



Eco-Friendly Sanitizing Solutions

# DIGESTOR

A BIO ENZYMATIC  
SOLUTION

From  
ADS ENZYMES PVT.. LTD.



Eco-Friendly Sanitizing Solutions

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**SOLID ORGANIC & LIQUID WASTE  
MANAGEMENT (SLWIII) AND WASTE  
WATER TREATMENT**

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# **DIGESTOR**

**A BIO ENZYMATIC SOLUTION**

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**CONVERTING WASTE TO  
VIABILITY**

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# The Challenges of Water Scarcity & Sanitation

- 50% of rivers are polluted.
- 80% of all sewage flows directly into rivers untreated.
- Only 9% of wastewater is treated in the country, before it is discharged into water bodies.
- 80% of our surface waters are contaminated and 80% of water pollution was due to untreated sewage.
- Only 20% of 38bn liters of daily sewage is treated, and most of it is discharged into fresh water bodies.
- The number of polluted rivers are increasing
- The sewage generated has increased to



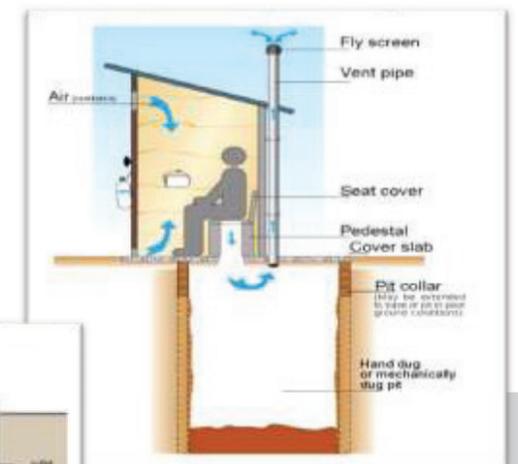
# Current Challenges in Septic Tank, Pit Toilets & Polluted Lake & Pound, Defunct Toilet

A septic tank is a small-scale sewage treatment system common in areas that lack connection to main sewage pipes provided by local governments or private corporations.

The term 'septic' refers to the anaerobic bacterial environment that develops in the tank which decomposes or mineralizes the waste discharged into the tank.

## Issues

- Periodic preventive maintenance to remove solids
- Bad Odour
- Manual/ machine Cleaning
- Underground water pollution
- Flies and Pests
- Water Borne Diseases



## Current Challenges in Grease Traps in Restaurants, Hotels & Resort

Grease trap is a receptacle that kitchen wastewater flows through before entering the sanitary sewer lines. This receptacle intercepts, captures, or traps grease.

Grease is 10 to 15 percent less dense than water. Grease also won't mix with water. As a result, fats and oils float on top of water.

### Issues

- The grease and food stuff solidifies inside Grease traps The Grease traps have foul odour
- The Grease traps are needed to be emptied frequently (every 3-4 days).
- Pests and Insects Growth
- The drain lines are often clogged
- There is a backflow of bad odour in Kitchen and surroundings Oil and Grease to be manually removed.
- Can be a cause of water borne diseases



## Current Challenges in Sewage/ Effluent Treatment Plant

Sewage treatment is the process of removing contaminants from wastewater, primarily from household sewage. It includes physical, chemical, and biological processes to remove these contaminants and produce environmentally safe treated wastewater (or treated effluent).

A by-product of sewage treatment is usually a semi-solid waste or slurry, called sewage sludge that has to undergo further treatment before being suitable for disposal or land application.

### Issues

- The STP area is always emitting foul Odour
- The current system does not treat Oil and fats.
- The solids needs to be digested and STP cycle time is longer
- The Water coming out of STP has foul smell leading to issues with water being used in Gardening.
- It's difficult to maintain the right environment to maintain bacteria. The initial set up and maintenance cost is high



## Current Challenges in Hog & Poultry Farming /Animal Husbandry

### Issues

- Disposal of wastes that contribute to Air and water Pollution
- Foul Smell In surrounding Area
- Space Problem for stacking



## Current Challenges in Slaughter House

### Issues

- Bad Odour
- Blood, flash and fat create water pollution Line clogging of drain line
- Heavy oil and grease



## Current Challenges in Solid Organic Waste

### Solid Waste Management - Organic

Municipal solid waste (MSW), commonly known as trash or garbage is a waste type consisting of everyday items that are discarded by the public. 11Garbage11 can also refer specifically to food waste, as in a garbage disposal; the two are sometimes collected separately

Approx. 65% of all solid waste is organic

### Issues

- Organic waste is going to land fills Degrading Organic waste emits foul smell.
- Organic Waste leaches water that pollutes Ground water/ lakes and river system
- Causes Air, Water and soil pollution.
- New Dump sites are not available and expensive



## PROBLEM AREAS PONDS AND LAKES

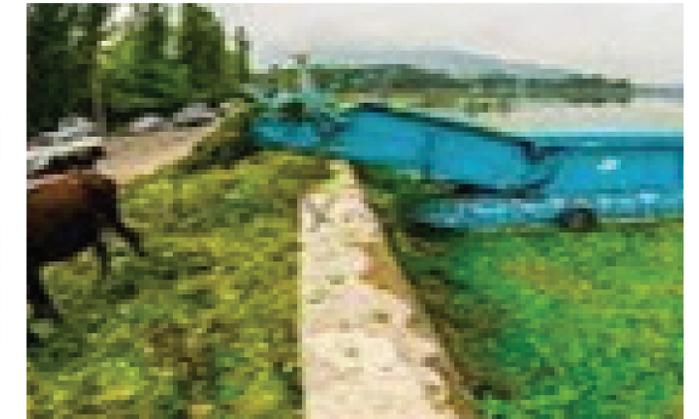
Sewage dumping in the lakes Household waste being dumped in the lake  
Upstream water pollution



## PROBLEM AREAS WEEDS IN LAKES

WEEDS IS GROWING DUE TO :

- Sewage dumping
- Excessive of fertilizers
- Dead plant acts as fertilizers for the weed



**PROBLEM AREAS**

**ALGAE AND DEAD BIOMASS**



**CURRENT  
CHALLENGES**

## CURRENT CHALLENGES



## Issues Due to the Problems

- Bad odor in ponds and lakes
- BOD, COD, TSS Nitrates and Phosphate percentage increase in Ponds
- Due to High BOD & Lack of Dissolved Oxygen Aquamarine life dead
- Water Hyacinth harvest in ponds due to that dissolved oxygen reduced in water
- Water pollution
- Water pollution
- No ground water recharge due to oily surface at the pond bottom



**SOLUTION**

## TRAPPING OF WASTE WATER

- Construction of Drains to collect waste water on surface
- Construction of silt chamber in drains
- Connect all the drains at one point before to discharge in Pond.
- Connect all the drains at one point before to discharge in Pond.
- Start treatment from silt chambers



## WATER HYACINTH HARVESTING

- The best method of elimination of Water Hyacinth is harvesting equipment. It cuts the plant deep from the root and crushes the plant and having the storage space allowing to throw out of reach of water.



## WATER HYACINTH HARVESTING

- For restoring the lake ecosystem. The major benefits of the sludge digester (Bacteria):
- Reduction in COD/BOD levels
- Reduction in sludge yield and accumulation
- Removal of odor generation
- Improves nutrient removal
- In Nature all animal and vegetable matter, from insects to mighty oaks, in broken down and recycled into plant food by enzymes and bacteria. Digester uses this same principle to biodegrade animal and vegetable waste. Enzymes act like short order cooks. They prepare food for bacteria by breaking large molecules down into a size the bacteria can "eat". Each enzyme works on one specific type of molecule. For example, the protease enzyme only works on protein.
- Dosage of DIGESTOR depends on organic load , BOD,TSS,PH,Oil& Grease.

## AERATION OF LAKE WATER

- The aeration will oxidise the organic matter helping in reducing the level of pollution in the lake. The oxygen will be added in the whole lake water column which will help in decreasing the concentration of the toxic gases in due course of time. To oxygenate the lake water which is generally anoxic or has poor oxygen concentration, reduce BOD level, optimize nutrient load of nitrogen, phosphorus, and other elements in the whole lake column, lake aeration will be done through approximate aeration discs (on the basis of water volume and culture report) fixed at bottom covering the whole lake area connected with Blower/compressor with ozone system. The amount of muck present in the bottom will start to decrease. The aeration will also decrease Phosphorus (P) concentrations within the lake. Phosphorus is one of the main nutrients that support the growth of algae blooms.



## OZONATION

- The benefits of ozonation are as follows:
- Ozone dissolves into water 13 times faster than O<sub>2</sub>
- Kills viruses, bacteria, molds, spores, and cysts up to 3000 times faster than chlorine
- Oxidizes Nitrite to Nitrate
- Oxidizes organic nutrients, chlorohydrocarbons
- Precipitates iron, manganese, and heavy metals from water
- Produces increased water clarity
- Affect soil absorption rates of salts and other compounds



## BIO MANIPULATION TO MAINTAIN THE FOOD CHAIN SPECTRUM

The technical intervention will be done in such a manner that the population of the undesirable fish species is reduced. The lake will be stocked with eco-friendly fishes/organisms (beneficial zoo plankton, phytoplanktivorous fishes, weed eating fishes and insectivorous fishes) as per requirement. Also, aquatic weeds present in the lake will be controlled through different de weeding methods.



## BIO REMEDEATION By DIGESTOR

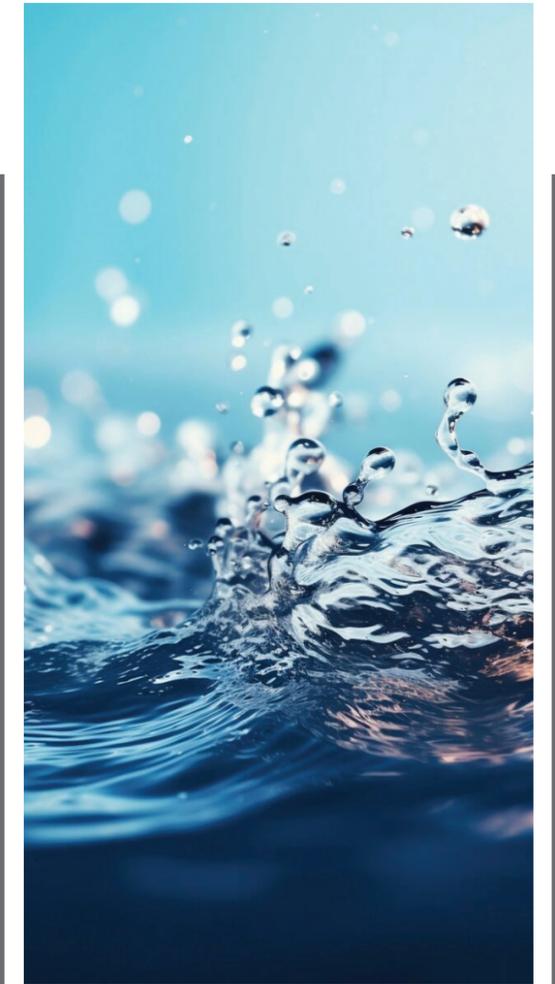
- DIGESTOR is a revolutionary sanitation product, which is primarily a prevention before cure.
- It is made of aerobic and anaerobic bacteria and digestive enzymes. consume food.
- When the mixture is poured into sludge or waste, its bacteria begins digesting it, like we
- It is ideal for sanitizing pit toilets (long-drops), sewage spills, hospitals, slaughterhouses, river algae and everyday contaminated water. river algae and everyday contaminated water.
- DIGESTOR can be used in sanitizing garbage disposal systems, grease traps, eliminating odors, sumps with pumps, pit toilets, drains, river algae and a whole range of pollutants and infectious resources at extremely economic costs. Most importantly with the emission of eco-friendly precipitates.
- It eliminates the needs to clean grease traps and cable drains, buy dangerous chemicals, deodorizers and costly compensation for employees that have been injured by using dangerous chemicals.

