ABSTRACT:

Rapid increase in volume and types of solid and hazardous waste as a result of continuous economic growth, urbanization and industrialization, is becoming a burgeoning problem for national and local governments to ensure effective and sustainable management of waste. It is estimated that in 2006 the total amount of municipal solid waste generated globally reached 2.02 billion tones, representing a 7% annual increase since 2003 (Global Waste Management Market Report 2007). The segregation, handling, transport and disposal of waste are to be properly managed so as to minimize the risks to the health and safety of patients, the public, and the environment. The economic value of waste is best realized when it is segregated. Currently there is no such system of segregation of dry, wet and metallic wastes at a household level. This paper proposes an Automated Waste Segregator (AWS) which is a cheap, easy to use solution for a segregation system at households, so that it can be sent directly for processing. It is designed to sort the refuse into metallic waste, wet waste and dry waste. The AWS employs parallel resonant impedance sensing mechanism to identify metallic items, and capacitive sensors to distinguish between wet and dry waste.

WHY THIS PROJECT

It enables more of the waste to be recycled, which reduces the drain on resources and energy when new stuff is being produced. It also reduces the amount of stuff that has to go to landfills, which is also environmentally good.
BLOCK DIAGRAM:

BASE STATION:

PLANT:

POWER SUPPLY

GSM RECEIVER

MOBILE/PC
INTRODUCTION:

In recent times, garbage disposal has become a huge cause for concern in the world. A voluminous amount of waste that is generated is disposed by means which have an adverse effect on the environment. The common method of disposal of the waste is by unplanned and uncontrolled open dumping at the landfill sites. This method is injurious to human health, plant and animal life. This harmful method of waste disposal can generate liquid leachate which contaminate surface and ground waters; can harbor disease vectors which spread harmful diseases; can degrade aesthetic value of the natural environment and it is an unavailing use of land resources.

In India, rag pickers play an important role in the recycling of urban solid waste. Rag pickers and conservancy staff have higher morbidity due to infections of skin, respiratory, gastrointestinal tract and multisystem allergic disorders, in addition to a high prevalence of bites of rodents, dogs and other vermin. Even though there are large scale industrial waste segregators present, it is always much better to segregate the waste at the source itself. The benefits of doing so are that a higher quality of the material is retained for recycling which means that more value could be recovered from the waste. The occupational hazard for waste workers is reduced. Also, the segregated waste could be directly sent to the recycling and processing plant instead of sending it to the segregation plant then to the recycling plant.

Currently there is no system of segregation of dry, wet and metallic wastes at a household level most appropriate technological option for safe management should be developed. The purpose of this project is the realization of a compact, low cost and user friendly segregation
system for urban households to streamline the waste management process. Waste is pushed through a flap into the proposed system. An IR proximity sensor detects this and starts the entire system. Waste then falls on the metal detection system. This system is used to detect metallic distinguishes between wet and dry waste. After the identification of waste, a circular base which holds containers for dry, wet and metallic waste is rotated. The collapsible flap is lowered once the container corresponding to the type of garbage is positioned under it. The waste falls into the container and the flap is raised. The waste in the containers now can be collected separately and sent for further processing.

ADVANTAGES:

1. When the waste is segregated into basic streams such as wet, dry and metallic, the waste has a higher potential of recovery, and consequently, recycled and reused
2. Higher quality of the material is retained for recycling which means that more value could be recovered from the waste
3. Dependency on the rag-pickers can be diminished if segregation takes place at the source of municipal waste generation.
4. Segregated waste could be directly sent to the recycling and processing plant instead of sending it to the segregation plant then to the recycling plant.
5. Bio-hazarders waste can be segregated for processing separately, in a safe manner.

APPLICATIONS:

1. The waste can be segregated into basic streams such as wet, dry and metallic.
2. The proposed module can be used as mini waste separator plant at the street level.
3. The total amount of waste collected can be easily monitored which could be helpful for processing.
4. The proposed model encourages the use of solar power.

SOFTWARE USED:

1. PIC-C compiler for Embedded C programming.
2. PIC kit 2 programmer for dumping code into Micro controller.
3. Express SCH for Circuit design.
4. Proteus for hardware simulation.

COMPONENTS USED:

1. PIC Controller
2. Metallic sensor
3. Conductive sensor
4. Voice Module
5. GSM (Sim 900)
6. DC Motors
7. IR sensor
8. Solar Panel
9. Battery
10. LCD Display

EARLIER PROPOSED SOLUTION:

Automated waste segregator [1]
The segregation of dry, wet and metallic wastes at a household level has recommended that a least cost, most appropriate technological option for safe management should be developed. The purpose of this project is the realization of a compact, low cost and user friendly segregation system for urban households to streamline the waste management process.

ADVANCEMENT OVER TO THE EARLIER PROPOSED SOLUTION:

1. Taking the proposed model of Automated Waste Segregator from home to street level by making it as solar operated mini segregation plant.

2. In-built Voice Module for encouraging people to make use of waste bins.

PHOTOGRAPHS:
CONCLUSION:

Segregation of the waste at the base level serves as an advantageous over to the conventional segregation method. In this way “Automated Solar Powered Mini Waste Segregation Plant” serves as a life tool.

REFERENCES: