جامعة الإمام عبد الرحمن بن فيصل
IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY

Solid and Hazardous Waste Management Consulting and Engineering Solutions

Environmental Engineering Department

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SOLID WASTE MANAGEMENT LABORATORY ANALYSIS (GAMEP Authorized)

Our Consultation Office offers consultation services, conducting studies, third-party testing, inspection, and training in the field of environmental engineering and waste management, including industrial, medical, and infectious waste among all other types of solid waste. In Addition, we offer short courses related to the area of solid waste management. The office is part of the Integrated Environmental Solutions and Consultancy Center established in 2020 by Imam Abdulrahman Bin Faisal University and authorization by the regulatory environmental accreditation body in Saudi Arabia - Presidency of General Authority of Meteorology and Environment Protection (GAMEP). All laboratory analysis are conducted following an approved environmental laboratory protocol.

EXAMPLES OF LAB ANALYSIS

- Running regulatory leaching tests to all types of solid waste materials
- Running beneficial reuse leaching tests to all types of solid waste materials
- Environmental impact assessment analysis
- Total elemental composition analysis
- Determination of surface area and pore size of Different solid waste materials
- Total organic carbon analysis
- Carbon, hydrogen, nitrogen and sulfur content analysis
- Solid waste materials characterization analysis
- Grinding solid waste materials to nano ranqe and smaller Range
- Enerqv content and colorimetric values of solid waste material analysis

CONSULTATION SERVICES IN SOLID WASTE MANAGEMENT OFFICE:

- Inspecting, analysis, and assessment of all types of solid and hazardous waste.
- Landfill and incineration design
- Best applicable technology including recycling and reuse
- Environmental Impact Assessment
- Life Cycle Assessment (LCA)
- Oil waste management and reuse
- Industrial waste collection and disposal
- Medical waste management, disposal, and incineration
- Radioactive waste management
- Contaminated solid purification

SAMPLE DIVIDER

The sample divider PT 100 divides the sample so exactly that the composition of each fraction of the sample corresponds exactly to that of the original bulk sample. Applied for materials like Cement clinker, chemicals, coffee, construction materials, fertilizers, fillers, flours, grains, metals powders, minerals, nuts, sand, seeds, soils,washing powder etc.

TEST EQUITY TEMPERATURE HUMIDITY CHAMBER

Designed to meet the demanding requirements for precise humidity and stability, Advanced engineered design incorporates the latest in cabinet, refrigeration, temperature control and monitoring features.

SURFACE AREA AND PORE SIZE ANALYZER

The surface area analyzers offers a full line of rapid, high throughput B.E.T. surface area and pore size analyzers. Eight fully automatic models meet the needs of any research or quality assurance laboratory.
It is use for surface area and pore size of different kinds of gels, solid and
nano composites etc.

TOTAL ELEMENTAL COMPOSITIONS

This instrument followed the proper regulatory protocol used to assess environmental risk of disposal and reusing waste material for direct exposure of solid waste materials. The results are compared with regulatory threshold standards.

Applications:

- Risk assessment of solid waste materials
- Evaluation of direct human exposure
- Decision making of disposal or beneficial use of waste material
- Prediction the worst-case scenario for disposal or beneficial reuse

INDUCTIVELY COUPLED PLASMA ICP-MS

Inductively coupled plasma mass spectrometry (ICP-MS) is a type of mass spectrometry that uses an Inductively coupled plasma to ionize the sample. Compared to atomic absorption spectroscopy, ICP-MS has greater speed, precision, and sensitivity.

Applications:

- Determination of loperamide in environmental waters by ion chromatography-ICP-MS.
- Analysis of flue gas desulfurization wastewaters by ICP-MS.
- An Examination of the presence, formation, and transformation of volatile.
- Halogenated organic species in wastewater extracts using GC-ICP-MS.

GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS)

Gas chromatography-mass spectrometry (GC-MS) is an analytical method that combines the features of gas chromatography and mass spectrometry to identify different substances within a test sample.

Applications:

- Environmental monitoring & cleanup
- Criminal forensics
- Law enforcement
- Security
- Chemical warfare agent detection
- Chemical engineering
- Food, beverage and perfume analysis

CHNS ANALYSER

Rapidly determine the carbon, hydrogen, nitrogen, sulfur, or oxygen in inorganic and other types of materials. CHNS can handle a wide variety of sample types including solids, liquids, volatile and viscous samples.

Examples of how our elemental analysis technology is applied

- Pharmaceutical / chemical, energy, purity, analysis of coal
- Polymers: blend analysis, nitrogen level
- Environmental: C/N ratio in soil, sediment and plant material, organic particulate collected on filters, nitrogen content in fertilizer

CALORIMETER 6200

Calorimeter provide a wide selection of equipment for all types of calorimetric service, whether for routine fuel tests, for precise research measurements, for occasional calorific tests, or for student instruction. Principal applications of calorific measurements

Fuel oils, gasoline, all motor fuel and aviation types jet fuels.

- Combustible wastes and reuse disposal.
- Foodstuffs and supplements for human nutrition
- Thermodynamic studies of combust

LEACHING TESTS TO ALL TYPES OF SOLID WASTE MATERIALS SUCH AS TCLP

The TCLP is designed to determine the mobility of both organic and inorganic analytes present in liquid, solid and multi-phase wastes. The TCLP procedure is generally useful for classifying waste material for disposal options and waste characterization.

- Beneficial reuse decision making
- Environmental assessment to groundwater
- Determination of the proper disposal of waste materials
- Prediction of worst-case scenario for disposing or reusing waste materials

TOC ANALYZER

Total organic carbon (TOC) analyzers is designed to measure organic carbon across a broad range of water samples. Offering a dynamic operating range of 50 ppb to 50,000 ppm, this analyzer ensures superior TOC recovery and accuracy with its patented supercritical water oxidation technique. Main application is biological wastewater plant optimization, wastewater monitoring.

BALL MILL

Ball mill is used for mixing and size reduction processes, these mills also meet colloidal grinding and provide the energy input necessary for mechanical alloying. Powerful and quick grinding of solid samples down to nano range or even smaller range.

EXAMPLES OF PREVIOUS PROJECTS AND STUDIES

- Food Waste Management in the Eastern Province Study
- Construction and Demolition Waste Management in the Eastern Province
- Development and Testing of Glow in the Dark Materials in replacement of Asphalt
- Greenhouse Emission from Solid Waste Management Generated in the Eastern Province
- Life Cycle Assessment of Selected Waste Products
- Environmental Impact Assessment of Selected Solid Waste Materials
- Complete Solid Waste Characterization in the Eastern Province
- Utilizing Solid Waste Material in Replacement of Portland cement

EXAMPLES OF PREVIOUS REFEREED JOURNAL PAPERS

- Investigation and modelling of greenhouse gas emissions resulting from waste collection and transport activities.
- Construction and demolition waste management in Saudi Arabia: Current practice and roadmap for sustainable management
- Food waste management current practices and sustainable future approaches: a Saudi Arabian perspectives.
- Fundamental investigation of solid waste generation and disposal behavior in higher education institute of kingdom of Saudi Arabia.
- Construction material properties of slag from the high temperature arc gasification of municipal solid waste.
- Comparative Adsorption of anionic dyes (Eriochrome black T and Congo red) onto Jojoba residues: Isotherm, kinetics and thermodynamic Studies.

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FLIP LINK

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