

Bio Waste Pollution from Industrial Waste with Primary Focus on Food Waste

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INTRODUCTION

Organic waste from commercial and home kitchens, food processing companies, restaurants, and cafeterias is generated during different unit operations. According to the FAO, roughly 1.3 billion tonnes of vegetables, meat, fruits, bread, dairy, and other food products are lost throughout the food supply chain. Nearly every year, the amount of food waste (FW) in Asian countries might climb from 278 to 416 million tonnes [1].

The primary source of municipal solid waste is kitchen and yard garbage (MSW). Rather than dumping and landfilling, this trash can be converted into valuable products/energy generation at a very cheap cost. The process may be attributed to environmental and economic factors such as the capacity of municipal landfills, the cost of waste transportation and landfilling, the adoption of environmental rules and regulations, the use of commercial fertilisers less frequently, the recycling of household waste, and the quality improvement of compost products. Composting FW reduces waste volume, kills germs, minimises weed germination in agricultural fields, and eliminates foul-smelling substances. Organic-grade agricultural waste compost is gaining favour in the organic agriculture idea due to its advantages in physical, biological, and chemical soil qualities. Various food sectors produced a large number of by-products or trash, posing a serious environmental disposal concern.

Globally, around 1.3 billion tonnes of food for human consumption are lost or squandered each year. Food wastes and losses are indirectly accompanied by environmental impacts such as soil erosion, deforestation, air and water pollution, and greenhouse gas emissions that occur in the processes of food production, storage, transportation, and waste management because food production is resource-intensive. Domestic households are the source of the most food waste in the food supply chain [2].

Because the amount of food waste generated at the home level and throughout the food supply chain at the final stages is so significant, prevention is critical to preventing additional climate change from food waste. The recognition of proper waste management as a precondition for long-term growth has been implemented. Historically, the primary goal of public waste management in

metropolitan areas has been to keep potentially toxic substances or materials away from human populations. Waste management began to change from a simple pollution prevention and control exercise to a more holistic strategy as a result of increased waste output due to environmental, social, and economical ramifications of unsustainable use of raw materials in the short and long term [3].

Food Waste and Agro By-Products

Organic residues created during the conversion of raw materials into food are commonly referred to as food wastes. Waste is defined as a product that adds no value to the main product, whereas a by-product is a secondary product produced as a result of the main product's manufacturing and typically has a market value. Many by-products require additional processing before they can be sold.

As a result, if suitable technical means exist to generate value that surpasses the cost of reprocessing, wastes could be termed valuable by-products. In this instance, residues are no longer considered waste, but rather a higher-value product. The use of food processing wastes has the ability to transform these by-products into useful products [4].

Agro by-products, also known as agro leftovers, are primarily obtained from agricultural production, harvesting, and processing in farm areas, as well as agricultural processing industries such as oilseed extraction, brewery, malt production, cereal grain milling, and fruit and vegetable processing. These by-products have enormous promise as a source of protein for animal feed, as well as the ability to be transformed into biofuels, bioenergy, and other products with economic value.

The Food Supply Chain: Food Losses and Waste

The global food waste problem is concerned about rising greenhouse gas emissions and other environmental impacts linked with food waste. As a priority waste stream, food waste is being targeted by an increasing variety of programmes (national and regional). Food security is a persistent global issue that poses questions. A large amount of food is wasted in the global food supply chain (FSC) that could have been used to feed people [5].

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