## How does Digestor Work?

With DIGESTOR	Induced Enzymatic Digestion	Solid Waste is Liquefied
Source of Odor is Digested	Pest Attractions are Digested	Better Hygiene & Happy Residents

## ADVANTAGES OF DIGESTOR

- No methane emission is involved and hence no exhaust system is required.
- There is no odor due to its reactions.
- There are no micro organism, flies, ants or any other pests left as their food source is depleted-it is consumed by the bacteria.
- Being a simple tank, the discharge outlet can be designed for easy flushing.
- Fiberglass tanks can be used that are lighter in weight and corrosion free.
- Unskilled manpower can be used in its application.
- A simple tank would be needed with a primary mesh filter to keep away the plastic and other such products from entering the tank.
- It can tolerate temperature up to 70°C and common cleaning chemicals.



## WATER REUSE AND SANITATION MARKET

Expected to be one of the top markets for Water Reuse.

We can also create opportunities for water reuse.

Growing at over 16% per annum, the overall sector presents a good opportunity for investors.

Metropolitan cities has number of pit toilets and septic tanks.

We need not only to look for CSR funds and private initiatives from companies and individuals, but we need an actionable plan of ensuring easy degradation of sludge, wastes and pollutants so that they do not continue to affect our water resources.

## CONCLUSION

- Increase in the transparency of the pond water.
- The decrease in the concentrations of the toxic gases, like carbon dioxide, ammonia, hydrogen sulphide and methane etc.
- Decrease the concentrations of nutrients like nitrogen and phosphorous.
- Decreasing the production of algae thus increasing the transparency of the water.
- Replace the undesirable flora and fauna to lead to the development of desirable life forms in the water.
- Create conditions suitable for the growth and breeding of environment friendly fish species.
- Increase the concentrations of dissolved oxygen in the pond.
- Restoring the pond ecosystem completely.



# HOW MUCH DOES THIS COST THE NATION? DRAIN OF WEALTH & LIFE

The government has earmarked \$3 billion for Ganga rejuvenation.

It plans to pump in \$6 billion to increase the country's forest cover to re-equilibrate water resources.

Since 2015, India has spent \$956 million on sewage and waste treatment.

Over 60 billion rupees have been approved for cleaning rivers in 21 states over the last three years.

Deaths due to malaria and dengue account for 300.00 deaths annually

Diarrhea itself claims the lives of half a million children under 5 years

India loses about US\$5.1 billion, annually, due to lack of hygiene

The cost of a shower in India is US\$ 0.92, which is about 20% of the average daily income



# A HUGE TOLL ON THE ECONOMY

By 2025 annual per capita availability of water will fall from the actual requirement

The economic losses due to sanitation on Country GDP

Premature mortality and other health-related impacts cost 71.6% of total impacts.

Sanitation casualties account for \$10.7 billion, and drinking water-related impacts, \$4.2 billion, 7.8%

Over three-fourths of the mortality-related losses are due to deaths and diseases in children below five.

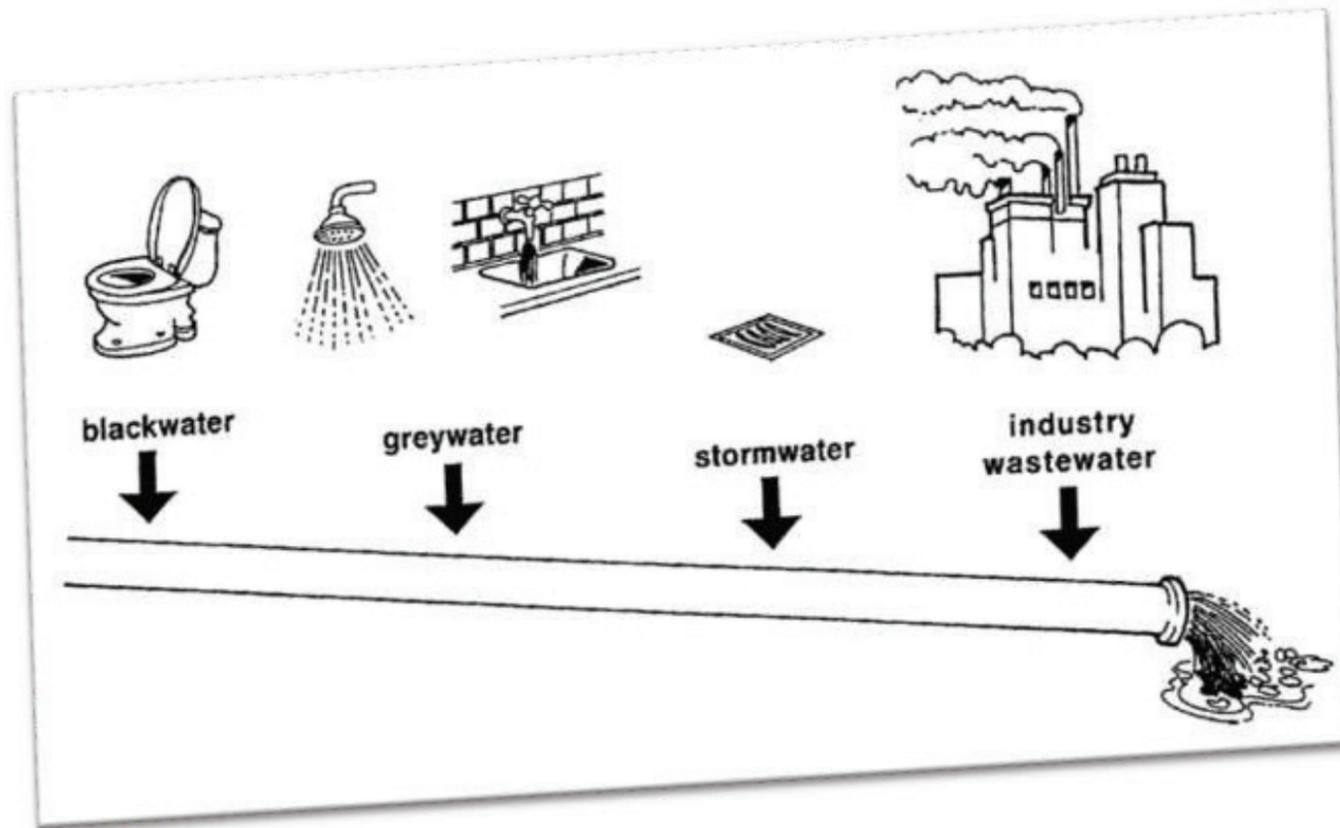
Losses at least 1000 children a day to diarrheal deaths.



# FAULTY DISCHARGE SYSTEM

In Flush and Discharge system, a small amount of dangerous material -  
Huma Feces

is allowed to pollute a huge amount of water



# DIGESTOR

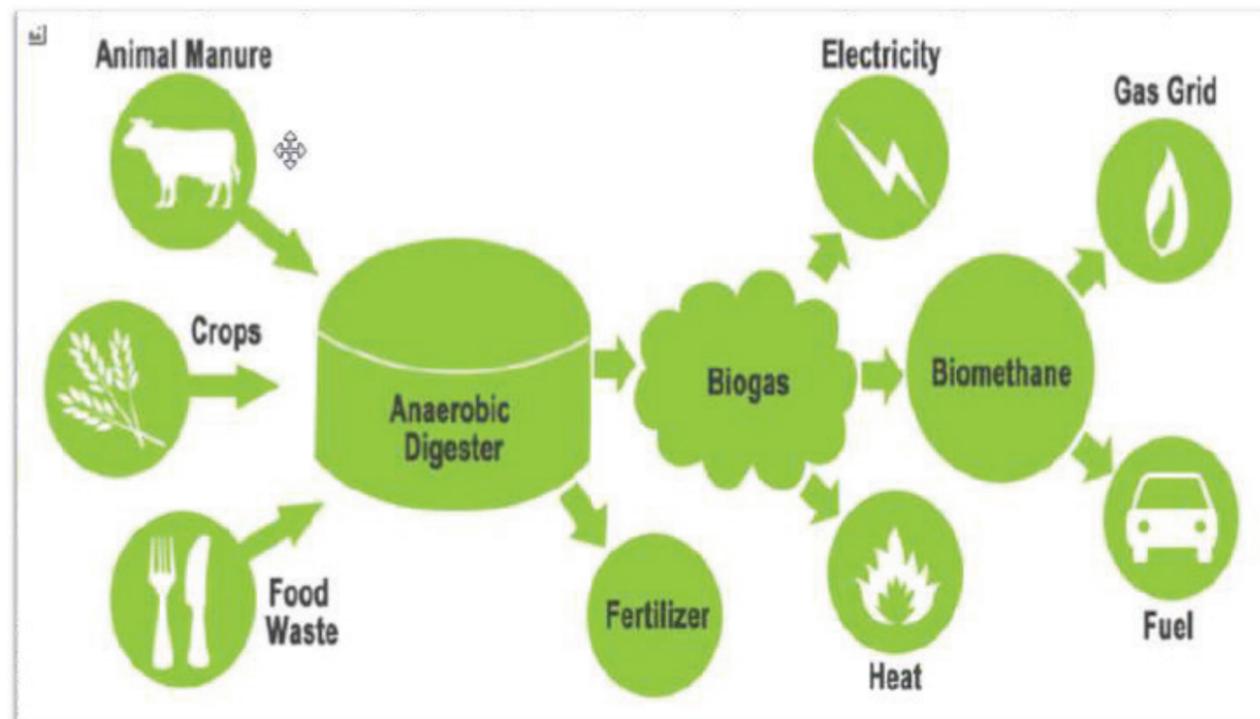
A Breakthrough in sanitation management



## How can Digesteor help in Sanitation?

- DIGESTOR is a revolutionary sanitation product which is primarily a prevention before a cure
- It is made of aerobic and anaerobic bacteria and digester enzymes
- When the mixture is poured into sludge or waste, its bacteria begins digesting it, like we consume food
- It is ideal for sanitizing pit toilets (long-drops), sewage spills, hospitals, slaughterhouses, river algae and everyday contaminated water
- DIGESTOR can be used in sanitizing garbages disposal systems, grease traps, eliminating odors, sumps with pumps, pit toilets, drains river algae and a whole range of pollutants and infectious resources at extremely economic costs, and more importantly with the emission of eco-friendly precipitates
- It eliminates the needs to clean grease traps and cable drains, buy dangerous chemicals, deodorizers, and costly compensation for employees that have been injured by using dangerous chemicals

## How can Digester help in Hog/Poultry/Animal Husbandry



## A summary of uses & features of Digester

- A Cost-effective
- Ready to use product
- That's environment friendly
- Provides rapid system recovery
- Degrades tissues, detergents oils, fats and grease
- Accelerates bio-degradation of organic wastes
- While improving the overall ecosystem's biological stability
- Since it is a much safer alternative to caustic or acidic cleaners
- Non-corrosive and easy to use
- It removes bad odors
- Reduces organics that attract pests
- Prevents water-borne disease
- While itself being non-toxic, and containing
- No chemicals or pathogens
- It also reduces load in septic drain fields
- And reduces frequency of pumping



