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Water and Wastewater

What is Wastewater?

Wastewater is defined as water that has been adversely affected in quality by anthropogenic influence. It comprises liquid waste discharged by domestic residences, commercial properties, industry, and/or agriculture and can encompass a wide range of potential contaminants and concentrations. In the most common usage, it refers to the municipal wastewater that contains a broad spectrum of contaminants resulting from the mixing of wastewaters from different sources.

Why is it so Important to Monitor Wastewater Levels?

Quite simply, wastewater goes into the environment, which ultimately will be discharged into various bodies of water. Therefore it could have serious ramifications on the environment.

Depending on the nature of the water and the constituents it can affect the environment. For example if a sample of wastewater contained high COD (chemical oxygen demand) and BOD (biochemical oxygen demand) levels, it will in turn affect the oxygen level.

If the oxygen level is affected, to the point where the wastewater absorbed all the oxygen, an environment can no longer sustain life.



Legislation Dealing with Management of Wastewater...

Growing public awareness and concern for environmental degradation in Trinidad and Tobago, led to the enactment of the Environmental Management Act 2000. Various sections of this primary piece of legislation seeks to manage waste water discharges either directly, or through other pieces of subsidiary legislation. Some examples of relevant sections are identified below:-

Sections 26 – Requires the Honorable Minister of Environment to make rules (subsidiary legislation) aimed at managing various sources, type, quantity, and concentration etc. of pollutants that may be released into the environment by different sources. As a result the Draft Water Pollution Rules 2001 (amended in 2005) has been developed. Though not at present law, when it becomes legislation it would require a person, who intends to or is already doing so, release from a facility to register that facility as a source of the release of a water pollutant. Additionally, the proposed Water Pollution Rules 2005 would require facilities to monitor all its wastewater releases into the environment, and submit reports to the Environmental Management Authority where parameters set out in the First Schedule of the proposed Water Pollution Rules 2005 are not compliant with their respective concentrations also set out in the First Schedule.

- Section 53.** (1) The Authority may require and grant permits to authorize any process releasing water pollutants subject to such terms and conditions as it thinks fit.
- (2) The terms and conditions of a permit may relate to the design, construction, operation, maintenance, and monitoring of the facilities and processes releasing water pollutants.
- (3) A person shall apply to the Authority for the grant of a water pollution permit in accordance with the form as determined by the Authority.

Section 54. No person shall release or cause to be released any water pollutant into the environment which is in violation of any applicable standards, conditions or permit requirements under this Act.

KAIZEN and Wastewater

KaizenLAB, Analytical Division of **Kaizen Environmental Services (Trinidad) Limited** is a well-established environmental laboratory with over 10 years of analytical experience.

KaizenLAB specializes in analytical techniques applied to environmental chemistry for Water and Wastewater analysis, enhanced data interpretation and superior customer service. Following is a list of services that is offered with respect to Water and Wastewater:

Routine Inorganic Parameters:

Aggregate Tests

- Alkalinity (mg/L as CaCO₃)
- Conductivity-EC @ 25°C (dS/m³)
- Hardness (mg/L as CaCO₃)
- pH @ 25°C
- Total Dissolved Solids- TDS (mg/L)
- Total Suspended Solids- TSS (mg/L)

Dissolved Anions (mg/L):

- Bromine
- Chloride
- Nitrate
- Nitrite
- Phosphate
- Residual Chlorine
- Sulphate
- Ammonium
- Cyanide

Dissolved Cations (mg/L):

- Aluminium
- Calcium
- Magnesium
- Potassium
- Sodium

Trace Metals (mg/L):

- Arsenic
- Chromium
- Cadmium
- Hexavalent Chromium
- Copper
- Iron
- Lead
- Manganese
- Mercury
- Nickel
- Selenium
- Silica
- Vanadium
- Zinc

Routine Organic Parameters:

Aggregate Tests:

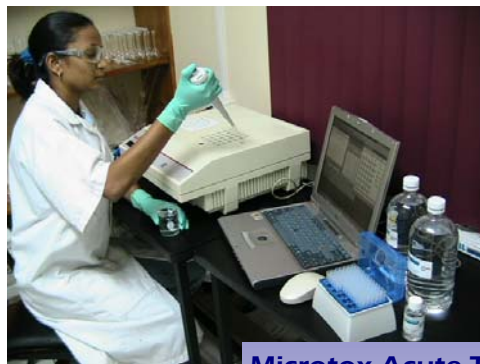
- Acute Toxicity-Microtox Bioassay (EC₅₀)
- Biological Oxygen Demand- BOD (mg/L)
- Chemical Oxygen Demand- COD (mg/L)
- COD with chloride correction factor
- Oil & Grease- O&G (mg/L or %)
- Phenolic Compounds(mg/L)
- Total Organic Carbons- TOC (mg/L)
- Total Petroleum Hydrocarbons- TPH (mg/L)

