



Classification Specification Title: Chemist

Department	Wastewater	Grade: WWFG.10
Supervision Received	Manager Laboratory Services	FLSA Status: Exempt
Supervisory Responsibility	None	Established: Jun 29, 2007
		Revision: Apr 9, 2026

CLASSIFICATION SUMMARY:

Working under limited supervision, incumbents in this classification exercise independent technical judgment to perform complex qualitative and quantitative analyses on wastewater, industrial, and plant samples. The role primarily focuses on the technical administration and analysis of volatile and semi-volatile organic pollutants using specialized instrumentation, specifically requiring extensive experience with multiple gas chromatograph/mass spectrometers (GC-MS). Beyond core testing and sample collection, duties involve managing GC-MS control data, calibrating equipment, maintaining detailed records, and reviewing technical literature to ensure precise monitoring of wastewater and well water quality.

SERIES LEVEL: The Chemist is the third level of a five-level laboratory series.

ESSENTIAL FUNCTIONS: *(The following duties ARE NOT intended to serve as a comprehensive list of all duties performed by all employees in this classification, only a representative summary of the primary duties and responsibilities. Incumbent(s) may not be required to perform all duties listed and may be required to perform additional, position-specific duties.)*

Utilizing EPA-approved methods, the incumbent performs chemical, bacteriological, and physical examinations of wastewater, specializing in the GC-MS analysis of over 100 organic compounds.

Develops and applies statistical QA/QC techniques to evaluate analytical data, ensuring all routine and non-routine environmental samples meet prescribed control limits to maintain the integrity of results.

Assesses each quality control sample and reported sample against a combination of GC-MS EPA method limits and ongoing statistically-derived control limits.

Performs GC-MS precision determinations. Documents quality control data and performs ongoing statistical evaluations to store in laboratory files, electronic and/or paper logs, and/or the laboratory database.

Investigate out-of-control data to determine, if possible, the cause. Takes corrective action to reduce or eliminate future occurrences of aberrant quality control data. Detects unusual situations in the application of established methods and recommends options to the supervisor. Determines approach and methods to use.

Operates, calibrates, and maintains complex equipment and instruments, including gas chromatograph/mass spectrometers and a purge & trap system.

Optimizes calibration curves for over 100 GC-MS compounds, manages technical support and instrument maintenance logs, and evaluates the need for equipment upgrades or replacements.

Prepares wastewater samples for GC-MS analysis using purge and trap, SFLLE, or CLLE methods, strategically selecting the extraction technique based on historical data and detection limits to minimize analytical interference.

Collects and/or receives wastewater samples, industrial waste samples, stormwater samples, landfill samples, and chemical samples; verifies and maintains chain-of-custody for samples in a way that maintains the legal defensibility of the records.

Interprets mass spectra from various water sources to produce comprehensive reports of analytical findings.

Primarily responsible for generating data used to determine compliance with State and Federal regulations and applicable environmental permits issued to the City. Signs an affidavit each month attesting to the truth, accuracy, and completeness of data produced with the penalty of discipline up to and including termination.

Responsible for generating data used to determine the efficient operation of the City's wastewater treatment plant. Data produced are used to make adjustments to wastewater operations, as needed.

Required to pass an EPA-mandated proficiency study of blind samples annually; document any issues; make corrections and retest any parameters that are not within study acceptance limits.

Signs documents and keeps records in such a way that these may be used in a court of law, if necessary.

Immediately notifies interested parties of permit violations or other aberrant results requiring attention, reporting to regulatory authorities, or correction.

Enters and imports analytical results into the laboratory database, exports data to municipal operational databases, and reviews peer-entered data for completeness and accuracy.

Prepares standard solutions and reagent solutions for use in daily analytical testing in accordance with quality control procedures and standard operating procedures.

Reviews for accuracy and updates standard operating procedures required for laboratory analysis.

Maintains safety data sheet binders for the main laboratory and the GC-MS laboratory.

Records quantities of lab supplies and chemicals taken from the stockroom to assist in maintaining an adequate supply at all times. Determines supplies needed for GC-MS analysis and maintains an inventory for that area.

Assist Lab Analyst/Technician with the performance of their duties during times of staff shortages. Assists senior staff with assignments, as needed.

Must remain available for after-hours on-call testing and maintain essential operations during emergencies or pandemics to ensure compliance with critical regulatory and operational data requirements.

Must meet regular attendance requirements.

Must be able to maintain good interpersonal relationships with staff, co-workers, managers, and citizens.

Must accomplish the essential functions of the job, with or without reasonable accommodations, in a timely manner.

Performs other duties as assigned.

This position is deemed essential during inclement weather situations, and must report to or remain at work, even when administrative closings are announced, as determined by the Department Head.

DEPARTMENT SPECIFIC DUTIES (if any):

None

MINIMUM QUALIFICATIONS:

Bachelor's Degree in Chemistry, Biology, Environmental Science, or a related field with four (4) years of laboratory analysis experience; or any combination of equivalent experience and education.

LICENSING AND CERTIFICATIONS:

Valid Driver's License

KNOWLEDGE AND SKILLS:

Knowledge of chemistry theory and concepts; laboratory safety practices; environmental GC/MS applications; organic chemistry principles; solvent extractions; basic wet chemistry laboratory procedures; laboratory equipment, machinery, tools, and materials; data analysis techniques; advanced spreadsheet concepts; total organic carbon and atomic absorption analysis techniques; mathematical concepts; and, chain of custody principles; knowledge of complex sample preparation, analysis on and maintenance on complex instruments. Knowledge of laboratory quality assurance and control practices and procedures to apply to the GC-MS area and other areas. Experience using spreadsheet software and databases to compile and process numerical or statistical data.

Skill in performing basic wet chemistry laboratory procedures; performing solvent extractions; operating GC/MS; performing total organic carbon and atomic absorption analysis; operating, maneuvering, and controlling the actions of applicable laboratory equipment, machinery, tools, and materials; evaluating, auditing, deducing, and assessing data utilizing established guidelines; performing mathematical calculations, including linear regression; interpreting diagrams; and communication and interpersonal skills as applied to interaction with coworkers, supervisor, and the general public, sufficient to exchange or convey information and to receive work direction; Skill in utilizing complex calibration, data interpretation and maintenance/troubleshooting. Analysis requires specialized interpretive skills using complex analytical systems and instrumental analysis via gas chromatography mass spectroscopy. Understands chromatographic separation techniques, including flow and temperature variables. Able to evaluate specific constituents within the chromatographic system and manipulate these individual variables to create an efficient and viable method for testing.

PHYSICAL DEMANDS:

Positions in this class typically require fingering, grasping, talking, hearing, seeing, and repetitive motions.

WORK ENVIRONMENT:

Light Work: Exerting up to 20 pounds of force occasionally, and/or up to 10 pounds of force frequently, and/or a negligible amount of force constantly to move objects. If the use of arm and/or leg controls requires exertion of forces greater than that for Sedentary Work and the worker sits most of the time, the job is rated for Light Work.

Incumbents may be subjected to fumes, odors, dusts, gases, poor ventilation, hazardous chemicals, and infectious diseases.

SPECIAL REQUIREMENTS:

Safety Sensitive: YES NO Child Sensitive: YES NO Dept of Transportation (CDL): YES NO

The City of Chattanooga, Tennessee, is an Equal Opportunity Employer. In compliance with the Americans with Disabilities Act, the City will provide reasonable accommodations to qualified individuals with disabilities and encourage both prospective and current employees to discuss potential accommodations with the employer.

Revision History: 4/01/25; 8/27/24; 5/09/24; 12/11/23; 10/20/23; 8/25/22