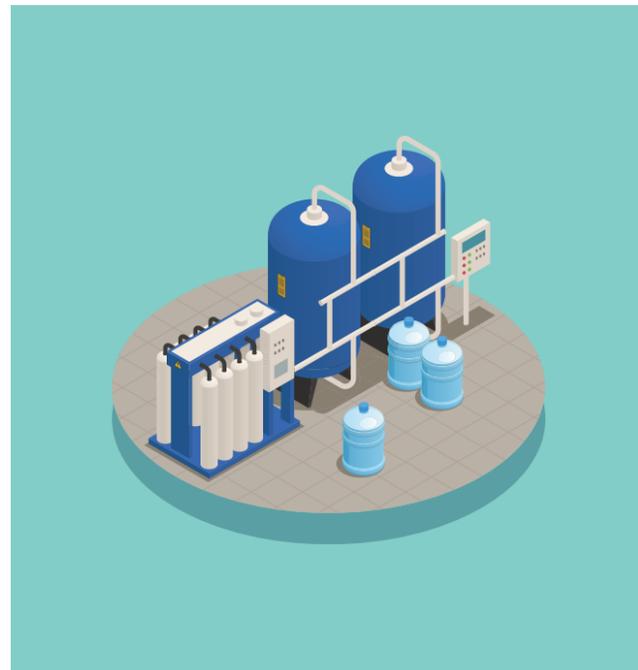
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- There is no odor due to its reactions.
- There are no micro organism, flies, ants or any other pests left as their food source is depleted—it is consumed by the bacteria .
- Being a simple tank, the discharge outlet can be designed for easy flushing.
- Fiberglass tanks can be used that are lighter in weight and corrosion free.
- Unskilled manpower can be used in its application.
- A simple tank would be needed with a primary mesh filter to keep away the plastic and other such products from entering the tank.
- It can tolerate temperature up to 70°C and common cleaning chemicals.



## DETAILS USES & FEATURES OF DIGESTOR

- Regular maintenance with DIGESTOR prevents buildup of gunk or clogs in areas which are prone to accumulating biodegradable waste.
- In 2-4 hours of being poured into bowls or pans, the bacteria of the admixture embed themselves onto the waste particles. They are not flushed out after that, even though the toilet is flushed. They keep digesting the waste.
- DIGESTOR does not contain any acid, lye, solvents, perfume or poisonous substances.
- It does not attack tree roots unless they are completely dead. It also discourages growth of tree roots in sewers.
- DIGESTOR is highly effective on oils, fats, grease and paper which are difficult for intestinal bacteria to metabolize.



## APPLICATION



Hospitals



Marinas



Passenger Ships



Refugee Camps



Pit Toilets



Schools



Restaurant Sewage



Raw Sewage Plants



Waste Dumps



Rivers and Lakes



Industrial Sewage



Agricultural Sewage

## BEFORE AND AFTER



## SAFETY PRECAUTIONS & STORAGE

- DIGESTOR is an environmental friendly, safe-to-use product that contains a non-GMO strain of Bacillus Subtilis spore and various Enzymes derived from this organism, for example Bacterial A Amylase and Proteases.
- No product specific certification is provided, however the strain for the active ingredients is non-pathogenic and its enzymes are produced by standard fermentation techniques and conform to
- Generally Recognized as Safe (GRAS) status. They have FDA approval for Foodstuff applications.
- The preparation conforms to FAO/WHO and FCC recommended standards. In the event of an accidental spillage wash the affected area with copious amounts of water.
- To maintain maximum activity of the enzymes and the viability of the bacteria, DIGESTOR should be stored under cool and dry conditions.
- Bacteria/Enzymes present in Digester will tolerate temperatures up to 70°C. However, the bacteria in the product cannot tolerate temperatures in excess of 50°C. High concentrations of heavy metals will inhibit the activity of the product. Common cleaning agents, containing chlorine (bleaches) and quaternary ammonium compounds (disinfectants) etc., can have a detrimental effect on the product. Neutralization of these inhibitors is necessary before treatment with DIGESTOR.
- DIGESTOR does not guarantee that the above products can be used as described without prior positive testing or the use of these products does not infringe third parties' patent rights

## HOW DIGESTOR IS ECONOMICAL

- Digester is easy to use & transport any where swiftly.
- Digester clean the pipes as new without any side effect on construction material.
- Digester is best preventive measure to avoid clogging, bad odor, organic scaling around pipes, ies & pests and water contamination.
- Digester does not require skilled manpower to apply in position.
- Digester used at source and no solid accumulation will happen in drains.
- Treated water can be used for horticulture work.
- Digester resolve the problem at source due to that we said continuous use of Digester is very economical.
- Machineries (Tankers & Pressure machine ) have limited Movement & high pressure can damage Pipes joints.
- Machine & other acid base material can not clean drain pipes effectively. Machine & acid clear the blocking only but also damage pipelines, its joints and also harm human life.
- Machine & Acid base material are not preventive measure.
- For machines need skilled manpower, resources, equipment's & limited access at very high cost.
- Water can not be reused, unless Further treatment is not done.
- Machinery have very high cost and it works only at one place.

# ADS ENZYMES PRIVATE LIMITED

## BIO-ENZYMATIC CLEANING SOLUTIONS

### DIGESTOR

#### ORGANIC WASTE SOLUTION

A Strong & Superior quality product ensures the effective degradation of solid organic waste in pit toilets, septic tanks, Sewer Lines, Mess Kitchen and more.

### INTRODUCTION

In Nature all animal and vegetable matter, from insects to mighty oaks, is broken down and recycled into plant food by enzymes and bacteria. DIGESTOR uses this same principle to degrade animal and vegetable waste.

Like all living things, bacteria must eat to survive. Fortunately, certain types of bacteria will use for food the grease, hair, soap film and all the organic waste.

### DIGESTOR IS A BLEND OF BACTERIA AND ENZYMES

The bacteria are natural, not genetically engineered. The enzyme concentration is the most powerful on the market. DIGESTOR is a proprietary blend of superior aerobic and anaerobic bacteria selected for their ability to degrade organic waste. The product contains both aerobic (not less than  $8 \times 10^9$ /g) and anaerobic bacteria (not less than  $8 \times 10^9$ /g) in near equal proportions and hence can be used in many different applications.

### SPECIFICATIONS

Appearance	Tan coloured
	Low dusting powder in a cereal/salt base
Solubility	> 95% in H <sub>2</sub> O
Aerobic bacteria	Not less than $8 \times 10^9$ /g
Anaerobic bacteria	Not less than $8 \times 10^9$ /g
Heavy metals	Less than 50 ppm
Aflatoxins	Absent
Antibiotic activity	Absent
E.coli	Absent in O.Ig

### OPERATING CONDITIONS

Optimum pH	4.5-9.0 PH Effluent with a pH outside this range should be pre-treated with a suitable acid or lime prior to dosing with DIGESTOR
Temperature tolerance	Enzymes up to 7 °C

### SAFETY

DIGESTOR is non-toxic. It creates no heat, no fumes, no boiling. It does not attack live tissue or inorganic materials, only organic wastes like grease, hair, food particles, paper, cotton & sewage. This makes DIGESTOR safe for people, plumbing and the environment. DIGESTOR changes the waste particles into water, carbon dioxide and mineral ash which run harmlessly out of your waste system. These elements are then available for plant life.

### EFFECTIVENESS

Within minutes after pouring the bacteria into the affected area, the bacteria begin to eat their way into the waste that has accumulated. This is their natural food. They digest the waste and spread throughout your system, cleaning it completely.

### MULTIPURPOSE APPLICATION

Residential and commercial applications

**All drain and sewer pipes, including:**

- Pit Toilets (long-drops) or (Poof•Ooofs)
- Kitchen Sinks
- Lavatories
- Bath tubs
- Showers
- Floor drains
- Laundry drains
- Septic tanks and drain fields
- Garbage disposal odours
- Grease traps
- Sewage ejector sumps
- Outdoor outhouses and cesspools
- R.V. & boat holding tanks
- Lift Stations
- Cat Utter Boxes

### HOW IT WILL BE BENEFITTED

- Digester is recognized as GRAS (generally recognized as safe) has no side effect on living organism.
- Digester will reduce Maintenance cost of Machineries in STP/ETP plant by reducing organic load.
- Digest or will reduce frequency of emptying Septic tank, grease Chamber, Pit toilet by reducing organic solids.
- Digester will help in saving water, create hygienic environment, and remove foul smell from STP water.
- Digester treated water can be used directly for Horticulture purpose because No foul smell, No water borne disease bacteria, No pollution, No side effect.
- Digester is easy to use no machinery required, no specialized manpower required.

## ECONOMICAL

- Eliminates the need to clean grease traps and cable drains
- Eliminates the need to buy dangerous chemicals
- Eliminates the need to buy deodorant blocks (urinals)
- Eliminates costly compensation to employees that have been injured by using dangerous chemicals

## ECONOMICAL

In Nature all animal and vegetable matter, from insects to mighty oaks, is broken down and recycled into plant food by enzymes and bacteria. DIGESTOR uses this same principle to degrade animal and vegetable waste.

Like all living things, bacteria must eat to survive. Fortunately, certain types of bacteria will use for food the grease, hair, soap film and all the organic waste.

## HOW TO USE DIGESTOR

In Nature all animal and vegetable matter, from insects to mighty oaks, is broken down and recycled into plant food by enzymes and bacteria. DIGESTOR uses this same principle to biodegrade animal and vegetable waste.

Like all living things, bacteria must eat to survive. Fortunately, certain types of bacteria will use for food the grease, hair, soap film and all the organic waste that tend to clog people's drains and fill pit toilets.

Enzymes act like short order cooks. They prepare food for bacteria by breaking large molecules down into a size the bacteria can "eat." Each enzyme works on one specific type of molecule. For example, the protease enzyme only works on protein. Lipase works only on fats.

The bacteria in DIGESTOR are dormant while in the container. When exposed to or mixed with water they come to life in few minutes. In the meantime, the enzymes are breaking down the waste. They act very fast. In fact, they work on contact. When the bacteria revive they are hungry. Each one eats its weight of waste every minute • and they never sleep! As a result of eating and growing they start to multiply through cell division. Their numbers will double rapidly under favourable conditions.

In the treatment of drains for example DIGESTOR should be mixed with warm (not hot) water and applied when no water will be drained for six to eight hours. This allows some of the bacteria time to embed themselves into the waste so they won't be washed out when water is drained again.

Periodic maintenance treatment prevents new organic waste build-up, so no slower drains or clogs!

## SEPTIC SYSTEMS

Most septic systems in operation do not function well. The tanks need pumping frequently because of solids build up. All too often the fields stop absorbing water prematurely. The number one reason is the vast array of household chemicals which either inhibit or kill biological action. The coliform bacteria normally present in sewage are in no way equal to present daily demands. They are used to warm body temperatures and are poor enzyme producers. They cannot handle synthetic materials present in detergents even under the best conditions.

DIGESTOR contains not only potent enzymes, but also contains bacteria that outperform the coliform species in very important ways. They are high producers of enzymes and they are acclimated so that they feed on a larger variety of materials in the waste such as fats and grease, vegetable oil, paper, detergents, fabric softeners, aliphatic and aromatic organic compounds as well as synthetic organics.

Chemicals, bleaches, detergents, food preservatives and bowl cleaners inhibit or kill bacterial action within your septic system. This lets solids accumulate in the tank, some of which flow out and clog the drain field. DIGESTOR will restore the necessary bacterial action and make your system work at full efficiency! People on a septic system must select their cleaning products very carefully. Do not use chemical cleaners in conjunction with DIGESTOR.

