

GENERAL DESCRIPTION OF CLASS

A CHEMIST 3 serves as a specialist with expertise in a specialty area of chemistry involving the design, development, and application of the state of the art analytical methods and procedures to complex and unusual problems.

DISTINGUISHING FEATURES

This is the third level in a three-level series. It is distinguished from the lower levels by designing, developing, and implementing state of the art analytical methods and procedures. At this level employees routinely exercise independent scientific judgment in the interpretation of data and make recommendations on the application of findings. Employees in this class regularly perform nonroutine tests and procedures requiring complex analytical techniques.

DUTIES AND RESPONSIBILITIES

Employees in this class will specialize in one of the fields of chemistry, such as organic, inorganic, environmental, radiochemical, or pesticide, or in a complex analytical technique such as GCMS [gas chromatograph/mass spectrometry], ICP [inductively coupled plasma], alpha spectrometry, or XRF [x-ray fluorescence]; however, the employee may be called upon to assist in any of these areas as the need arises.

Allocation of positions to this class will depend on the total work performed which may include one or a combination of the duties or tasks listed below.

- 1. Analytical Specialty.** Typical tasks: uses expertise to design, develop, and implement specialty procedures in a specific area of chemistry; develops sample collection methods for field personnel; develops quality assurance for instrument, sampling, and analytical procedures; expert in the use (including methodology, parameters that can be measured, limitations, and peripherals, etc.), care, and maintenance of sophisticated specialty instrumentation; instructs other chemists in the use of the techniques; interprets data from the specialty for supervisor and others.
- 2. Benchwork.** Typical tasks: prepares or oversees preparation of necessary equipment, supplies, and reagents; prepares or oversees preparation of samples for testing by diluting, filtering, centrifuging, digesting; performs and develops various chemical tests, such as microscopic analysis for foreign substances, asbestos, etc; metals analysis by various techniques (i.e. AA [atomic absorption], ICP [inductively coupled plasma], XRF [x-ray fluorescence], XRD [x-ray diffraction]); chromatographic analyses for various organic compounds (PCB's [polychlorinated biphenyls], THM's [trihalomethanes], pesticides, or oils); using GC's [gas chromatographs], GCMS's [gas chromatographs/mass spectrophotometers], LC's [liquid chromatographs]; radiochemical analysis such as gamma spectroscopy, alpha spectrometry, and separations for radionuclides; other analyses as appropriate; prepares and runs quality control samples with known values to determine if procedures and results are within acceptable limits; calculates numerical results based on calibrations; determines validity of results by correlating results with other information; investigates deviations from expected results as identified by quality assurance.

- 3.Reports.** Typical tasks: enters results of test in appropriate log or computer; completes test result form to be sent to person or agency that submitted specimen or sample and contacts them immediately in cases of significant test findings; interprets results for submitter; requests additional samples, if necessary; completes daily and monthly reports including number and types of tests performed; maintains accurate and up-to-date records detailing quality assurance procedures and results for all tests; may collaborate in preparation of written reports to users of laboratory services.
- 4.Advancement of Knowledge.** Typical tasks: keeps current in field by reading literature and attending symposiums, conferences, and workshops; implements improvements in methodology and new procedures; implements pilot programs to test recommended improvements and procedures; participates in procedure manual preparation by making revisions deemed appropriate; maintains expertise in other areas of laboratory.
- 5.Miscellaneous.** Typical tasks: may assist manager in overall operation of the laboratory; provides technical direction to new employees, student interns and other support staff, such as laboratory technicians and lower grade chemists; calibrates, troubleshoots, performs and oversees maintenance of laboratory equipment; takes inventory and requisitions supplies with supervisor's approval; testifies on methodology and results of tests when those results are evidence in cases of litigation; may collaborate in writing grant proposals.

RELATIONSHIPS WITH OTHERS

Employees in this class may have daily in-person or telephone contact with users of the laboratory services to exchange information, determine priorities, interpret data, and discuss test results. They have regular contact by phone with governmental agencies, industrial and business representatives, and other organizations to discuss issues pertaining to a sample, specimen, or technique. They may have occasional contact with other experts in their field to discuss mutual problems and their resolution. They have regular contact with equipment manufacturers, sales and service representatives to discuss instrument improvements and problems. These employees may have occasional in-person contact with students to instruct them in chemical methods and techniques.

SUPERVISION RECEIVED

Employees in this class receive general supervision from a laboratory supervisor or other administrative superior who reviews work periodically in personal meetings. Test data, results, and interpretations are reviewed for program implications. Reports are reviewed routinely for completeness and accuracy (may be used in cases of litigation). Records are reviewed for quality control. Guidelines used in performance of duties include accepted laboratory practices, manufacturers instrumental guidelines, and applicable State and Federal regulations.

GENERAL INFORMATION

Positions are found in central and remote locations throughout State government (e.g., general government agencies, natural resource agencies, higher education institutions, and hospitals.). They require the willingness to work within the environment associated with the position's location (usually a laboratory).

KNOWLEDGE, SKILLS, AND ABILITIES (KSA)

Extensive knowledge of a specific branch of chemistry or of a complex analytical technique such as GCMS, ICP, pesticides, etc.

Extensive knowledge of laboratory and chemical principles, terminology, material, equipment, procedures, and techniques.

Extensive knowledge of the techniques required for laboratory safety and the proper handling of hazardous materials.

Extensive knowledge of various fields of chemistry such as organic and inorganic.

General knowledge of various laboratory testing procedures such as spectroscopic, titrametric, and microscopic.

General knowledge of the operation and maintenance of various laboratory instruments and equipment.

Skill in operating, maintaining, calibrating, and otherwise running a complex analytical instrument such as GCMS, ICP, etc.

Skill in preparing laboratory samples, reagents, and solutions.

Skill in the care and handling of laboratory samples.

Skill in performing laboratory tests.

Skill in operating laboratory equipment and instruments.

Skill in reading and following scientific laboratory methods and procedures.

Skill in calibrating and maintaining standard laboratory equipment.

Skill in preparing written reports which contain analysis of laboratory test results.

Skill in interpreting test results.

Skill in communicating orally and in writing to gather and exchange information.

Ability to determine appropriate test equipment or instruments to be used.

Ability to learn new complex laboratory procedures.

Ability to develop complex laboratory procedures.

Ability to apply appropriate procedures and controls in nonroutine circumstances.

Ability to work with flammable, corrosive, reactive, toxic, radioactive, or irritating substances on a regular basis.

NOTE: The KNOWLEDGE and SKILLS are required for initial consideration. ABILITIES may be required for initial consideration, at any time during the selection process, or during a trial service period as a final stage of the selection process. Some duties performed by positions in this class may require different KSA's. No attempt is made to describe every KSA required for **all** positions in this class. Additional KSA requirements will be explained on the recruiting announcement.

Adopted 1/90

Revised

Examples of work are typical of duties assigned to this class. No attempt is made to describe every duty performed by all positions in this class.