

Dr. W.D. Hatfield Laboratories at the Sanitary District of Decatur

Laboratory analysis for wastewater treatment,
industrial monitoring, and environmental protection



The man who started it all



Dr. W.D. Hatfield was an innovator in wastewater treatment technologies and analytical methodology.

He served as Superintendent of the Sanitary District of Decatur from 1924 - 1958. He also served as the President of the Central States Sewage Works Association and the Water Environment Federation.

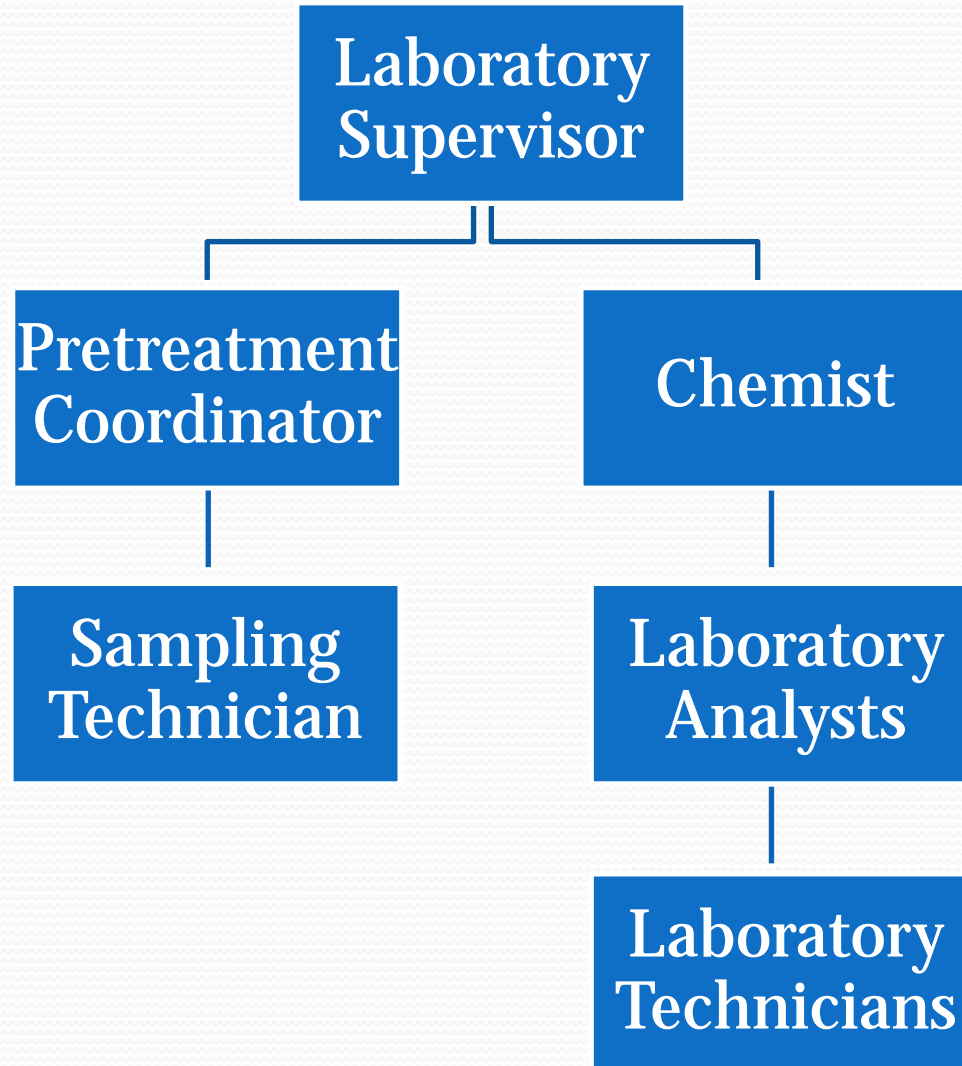
Numerous organizations annually present a “William D. Hatfield” award for outstanding performance and professionalism in wastewater treatment.

