Analytical services

Our facilities have laboratories of about 800 m^2 that include a wide variety of equipment and specialised instrumentation focused on research in all our areas of expertise. Our technological capabilities can be useful to different companies, educational or research centres, but also to public administrations and other entities related to environmental issues. The interdisciplinary nature of our technical and scientific team allows the Centre to adapt to a wide range of analytical needs.

Our analytical services are focused on five areas:

- Physicochemical analyses in water, soil, and residue-based matrices
- Microbiological analyses
- Instrumental analyses: Elemental analysis, TOC/TN, Ion and gas chromatography, Atomic absorption
- Bioprocesses monitoring: Anaerobic digestion, composting, aerobic processes, nutrients recovery, among others
- Pilot plant for environmental technologies: Biodrying, anaerobic digestion, freeze concentration, electrodialysis, among others

Offered services:

Parameter	Methodology	Matrix
pH	Electrometric	Water, soils, residues
Electrical conductivity (EC)	Laboratory	Water, soils, residues
Total solids (TS)	Drying at 105ºC	Water, soils, residues
Volatile solids (VS)	Calcination at 550ºC	Water, soils, residues
Total suspended solids (TSS)	Filtration/Drying a 105ºC	Water

Parameter	Methodology	Matrix
Volatile suspended solids (VSS)	Filtration/Calcination a 550ºC	Water
Settable solids (SS)	Imhoff cone	Water
Turbidity (Tur)	-	Water
Temperature (T)	Direct measurement	Water
Acid digestion	$H_2SO_4/HNO_3/HCl$	Water, soils, residues
Ammoniacal Nitrogen ($N\text{-}NH_4^+$)	Distillation/Phenate	Water, soils, residues
Kjeldahl Nitrogen (KTN)	Micro Kjedahl	Water, soils, residues
Total Phosphorus (P-Tot)	Digestion/Ascorbic acid	Water, soils, residues
Chemical oxygen demand (COD)	Closed reflux/Colorimetric	Water
Biochemical oxygen demand (BOD)	Kit HACH LCK 554	Water
Alkalinity (Alk)	Titration	Water
Chloride (Cl^-)	Argentometric	Water, soils, residues
Chloride (Cl^-)	Potentiometric	Water, soils, residues
Nitrate ($N\text{-}NO_3^-$)	Selective Ion	Water, soils, residues

Parameter	Methodology	Matrix
Chloride (Cl^-)	Ionic Chromatography CS	Water, soils, residues
Nitrite (NO_2^-)	Ionic Chromatography CS	Water, soils, residues
Nitrate (NO_3^-)	Ionic Chromatography CS	Water, soils, residues
Sulfate (SO_4^{-2})	Ionic Chromatography CS	Water, soils, residues
Phosphate (PO_4^{-3})	Ionic Chromatography CS	Water, soils, residues
Total Organic Carbon (TOC)	High temperature combustion	Water
Total Nitrogen (TN)	High temperature combustion	Water
Elemental total carbon (TC)	Dry combustion	Water, soils, residues
Elemental total nitrogen (TN)	Dry combustion	Water, soils, residues
Total oxidable carbon (OXC)	Acid oxidation/titration	Water, soils, residues
Auto heating	Dewar test/10 days	Solid residues
High calorific value	Adiabatic combustion	Solid residues
Polyhydroxyalkanoates	Digestion at 95°C + CG-FID	Water, soils, residues
Geosmin	SPME + CG-MS	Water

Parameter	Methodology	Matrix
Exopolysaccharides	Ethanol precipitation + dialysis	Water, residues
Reducing sugars	DNS Miller method	Water, residues
Total carbohydrates	Phenol-Sulfuric acid	Water, residues
Biomass (x)	Centrifugation + drying at 60º	Water, residues
Cells count	Incubation at optimal T + Petri dish count	Water, residues
Potassium (K)	Flame Atomic absorption A/A	Water, soils, residues
Sodium (Na)	Flame Atomic absorption A/A	Water, soils, residues
Magnesium (Mg)	Flame Atomic absorption A/A	Water, soils, residues
Calcium (Ca)	Flame Atomic absorption N_2O/A	Water, soils, residues
Zinc (Zn)	Flame Atomic absorption A/A	Water, soils, residues
Copper (Cu)	Flame Atomic absorption A/A	Water, soils, residues
Lead (Pb)	Flame Atomic absorption A/A	Water, soils, residues
Cadmium (Cd)	Flame Atomic absorption A/A	Water, soils, residues
Iron (Fe)	Flame Atomic absorption A/A	Water, soils, residues

Parameter	Methodology	Matrix
Nickel (Ni)	Flame Atomic absorption A/A	Water, soils, residues
Aluminum (Al)	Flame Atomic absorption N_2O /A	Water, soils, residues
Dynamic respirometric index (DRI)	Dynamic respirometry 37°C/5 days	Solid residues
Biochemical methane potential (BMP)	Anaerobic digestion 37°C/21 days	Solid residues
Methane (CH_4)	Gas chromatography TCD	Solid residues
Apparent Density	Direct measurement	Soils, residues
Water holding capacity (WHC)	Gravimetric	Soils, residues
Granulometry	Sieving	Soils
Equivalent Calcium carbonate	Back titration	Soils
Microbial soil respiration	Static incubation with NaOH	Soils

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