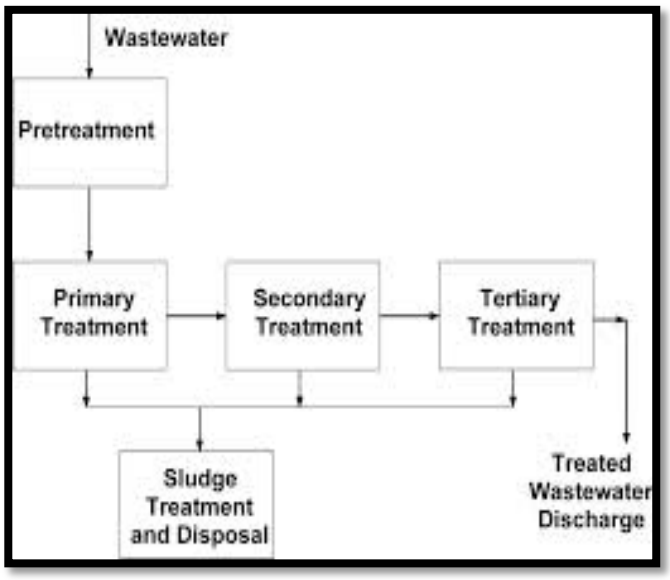
Wastewater – Part 2

Last week we highlighted the fact that water is as important as the air we breathe. We also established that as long as we are using water, wastewater can't be avoided. The wastewater produced, if left untreated can affect our food supply, quality of life as well as the environment. This week we will examine some of the processes that make wastewater safe for release into the environment.

Wastewater Treatment Processes

The main reason why we treat wastewater is to reduce its potential negative impacts on the natural environment and human health. Wastewater can be treated either by Conventional methods or Natural methods.

(1) Conventional Wastewater Treatment Systems consist of a combination of physical, chemical, and biological processes and operations to remove solids, organic matter, and sometimes nutrients e.g. nitrates and phosphates from wastewater.



A diagram of a generalized wastewater treatment process is shown in the figure on the left. At the first stage or ***pre-treatment*** large debris such as garbage are removed. This is followed by the second stage or ***primary treatment*** during which solids are allowed to settle. At the third stage wastewater undergoes ***secondary treatment*** where dissolved or suspended materials are allowed to breakdown or degrade. This breakdown is done by bacteria and other micro-organisms in the presence of oxygen. At the fourth stage particles and nutrients e.g. as phosphorous and nitrogen are removed in the ***tertiary treatment***. The sludge formed at the end of the various stages of the process is further treated before disposal.

Finally, the water is disinfected, usually with chlorine or ultraviolet (UV) radiation before being discharged into natural waterways.

(2) Natural Wastewater Treatment Systems are also called constructed wetlands, artificial wetlands, and bio-filters. Wetlands such as mangroves, swamps and marshes act as a natural filter for pollutants.

The major processes occurring in natural systems include sedimentation (settling of solids), plant uptake, bacterial degradation, and chemical adsorption (fixation). These processes help to remove physical, biological and chemical contaminants from wastewater. These systems are generally man-made and controlled.

Protecting Water Resources in Guyana

Environmental Protection (Water Quality) Regulations 2000

In an effort to protect the water resources in Guyana, the Environmental Protection Agency (EPA), developed the Environmental Protection (Water Quality) Regulation 2000. This Regulation aims to protect Guyana's waters and by extension our health by management and monitoring of effluent (waste matter) discharge into coastal and inland waterways. The Regulation encourages proper disposal of effluent thereby minimising potential contamination of water sources.

Cartagena Convention

Guyana is signatory to the Cartagena Convention which calls for the protection and development of the marine environment within the wider Caribbean region. This is supported by a supplementary Protocol governing pollution from Land-Based Sources (LBS). Therefore, waste matter discharged into the Atlantic Ocean through the internal drainage canals is required to meet identified environmental standards.

Guyana Wastewater Revolving Fund (GWRF) Project

Along with legislation, the Government of Guyana has established the Guyana Wastewater Revolving Fund (GWRF) Project, in an effort to reduce water pollution and minimise the impact on marine life. The Project is the first of its kind in Guyana and is funded by the Global Environment Facility (GEF) and implemented with support from the Inter-American Development Bank (IDB) and United Nations Environment Programme (UNEP). This project which focuses on the treatment of wastewater from industries will see the enactment of legislation aimed at managing our water resources. Additionally, it will provide scope for greater collaboration within the Caribbean Region.

To-date consultations have been held with various stakeholders on strengthening policy and institutional frameworks for wastewater management in Guyana and a Draft National Wastewater Management Strategy is being circulated for comments.

Reducing Wastewater in your homes

1. Check faucets (taps) and pipes, toilets for leaks and have them repaired or replaced quickly. A small drip can waste 20 gallons of water per day.
2. Turn off faucets while brushing your teeth or soaping your skin, and use a container with water instead of running water to rinse your razor while shaving.

3. Thaw foods on the lowest shelf of the fridge overnight rather than in a container of water.
4. Use a filled sink to wash wares rather than running water.
5. Reuse washing water to water plants.
6. Never wash chemicals, paints and oil into the drains.

REDUCING WASTEWATER AND ITS IMPACTS IS VERY IMPORTANT BOTH FOR US AND THE ENVIRONMENT.

GET INVOLVED TO REDUCE, REUSE AND RECYCLE IT!