## GARBAGE DISPOSAL SYSTEMS

Odours come from waste that sticks to the disposal wall and slowly moulds and rots. It is hurled there by the high speed rotating blades. By using DIGESTOR the waste will be quickly digested by the live cultures, thus eliminating the odour.

## GREASE TRAPS

Cleaning out a grease trap is the worst of jobs in a foodservice operation. After the horrible odorous muck is removed it still has to be disposed of. Unfortunately, we are running out of landfills to put it in. DIGESTOR will digest the grease, eliminating the unwanted task, as well as the disposal of the pollutant. Of course, the grease trap must be large enough to accomplish two things. The flow of the water through the trap must be 1) slowed and 2) cooled, so that the oils and fats can rise and be retained between the baffles while the water continues down the sewer. Also, a garbage disposal should never discharge into a grease trap. If these criteria are met, daily treatment of the pot sink will maintain the digestive action. By eliminating the need to pump the trap is a significant cost saving?

## SUMPS WITH PUMPS

When ground water accumulates in sumps, odours may be noticeable. This is especially true if household or sanitary waste is present. DIGESTOR eliminates the odour by quickly digesting organic material in the waste water. Pumps will require less energy when the rotor, housing and lines are free of build-up. Lower energy costs and longer pump life are added bonuses for using DIGESTOR.

## PIT-TOILETS (LONG\_DROPS)

Mention a pit-toilet and the first thing that pops to mind is ODOUR, FLIES and MAGGOTS!

DIGESTOR turns the waste into water and carbon dioxide very quickly. This dramatically reduces odour and flies and without flies there are no maggots. Cleaning and disposal of the pit become easier and it is more pleasant for the user, too. Filling of the pit toilet is significantly prolonged and percolation into the underground is contaminant free.

## R.V. & BOAT HOLDING TANKS

As the waste water level increases in the tank some scum adheres to the sides and sensor. When the tank is drained, more scum is deposited. With continued use, this coating becomes odorous. It is additional weight and reduces tank capacity. There is no large access to the tanks and the build-up is so great that clean-up is difficult and time consuming that replacing the tank is often less expensive!

R.V.'s using chemicals in their tank are also encountering the new problem of not being able to dispose of their chemically treated waste at many dump stations. Waste water treatment plants do not want this chemical toxicity in their plants, so they charge dump stations large fines.

If DIGESTOR is used from the beginning, a tank will drain cleanly, including the sensor, if there is one. Using DIGESTOR in a tank previously treated with chemicals will take larger doses and some time to overcome the toxicity. It will, however, remove the old build-up. Waste from tanks treated with DIGESTOR is accepted anywhere because it is biologically active.

## QUESTIONS & ANSWERS

### How does DIGESTOR work in pit-toilets?

### How can such a small amount of DIGESTOR be effective?

There are millions and millions of bacteria in each spoonful. Each one will eat its weight of waste every 60 seconds. They double in numbers every few minutes, and as they multiply they will spread throughout the entire drainsystem.

### Will it work on a clog?

If the material is biodegradable, yes. However, in most cases, the stoppage is not caused by a blob of something in the trap. Most likely, it is several feet of pipe that is filled with "gunk", and it may take several days for the bacteria to eat through this long blockage. Therefore, it is suggested that a

mechanical cable be used to restore the flow. Then begin DIGESTOR treatments to remove any remaining waste build-up. Regular maintenance with DIGESTOR will prevent new build-up.

### How long will it take to see the results?

Some people notice improvement within an hour other problem areas in a day or two. Almost everyone will see results in one to three weeks. Note: The cleaning process is not completed with the initial treatment. The time is determined by the type of material the build-up is comprised of (grease, soap, hair) and the length of the lines. Hair takes the longest to digest.

### Should the toilet be flushed after pouring DIGESTOR into the bowl?

Do not flush for 2-4 hours. The mixture poured into the bowl pushes equivalent of water and mixture out of the bowl into the stack. The enzymes and bacteria carried out leaving the bowl are deposited on the effluent coating the pipe. In the following 2-4 hours they embed themselves in the waste so that when the toilet is next flushed they will not be flushed out.

### Are chemical drainopeners much stronger than DIGESTOR?

The strongest chemical in the world can't climb the side walls of horizontal pipes. Gravity makes all chemicals run along the bottom. Nor can chemicals remove much waste in vertical pipes because they flow through so quickly. The bacteria in DIGESTOR are live cultures and will go anywhere there is food. They will remove the waste chemicals leave behind.

### Does DIGESTOR contain any acid, lye, solvents, perfume or poisonous substances? No.

### Will DIGESTOR attack tree roots?

Only roots that is completely dead. Roots enter sewer pipes seeking the rich organic food supplied by the build-up. As roots feed on the waste they grow, branch out and eventually restrict flow. Periodic use of enough DIGESTOR and water to reach the root area will eliminate the waste they seek. In this manner, the use of DIGESTOR discourages root growth in sewers.

### Can DIGESTOR really be of benefit in a septic system?

Absolutely and in several ways. The bacteria in DIGESTOR are specially selected to digest a larger variety of waste, and metabolize it faster than naturally occurring bacteria or yeast additives. Oils, fats, grease and paper are very difficult for intestinal bacteria to handle. DIGESTOR is very effective on these materials. It increases solids destruction, so fewer pumpings are needed and that means money saved.

More complete digestion also means fewer undigested solids leaving the tank. These solids would otherwise form a black goopy accumulation in the leach field and prevent water absorption by the soil. Therefore, DIGESTOR extends the life of a leach field.

### Are any chemicals incompatible with septic systems?

Yes. Chlorine, germicidal products, anti-septic's, sanitizers, chemical drain openers, paint, lye, acids, cationic surfactants, food preservatives and in general, anything that is inorganic (not biodegradable).

### Do garbage disposal and/or automatic dishwasher affect a septic system?

Yes-in two ways. Disposals add greater loads. Without frequent DIGESTOR treatments, faster accumulation of solids in the tank occurs. Most automatic dishwashing compounds, either powder or gel, contain chlorine, which is damaging to all biological activity. For the least overall problems, don't use the disposal for material that could go into solid waste or be composted. Use non chlorinated, biodegradable dishwashing compound and treat regularly with DIGESTOR.

### Does DIGESTOR stop odours?

Yes, by digesting the waste which is the source of odour.

### Does DIGESTOR digest hair?

Yes. However, it does take much longer than most any other organic material. In drains, soap scum, skin oils, etc. bond hair to pipe surfaces. DIGESTOR digests these other materials more quickly, which releases the hair to wash downstream.

### How does DIGESTOR compare with liquid biological products?

DIGESTOR is more concentrated, more uniform, more stable (longer shelf life) and more economical. Liquid products depend upon preservatives to keep the bacteria dormant while in the bottle. Most have a high percent of surfactant to emulsify oils and fats, not digest them. Enzymes in solution interact with each other, which results in shorter shelf life and/or a single enzyme product.

### Does DIGESTOR stop odours coming from a catlitter pan?

Definitely. Best results can be obtained by washing and drying pan and then sprinkling the bottom with DIGESTOR before adding new litter and coating the top with DIGESTOR.

### What is the shelf life of DIGESTOR?

Two years if kept dry at normal temperature.

### Environmentally, does DIGESTOR help or harm?

DIGESTOR is a great help and in no way harm the ecology. The active ingredients in DIGESTOR are enzymes and bacteria which speed up the natural digestion of organic material. This is the only process that recycles organic waste back to plant food. DIGESTOR is not harmful to pets or marine

life. It is so safe a child can apply it. Because its action is natural, it enhances nature's ability to cope with man's pollution.

## INACTIVATION OF DIGESTOR

Bacteria/Enzymes present in DIGESTOR will tolerate temperatures up to 70°C. However, the bacteria in the product cannot tolerate temperatures in excess of 50°C. High concentrations of heavy metals will inhibit the activity of the product. Common cleaning agents containing chlorine (bleaches) and quaternary ammonium compounds (disinfectants) etc. can have a detrimental effect on the product. Neutralisation of these inhibitors is necessary before treatment with DIGESTOR

## SAFETY PRECAUTIONS

DIGESTOR is an environmentally friendly, safe-to-use product that contains a non-GMO strain of Bacillus Subtilis spore and various Enzymes derived from this organism, for example Bacterial A Amylase and Proteases.

No product specific certification is provided for however the strain for the active ingredients is non-pathogenic and the Enzymes are produced by standard fermentation techniques and conform to Generally Recognized as Safe (GRAS) status and have FDA approval for Foodstuff applications.

The preparation conforms to FAO/WHO and FCC recommended standards. In the event of an accidental spillage wash the affected area with copious amounts of water.

## STORAGE

To maintain maximum activity of the enzymes and the viability of the bacteria, DIGESTOR should be stored under cool and dry conditions i.e. <math>25^{\circ}\text{C}</math>.

ADS ENZYMES does not guarantee that the above products can be used as described without prior positive testing or the use of these products does not infringe third parties' patent rights.

## PRODUCT AVAILABILITY

DIGESTOR is available in 1kg, 5 Kg & 25kg bags



# MATERIAL SAFETY DATA SHEET

## Section 1. IDENTIFICATION OF THE SUBSTANCE /MIXTURE AND THE COMPANY/ UNDERTAKING

- |  |  |
|--|--|
| 1.1. Product identifier  | No.5, Main Subhash Vihar Road, Bhajanpura, Delhi - 110053 India<br>anil@adsenzymes.com |
| 1.2. Relevant identified uses of the substance or mixture and uses advised against |  |
| Multi-Purpose powdered bacterial product   |  |
| 1.3. Details of the supplier of the safety data sheet                              | 1.4. Emergency telephone number  |
| ADS Enzymes Private Limited, E-91, Street  | Telephone+91 9818073223 (10am-6.00pm Monday to Friday)                                 |

## Section 2. HAZARDS IDENTIFICATION

- |   |   |
|---|---|
| 2.1. Classification of the substance or mixture   | No Hazard Pictograms, Signal words, Hazard statements or Precautionary statements required  |
| Classification according to 1272/2008/EC  |   |
| This material is not classified as hazardous according to Regulation 1272/2008/EC as amended on classification, | Supplemental Hazard Statements  |
| Labeling and packaging of substances and mixtures.  | 2.3. Other hazards  |
|   | May cause mechanical irritation of the eye. Repeated inhalation of large amounts of Repairable dust may irritate lungs and airways. |
| 2.2. Label elements   |   |
| Labeling according to 1272/2008/EC  |   |

## Section 3. COMPOSITION / INFORMATION ON INGREDIENTS

- 3.1. Substances  
Not applicable, material is a mixture of aerobic and anaerobic bacteria in equal proportion in Bacillus spore form in Powder form specification is as per clause no.16.2 on page 6 of 6
- 3.2. Mixtures No hazardous ingredients declared according to Regulation (EC) No.1272/2008

CAS:	Industrial bran (pollard)	<10%
CAS:7732-18-5	Water	>90%

A full explanation of H-phrases appears in Section 16

## Section 4. FIRST AID MEASURES

- |   |   |
|---|---|
| 4.1. Description of first aid measures  | 4.2. Most important symptoms and effects, both acute and delayed  |
| Eye Contact Rinse immediately with water holding the eyelids open.              | May cause mechanical irritation of the eye. Repeated inhalation of large amounts of Respirable dust may irritate lungs and airways. |
| Skin Contact Wash off with soap and water. No need for first aid is anticipate. |   |
| Inhalation Move the exposed person to fresh air.                                | 4.3. Indication of any immediate medical attention and special treatment needed   |
| Ingestion Rinse mouth thoroughly. No need for first aid is anticipated.         | No special treatment required   |
| Seek medical attention if any symptoms persist.                                 |   |