District Lab – Types of Testing

- Permit required (NPDES, Land Application of Digested Sludge, etc.)
- Process Control
- Industrial Dischargers
- Project Support (Nutrient Removal)
- Intergovernmental Cooperation (RCPP)
- Research & Development
- River, Lakes, and Groundwater
- Analysis Quality Control



Laboratory Organizational Chart



Laboratory Instrumentation

- Inductively Coupled Plasma Optical Emission Spectrometer
- Ion Chromatograph
- Automated Discrete Chemistry Analyzer
- Oil and Grease automated extraction unit
- BOD automated analyzer
- Infrared Gas Analyzer
- UV-Visible spectrophotometer
- pH/Ion Selective Electrode Meter
- Chlorine Analyzer



Laboratory Equipment

- Analytical Balances
- Ovens/Furnace
- Heating Mantles
- Distillation Equipment
- Centrifuges
- Microscope
- Refrigerators
- Walk in Incubators
- Fume Hoods
- Water Production Unit (Type 1 Water)
- Water Baths/Sterilizers
- Laboratory Information Management System (LIMS)

Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES)

- Metals analysis of water and sludge samples



Ion Chromatograph (IC)

- Anion analysis including chlorides, nitrates, phosphates, and sulfides



Automated Discrete Chemistry Analyzer (AQ2)

- Nutrient analysis including total nitrogen, ammonia, and phosphorous



Oil and Grease Analyzer

- Measurement of fats, oils, and greases (FOG)



