced and transformed into an easier solid to decant.
4. After the project was halted and the test digester emptied, the BZT® Waste Digester did not inhibit the facility's ability to decant and dewater the solids. Exact data was unobtainable due to the fact that during the decanting of the digester, the digester had to be used for storage because of an emergency relating to a broken pump.

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Odor & Sludge Reduction – Manufacturing Plant Waste Lagoon

Biological Treatment Summary

BZT® Waste Digester

The Situation

The company wanted to close down their 1,106,321-gallon [4,187.5m³] waste lagoon and connect to the city sewer lines. The problem was that prior to closure the organic bottom solids would have to be pumped out and hauled away after draining off the liquids. There was over three (3) feet [.91m] of bottom solids plus a strong odor coming off the lagoon.

The Solution

United-Tech proposed a bioaugmentation program that consisted of the addition of BZT® Waste Digester. A seed application was preformed followed by regular maintenance applications. The treatment program was designed to decrease sludge volume and decrease the odors in the lagoon.

The Results

After a few days the odors were gone. Six (6) months into the treatment program sampling was done and bottom solids had been reduced to one (1) inch [2.54cm] allowing lagoon closure and a massive dollar savings in dredging cost to the company.

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Paper/Pulp Sludge Reduction – Wallboard Manufacturer

Biological Treatment Summary

BZT® Waste Digester

The Situation

A wallboard manufacturer faced routine dredging of two settling ponds. Each event carried a price tag of well over $1,000,000. This was an annual event. Heavy paper/pulp sludge build up also strained their regulatory discharge limits leaving the settling ponds at risk.

The Solution

United-Tech proposed a bioaugmentation program that consisted of the addition of BZT® Waste Digester. It was proposed that a seed application be performed followed by regular maintenance applications. The treatment program was designed to decrease the overall sludge volume, expanding the time frame between dredgings.

The Results

Physical and quantitative data clearly shows that the sludge volumes decreased to the point that one of the ponds is now empty, and serves as a standby pond.

The company now relies on the beneficial results of BZT® Waste Digester and anticipates tremendous savings over time.

In less than a year, the company went from utilizing two treatment/settling ponds, plus a large finishing lagoon to operating only one pond. They do not see the need to dredge any time in the foreseeable future.

Note: The effluent flow out of this current pond is cleaner than historical effluent flow.

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Photos – Dairy Processing Plant

One of the largest dairy processing plant in the United States was experiencing very bad odors from their waste lagoons. This problem was generating complaints from the public. This plant was also experiencing massive, excess foaming.

United-Tech developed a treatment program, designed specifically to eliminate these problems, utilizing BZT® Waste Digester. After just four days, the odors were completely gone! In one week the foaming had stopped!

This facility continues the treatment program designed for them utilizing the BZT® Waste Digester and since starting this treatment program have not experienced odors or foaming.

Odor & Foaming





BZT® Waste Digester





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Photos – Pulp/Paper Manufacturer – Sludge Reduction



A wallboard manufacturer faced routine dredging of two settling ponds. Each event carried a hefty price tag of well over $1 million dollars. This was an annual event. Heavy paper/pulp sludge build up also strained their regulatory discharge limits leaving the settling ponds at risk.

United-Tech, Inc. proposed a bioaugmentation program that consisted of the addition of BZT® Waste Digester. It was proposed that a seed application be performed followed by regular maintenance applications. The treatment program was designed to decrease the overall sludge volume, expanding the time frame between dredging.

Physical and quantitative data clearly shows that the sludge volumes decreased to the point that one of the ponds is now empty, and serves as a standby pond.

The company now relies on the beneficial results of BZT® Waste Digester and has seen tremendous savings over time.

In less than a year, the company went from utilizing two settling ponds, plus a large finishing lagoon, to operating only one pond.

They do not see the need to dredge any time in the foreseeable future, and the effluent flow out of the current pond is cleaner than historical effluent flow.