## Section 5. FIRE FIGHTING MEASURES

- |   |  |
|---|--|
| 5.1. Extinguishing Media Product is a powder and is not flammable. Use extinguishing Media to the surrounding fire conditions | Product is a powder so is not expected to burn or create special hazards                                     |
| 5.2. Special hazards arising from the substance or mixture  | 5.3. Advice for firefighters Wear full protective clothing and suitable respiratory equipment when necessary |

## Section 6. ACCIDENTAL RELEASE MEASURES

- |   |   |
|---|---|
| 6.1. Personal precautions, protective equipment and emergency procedures          | Small spillages (<20 liters) can be washed to drain with water (but not to One that leads to an open water course or surface water). For larger                             |
| No special protective clothing required.  | Spillages sweep up and transfer to suitable, labeled containers. Transfer to Suitable, labeled containers for disposal. Clean spillage area thoroughly With plenty of water |
| 6.2. Environmental precautions  | 6.4. Reference to other sections  |
| Do not allow large amounts (i.e. more than 20 kg) of product to enter drains      | See sections 8 and 13 for additional information  |
| Undiluted. Do not allow spillages to enter an open water course or surface water. |   |
| Prevent further spillage if safe.   |   |
| 6.3. Methods and material for containment and cleaning up                         |   |

## Section 7. HANDLING AND STORAGE

- |  |   |
|--|---|
| 7.1. Precautions for safe handling                         | 7.2. Conditions for safe storage, including any incompatibilities   |
| Wash thoroughly after handling. Adopt best Manual Handling | Keep in a cool dry, well-ventilated area. Keep containers tightly Closed. Store in correctly labeled containers |
| Considerations when handling, carrying and dispensing.     | 7.3. Specific end use(s) No exposure scenario currently available   |

## Section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

- 8.1. Control parameters

Ingredient	CAS	EC	Description	Pap	Mg/m <sup>3</sup>	Reference
Industrial bran (pollard)			Long term exposure limit (8hour TWA reference period)	-	10	UK EH40 Oct 2007
			Short term exposure limit (15 minutes reference period)	-	20	

## 8.2. Exposure controls Engineering measures

### Respiratory protection

Hand protection

Eye protection

Protective equipment

Environmental measures

Although WELs exist for ingredients in this product, normal use, i.e. Dosing of small quantities of product, is not expected to Generate significant dust. However, if use patterns do generate Dust; ensure adequate ventilation of the working area. If use means that dust is generated, wear suitable half mask

With Filter P2 (EN143) No chemical resistance gloves required  
None required

No special protective clothing required.

Do not allow product to enter open water courses or surface water

## Section 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

Appearance Brown powder

Odour Slight

Not determined Odor threshold (Of 1% solution)  
7-8pH:

Not applicable, predominantly a mixture of organic  
Melting point/ freezing

Point and Inorganic solids

Initial boiling point and boiling range

Not applicable, predominantly a mixture of organic and Inorganic solids

Flash point Not applicable, predominantly a mixture of organic and Inorganic solids

Evaporation rate contains no volatile material

Flammability (solid, gas):

Not a flammable solid

Upper/ lower flammability or explosive limits not applicable, see above

Not applicable, product is an aqueous liquid

Vapour pressure No vapour expected

Vapor density not applicable, see above

Relative density 0.75

Solubility's

Partition coefficient n-octane /water

Auto ignition

Temperature

Decomposition

Viscosity

Partially soluble, freely disposed of in water

Not applicable, predominantly a mixture of organic and Inorganic solids

Not applicable, predominantly a mixture of organic and Inorganic solids

Not applicable, product is a powder

No ingredients with explosive properties

Explosive properties

Oxidizing properties

No ingredients with oxidizing properties

## Section 10. TOXICOLOGICAL INFORMATION

10.1. Reactivity

No specific hazard

10.2. Chemical stability

Stable under normal conditions

10.3. Possibility of hazardous reactions

No hazardous reaction are expected

10.4. Conditions to avoid

Not determined

10.5. Incompatible materials

None known

10.6. Hazardous decomposition products

None known

## Section 11. FIRE FIGHTING MEASURES

11.1. Information on toxicological effects

a) Acute toxicity

Contains no toxic ingredients and therefore no ATE can be calculated.

The microorganisms in this product are all Group 1 (i.e. considered unlikely to cause human disease)

According to EU Directive 2000/54/EC and related legislation.

b) Skin corrosion/irritation: Mixture not classified as corrosive to skin or causing skin irritation.

c) Serious eye damage/irritation: Not classified as causing serious eye damage or irritation.

d) Respiratory or skin sensitization: Does not contain ingredients classified as Respiratory or skin sensitizers.

e) Germ cell mutagenicity: Does not contain ingredients that are known germ cell mutagens

f) Carcinogenicity: Does not contain ingredients that are known carcinogens

g) Reproductive toxicity: Does not contain ingredients that are known reproductive toxicants

h) STOT single exposure: Does not contain ingredients that are known to cause single target

Organ toxicity with single exposure

i) STOT repeated exposure: Does not contain ingredients that are known to cause single target

Organ toxicity with repeated exposure

j) Aspiration hazard: Does not contain ingredients that are known to cause aspiration hazards

## Section 12. ECOLOGICAL INFORMATION

- |  |  |
|--|--|
| <p>112.1. Toxicity<br/>Does not contain ingredients that are toxic or harmful to aquatic environment, so no classification of mixture is required for acute or chronic effects.</p> <p>12.2. Persistence and degradability<br/>Product is predominantly a mixture of organic and inorganic material and a cereal based organic<br/>Carrier and given the nature of the ingredients and their concentration in the mixture, no issues<br/>With persistence or degradability are expected.</p> | <p>12.3. Bio-accumulative potential<br/>Given the classification and environmental behavior information on the ingredients and their Concentration in the mixture, product is not expected to bio accumulate</p> <p>12.4. Mobility in soil<br/>Product is partially soluble and freely dispersible in water, not expected to be retained in soil to any significant extent.</p> <p>12.5. Results of PBT and vPvB assessment<br/>Not anticipated to be PBT or vPvB</p> <p>12.6 Other adverse effects<br/>None known</p> |
|--|--|

## Section 13. DISPOSAL CONSIDERATIONS

- |                                      |   |
|--------------------------------------|---|
| <p>13.1. Waste treatment methods</p> | <p>Small quantities of product (up to 20 kg on any one occasion) can be disposed of to drain (but not one that leads to an open water course or surface water) with a 10x dilution with water. small quantities of product (&lt;20kg) can also be disposed of with normal refuse.</p> |
|--------------------------------------|---|

## Section 14. TRANSPORT INFORMATION

- |   |   |
|---|---|
| <p>14.1. UN number not regulated<br/>Not regulated</p> <p>14.2. UN proper shipping name<br/>Not regulated</p> <p>14.3. Transport hazard class(s)<br/>Not regulated</p> <p>14.4. Packing group<br/>Not applicable</p> <p>14.5. Environmental hazards</p> | <p>14.6. Special precautions for user none required</p> <p>14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable</p> |
|---|---|

## Section 15. REGULATORY INFORMATION

- 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture no known regulations or restrictions exist in EU Member states

## Section 16. ADDITIONAL INFORMATION

- |  |  |
|--|--|
| <p>16.1 Chemical safety assessment</p> <p>Revision</p> <p>Methods used to classify:</p> <p>Further information</p> | <p>No chemical safety assessment has been carried out</p> <p>This SDS has been created to comply with the full implementation of the CLP Regulation (EC) No 1272/2008, namely the classification of ingredients and preparations using the new GHS/CLP symbols and phrases and communication of classification, hazards and advice according to the new rules.</p> <p>Mixture has been classified by reference to information on ingredients</p> <p>The information supplied in this Safety Data Sheet is designed only as guidance for the safe use, storage and handling of the product. This information is correct to the best of our knowledge and belief at the date of publication however no guarantee is made to its accuracy. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any other process.</p> |
|--|--|

