

CAREER MATCH

STANDARDS:

See summary of National Science Education Standards.

Original: <http://books.nap.edu/readingroom/books/nses/>

Standard Concept	General Standard	Specific Standard	General Standard	Specific Standard	General Standard	Specific Standard
Grade level		K-4		5-8		9-12
Science and Technology (E)	Understanding science and technology	E.2.4.2	Understanding science and technology	E.2.8.2	Understanding science and technology	E.2.12.3
		E.2.4.3		E.2.8.3		E.2.12.4
		E.2.4.4				
Science in ... social perspective (F)	Types of resources	F.3.4.1			Natural Resources	F.3.12.1
		F.3.4.2				
					Technology in ... challenges	F.6.12.1
						F.6.12.2



CAREER MATCH

INTRODUCTION

Earth Science is a field of study that offers career opportunities in a wide variety of areas. This activity specifically addresses the minerals industry because that industry is the basis of society.

PURPOSE:

Students will apply knowledge of Earth resource recovery to possible jobs.

PROCEDURE

- 1) Make individual career sheets with clues on back and the name of the career on the front. These will hang on the wall.
- 2) Make individual career clue cards made up with four (4) clues per career, but not the career name.
- 3) Place career sheets on walls around classroom and give each student a clue card.
 - a) Give students a few minutes to read their clues then have them stand in front of the career sheet they think matches their clues.
 - b) After most of the students have found a career sheet, have the students check the back of the career sheets to find out if they are correct.
 - c) Once the students all have found the matching career you might have several read their clues and explain how the clues relate to the specific career.

EVALUATION:

- 1) How many careers were included in the game?
 - a) Are there other careers in the Minerals Industry that were not included?
- 2) Do any of the mineral industries careers have something in common with other careers in that industry?
 - a) What might make one career stand out from the others?
- 3) Which careers can be classified as entry positions?
- 4) What other career possibilities could these entry positions lead to?

OPTIONS:

- 1) Some students can be given career cards and other students could receive the clues.
 - a) The students with the clues need to find their matching career.
- 2) Students could be given a career card or could select another career available in the Minerals Industry and research information on it.
 - a) An oral or written report could be prepared on wages, opportunities, etc.
- 3) Students could guess the careers from the clues in a game.
 - a) All the career sheets could be posted at the front of the room.
 - b) The class could be divided in to groups.
 - c) The teacher or leader could read off one clue at a time from the clue cards and the groups could guess the appropriate career.
 - d) The group with the highest number of matches would win.



CLUE CARDS

PRINT THESE OUT, BUT WITHOUT THE NAME OF THE CAREER

	Self-Motivated
ACCOUNTANT	Keeps track of costs.
	Numbers are a mainstay.
	Budgets are vital to their existence.

	Friendly personality
ADMINISTRATIVE ASSISTANT	Must have dexterity
	Uses latest technology
	Knows their ABC's.

	Accuracy and detail a must
ASSAYER	Likes to mix things up
	Enjoys physical and chemical reactions
	First to know ore grade

	Likes the security of repetitive work
ASSAY TECHNICIAN	Operates lab sized equipment
	Keeps detailed records
	Turns samples into powder



	Likes working outdoors most times
BLASTER	Breaks large rocks into smaller ones
	Safely handles explosives
	Likes to blow things up

	Can deal with monotony
CRUSHER OPERATOR	Monitors operations
	Knows belts, rollers, chutes and ladders
	Sizes rocks for processing

	Enjoys messy repetitive work
DRILLER	Usually found in a pit
	Collects samples for assay
	Puts holes in the ground

	Has nimble fingers
ELECTRICIAN	A language all its own
	Works with special equipment
	Can be a shocking experience

	May climb a ladder to start work
EQUIPMENT OPERATOR	Must be in tune with what they do
	Aware of immediate surroundings
	Seated but in motion all day



	Communicates and negotiates well
ENVIRONMENTAL MANAGER	Stickler for detail and deadlines
	Works with local, state and federal offices
	Responsible for most permits

	Takes samples of many things
ENVIRONMENTAL TECHNICIAN	Likes all aspects of nature
	Performs numerous laboratory tests
	Monitors air, water, plants and soil

	Works in remote undeveloped areas
GEOLOGIST	Has a special vest and belt to carry tools
	Pockets wear out rapidly
	Knows how rocks were formed

	Works with many people
HUMAN RESOURCES	Knows laws and regulations
	Maintains a difficult balance
	Hires and fires

	Must know all about rocks
HYDROLOGIST	Follows precipitation effects on land
	Does a lot of computer modeling
	Decides underground water movement



	Knows several languages
INFORMATION SYSTEMS MANAGER	Good at problem solving
	Good at interfacing
	Feeds on hardware and software

	Thrives on schedules
MAINTENANCE PLANNER	Has knowledge of all equipment on site
	Prevention is a key
	Down equipment can create havoc

	Likes to know how things work
MECHANIC	Found under or inside something
	Doesn't mind dirt, grease or oil
	Likes to put things back together

	Great at chemical analysis
METALLURGIST	Can be physical or extractive
	Uses many resources
	Knows a pure product is the goal

	Collects and analyzes process solutions
METALLURGY TECHNICIAN	Good at Math and Chemistry
	Does both physical and mental work
	Monitors the process systems