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Photos – Rendering Plant

- **Facultative Lagoon with extremely high TSS & BOD levels**
- **Compliance Problems**
- **6 Million Gallon [22,710m³] lagoon with in/out flow of 300,000 gpd [1,135.5m³]**
- **Lagoon was full of solids with no "freeboard"**



BZT®Waste Digester
Product of United-Tech, Inc. Tulsa, OK

- Heavy grease cap covering 75% to 80% of the lagoon
- Out of compliance BOD (over 2,000) & TSS (over 11,000)
- Seed Treatment February 10



- No grease cap
- BOD 200-250
- TSS 250 – best average ever, never went below 300 before
- 12 inch [30.5cm] freeboard with over 12 inches [30.5cm] of clear water
- Belt-press gone from continuous operation to only as needed on a weekly basis
- No odors
- All solids are now emulsified, no longer impacted
- Pictures July – 5 months into treatment
- Temperatures during this time were recorded seasonal lows (Feb. – March)

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Photos – Rendering Facility – Sludge Reduction





Oil and Grease, Odor, and Sludge Reduction

A rendering facility faced numerous issues with its series of wastewater lagoons.

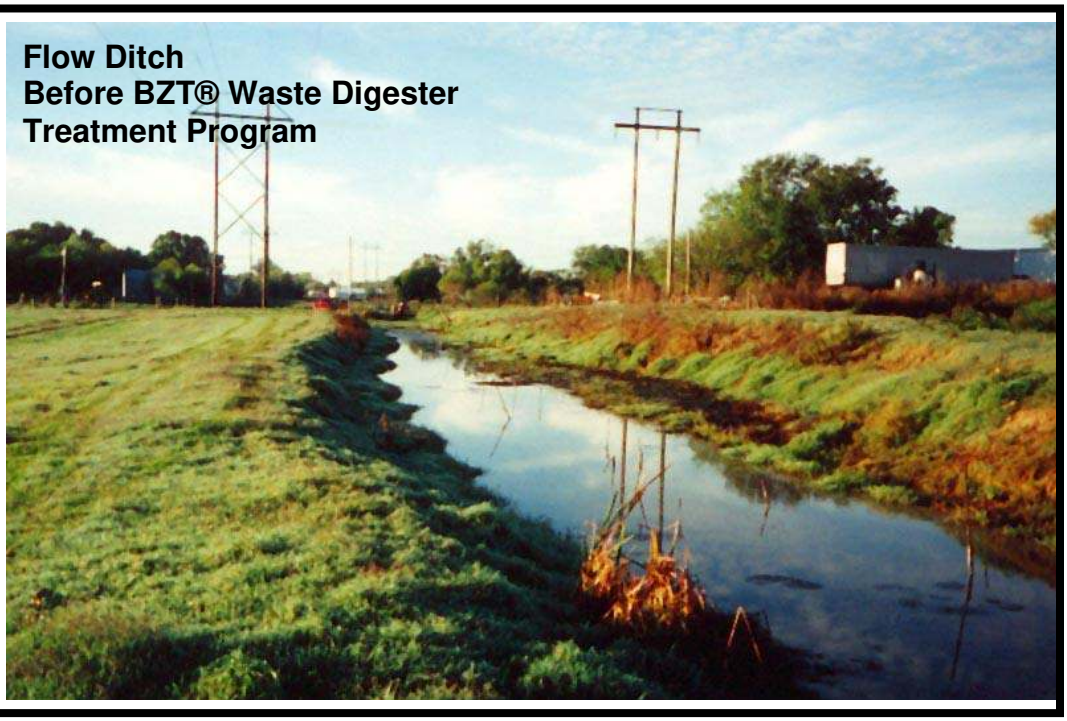
- Sludge build up had begun to take over the lagoon, decreasing capacity and putting regulatory limits in jeopardy.
- Oil and grease caps had taken over two of the lagoons, limiting their ability to aerate the system.
- Local residents complained about odors produced from the lagoons.

The company's only known solution was to dredge the lagoons and dispose of the sludge!

After utilizing United-Tech's BZT® Waste Digester program, the Oil and Grease caps had been taken under control, the odors had been eliminated, and after 120 days, the sludge depth readings showed over 60% reduction in sludge. The rendering facility continues to rely upon BZT® Waste Digester to maintain performance and regulatory limits.