Individual Analytes

- BTEX:
- Fecal Coliform
- Polychlorinated Biphenyls- PCBs (ppb)
- Microtox

Other Environmental Tests

- Total Sulphide (mg/L)
- Dissolved Oxygen (mg/L)
- Total Phosphorus (mg/L)



KaizenLAB employee testing wastewater using the MICRTOX

Microtox Acute Test System Product

Description: The Microtox Acute Toxicity Test is a 15 minute exposure metabolic inhibition test which uses freeze-dried luminescent bacteria (*Vibrio fischeri* NRRL B-11177) to assess the acute toxicity of water, soil or sediment samples.

EnviroPRODUCTS Wastewater Equipment

The **EnviroPRODUCTS** Division of **KAIZEN** provides **Sales, Rental and Service**, of wastewater equipment some offered in the area of wastewater are as follows:

SensION 6 Portable Dissolved Oxygen Meter

For portable measurement of DO and BOD in aqueous solutions

- Quick calibration
- All-in-one 5-pin connector
- Automatic temperature compensation
- Stable resolution to 0.1% saturation
- Variety of Probes, two membranes
- Electrolyte filling solution



L2000DX PCB/Chloride Analyzer System

- An efficient, accurate tool for determining chlorinated organic compound contamination in groundwater.
- User friendly with a variety of pre-programmed methods specifically designed for water testing.
- Extraction efficiencies and conversion factors for over a dozen chlorinated compounds.
- Customized methods can be designed by the user incorporating characteristics specific for site location and analyte
- Field trial and laboratory validation studies show that the L2000DX's water analysis compares very well with expensive laboratory methods.

HACH® SensION™ Waterproof pH/mV/ISE Meters

- Calibrates quickly and easily.
- Locks on and displays test results instantly on its large, easy-to-read display.
- Features electrode holder, anti-glare coating and slip-resistant keypad.
- **SensION1** measures pH, mV and temperature.



Niskin Bottle

- The Niskin bottle is used to collect water samples from below the surface.
- Used to measure many physical characteristics such as:
 - salinity
 - dissolved oxygen,
 - nutrient concentrations
 - dissolved organic and inorganic carbon.

KAIZEN News— KAIZEN & CWWA

Former President of CWWA Dr. Hugh Sealy giving a speech at the opening ceremony of The CWWA Conference & Exhibition



The Honorable Minister of Public Utilities and the Environment Ms. Penelope Beckles officially opening the exhibition



Strategic Diagnostics Inc. Technical Support Scientist Mr. Jason Ambrosius explaining the use of Microtox



Dr. Derrick Balladin – Manager KaizenLAB, having a chat about Microtox and other Analytical Services



The Caribbean Water and Wastewater Association (CWWA) is committed to the advancement of the science, practice and management of water supply and waste disposal for the benefit of Caribbean people through the development of human resources, public education and professionalism as well as promotion of appropriate technologies in the water and waste sectors.

KAIZEN Environmental Services (Trinidad) Limited recognizes the significant responsibility and more importantly regional and local benefits of such a mandate and as such KAIZEN enthusiastically participated in the recently held Caribbean Water and Wastewater Association Conference and Exhibition held at the Tobago Hilton. The exhibition proved to be a great success for KAIZEN as we were given the opportunity to meet with many of our existing as well as potential clients to dialogue on this shared commitment of supporting the CWWA's mandate.



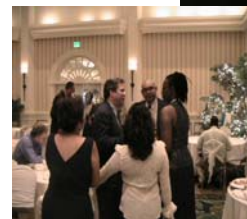
KaizenLAB Booth featured at the exhibition

EnviroPRODUCTS & PROJECTServices Booth



Strategic Diagnostics Inc. Technical Support Scientist Mr. Jason Ambrosius explaining the use of Microtox

CWWA President Ms. Sherry -Ann Dumas Harewood presenting the Kaizen hamper to winner Ms. Monique Walker of L & W Engineering Equip. Ltd.



Kaizen President Mr. de Freitas and Business Dev. Manager Mr. Superville meeting with CWWA President Ms. Sherry-Ann Dumas Harewood

www.kaizen-tt.com

We've Launched Our Website!!!!

On Friday 17th November, 2006, Kaizen Environmental Services (Trinidad) Limited launched it's website:

www.kaizen-tt.com

Be sure to check us out!!!!

PROJECTServices Division - NEW LOCATION!!

Please be advised that our PROJECTServices division has been re-located to:

ADDRESS:
 Corner Bahadoor Street and
 Southern Main Road,
 California.

CONTACT NOS.:
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