

Convert Human Urine into a Fertilizer (Crystalline Form Fertilizer)

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Abstract— The overuse and misuse of chemical fertilizers attributed to critical environmental and health problems such as chronic kidney disease (C.K.D) in Sri Lanka. Therefore, there is a growing trend among present researches to explore low cost, effective fertilizer substitutes for inorganic fertilizers in crop production. Therefore, there is a growing trend among present researches to explore low cost, effective fertilizer substitutes for inorganic fertilizers in crop production. This study was conducted to explore the possibility of utilizing human urine in edible crop production as a low cost and effective nitrogen fertilizer. Therefore, there is a growing trend among present researches to explore low cost, effective fertilizer substitutes for inorganic fertilizers in crop production.

Keywords: Human Urine, Nitrogen, Phosphorous, Ligands Chemicals, Carbon, Calcium, Struvite, Urine Collector Tank

I. INTRODUCTION

THE CONVERSION OF HUMAN URINE INTO FERTILIZER is a term that is used to refer to the process of collecting and treating liquid wastes. It also offers solutions for recycling items that do not belong to garbage or trash. As long as people have been living in settlements and residential areas, garbage or liquid waste has been an issue. Waste management is all about how liquid waste can be changed and used as a valuable resource. CONVERT HUMAN URINE INTO FERTILIZER should be embraced by each and every household including the business owners across the world. Industrialization has brought a lot of good things and bad things as well. One of the negative effects of industrialization is the creation of liquid waste. Every day, tonnes of liquid waste are disposed off at various landfill sites. This waste comes from homes, offices, industries and various other agricultural related activities. These landfill sites produce foul smell if waste is not stored and treated properly. It can pollute the surrounding air and can seriously affect the health of humans, wildlife and our environment.

II. METHODS OF CONVERT HUMAN URINE INTO FERTILIZER

There are different methods of CONVERT HUMAN URINE INTO FERTILIZER. The following are some of the recognized methods:

1) Sanitary Landfill

This is the most popular liquid waste disposal method used today. Garbage is basically spread out in thin layers, compressed and covered with soil or plastic foam. Modern landfills are designed in such a way that the bottom of the landfill is covered with an impervious liner which is usually made of several layers of thick plastic and sand. This liner protects the ground water from being contaminated because of leaching or percolation. When the landfill is full, it is covered with layers of sand, clay, top soil and gravel to prevent seepage of water.

2) Recovery and Recycling

Recycling or recovery of resources is the process of taking useful but discarded items for next use. Traditionally, these

items are processed and cleaned before they are recycled. The process aims at reducing energy loss, consumption of new material and reduction of landfills.

3) Composting

Due to lack of adequate space for landfills, biodegradable yard waste is allowed to decompose in a medium designed for the purpose. Only biodegradable waste materials are used in composting. Good quality environmentally friendly manure is formed from the compost and can be used for agricultural purposes.

4) Pyrolysis

This is method of CONVERT HUMAN URINE INTO FERTILIZER whereby liquid wastes are chemically decomposed by heat without presence of oxygen. This usually occurs under pressure and at temperatures of up to 430 degrees Celsius. The liquid wastes are changed into gasses, liquid residue and small quantities of liquid.

In summary, proper CONVERT HUMAN URINE INTO FERTILIZER is an integral part of environmental conservation that should be observed by individuals and companies globally. This will keep the environment clean and reduce health and settlement problems.

– The combined effects of population explosion and changing modern living standard have had a cumulative effect in the generation of a large amount of various types of wastes. Liquid waste can be classified into different types depending on their sources

III. CONCEPT & FUNCTIONING:

A. Two Process Steps for Complete Recovery

The complete nitrification process developed by the PROJECT 1 (CONVERT HUMAN URINE INTO A FERTILIZER) consists of two main process steps:-

1) Nitrification:

Approximately 50 % of the total ammonia (NH₃ and NH₄⁺) contained in stored urine is transformed to nitrate (NO₃⁻) by bacteria. Simultaneously, about 90 % of the organic matter is degraded. The remaining nitrogen leaves the reactor unchanged as ammonium. The resulting liquid is free from malodour and can be distilled without losing ammonia via volatilization, i.e. the urine and the nutrients contained in it are Stabilized by the nitrification process.

2) Distillation:

The stabilized urine is distilled to approximately 3 to 5 % of its initial volume. The remaining concentrated liquid contains all the nutrients from urine. At ambient temperature, all nutrient salts stay in solution. Distilled Urine is recovered.

B. Reactor Construction for Distillation

The following section describes what components are necessary to convert urine to fertilizer at the scale of a building or a neighborhood. Though the general components and their functioning are outlined, it cannot replace the engineering required to install and operate such a system. The system will have to be carefully adapted to new

situations. Furthermore, the technology is still being developed further, so components may vary or be replaced in the future.

IV. CONCLUSION

The overuse and misuse of chemical fertilizers attributed to critical environmental and health problems such as chronic kidney disease (C.K.D) in Sri Lanka. Therefore, there is a growing trend among present researches to explore low cost, effective fertilizer substitutes for inorganic fertilizers in crop production. Therefore, there is a growing trend among present researches to explore low cost, effective fertilizer substitutes for inorganic fertilizers in crop production. This study was conducted to explore the possibility of utilizing human urine in edible crop production as a low cost and effective nitrogen fertilizer. Therefore, there is a growing trend among present researches to explore low cost, effective fertilizer substitutes for inorganic fertilizers in crop production.

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