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Photos – Rendering & Grease Processing Plant – Sludge Reduction



Flow Ditch
Before BZT® Waste Digester
Treatment Program



Flow Ditch
After BZT® Waste Digester
Treatment Program

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Photos - Rendering Plant – Sludge Reduction





No Odors, No Sludge, No Grease Caps

A Rendering Plant with facilities nationwide faced numerous issues with its series of wastewater lagoons. Sludge build up had begun to take over the lagoons, decreasing capacity and putting regulatory limits in jeopardy. Local businesses and residents complained about the odors generating from the lagoons, and oil and grease caps had virtually taken over.

Within days of the initial seed applications, there was a dramatic decrease in the odors generating from the lagoons and the oil and grease cap had been taken under control.

Technical data shows there was an overall sludge reduction across all the lagoons of 45% after just 60 days! The Rendering Plant continues to rely on BZT® Waste Digester for its performance and benefits, and the Corporate Headquarters has introduced BZT® Waste Digester into many of its other facilities nationwide.

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Photos – Wastewater Lagoon – Oil & Grease, Odor & Sludge Reduction



A rendering facility had numerous wastewater lagoons where they faced a number of issues.

1. Heavy sludge build up
2. Oil & Grease caps had begun to take over the lagoons
3. Local businesses & residents complained of odors
4. Regulatory limits were in jeopardy
5. Possible need to dredge the lagoons and dispose of the sludge

United-Tech personnel proposed a bioaugmentation program that consisted of the addition of BZT® Waste Digester throughout the lagoon system. United-Tech proposed that an initial seed application be performed followed by regular weekly maintenance applications. The program was designed to decrease overall sludge volume, decrease oils & greases, and keep odors under control.



THE RESULTS:

Within days of the initial seed application, there was an impressive decrease in the odor generated from the lagoons and the oil and grease cap had been taken under control. Eventually, the odors from the lagoons were ELIMINATED.

Sludge depth readings were taken at 60 days and 120 days. The initial readings at 60 days, showed an average sludge reduction of 45% across all the lagoons.

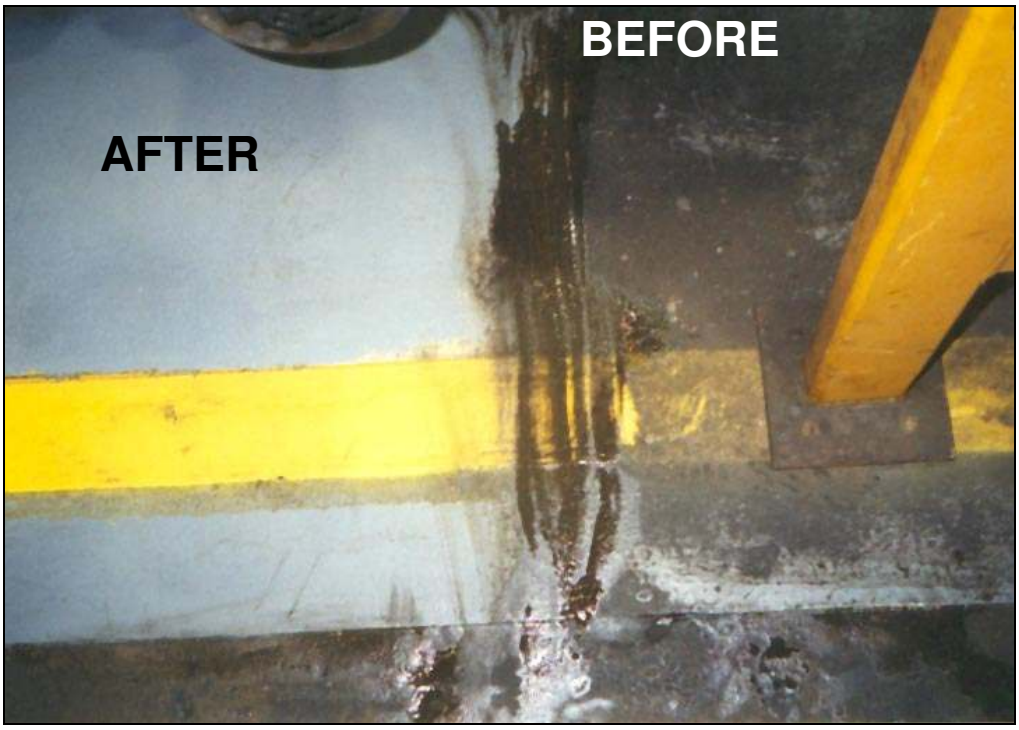
The sludge depth readings taken at 120 days showed all but 3-6 inches [7.62cm-15.24cm] of sludge left in two of the lagoons, with sludge reductions of over 60% in two other lagoons. The company continues to rely on BZT® Waste Digester for its performance and benefits. The corporate headquarters of the subject company is now introducing BZT® Waste Digester and United-Tech to many of its other facilities nationwide.