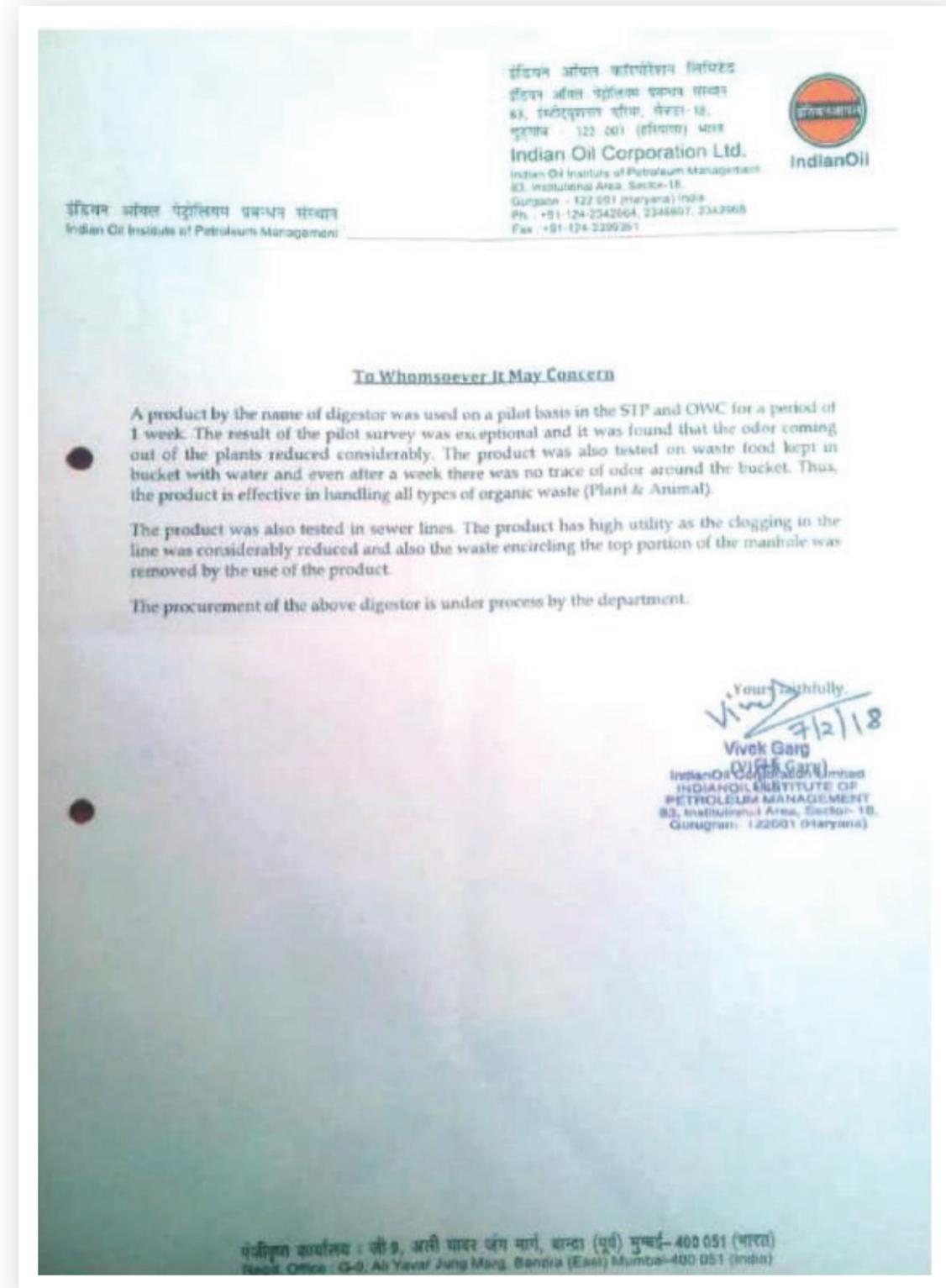
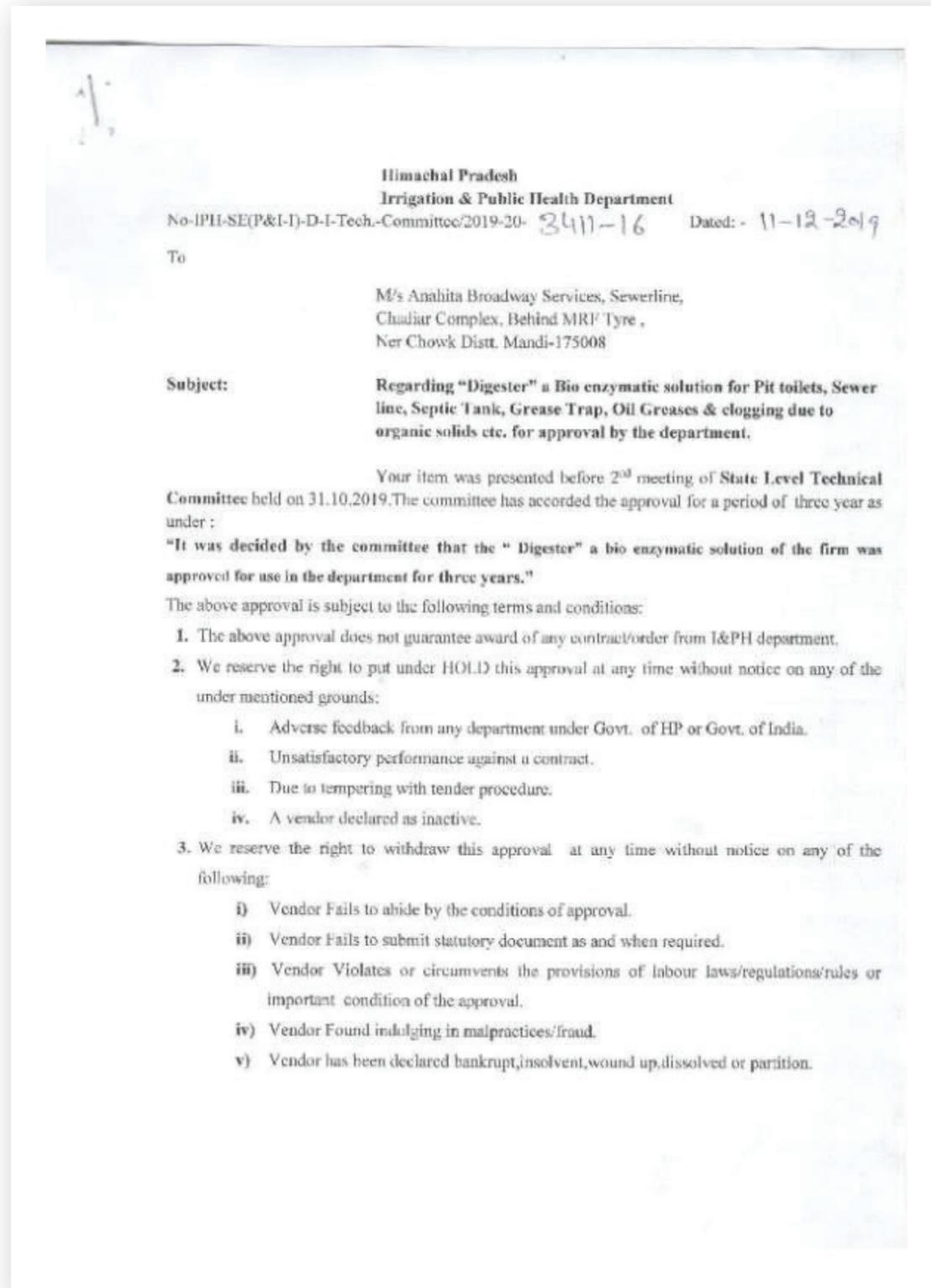
## Section 16.2. Specification

Appearance	Tan colored Low dusting powder in a cereal/salt base
Solubility	>95% in H <sub>2</sub> O
Aerobic bacteria	Not less than 8 x 10 <sup>8</sup> cfu/g
Anaerobic bacteria	Not less than 8 x 10 <sup>8</sup> cfu/g
Aflatoxins	absent
Antibiotic activity	absent
E. coli	absent in 0.1g

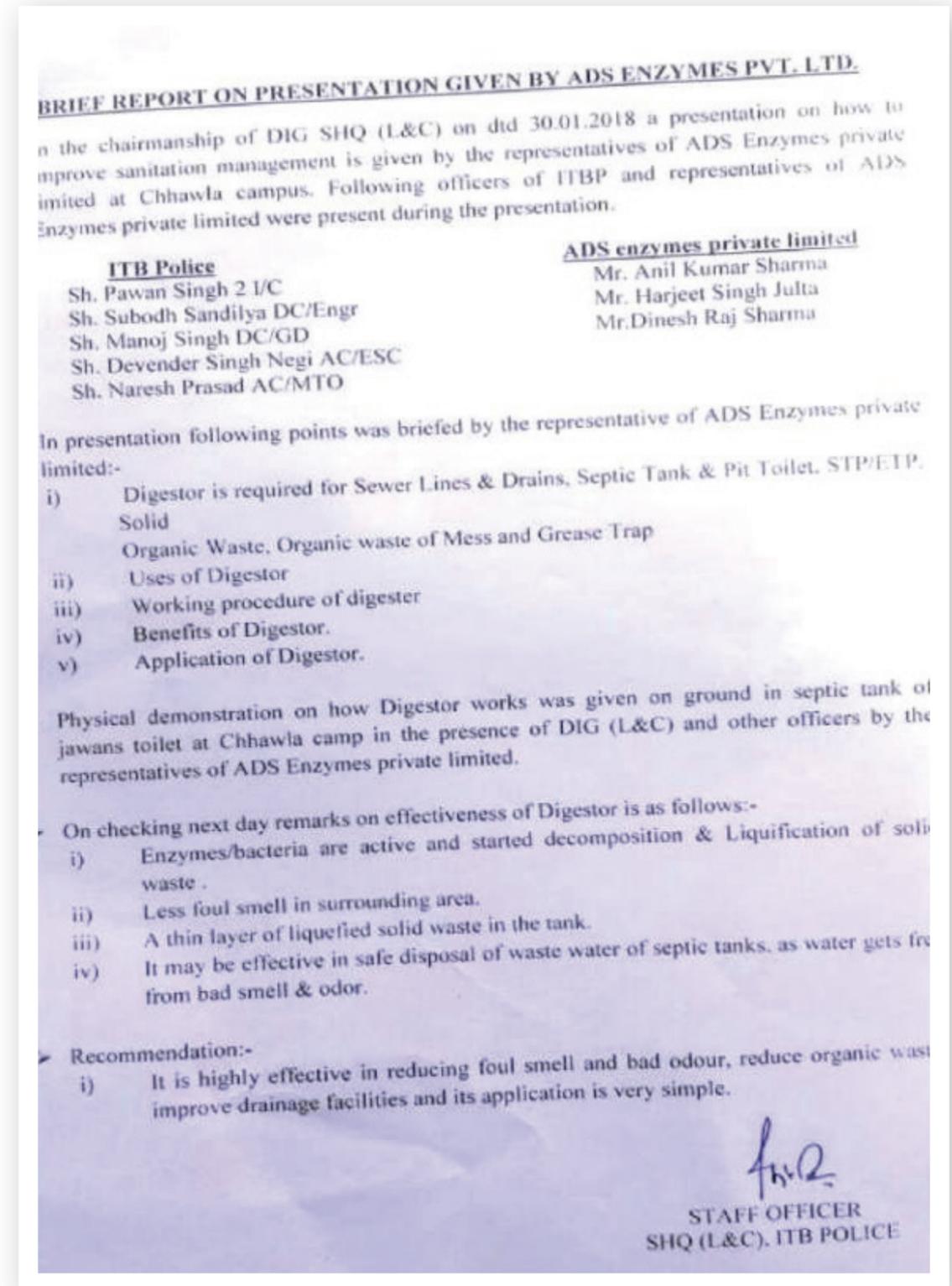
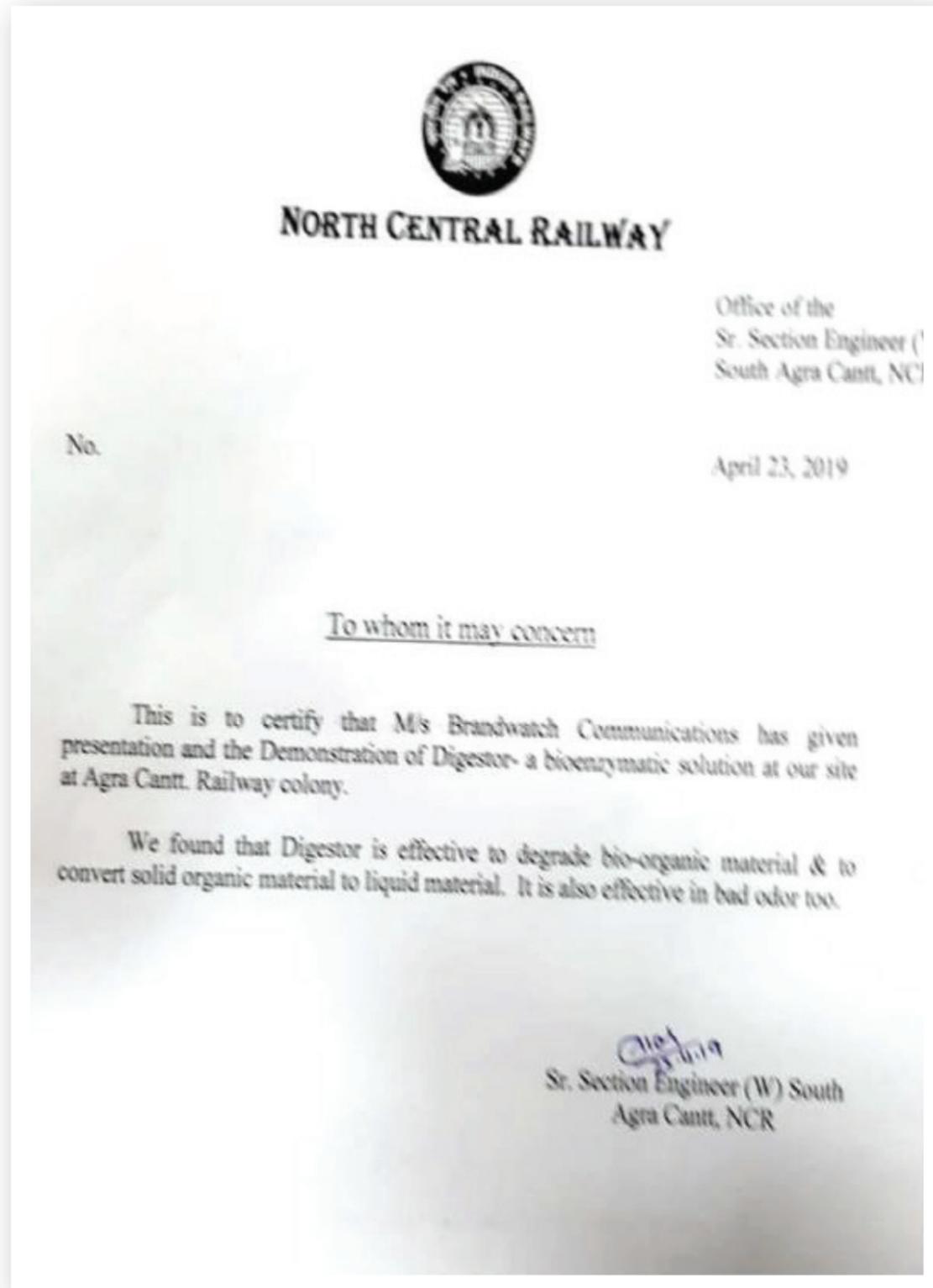
## OPERATING CONDITIONS

