

METALLURGIST AND HYDROMET SUPERINTENDENT^{1,2}

WHO ARE THEY?^{1,2}

Metallurgy refers to the scientific and technical study of metals and their properties as well as the art of extracting and modifying metals for everyday use. Metallurgists look at the physical and chemical behavior of metals, their compounds and their mixtures (called alloys). This is an ancient art—did you know that our present-day use of metals is thought to be the result of 6,500 years of exploration and study?

Hydrometallurgy is a specific technology for extracting metals from ore that involves water (you might have guessed that from the prefix hydro), oxygen and other substances. Hydromet refers to industrial equipment used in this process, and a metallurgist and hydromet superintendent is responsible for directing a team of people who successfully operate this process and the equipment. They are responsible for ensuring the process is run safely, efficiently and according to environmental regulations. They likely work in both indoor and outdoor conditions.

WHAT DO THEY DO?^{3,4}

Metallurgist and hydromet superintendents supervise a team through a complex process of metallurgic testing, analysis and extraction of metals for commercial use. This may include the review of testing equipment and protocols to ensure the team is using the most efficient process and then making changes or purchasing new equipment when it becomes necessary. The metallurgist and hydromet superintendent is responsible for understanding and guiding their team to abide by local, state and federal regulations. They may also represent the team's interest in meetings and negotiations, manage relationships with other teams, and administer contracts with external vendors.

JOB OUTLOOK⁵

The demand for metallurgists is forecasted to be high, especially since there is currently a shortage of metallurgists. The metal mining industry currently employs almost 190,000 people in America, and that number is projected to grow. Just under 4 percent of these jobs are supervising or managing construction and extraction workers. If you enjoy mastering new technology, excel at analyzing and solving complex problems, and would like to manage a team, the role of metallurgist and hydromet superintendent may be an exciting career choice for you. This will be a

SALARY RANGE⁶

**\$72,000—
\$119,000**

EDUCATION/TRAINING

- Bachelor's or master's degree in metallurgy or a related engineering field
- Prior experience in metallurgy or a related engineering field
- Knowledge of the principles and methods of metallurgical processes and analysis
- Strong oral and written communication skills

¹ "Hydromet Technology." Vale. <http://www.vale.com/canada/EN/business/mining/nickel/vale-canada/long-harbour/Pages/Hydromet-Technology.aspx>. Accessed 4.14.2020.

² "Metallurgy." Britannica. <https://www.britannica.com/science/metallurgy>. Accessed 4.14.2020.

³ "Hydromet Diagnostic Mechanic." Freeport-McMoRan. <https://jobs.fcx.com/job/Safford-Hydromet-Diagnostic-Mechanic-AZ-85548/634711300/>. Accessed 4.14.2020.

⁴ "Senior Metallurgist." Freeport-McMoRan. <https://jobs.fcx.com/Climax-Molybdenum/job/Climax-Senior-Metallurgist-Climax-Mine-Leadville%2C-CO-CO-80429/627061900/>. Accessed 4.14.2020.

good fit if you don't mind a nontraditional work environment, as you will likely spend portions of your work week outside — and you shouldn't be afraid to get a little dirty.

HOW DO I BECOME ONE?7

A metallurgist and hydromet superintendent will need a combination of a formal degree and several years of on-the-job experience. There are some degree programs that will offer a combination of coursework, laboratory work and job experience, all of which will be necessary to excel in the field of metallurgy. To prepare for this career, students should focus on building skills in engineering, mathematics, calculus, chemistry and physics.

⁵ "Industries at a Glance." Bureau of Labor Statistics. <https://www.bls.gov/iag/tgs/iag212.htm>. Accessed 4.14.2020.

⁶ "Occupational Employment Statistics." Bureau of Labor Statistics. <https://www.bls.gov/oes/2018/may/oes172131.htm>. Accessed 4.14.2020.

⁷ "What is a Metallurgist?" Environmental Science. <https://www.environmentalscience.org/career/metallurgist>. Accessed 4.14.2020.