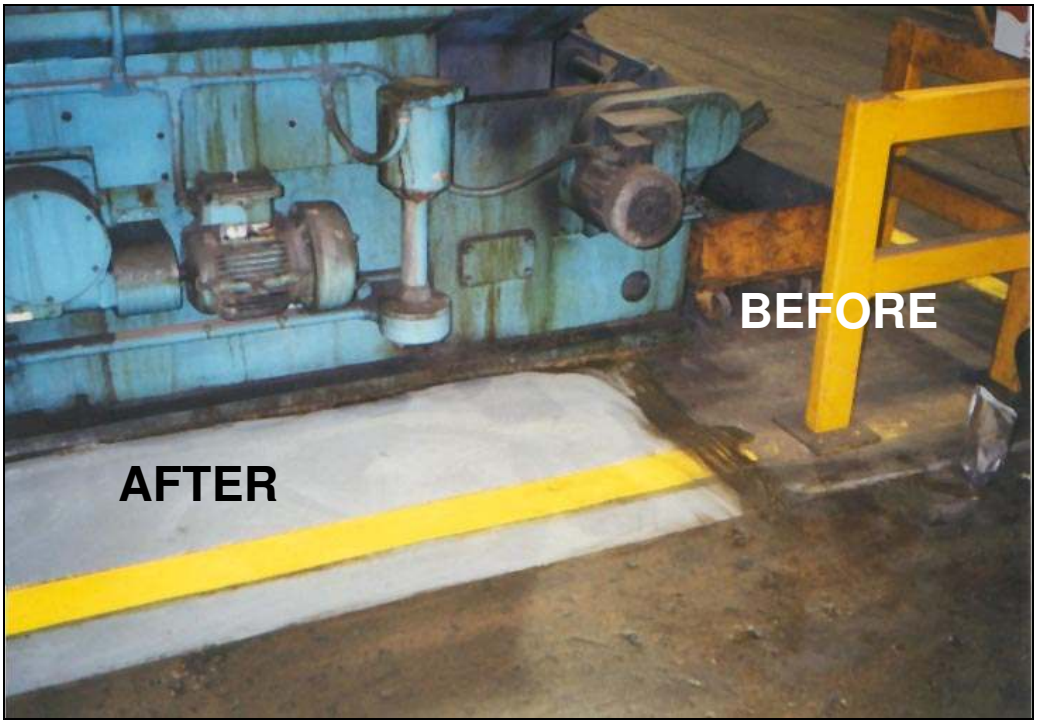
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Photos – Oil & Grease Floor Clean-up

BZT® Waste Digester

Product of United-Tech, Inc. Tulsa OK





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Photos – Food Processing Facility – Great Bend, KS