Optimum pH	4.5 - 9.0 PH Effluent with a pH outside this range should be pre- treated with a suitable acid or lime prior to dosing with <b>DIGESTOR</b>
Temperature tolerance	Up to 50°C

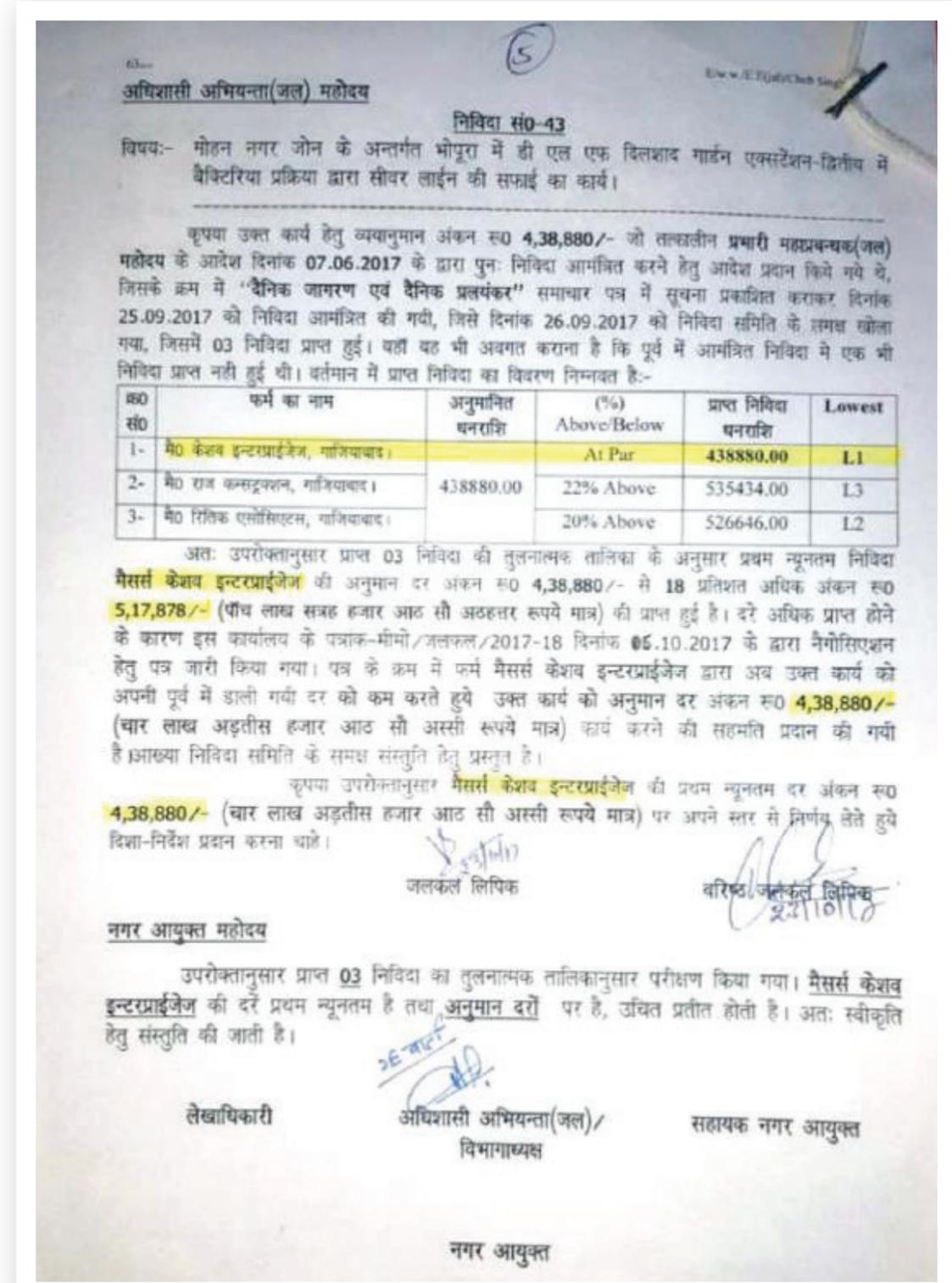
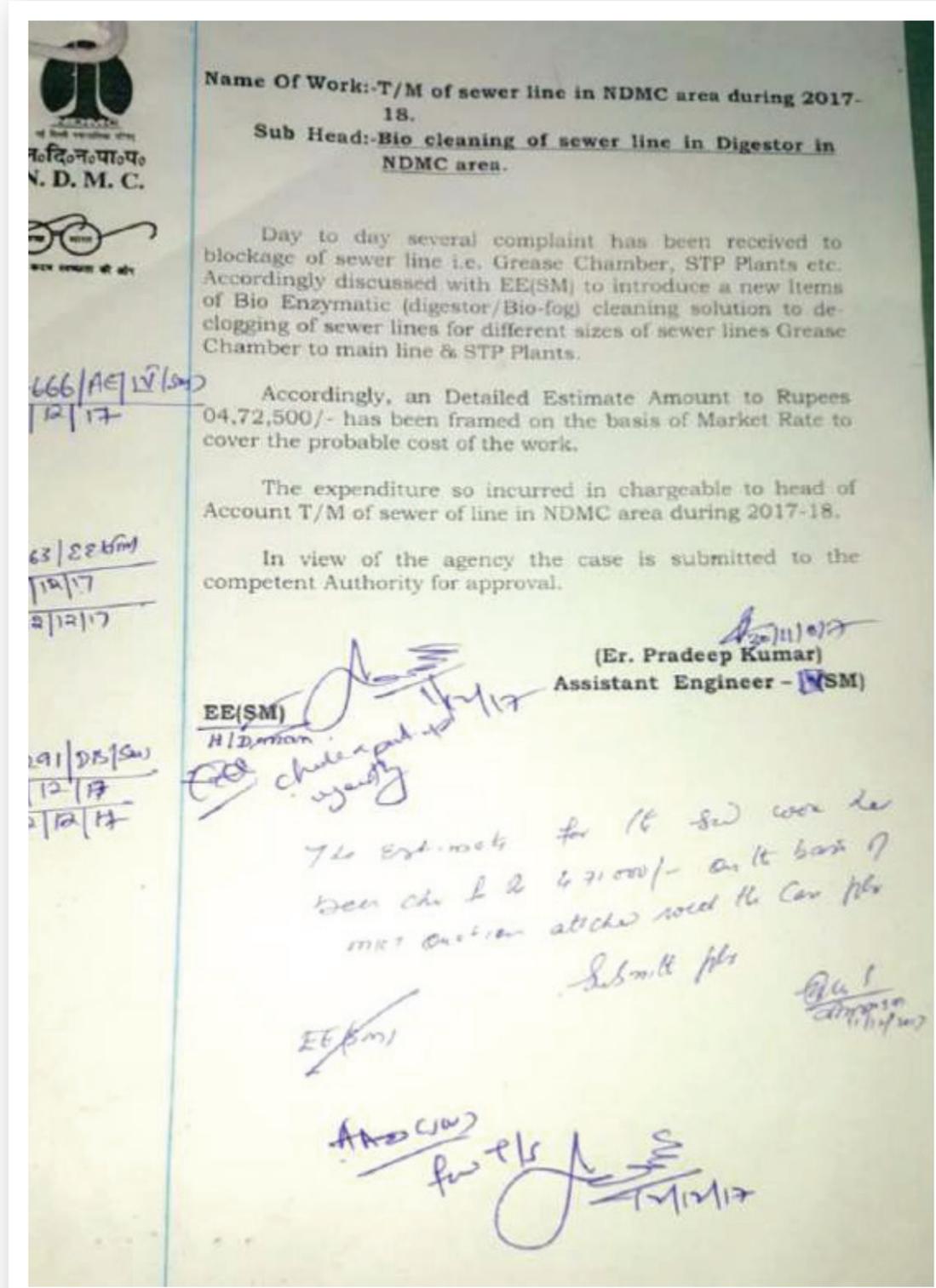
# CERTIFICATES



