SENIOR ENVIRONMENTAL CHEMIST (INORGANIC)

DISTINGUISHING FEATURES OF THE CLASS: Under the general supervision of the Chief-Environmental Laboratory Services, the incumbent in this class organizes and directs the activities of a specialized area of Environmental Chemistry involving environmental inorganic chemistry metals and conventionals analyses of drinking water, wastewater, estuarine water, soil, and other environmental samples, and performs advanced environmental examinations as well as initiating, coordinating and conducting independent scientific research of new and improved methods and procedures for increased sensitivity and specificity. This position is directly responsible for the coordination of all operations concerning Inductively Coupled Plasma Spectrometer-Data System and other instrumentation including program modification, sample and data quality control; preventative maintenance and repairs, and workload assignments. Supervision is exercised over a number of professional and technical environmental laboratory personnel. The incumbent must maintain a satisfactory rating of performance by the New York State Department of Health for those procedures for which approval has been granted to the laboratory. Does related work as required.

EXAMPLES OF WORK: (Illustrative Only)

General:

Assists in preparing environmental laboratory budget requests by identifying needs, gathering and compiling appropriate justifications, and evaluating new instrumentation and equipment as to its applicability for environmental laboratory inorganic work;

Responsible for overseeing installation of new equipment and instrumentation, as well as to its implementation for laboratory use;

Provides consultation and advice to local health department personnel, local water company personnel, private companies and private individuals regarding sampling and analyses programs;

Directs and participates in training personnel in the inorganic laboratories;

Ensures the maintenance of procedure manuals, quality control manuals and instrument manuals;

Ensures the maintenance of statistical data in a manner that will facilitate orderly storage and retrieval;

Responsible for the daily, monthly and other reports requested from the inorganic laboratory;

Directs and participates in analyzing quality assurance samples as mandated by federal and state guidelines to maintain laboratory certification;

Keeps abreast of current trends as well as changes in the field of environmental science that may effect operations;

EXAMPLES OF WORK: (Illustrative Only) (Cont'd.)

Responsible for maintaining assigned areas, instrumentation and equipment in a clean and safe manner and at operational readiness;

May be required to give expert testimony in court or before other administrative hearings regarding results and methodology;

Responsible for maintaining N.Y.S. laboratory approval for those parameters for which approval has been granted to the inorganic laboratory;

Directs the flow of work into the laboratory as well as the workload assignments;

Inorganic Preparation:

Plans, directs, coordinates and participates in researching, developing and initiating new approved and improved methods for use in the pretreatment of water, wastewater, fish tissue, soil sediment and other related environmental samples to remove interference and to improve sensitivity and specificity;

Directs, plans, develops and initiates field sampling collection methods and establishes sample preservation protocols;

Directs, plans, and initiates protocols for submitting samples to the laboratory, accessioning samples and the recording and reporting of results.

Atomic Absorption Instrumentation:

Reviews samples and sample extractions and digestions prior to atomic absorption analyses for metals parameters such as those contained in pesticides, fumigants, waste oils, leachates and toxic substances;

Responsible for installation of new equipment and modifying old equipment as needed;

Directs the utilization of the atomic absorption spectrometers and interfacing of them to graphite furnace, auto-samplers, hydride generators, oxidants and fuels; evaluates sample and standard matrices; determines instrumental operating parameters;

Directs and participates in the identification and quantification of strip charts and digitized data.

Plasma Emission Spectrometer - Data System:

Plans, directs and participates in the operation of Plasma Emission Spectrometer - Data System;

Reviews samples and preparative sample techniques prior to ICAP analyses;

EXAMPLES OF WORK: (Illustrative Only) (Cont'd.)

Aligns the plasma torch and profiles the spectral lines;

Performs standardization protocol for all elements to be analyzed;

Checks data to insure quality control;

Performs preventative maintenance and repairs;

Develops, modifies and provides computer programs for use in the data system;

Interprets spectral data for element identification, verification and quantification;

Uses computer applications or other automated systems such as spreadsheets, word processing, calendar, e-mail and database software in performing work assignments;

May perform other incidental tasks, as needed.

FULL PERFORMANCE KNOWLEDGE, SKILLS, ABILITIES AND ATTRIBUTES: Thorough knowledge of the principles, practices, techniques, procedures and applications of environmental inorganic chemistry; thorough knowledge of the theory and practice of atomic absorption spectrophotometry, inductively coupled plasma emission spectroscopy, inductively coupled plasma-mass spectroscopy, UV-Vis spectroscopy, ion chromatography, flow injection auto analyzer systems, total organic and total halide analyzers, and selective ion electrodes and probes; good knowledge of computer systems and languages used in the acquisition, processing and quantification of spectral data; good knowledge of spectral interpretation, identification and verification; good knowledge of basic statistical calculations as they apply to environmental chemistry; good knowledge of federal, state and local laws, rules, regulations and policies as they apply to the operation of the environmental laboratory; ability to operate and maintain a modern ICAP system with a high degree of technical competence; ability to troubleshoot the ICAP located in the environmental inorganic laboratory; ability to plan and conduct independent professional scientific research to improve laboratory methods and procedures and prepare comprehensive reports of findings and recommendations; ability to plan, organize and supervise the utilization and work assigned to professional and technical laboratory personnel; ability to understand, follow and explain technical guidelines; ability to communicate effectively both orally and in writing; ability to follow detailed oral and written instructions; ability to read, write, speak, understand, and communicate in English sufficiently to perform the essential duties of the position; ability to use computer applications such as spreadsheets, word processing, e-mail and database software; accuracy; thoroughness; dependability; initiative; judgment; integrity; physical condition commensurate with the demands of the position.

MINIMUM ACCEPTABLE TRAINING AND EXPERIENCE: A Bachelor's Degree* in Chemistry or a Biological Science which must have included twenty credits in Chemistry and six years of professional environmental inorganic chemistry experience**, or closely related analytical chemistry experience in instrumentation and methodology used in an environmental inorganic chemistry laboratory**, two of which must have included the supervision of professional laboratory staff and one which must have included hands-on experience with a plasma emission spectrometer-data system

SUBSTITUTION: Satisfactory completion of a Master's Degree in Chemistry, Environmental Engineering or a related field may be substituted for two years of general experience. A Ph.D.* in Chemistry or Environmental Engineering may be substituted for three years of general experience. There is no substitution for the supervisory or specialized experience.

**SPECIAL NOTE: Acceptable professional environmental inorganic chemistry experience includes performance of both metals and conventionals analyses in accordance with EPA methods and New York State Environmental Lab Approval Program Protocols.

Relevant metals experience includes: analyses of drinking water, wastewater soils using atomic absorption spectrophotometry and inductively coupled plasma techniques.

Relevant conventionals experience includes: analyses utilizing selective ion probes, flow injection auto analyzer systems, ion chromatography, total organic carbon and total organic halides analyzers.

*SPECIAL NOTE: Education beyond the secondary level must be from an institution recognized or accredited by the Board of Regents of the New York State Education Department as a post-secondary, degree-granting institution.

NOTE: Unless otherwise noted, only experience gained after attaining the minimum education level indicated in the minimum qualifications will be considered in evaluating experience.