Biochemical Oxygen Demand (BOD) Automated Analyzer

- Measurement of 5-day BOD and Carbonaceous BOD



Infrared Gas Analyzer

- Measurement of gas quality in the anaerobic digesters



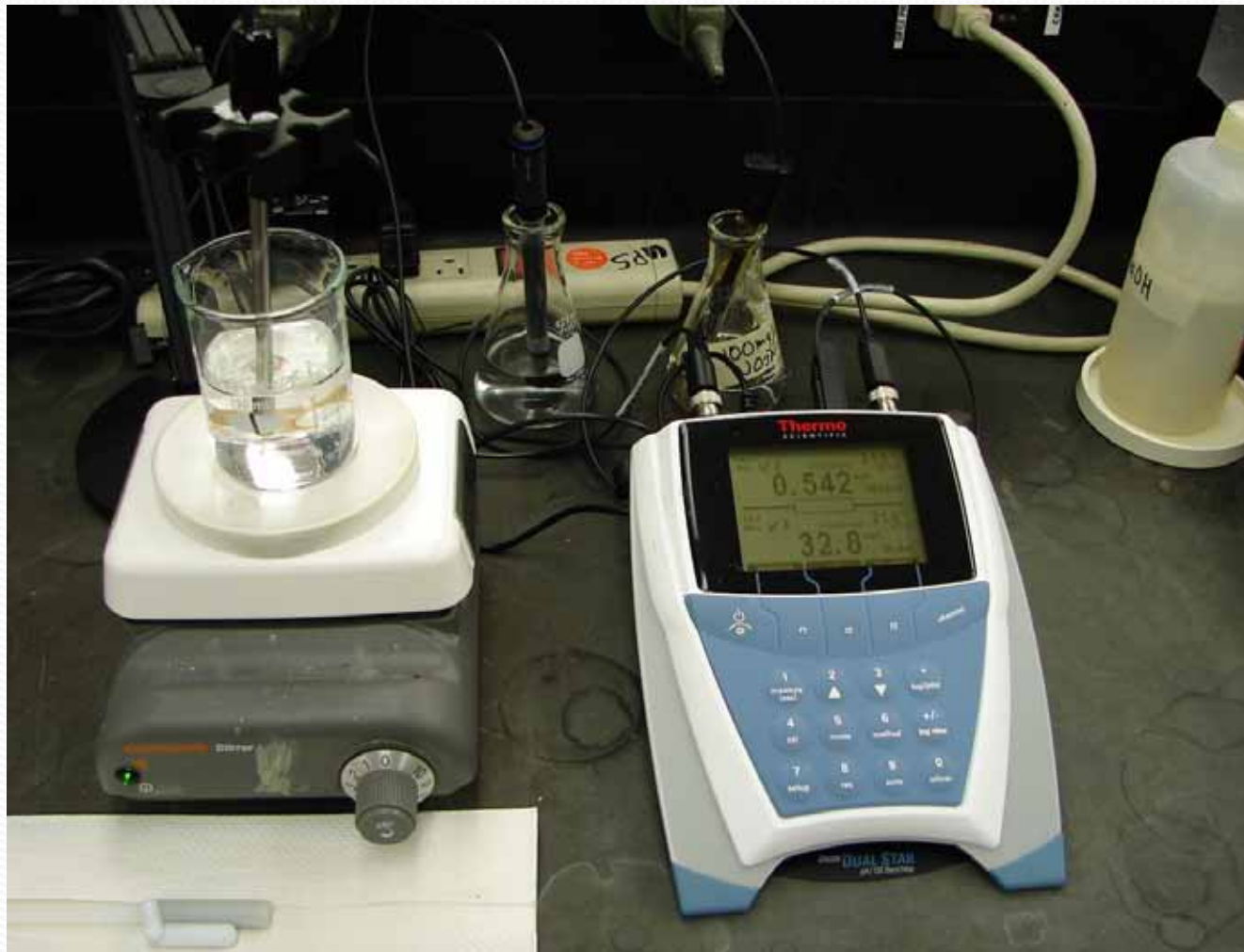
UV-Visible Spectrophotometer

- Analysis of Phenols and Oxygen Demand Index (ODI)



