



Code: 5533

Family: Technical Engineering
Service: Operation and Construction
Group: Engineering, Designing, and Structural
Series: Chemical Engineering

CLASS TITLE: WATER CHEMIST III

CHARACTERISTICS OF THE CLASS

Under supervision, performs fully functional professional level chemical and physical analyses of raw and treated water to assist in the control processes which make water suitable for drinking, and performs related duties as required

ESSENTIAL DUTIES

- Prepares and standardizes chemical solutions prior to analyzing water samples
- Performs standard and non-routine analytical tests on water samples obtained from source water, purification plants, and distribution systems to detect and determine relevant characteristics (e.g., pH level, chlorine residue, turbidity, ammonia, threshold odors, radioactivity, fluoride concentration)
- Performs detailed and standard tests on pipe scales, sediment, seepage, and sludge deposits to determine chemical content
- Analyzes materials used in treating water at filtration plants (e.g., blended phosphate, aluminum sulfate, hydrofluosilicic acid) to ensure conformance with product specifications and safety standards
- Calculates, analyzes, and interprets test results
- Prepares reports on the status and results of testing projects
- Records data and maintains records on tests and analyses conducted in accordance with state and federal guidelines
- Conducts specialized water analyses in response to customer complaints
- Conducts research to discover improved methods of water purification
- Collects data to assist in determining the amounts of chemicals to be used at purification plants
- Maintains and controls inventory of laboratory testing equipment, materials, and instrumentation in conformance with acceptable laboratory standards
- Assists in training personnel on testing procedures, as required
- Oversees subordinate staff on special testing assignments, as required

NOTE: *The list of essential duties is not intended to be inclusive; there may be other duties that are essential to particular positions within the class.*

MINIMUM QUALIFICATIONS

Education, Training, and Experience

- Graduation from an accredited college or university with a Bachelor's Degree in Chemistry, Chemical Engineering, or a directly related field, plus one year of experience in water purification and chemical analysis; or an equivalent combination of education, training and experience provided that the minimum degree requirement is met

Licensure, Certification, or Other Qualifications

- None

WORKING CONDITIONS

- Exposure to fumes or dust
- Exposure to hazardous and toxic chemicals

EQUIPMENT

- Standard office equipment (e.g., telephone, printer, photocopier, fax machine, calculator)
- Computers and peripheral equipment (e.g., personal computer, computer terminals, hand-held computer)
- Personal protective equipment (e.g., glasses, gloves)
- Scientific calculators
- Chemical and environmental testing and monitoring equipment
- Laboratory instruments and materials

PHYSICAL REQUIREMENTS

- Some moving or lifting of laboratory equipment and supplies

KNOWLEDGE, SKILLS, ABILITIES, AND OTHER WORK REQUIREMENTS

Knowledge

Moderate knowledge of:

- *applicable water treatment and purification principles, theories, methods and practices
- *laboratory methods, practices, and procedures
- *chemical testing and analysis principles, theories, methods, and practices
- *applicable safety principles, methods, practices, and procedures
- *applicable federal, state, local laws, regulations and guidelines
- *procedures and methods for maintaining applicable equipment and instruments

Some knowledge of:

- *water treatment and purification operations
- applicable computer software packages and applications

Knowledge of applicable City and department policies, procedures, rules, and regulations

Other knowledge as required for successful performance in the Water Chemist II class

Skills

- *ACTIVE LEARNING - Understand the implications of new information for both current and future problem-solving and decision-making
- *ACTIVE LISTENING - Give full attention to what other people are saying, take time to understand the points being made, ask questions as appropriate, and not interrupt at inappropriate times
- *CRITICAL THINKING - Use logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems
- *MATHEMATICS - Use mathematics to solve problems
- *SCIENCE - Use scientific rules and methods to solve problems

- *COMPLEX PROBLEM SOLVING - Identify complex problems and review related information to develop and evaluate options and implement solutions
- *COORDINATION WITH OTHERS - Adjust actions in relation to others' actions
- *JUDGEMENT AND DECISION MAKING - Consider the relative costs and benefits of potential actions to choose the most appropriate one
- *EQUIPMENT MAINTENANCE - Perform routine maintenance on equipment and determine when and what kind of maintenance is needed
- *EQUIPMENT SELECTION - Determine the kind of tools and equipment needed to do a job
- *QUALITY CONTROL ANALYSIS - Conduct tests and inspections of products, services, or processes to evaluate quality or performance

Other skills as required for successful performance in the Water Chemist II class

Abilities

- COMPREHEND ORAL INFORMATION - Listen to and understand information and ideas presented through spoken words and sentences
- SPEAK - Communicate information and ideas in speaking so others will understand
- COMPREHEND WRITTEN INFORMATION - Read and understand information and ideas presented in writing
- WRITE - Communicate information and ideas in writing so others will understand
- RECOGNIZE PROBLEMS - Tell when something is wrong or is likely to go wrong
- REASON TO SOLVE PROBLEMS - Apply general rules to specific problems to produce answers that make sense
- REASON MATHEMATICALLY - Choose the right mathematical methods or formulas to solve a problem

Other abilities as required for successful performance in the Water Chemist II class

All employees of the City of Chicago must demonstrate commitment to and compliance with applicable state and federal laws, and City ordinances and rules; the City's Ethics standards; and other City policies and procedures.

The City of Chicago will consider equivalent foreign degrees, accreditations, and credentials in evaluating qualifications.

* May be required at entry.