

Job Class Profile: Mineral Laboratory Chemist I

Pay Level: CG-29 **Point Band:** 622-675

Factor	Knowledge	Interpersonal Skills	Physical Effort	Concentration	Complexity	Accountability & Decision Making	Impact	Development and Leadership	Environmental Working Conditions	Total Points
Rating	5	3	3	6	4	3	3	2	5	
Points	233	50	19	29	120	65	62	43	54	675

JOB SUMMARY

The Mineral Laboratory Chemist I performs geo-analytical chemistry work in a mineral laboratory in support of geological research.

Key and Periodic Activities

- Digests geological material using high temperature ovens, multiple acid techniques, hot water baths and open burners.
- Prepares samples: sieves soils, tills and lake sediments; filters waters; weighs and splits samples for external analysis; performs maintenance on all sample preparation equipment; obtains proper domestic moving certificates.
- Conducts geochemical analysis: uses selective ion electrodes for fluoride analysis; uses redox indicating titrimetric techniques for ferrous iron analysis; uses wet and dry techniques for grain analysis; analyses various media types for loss on ignition using classical gravimetric techniques; uses analytical balances and microcomputers for weighing rocks, tills, soils and lake sediments.
- Data Management: calculates, maintains, archives and reports analysis to geologists on spreadsheets, and database software; calibrates and maintains all instruments used in performing analyses; and verifies quality of analysis through compilation of quality control samples and application of statistical analysis.
- Prepares and maintains records of samples received at the mineral laboratory. Inserts quality control samples.
- Oversees and trains summer students and provides guidance to new staff in matters regarding sample preparation, laboratory procedures and general safety.
- Checks inventory monthly and reports shortages to Laboratory Director.

SKILL

Knowledge

General and Specific Knowledge:

- Knowledge of analytical chemistry.
- Knowledge of mineral laboratory procedures and equipment.

- Knowledge of the safe operation of laboratory equipment and Workplace Hazardous Materials Information System (WHMIS) as it relates the safe use of chemicals.

Formal Education and/or Certification(s):

- Minimum: Undergraduate Degree in Chemistry. Training in software use: spreadsheet, database.

Years of Experience:

- Minimum: 4 – 5 years.

Interpersonal Skills

- A range of interpersonal skills are used such as: listening and asking questions; and providing routine information. From time to time, communicating complex information to others, instructing or training, coaching or mentoring, gaining the cooperation of others, and providing expert advice.
- The most significant contacts are with: other employees in the laboratory to work co-operatively and share information; the Laboratory Director to receive assignments, direction and advice; and Geologists within the Department to provide information and results.

EFFORT

Physical Effort

- The demands of the job generally do not result in fatigue, requiring periods of rest.
- Occasionally required to lift or move objects between 25-50 lbs., and regularly lifting objects from 10-25 lbs. such as geological material or supplies.
- The use of fine finger/precision work, using hand tools that require accurate control and steadiness, equipment requiring controlled movement, and using reflexes and maintaining balance is a regular requirement. Occasionally requires working in cramped or awkward positions.
- Most work time is spent sitting at a computer weighing samples, entering readings for analysis or transferring sample digestions but there is freedom to move about.

Concentration

- **Visual** concentration or alertness is required for weighing samples, entering data in a spreadsheet, ensuring accuracy of instrument readings, calibrating instruments, and observing chemical digestions to ensure reactions are complete.
- **Auditory** demands are required when listening to make sure mechanical equipment is working properly.
- **Eye/hand coordination** is required for titrating, transferring, weighing samples, and entering data into the computer.
- Activities such as data entry, weighing samples and sample digestions can be **repetitious and require alertness**.
- **Higher than normal levels of attentiveness/alertness is required for the health and safety of others** due to handling hazardous acids and chemicals and working around equipment such as rock crushers, pulverizers and splitters.
- **Time pressures, deadlines, and lack of control over work pace** are experienced when there is a special request to place a rush on samples being analyzed. Also, work needs to be completed

<p>from year to year as results are used to plan subsequent field work.</p> <ul style="list-style-type: none"> — Exact results and precision are required in everyday procedures. Results have to be of the highest degree of precision and accuracy as they are used in preparation of reports for scientific journals and maps. Quality controls are checked daily.
Complexity
<ul style="list-style-type: none"> — Work involves tasks and activities that are quite different but allow for the use of similar skills and knowledge. There are also tasks that are different and unrelated. — Typically, work is performed within defined and standard work processes, have known solutions and/or can be addressed by following procedures or guidelines, but from time to time tasks arise where a limited number of guidelines or procedures exist or where problems arise and solutions must be found from a number of options. Some tasks are highly technical. — The most typical problem is when there is a problem with procedure identified by the failure of Quality Assurance/Quality Control protocols and must be solved before the task can be completed.

RESPONSIBILITY

Accountability and Decision-Making
<ul style="list-style-type: none"> — Work tasks are highly monitored or controlled. Work is carried out independently while following standard and defined procedures. The results of the work are checked using rigorous QA/QC procedures and all work is reviewed and analyzed by the Laboratory Director. — Without formal approval can assign duties to summer students. — Supervisory approval is required for laboratory purchases and changes to procedures. — Exercises judgement to make decisions in assessing the validity of results reported. Responsible to ensure confidentiality of sensitive information in external reports and filing them.
Impact
<ul style="list-style-type: none"> — Impacts generally affect the immediate work area, department, outside the organization on clients, and the exploration/mining industry as the information is used by Geologists for the purpose of reports, maps, and national and international research. The work is used by Government Departments and Universities and also by the private sector for mineral exploration projects. — The results of work activities impact on processes and systems, information, human resources, finance, health and safety and corporate image. The information provided impacts exploration on new mines, updating maps, and research. The quality of work affects corporate image. Information provides background information for health and safety studies. — The consequences of a mistake or error can have some impact only in the immediate workplace as all work undergoes a high degree of QA/QC procedures to eliminate mistakes. The mistake must be corrected which will involve repeating the work.
Development and Leadership of Others
<ul style="list-style-type: none"> — Does not have full time responsible for the direct supervision of staff. — Provides on the job training and direction, including knowledge transfer of laboratory procedures, instrument training and computer programs to new staff when needed.

- During the summer months will oversee and train summer students in laboratory procedures and safety.

WORKING CONDITIONS

Environmental Working Conditions

- Safety equipment and special precautions are required when working with hazardous chemicals, hot ovens, waterbaths, dust and fumes, and around equipment such as rock crushers and grinders. Also, manually breaking rocks requires special precautions.
- The likelihood of injury or illness is limited if normal precautions are followed.
- There is regular exposure to dust from sample preparation, fumes and hazardous chemicals, odours and glare from computer screens when entering data. Samples can be radioactive and odours can be present from chemical reactions. Regularly exposed to high heat from equipment such as furnaces and ovens.
- Occasionally, there is exposure to unusual/distracting noise, limited ventilation, vibration, physical dangers, radiation and heavy machinery.