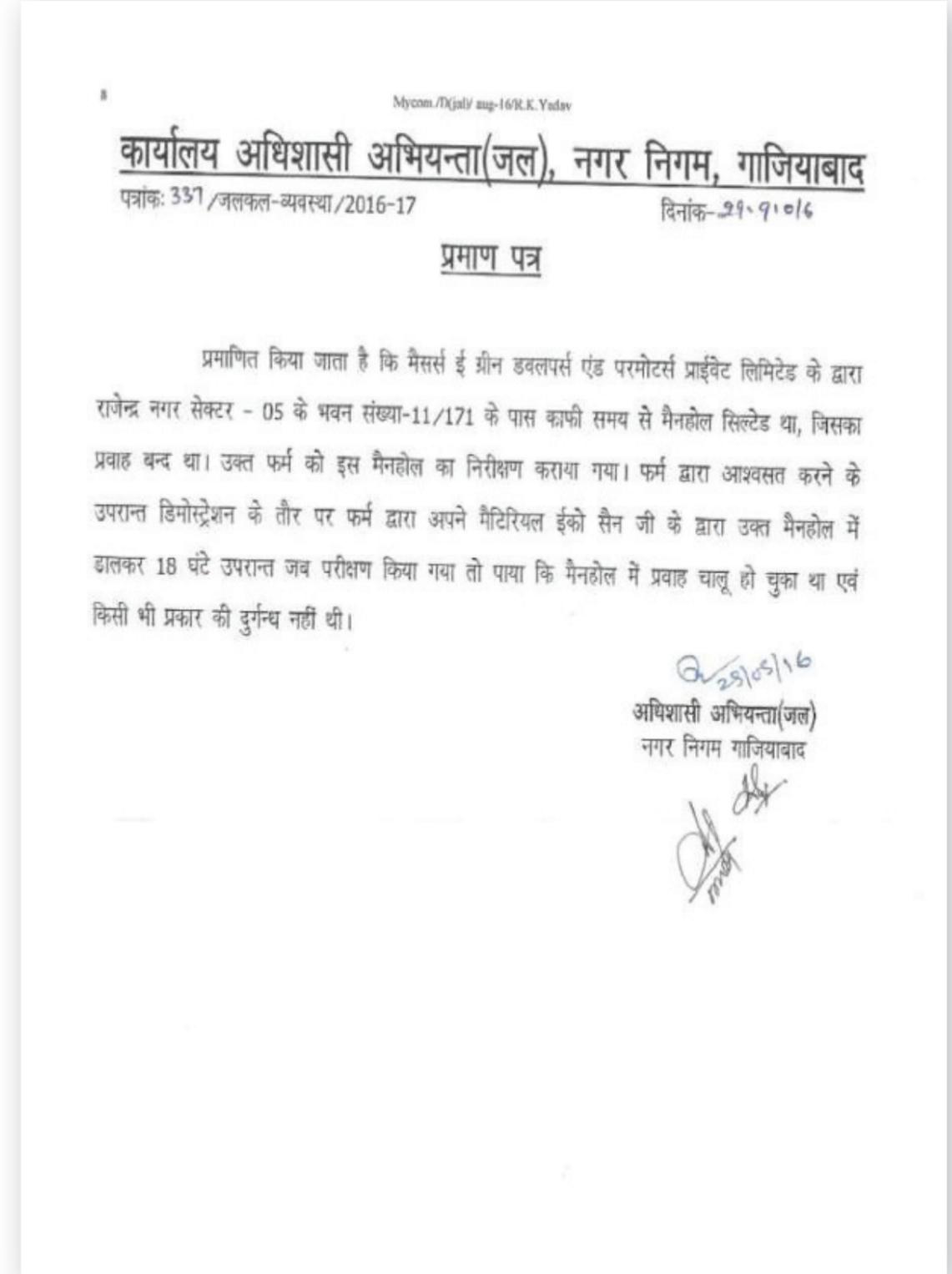
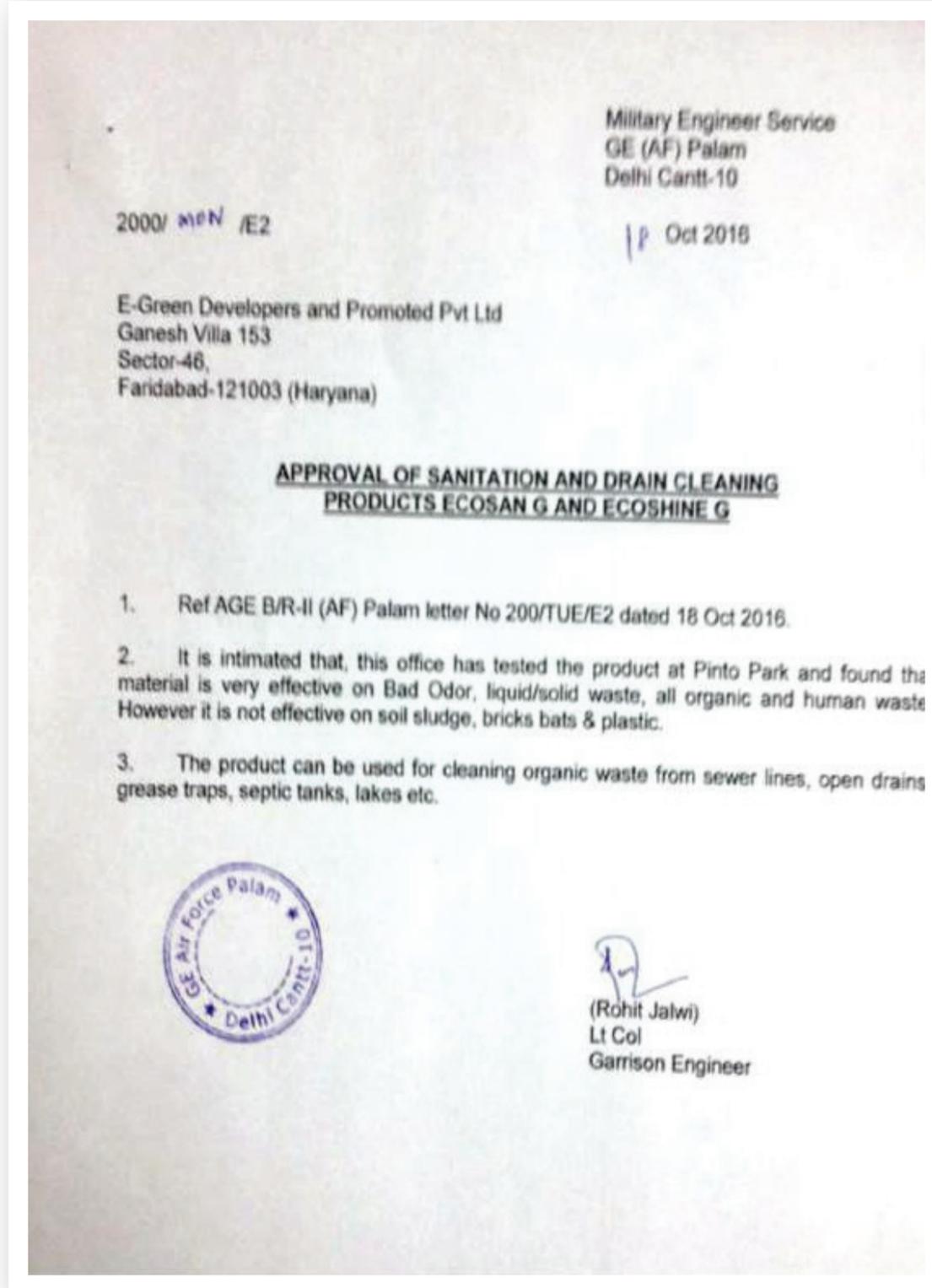
# CERTIFICATES



# CERTIFICATES



# CERTIFICATES



# CERTIFICATES



अजय तिवारी  
अधीक्षण अभियंता

Ajay  
Superintending E

SE(T)/QC/Gen/AIR/115 Dated:- 03.10.2016

**TO WHOM IT MAY CONCERN**

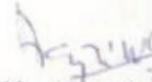
This is to certify that M/s E-Green Developers & Promoters Pvt. Ltd. has given a Presentation & Demonstration of EcoSan G & EcoShine G at our office CCW, AIR, Soochna Bhawan, New Delhi.

We found that EcoSan G is very effective in Grease Traps, Sewer Lines, Declogging them and converts all organic solids into liquid, no bad odour is there after EcoSan G treatment.

EcoShine G is very good in removal of Hydrocarbons. i.e. any kind of crude oil and grease.

I hereby approve the above products for the Civil work under the aegis of Civil Construction Wing, All India Radio for Doordarshan & All India Radio's various undertakings of Ministry of Information & Broadcasting, Public Sector Banks and Deposit works of all Ministries of Government of India.

I wish them Success.

  
**(Ajay Tiwari)**  
 Superintending Engineer (Trg.) QC  
**(AJAY TIWARI)**  
 Superintending Engineer (Trg.)  
 CCW - All India Radio  
 1st Floor Soochna Bhawan  
 New Delhi-110003



प्रसार भारती | PRASAR BHARATI  
 भारतीय लोक सेवा प्रसारक | India's Public Service Broadcaster  
 Civil Construction Wing, All India Radio, 1st Floor, Soochna Bhawan,  
 C.G.O. Complex, Lodhi Road, New Delhi-110 003  
 Ph. 011-2436 3606, 2436 2851, Fax. 011-2436 4358  
 E-mail: settraining50@gmail.com, website: www.cckwiprasarbharti.nic.in



Military Engineer Service  
 GE (AF) Palam  
 Delhi Cantt-10  
  
 2000/ *MON* /E2 18 Oct 2016

E-Green Developers and Promoted Pvt Ltd  
 Ganesh Villa 153  
 Sector-46,  
 Faridabad-121003 (Haryana)

**APPROVAL OF SANITATION AND DRAIN CLEANING  
 PRODUCTS ECOSAN G AND ECOSHINE G**

1. Ref AGE B/R-II (AF) Palam letter No 200/TUE/E2 dated 18 Oct 2016.
2. It is intimated that, this office has tested the product at Pinto Park and found that material is very effective on Bad Odor, liquid/solid waste, all organic and human waste. However it is not effective on soil sludge, bricks bats & plastic.
3. The product can be used for cleaning organic waste from sewer lines, open drains, grease traps, septic tanks, lakes etc.



  
**(Rohit Jalwi)**  
 Lt Col  
 Garrison Engineer

# CERTIFICATES

**कार्यालय नगर पालिका पुष्कर, जिला अजमेर**  
सदर बाजार, बंदी घाट के पास

E-Mail :- np.pushkar.nagarpalika@gmail.com PH :- 0145-2773025

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क्रमांक: न.पा.पु./सामान्य/19/2758 दिनांक : 20/12/2019

श्रीमान मुख्य अभियंता  
स्वायत्त शासन विभाग,  
राज. जयपुर

विषय :- बायो एन्जाइम क्लीनिंग सोल्यूशन का प्रदर्शन करवाये जाने बाबत।  
प्रसंग :- श्रीमान के कार्यालय का पत्रांक: F. 55 ( )Engg./CE/DLB/SBM/19/91177 दिनांक 04.10.2019 के क्रम में।

महोदय,  
उपरोक्त विषयान्तर्गत प्रासंगिक पत्र के संदर्भ में निवेदन है कि पालिका द्वारा खरेखडी रोड स्थित कचरा संग्रहण केन्द्र पर दिनांक 13.11.2019 को उपलब्ध लिंगेसी वेस्ट की मात्रा एवं दुर्गन्ध को 10 टन कचरे पर 10 किलोग्राम कम करने हेतु बायो एन्जाइम क्लीनिंग सोल्यूशन (डायजेस्टर) का छिड़काव किया गया था। जिसके उपरान्त दिनांक 09.12.2019 को निरीक्षण के दौरान पाया कि लिंगेसी वेस्ट की मात्रा पूर्व उपलब्ध मात्रा से 25.00 प्रतिशत कम हुई है एवं दुर्गन्ध की मात्रा में कमी आई है।  
अतः श्रीमान के समक्ष अग्रिम आदेशार्थ रिपोर्ट प्रेषित है।

sdh  
अधिशापी अधिकारी  
नगर पालिका पुष्कर  
दिनांक : 20/12/2019

क्रमांक: न.पा.पु./सामान्य/19/ 2759-60  
प्रतिलिपि :- सूचनार्थ  
1. मैसर्स वियोम इंजिनियरिंग प्रताप नगर जयपुर।  
2. सुरक्षित पत्रावली।

A  
अधिशापी अधिकारी  
नगर पालिका पुष्कर

Scanned with CamScanner

  
न.दि.न.पा.पु.  
N. D. M. C.

Name Of Work:-T/M of sewer line in NDMC area during 2017-18.  
Sub Head:-Bio cleaning of sewer line in Digester in NDMC area.

Day to day several complaint has been received to blockage of sewer line i.e. Grease Chamber, STP Plants etc. Accordingly discussed with EE(SM) to introduce a new Items of Bio Enzymatic (digester/Bio-fog) cleaning solution to de-clogging of sewer lines for different sizes of sewer lines Grease Chamber to main line & STP Plants.

Accordingly, an Detailed Estimate Amount to Rupees 04,72,500/- has been framed on the basis of Market Rate to cover the probable cost of the work.

The expenditure so incurred in chargeable to head of Account T/M of sewer of line in NDMC area during 2017-18.

In view of the agency the case is submitted to the competent Authority for approval.

(Er. Pradeep Kumar)  
Assistant Engineer - (SM)

666/AE/IV/SM/12/17  
63/EE/SM/12/17  
291/DB/SM/12/17

EE(SM)  
H.D. Manan  
challenged to agency  
The estimate for the work has been checked on the basis of market condition attached with the cover sheet. Submit the file.

for file  
12/12/17