pH/Ion Selective Electrode (ISE) Meter

- Analysis of pH, nitrates, and ammonia



Chlorine Analyzer

- Analysis of total residual chlorine during disinfection



Analytical Balances

- Accurate weighing for gravimetric analysis and solution preparation



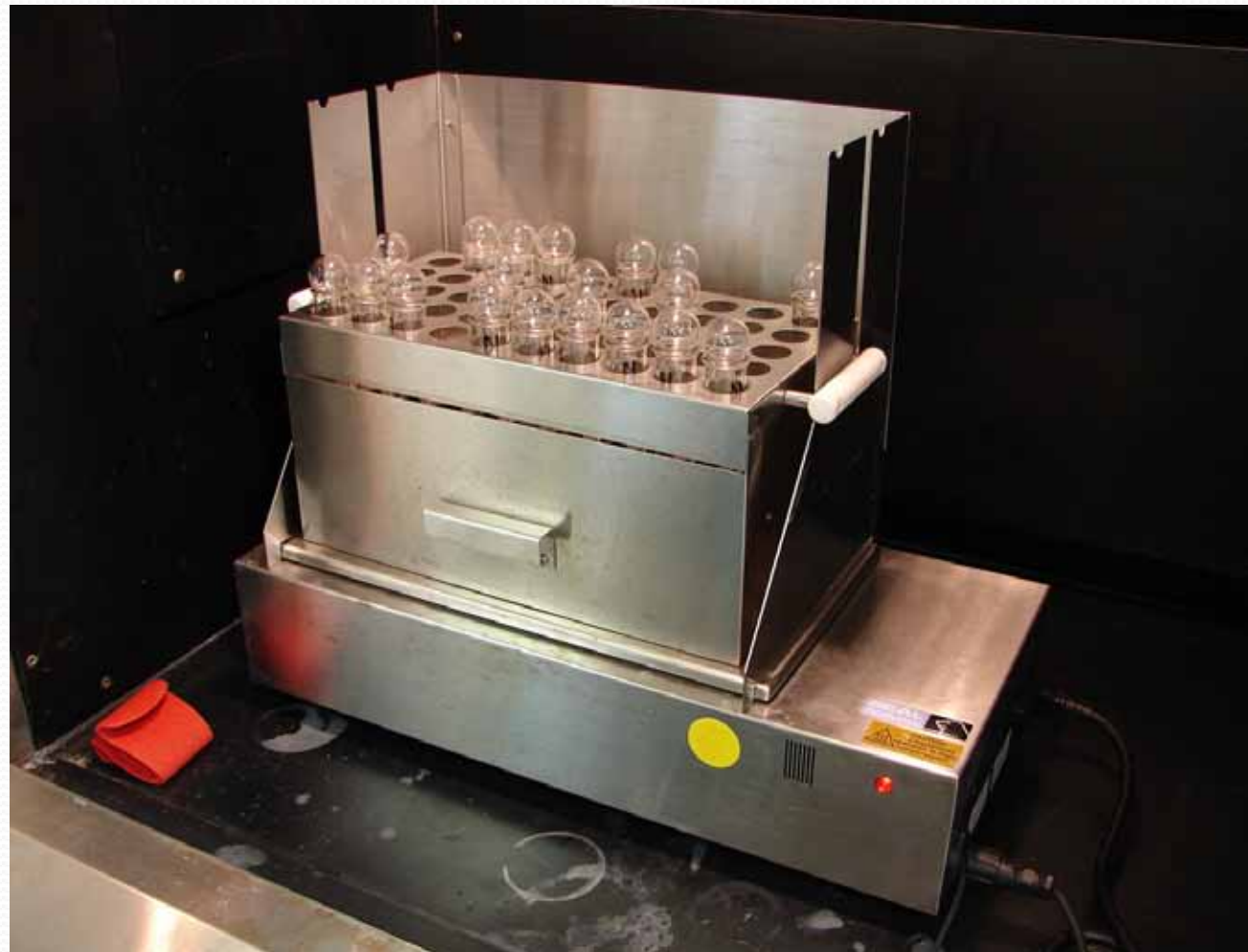
Ovens/Furnace

- Sample drying/ignition for solids analysis



Heating Mantles

- Digestion of samples prior to analysis



Centrifuges

- High speed separation of solids from liquids



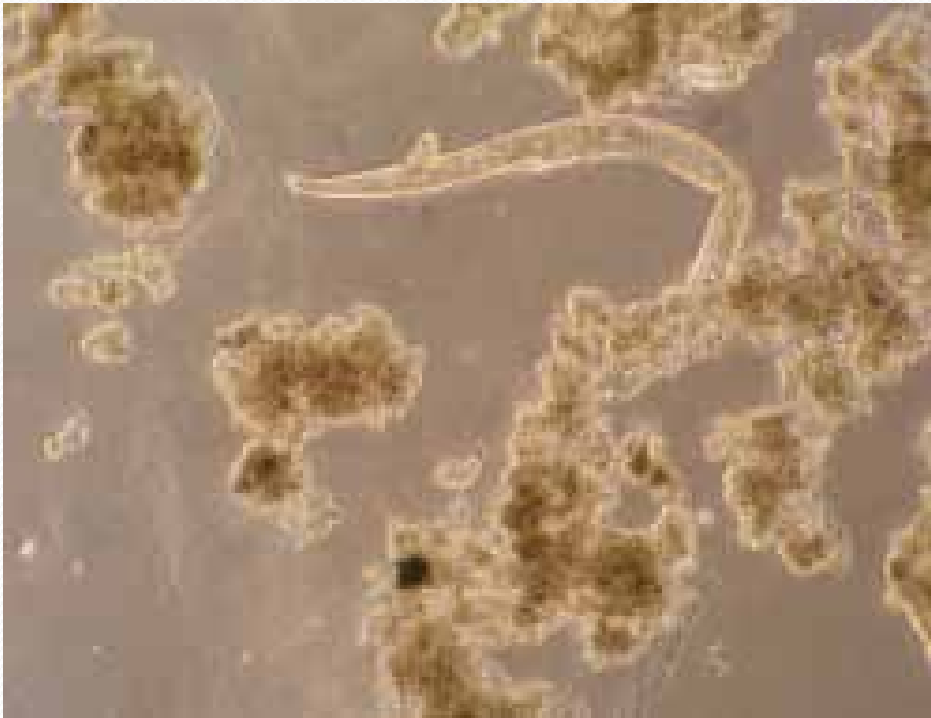
Distillation Equipment

- Distillation of samples to remove interfering materials



Microscope

- Analysis of microbiological activity in activated sludge



Refrigerators

- Cold storage of samples, standards, and reagents



Walk in Incubators

- Incubation of BOD samples at 20°C



Fume Hoods

- Fume removal when working with dangerous/toxic chemicals



