The Analytical Services Department at Concurrent Technologies Corporation (CTC) operates chemical and corrosion/coatings laboratories to provide testing and consulting services. We evaluate processes to gauge effectiveness; work to find solutions to environmental problems; analyze coatings to determine the best alternative to achieve maximum performance . . . and more, as determined by specific client needs.

CTC’s chemists, biologists, environmental scientists and skilled technicians tailor efforts to client needs to provide bench scale, pilot scale, production shop floor and field services covering the following areas.

Chemical Testing

- **General**
  - High Pressure Liquid Chromatography (HPLC)
    - Various Organic Constituents
    - Explosives Analysis - Method 8330, Nitrate Esters
    - Ion Chromatography
      - Anions
      - Cations
  - Metals Analysis
    - Inductively Coupled Plasma/Optical Emission Spectrometry (ICP/OES)
    - Metals Digestion and Extraction
      - Toxicity Characteristic Leaching Procedure (TCLP), Method 1311 SW 846
      - Synthetic Precipitate Leaching Procedure (SPLP), Method 1312 SW 846
      - Extraction Procedure (EP) Toxicity Test, Method 1310B SW 846 Extraction Method 1311 SW 846
  - General Microbiological Testing
    - Standard Plate Count Bacteria – Standard Methods 9215 B
    - Gram Staining
  - Spectrophotometric Methods
    - Bromine
    - Chemical Oxygen Demand (COD) – Reflux Method
    - Chlorine – Free and Total
    - Hexavalent Chromium
    - Iron Concentration
    - Phenols
    - Phosphate – Total and Ortho
    - Silica – Low and High Range
    - Sulfates
    - Turbidity
  - Surfactants Analysis and Quantification
    - Methylene Blue Activated Substances (MBAS)
  - Oil and Grease - EPA Method 1664
  - Residue (Total, Filterable, Nonfilterable) - EPA 160
  - pH - EPA 150.1
  - Conductivity - EPA 120.1
  - Dissolved Oxygen (DO) – Standard Methods 4500-0, EPA Method 360.1
  - Turbidity - EPA 180.1
  - Total Organic Carbon (TOC) - EPA 415.2
  - Biochemical Oxygen Demand (BOD) SM 5210 B
  - Density
  - Air Sampling and Emissions Monitoring
    - Particulates
    - Volumetric Flow
    - Gas Analysis
    - Continuous Emissions Monitoring (CEM)
    - Acid Gases
    - Metals
  - Gas Chromatography/Mass Spectrometry
    - Light Gas Analysis
    - Sulfur
    - Organic Analysis

**CTC** operates environmental, chemical and coatings laboratories. Chemists, biologists, environmental scientists and skilled technicians help military and industrial clients meet environmental standards and regulatory requirements and develop tailored solutions to a variety of challenges.
Chemical Testing continued

- Fourier Transform Infrared Spectroscopy
  - Organic Functional Group Identification
- Titrimetric Methods
  - Acidity
  - Alkalinity
  - Chlorides
  - Karl Fisher
  - Ion Selective Methods
- Organics Digestion/Extraction

- Fuels Analysis
  - Bomb Calorimetry - Heat of Combustion
  - Hydrocarbon Analysis
  - Gas Range Organics (GROs) and Diesel Range Organics (DROs)
  - Characterization and Specification of Organics and Additives by GC/MS/MS
  - Water Separation Index
  - Flash Point
  - Mercaptan Sulfur
  - Low Level Sulfur by X-ray Fluorescence
  - Elemental Analysis, specifically Carbon, Oxygen, Nitrogen, Hydrogen, Sulfur
  - Viscosity
    - Room Temperature
    - Low Temperature
  - Cloud Point
  - Pour Point
  - Smoke Point
  - Freezing Point
  - Melting Point
  - Color
  - Ash Content
  - Carbon Residue
  - Trace Metals
  - Demulsification
  - Accelerated Stability
  - Distillation Temperature
  - Cetane Index
  - Copper Strip Corrosion
  - Total Acid Number (TAN)
  - Total Base Number (TBN)

- Corrosion Testing
  - Corrosion Rate Evaluation Procedure (CREP)
  - Salt Spray - ASTM B117
  - Humidity - ASTM D1748; MIL-STD-810F, Method 507.4
  - Filiform Corrosion - ASTM D 2803-93, Procedure C
  - Weatherometer Testing - ASTM G-26, Type BH; MIL-PRF-85285C, paragraph 4.6.4
  - Condensation - ASTM D 4585-99
  - Cyclic Corrosion - GM 9540P
  - Sandwich Corrosion - ASTM F 1110-90
  - Accelerated Weathering - ASTM G-26
  - Ultraviolet (A or B) Condensation - ASTM D4587

- Physical Properties Testing
  - Quality/Appearance - MIL-C-1359B
  - Surface Profile-Profilometry - ASTM D 7127
  - Hardness
    - Pencil - ASTM D3363
    - Shore A - ASTM D 2240
    - Shore D - ASTM D 2240
  - Microhardness - ASTM E384, ASTM D 1474, ASTM B578
  - Nanohardness
- Adhesion
  - Wet Tape - ASTM D3359, FED STD 141, Method A and Method B
  - Dry Tape - ASTM D3359, FED STD 141, Method A and Method B
  - Pneumatic Adhesion Tensile Testing Instrument (PATTI) - ASTM D 4541
  - Knife/Chisel - ASTM D6677
  - Color - ASTM D2244
  - Gloss - ASTM D523
  - Coating Thickness - ASTM B499, ASTM B244, ASTM D1400
    - Eddy Current
    - Magnetic Thickness
  - Fluid Resistance - ASTM D1308
  - Flexibility
    - Mandrel Bend - ASTM D 522
    - Impact -ASTM D 2794, ASTM B499, ASTM D1400, ASTM D4138
    - Low Temperature - SAE AS 5127/1
  - Universal Tensile Testing
  - Taber Abrasion - ASTM D4060, FED STD 141, Method A and Method B
  - Pneumatic Adhesion Tensile Testing Instrument (PATTI) - ASTM D 4541
  - Knife/Chisel - ASTM D6677
  - Color - ASTM D2244
  - Gloss - ASTM D523
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  - Pneumatic Adhesion Tensile Testing Instrument (PATTI) - ASTM D 4541
  - Knife/Chisel - ASTM D6677

Additional Services

- Method Development
  - Material Compatibility
  - Alternative Fuels

- Technologies (Capabilities) Developed In-House
  - Stress Corrosion Cracking - ASTM G-44
  - Alternate Immersion - ASTM G-31
  - Non-Skid Testing (Coefficient of Friction) - MIL-PRF-24667B, Section 4.5.1

- Bench Scale Studies
  - Recycle, Recovery, Remediation
  - Plating
  - Micro-reactors

- Support of CTC's Demonstration Factories
  - Organic Finishing Line
  - Laser Stripping
  - Fuel Cell Test and Evaluation Center
  - Friction Stir Welding and Fusion Welding

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