26 March, Day 1 of Treatment

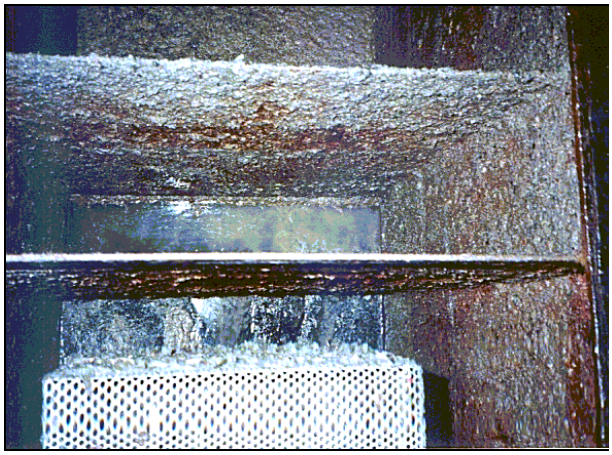


18 April, Day 23 of Treatment

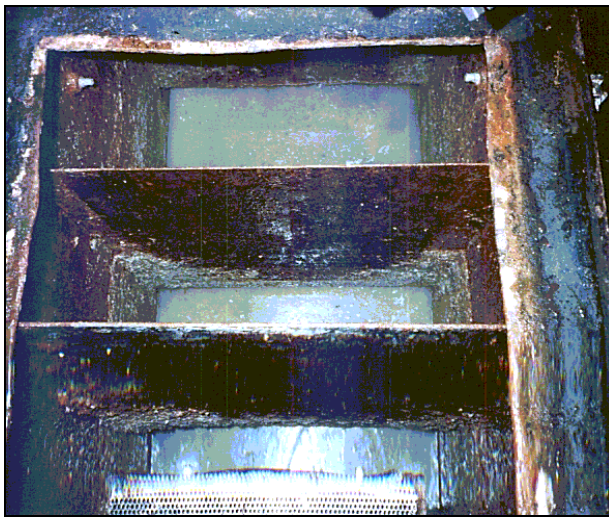


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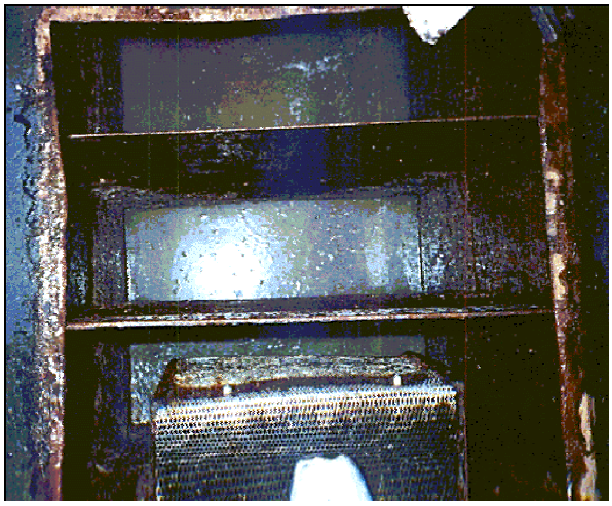
Photos – Grease Trap Treated



Day 1
of Treatment
Monday
(This had been cleaned
a day earlier)



Day 4
of Treatment
Thursday



Day 7
of Treatment
Sunday

BZT® Waste Digester
Product of
United-Tech, Inc., Tulsa, OK

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Testimonial – Warrick County School Corporation

Warrick County School Corporation
SUPERINTENDENT'S OFFICE

James R. Martin, Superintendent
Gina Berridge, Business Manager
Paul Ramey, Director of Curriculum and Instruction
Bradley Schneider, Director of Personnel
Mike Maday, Director of Student and Support Services

October 4, 2002

To Whom It May Concern:

United-Tech Indiana has been treating drains in our buildings for the past two years. Prior to contracting with United-Tech Indiana, our maintenance department regularly had to rout out our drains in the kitchens of our schools. Most of the drain clogs were due to grease being washed down the sinks. The bacteria treatment has completely eliminated the need for our employees to unclog the drains as the treatment has kept material in the drains in a liquid state. We have been very satisfied with Mr. Steurer and the treatment being used in our schools. We believe the treatment has freed our maintenance workers to use their time one other projects and the cost of United-Tech's applications has been money well invested.

In summary, I would recommend the BZT Waste Digester to anyone that is having problems with clogged drains.

