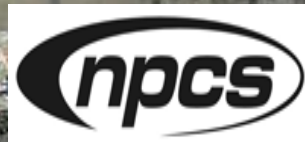


**Biological Treatment of Organic Waste, Tomato Waste  
Water Treatment, Agro-Industrial Wastes, Oxalic Acid  
from Jute Stick, Liquid Manure into a Solid, Cotton  
Processing Waste, Fish Waste, Bioconversion of  
Pretreated Wheat Straw and Sunflower Stalks to Ethanol,  
Pig Waste, Oxytetracycline, Methane from Cattle Waste,  
Agricultural Waste Treatment, Waste of Dehydrated  
Onion, Beef-Cattle Manure Slurry, Meat Meal and Algae  
for Calves, Wastes from Large Piggeries**





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## **Introduction**

**Biological treatment is an important and integral part of any wastewater treatment plant that treats wastewater from either municipality or industry having soluble organic impurities or a mix of the two types of wastewater sources. The obvious economic advantage, both in terms of capital investment and operating costs, of biological treatment over other treatment processes like chemical oxidation; thermal oxidation etc. has cemented its place in any integrated wastewater treatment plant.**



**Biological treatment using aerobic activated sludge process has been in practice for well over a century. Increasing pressure to meet more stringent discharge standards or not being allowed to discharge treated effluent has led to implementation of a variety of advanced biological treatment processes in recent years.**

**Biological treatment is the recycling of humus, nutrients and/or energy from biological waste by means of aerobic (composting) or anaerobic (digesting) processing. In practise, this includes a number of specialist areas such as source collection of food waste, choice of suitable substrate, pre-treatment of the substrate, the biological process, emissions as well as utilisation of the products produced (biofertilizer, sludge, compost, biogas).**

**Biological wastewater treatment confines high concentrations of naturally occurring bacteria in treatment tanks. These bacteria, along with protozoa and other microbes, form activated sludge. When the activated sludge bacteria "eat" small organic carbon molecules, the wastewater is cleansed. Biological treatment is widely used because it is more cost effective than other types of treatment processes, such as chemical oxidation or thermal oxidation.**

**Biological wastewater treatment processes are economical and environmentally sustainable for the removal of organic pollutants from wastewater. The biological wastewater treatment processes are basically biochemical oxidation processes in which under controlled environmental conditions in the presence or absence of oxygen, micro-organisms utilise the organic matter for the production of energy by cellular respiration and for the synthesis of protein and other cellular components for the production of new cells. The process occurring in the presence of oxygen is termed as “Aerobic” process.**

**The biological treatment of wastewater is based on the ability of a set of microorganisms that are capable of degrading the organic matter present in the wastewater for its own growth. Apart from organic matter, microorganisms need water containing nutrients, basically nitrogen and phosphorus, to grow. Subsequently, the separation of these microorganisms from water is simple and economical. Thus, microorganisms are responsible for removing the organic matter present in water, both particulate and soluble.**

**Organic waste is material that is biodegradable and comes from either a plant or animal. Organic waste is usually broken down by other organisms over time and may also be referred to as wet waste. Most of the time, it's made up of vegetable and fruit debris, paper, bones and human waste which quickly disintegrate. Organic waste, or green waste, is organic material such as food, garden and lawn clippings. It can also include animal and plant based material and degradable carbon such as paper, cardboard and timber.**





**25% of this waste originated from green (or garden) waste with other main contributors to this waste stream being manures and sludges (20%), food wastes (18%) and paper and cardboard waste (15%). Land clearing, timber processing and wood combine to form another 18% of the organic waste. In addition to being a valuable resource for nutrient poor soils, this material generates the most significant levels of pollution when disposed of in landfills. Some forms of organic wastes can cause public health problems, such as disease, odours and pests.**

**Oxalic acid, an important organic chemical, has been obtained in fairly good yield from jute stick, an agrowaste of India, by alkali fusion and nitric acid oxidation processes. The latter process yielded oxalic acid with the highest degree of purity.**

## ***Agro-Industrial Wastes***

**Agricultural residues are rich in bioactive compounds. These residues can be used as an alternate source for the production of different products like biogas, biofuel, mushroom, and tempeh as the raw material in various researches and industries. The use of agro-industrial wastes as raw materials can help to reduce the production cost and also reduce the pollution load from the environment. Agro-industrial wastes are used for manufacturing of biofuels, enzymes, vitamins, antioxidants, animal feed, antibiotics, and other chemicals through solid state fermentation (SSF).**

**A variety of microorganisms are used for the production of these valuable products through SSF processes. Therefore, SSF and their effect on the formation of value-added products are reviewed and discussed.**

**Large amount of wastes is generated every year from the industrial processing of agricultural raw materials. Most of these wastes are used as animal feed or burned as alternative for elimination. However, such wastes usually have a composition rich in sugars, minerals and proteins, and therefore, they should not be considered “wastes” but raw materials for other industrial processes.**

**The presence of carbon sources, nutrients and moisture in these wastes provides conditions suitable for the development of microorganisms, and this opens up great possibilities for their reuse in solid-state fermentation (SSF) processes, for example. Agro-industrial wastes can be used as solid support, carbon and/or nutrient source in SSF processes for the production of a variety of value-added compounds.**





## ***Agricultural Waste Treatment***

**The global agricultural wastewater treatment market was valued at USD 1,997.24 million in 2017, and is expected to register a CAGR of 5.35%, during the forecast period 2018-2023.**

