

Summary of Duties: Performs difficult organic, inorganic, and physical chemical analyses and research studies in connection with water quality, wastewater, and industrial waste treatment, construction and maintenance materials, arson investigations, expert testimony, and hazardous waste assessments; conducts tests and experimental work in relation to the measurement of air quality and the control of combustion products; and does related work.

Distinguishing Features: A Chemist is responsible for development of chemical instrumental methods of examination, for determining sampling methods and types of tests to be used, and for acting as a consultant on chemical problems. This work is on a professional level. Assignments are made in general terms and are primarily of a research nature directed to the solution of specific problems. A Chemist is expected to complete difficult organic, inorganic, and physical chemical analyses and research studies in connection with water quality, wastewater, and industrial waste treatment, construction and maintenance materials, air quality, and experimental work in relation to combustion products control and their toxicity, with little or no guidance by supervisors. A Chemist may assist in supervising the activities of the chemistry laboratory, and in relieving the laboratory manager in the manager's absence.

Examples of Duties: Makes chemical, physical, and biochemical investigations to develop and improve laboratory and field methods, instruments, and equipment for analyses of water; conducts field and laboratory experiments to determine the effects and suitability of chemicals used in water treatment and the causes of corrosive action on water works equipment; tests materials to determine their suitability to use in the water system for conformance with specifications;

Conducts difficult routine and special chemical examinations of samples of industrial waste, wastewater, by-products of the wastewater treatment process, and environmental samples in the receiving waters of waste discharge to determine chemical constituents, the effectiveness of treatment, effect of treatment processes on plant machinery and equipment, and means of minimizing deterioration of plant machinery and equipment; investigates special chemical problems in the fields of water pollution, air pollution, wastewater treatment processes, oceanography, and radiological activity in water and air; makes routine bacteriological identification;

Devises and adapts complex sampling methods, some of which may require field testing and evaluation; analyzes fumes, vapors, gases, dust, soil and industrial materials; adapts and calibrates sampling and instrumental equipment; makes toxicological tests; prepares standard solutions; makes stoichiometric calculations; makes and reviews results of laboratory tests; orders supplies, chemical apparatus, and equipment; may work closely with engineering or other technical

personnel in problems of a joint nature; frequently works with dangerous chemicals, and radiological and wastewater materials;

Makes a wide variety of qualitative and quantitative chemical tests and analyses of construction and maintenance materials, supplies, and other substances to make recommendations on standards and specifications or to determine conformance to specifications; prepares written reports required by regulatory agencies; maintains records of data on analyses performed; conducts research to develop methods to evaluate relative merits of materials; may act as consultant on chemical problems; may exercise functional and technical supervision over laboratory personnel; may develop, implement and monitor a laboratory quality assurance program; may testify in court as an expert witness; and may occasionally be assigned to other duties for training purposes or to meet technological changes or emergencies.

Qualifications: A good knowledge of the principles of water analysis and chemistry; a good knowledge of laboratory procedures; a good knowledge of quality assurance procedures; a good knowledge of mathematics including algebra and calculus; a good knowledge of statistics including mean, standard deviation, and correlations; a working knowledge of research testing methods, procedures, and regulations including quality control; a working knowledge of safety procedures; a general knowledge of project development; the ability to solve problems and use independent judgement; the ability to follow written instructions; the ability to direct the work of other employees; and the ability to communicate effectively in writing and verbally.

Graduation from a recognized four-year college or university with a major in Chemistry or Chemical Engineering and coursework or experience utilizing at least two of the following instruments: gas chromatograph, atomic absorption spectrophotometer, infra-red spectrophotometer, or high-performance liquid chromatograph.

License: A valid California driver's license is required.

Physical Requirements: Strength to perform average lifting of less than 40 pounds and occasionally over 60 pounds; arm, hand, and finger dexterity with both hands involved in activities such as reaching and handling; and good eyesight.

Persons with medical limitations may with reasonable accommodations, be capable of performing the duties of some of the positions in this class. Such determination must be made on an individual basis in light of the person's limitations, the requirements of the position, and the appointing authority's ability to effect reasonable accommodations to the limitations.

As provided in Civil Service Commission Rule 2.5 and Section 4.55 of the Administrative Code, this specification is descriptive, explanatory and not

restrictive. It is not intended to declare what the duties and responsibilities of any position shall be.