Sincerely,

Jim Martin, Superintendent
Warrick County Schools

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Testimonial – Biological Solutions

February 18, 2002

Dear Dr. Barnard

This is the results of the force main treatment for the egg breaking plant located in Southwestern Indiana. The force main was treated in conjunction with a waste treatment system for the facility. The treatment was started in January 10, 2002. The force main was seeded, followed by a maintenance treatment.

The Wastewater Treatment Plant started seeing reduction in the COD at the plant after (5) weeks. Typical COD at the POTW averaged between 3,500 and 5,000. COD average for week (5) was 489.0 mg/l. The odors in the force main are gone. Both the egg plant and the POTW are extremely pleased with the program.

Sincerely,



Patrick W. Beamon
General Manager
Biological Solutions, Inc.

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Testimonial – Furrs Café

To Whom It May Concern:

Just a few months ago, I was very skeptical about using bacteria down the drains to take care of the grease in the drains and in the grease trap. Although now I am very pleased.

We have not pumped the trap in over six months and it looks great compared to what it looked like previously. There was over a foot of crust on top and it smelled very badly. Now it is simply liquid and the odor is not as bad. We have had no problems with the city or with grease build-up in the drains.

Sincerely,



Richard Hill
Furrs Cafe

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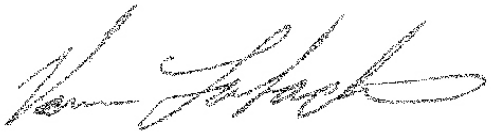
Testimonial – Golden Corral Restaurant

May 7, 2000

To Whom It May Concern:

The restaurant at which I am manager began using BZT® Waste Digester in the drains as a grease reducer in February of this year. It was done on a trail basis, in which results have been amazing. Finally someone has made a product that will not only help our drains, but in turn will help the cities drain problems too.

Sincerely,



Vann Labadie
Manager
Golden Corral Restaurant
Tulsa, Oklahoma

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Testimonial – Gambino's (Green Mountain Café)

December 13, 2002

To Whom It May Concern:

R&B New Beginnings, Inc. started treating Gambino's (Green Mountain Café) on August 25, 2001 with BZT® Waste Digester.

I have been very pleased with the results of the drain maintenance they have done. My drains stayed unclogged and working better than before.

I would recommend this service to anyone.



Manager
Gambino's
Branson, Mo.

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Testimonial – McGuffey's Restaurants, Inc.

To Whom It May Concern:

On March 27, 2002 the drains were first treated with BZT® Waste Digester. Since then I have had less problems with backups and clogged drains. I would recommend anyone using this service that wants to spend less money on plumbing bills.



Richard Huacuz
Manager
McGuffey's Restaurants, Inc.
Branson, Mo.

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Testimonial – Burger King

4 May 2000

To Whom It May Concern:

The restaurant at which I am a manager began using BZT® Waste Digester in the drains as a grease reducer in February of this year. It was on a trial basis. The results of this trial were amazing. Prior to the use of BZT® Waste Digester our store experienced severe drain problems at least once per month. Since February it has not occurred.

In working with Rick, he has explained and demonstrated how BZT® Waste Digester works. Each time he checks the progress, he allows me to observe. I am simply astounded at the success.

Thank you,

H. Lee Matheson
Manager Burger King Restaurant

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Testimonial – McDonald's

MLT, Inc.
PO Box 26340
Evansville, IN 47724

July 26, 2002

To Whom It May Concern:

We have been using United-Tech Indiana at our First Avenue store in Evansville, Indiana since February of 2001. United-Tech Indiana has served our restaurant's drains and grease trap.

Since we began using the service, we have not had to have our grease trap pumped out or cleaned one single time, and the grease trap is in great shape. We have not experienced any odor with the sewer lines that previously had been a problem.

As an operator of a food service establishment, we not only had the high cost of grease disposal but we also had the added difficulty of finding someone to haul the byproduct off site. We have not had to worry about this since we have used United-Tech Indiana. And as responsible corporate citizens, we also no longer have to worry about the environmental impact the disposing of our grease would cause.

We intend to keep using the services of United-Tech Indiana at our First Avenue location.

Sincerely,

Bill Barrett

Bill Barrett
Business Consultant
MLT, Inc.

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