**The global market primarily includes manure management nutrient capture, renewable electricity and anaerobic digestion. More than 3,000 upcoming projects are expected to take place in the next 5 years, majorly located on dairy, swine or livestock farms, as manure is a consistent and reliable supply of wastewater. Wastewater is used extensively in the agricultural sector owing to it providing necessary nutrients and the desired moisture to the crops.**

**One of the major factors driving the growth of the market is the rapidly diminishing fresh water resources and the rising demand for water in agriculture. The agriculture sector accounts for about 70% of the total fresh water use. The trend of reusing wastewater for irrigation has been gaining traction and demand, leading to the growth of the market. Biological solutions was estimated to be the fastest growing segment through 2023.**



***Handbook on Organic Waste for Biological Treatment, Liquid Manure into a Solid, Tomato Waste Water Treatment, Oxalic Acid from Jute Stick, Cotton Processing Waste, Fish Waste, Agro-Industrial Wastes, Bioconversion of Pretreated Wheat Straw and Sunflower Stalks to Ethanol, Agricultural Waste Treatment, Waste of Dehydrated Onion, Beef-Cattle Manure Slurry, Meat Meal and Algae for Calves, Wastes from Large Piggeries, Pig Waste, Oxytetracycline, Methane from Cattle Waste***

**Handbook on  
Organic Waste for Biological Treatment,  
Liquid Manure into a Solid,  
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from Jute Stick, Cotton Processing Waste,  
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Bioconversion of Pretreated Wheat Straw and  
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Waste Treatment, Waste of Dehydrated Onion,  
Beef-Cattle Manure Slurry, Meat Meal and  
Algae for Calves, Wastes from Large Piggeries,  
Pig Waste, Oxytetracycline,  
Methane from Cattle Waste**



## **About the Book**

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**Biological Treatment is the recycling of humus, nutrients and/or energy from biological waste by means of aerobic (composting) or anaerobic (digesting) processing. Biological treatment is an important and integral part of any wastewater treatment plant that treats wastewater from either municipality or industry having soluble organic impurities or a mix of the two types of wastewater sources. Biological wastewater treatment is an important and integral step of wastewater treatment system and it treats wastewater coming from either residential buildings or industries etc. It is often called as Secondary Treatment process which is used to remove any contaminants that left over after primary treatment.**

**Organic waste is material that is biodegradable and comes from either a plant or animal. Organic waste is usually broken down by other organisms over time and may also be referred to as wet waste. Most of the time, it's made up of vegetable and fruit debris, paper, bones and human waste which quickly disintegrate. Wastewater treatment is a process used to convert wastewater, which is water no longer needed or suitable for its most recent use, into an effluent that can be either returned to the water cycle with minimal environmental issues or reused.**

**Expenditure on water and wastewater infrastructure in India is set to increase by 83% over the next five years, hitting an annual run rate of \$16 billion by 2020. The utility market is set to top \$14 billion within five years, while annual spending in the industrial sector will approach \$2 billion. Spending on water supply will grow from \$5.56 billion to \$9.4 billion over the next five years.**

**It will be a standard reference book for professionals, entrepreneurs, those studying and researching in this important area.**

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# Tags

Biological Treatment, Organic-Waste Treatment, Biological Treatment of Organic Waste, Biological Wastewater Treatment, Biological Treatment Plant or Organic Waste, Organic Solid Waste Biological Treatment, Biological Treatment Plant, Microorganisms in Organic Waste Disposal, Biological Treatment of Waste, Process for Biological Treatment of Organic Waste, Biological Treatment Process, Organic Waste Treatment, Organic Waste Recycling, Organic Waste Forms and Treatment Strategies, Biological Waste Treatment and Utilization, Transformation of Liquid Manure into Solid, Tomato Waste Water Treatment, Treatment of Wastewater from Peeled Tomato, Tomato Cleaning and Water Recycle, Preparation of Oxalic Acid from Jute Stick, Oxalic Acid Manufacture, Oxalic Acid from Jute Stick, Digestion of Cotton Processing Waste, Properties of Sorghum Stalk, Physical and Mechanical Properties of Sorghum Stalk, Biological Fermentation of Fish Waste, Fermentation of Fish Waste, Fermented Fish Waste, Fish Waste in Fermentation, Agro-industrial Wastes, Agro-industrial wastes utilization, Recycling of Agro-Industrial Wastes, Modelling of Agricultural Waste Treatments, Utilization of Waste of Dehydrated Onion, Utilization of Waste Products of Dehydrated Onion Industry, Palm Oil Mill Effluent Disposal on Land, Palm Oil Mill Effluent (POME), Palm Oil Mill Effluent (POME) Treatment,

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How to start a Biological Treatment Plant, Start Your Own Biological Treatment Business, Biological Treatment Business Plan, Business plan for Organic Waste for Biological Treatment, Small Scale Industries in India, Organic Waste for Biological Treatment Based Small Business Ideas in India, Small Scale Industry You Can Start on Your Own, Business plan for small scale industries, Profitable Small Scale Manufacturing, How to Start a Small Business in India, Free Manufacturing Business Plans, Small and Medium Scale Manufacturing, Profitable Small Business Industries Ideas, Business ideas for Startup, Detailed Project Report on Biological Treatment, Project Report on Biological Treatment, Pre-Investment Feasibility Study on Oxytetracycline Production, Techno-Economic feasibility study on Oxytetracycline Production, Feasibility report on Piggery Waste Management, Free Project Profile on Piggery Waste Management, Project profile on Organic Waste for Biological Treatment, Download free project profile on Oxytetracycline Production

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# Our Approach

Requirement collection

Thorough analysis of the project

Economic feasibility study of the Project

Market potential survey/research

Report Compilation

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