Water Production Unit

- Production of highly pure Type 1 water required for many lab procedures



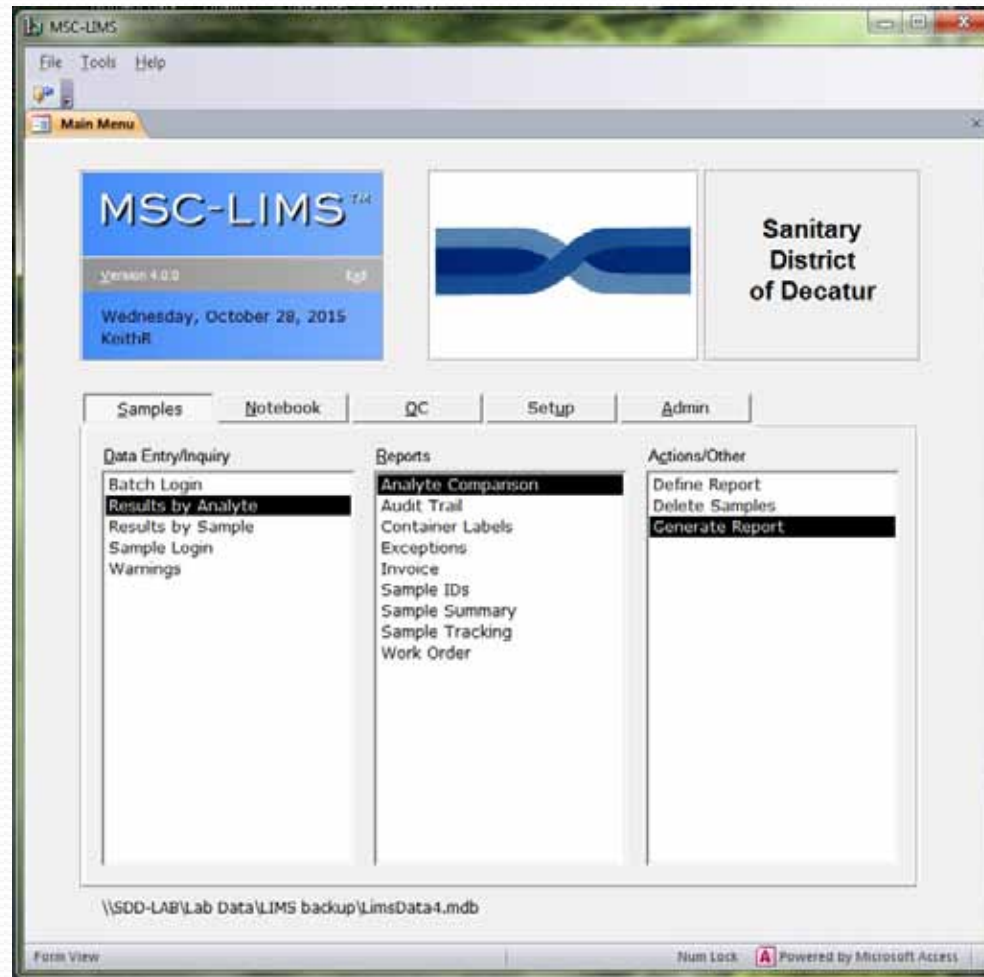
Water Baths/Sterilizers

- Sterilization of glassware and incubation of samples for bacteriological analysis



Laboratory Information Management System (LIMS)

- Electronic data acquisition, storage, and transfer



Field Sampling/Monitoring

- Collection of industrial, environmental, and plant samples



Summary

- The laboratory processes approximately 400 samples per month.
- The laboratory performs approximately 2,000 analyses per month.
- The laboratory has passed the annual EPA DMR-QA proficiency test for 22 years in a row.
- The pretreatment program monitors 29 industrial users and 11 waste haulers.
- Samples are being collected 24 hours a day, 365 days a year.



Questions?

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