	Obsessed with detail
MINE ENGINEER	Works with numbers and computers
	Works inside and outside
	Creates maps and drawings

	Monitors material and solution flow
PROCESS OPERATOR	Collects samples
	Can be found inside or outside
	Good with a shovel

	Has a controlling nature
PURCHASING AGENT	Likes people and making deals
	Knows all facets of the operation
	Good at spending and saving money

	Kept separate from all others
REFINER	Good at recipes
	Great at house cleaning
	First to see results

	Demanding of all those on site
SAFETY COORDINATOR	Knows the laws and miners rights
	Enjoys training others
	Has life-saving skills



	Doesn't mind repetitive action
SAMPLE PREP TECHNICIAN	Good memory for numbers
	Excellent weight lifting exercise
	Grinds rocks to powder

	Has an eagle eye on everyone
SECURITY GUARD	Enjoys solitude
	Knows to keep people honest
	Gracious figure of authority

	Is walking outdoors in all weather
SURVEYOR	Provides information to others
	Detailed, accurate and conscientious
	Equipment ranges from tapes to lasers

	Works in warm, damp surroundings
UNDERGROUND MINER	Wears reflective tape on clothing and hat
	Walks or rides down to work
	Doesn't know if it is day or night

	Tends to be an organizer
WAREHOUSE PERSON	Knows proper lifting procedures
	Works with numbers and computers
	Can usually deliver what is needed



	Puts things together like a puzzle
WELDER	Can work in a variety of locations
	Can make things from metal
	Extreme heat gets required results



DETAILED MINING INDUSTRY CAREER INFORMATION

CAREER SHEETS

Copy the career description, cut the name of the career off the top and put it onto the front side of the sheet of paper, leaving the description on the back. Hang the career sheets around the room for the students to match to their clue cards.



ACCOUNTANT

If you enjoy working with numbers (dollars), like to work by yourself, and are self-motivated then maybe accounting is a career for you.

An Accountant provides all the cost information for the mine site. This includes the maintenance of the general ledgers, reviewing payroll records, performing internal audits, providing all financial reports, and assisting in preparing annual budgets. In addition, you will be working to train other department staff on the use of the chart of accounts.

As an Accountant, you must have a bachelor's degree in accounting or business administration. In addition, you may be required to obtain a CPA (Certified Professional Accountant) certificate.

High school courses that will help prepare for this career are Math, Accounting, Bookkeeping, Computer Science, English, and Speech.



ADMINISTRATIVE ASSISTANT

Do you enjoy working with people and providing information? Do you like office clerical work and business machines? If so, you might like to be an Administrative Assistant.

As an Administration Assistant, you will assist various departments with clerical functions, route mail, type reports, and maintain files. In addition you will screen and route phone calls and visitors. You will work with various types of business machines, computers, typewriters, copy machines, calculators, etc.

To be an Administrative Assistant you will need a high school diploma or equivalent and know basic office machines.

Helpful high school courses: Math, English, Computer Science, Typing, and Office Machines. You may wish to obtain a business certificate from an accredited business school or college.



ASSAYER

Are you interested in Chemistry? Do you enjoy routine chemical tests? Can you stand heat and like to work with your hands? If so, maybe you would like to be an Assayer.

As an Assayer, you will determine procedures for sample preparation and then perform fire assaying. In addition, you will do analysis that determines the quantity of elements in the sample through the Atomic Absorption, perform basic assay calculations, and fill out daily reports.

To be an Assayer you will need a high school diploma or equivalent and a minimum of six (6) months experience related to fire assaying and sample preparation. You must also pass written and hands on tests for basic assay calculations, assay techniques, reagents, and safety policies.

Helpful high school courses include Math, English, Chemistry, and Computer Science.



ASSAY TECHNICIAN

Do you like the security of repetitive work? Do you like to be both inside and outside? Do you like to work with your hands? If you do then you might like the job of Assay Technician.

As an Assay technician, you will collect samples from the mine. Then you will split, dry, crush, split again, and pulverize the sample to the consistency of talcum powder. You will have the opportunity to operate different types of pulverizers, lab sized crushers, and a forklift. You will keep daily records of sample preparation activities. In addition, some minor maintenance work will be required on the pulverizer and lab crusher, and computer skills are necessary.

To assume the duties of this position you will need a high school diploma or equivalent and either on-the-job training or vocational school. You will also need to be in good physical condition.

Helpful high school courses: English, Math, Science, Chemistry, Computer Science, and Physical Education.



BLASTER

If you think you would enjoy the challenge of breaking up a large block of ground then maybe you would like a career as a Blaster.

As a Blaster, you will learn how to safely handle explosives, load and tie in blast patterns, calculate the tons of rock broken and quantities of explosives used. In addition, you must understand the basics of blasting, be able to fill out all required reports, and be able to communicate effectively both verbally and in writing.

To be a Blaster you will need a high school diploma or equivalent and a minimum of one to two years experience working as a laborer on a powder crew. You will also be expected to attend any required blasting schools and may be required to obtain a State Certified Blasting License.

Helpful high school courses are Math, English, Computer Science, and Speech.



CRUSHER OPERATOR/MECHANIC

If you like to work with your hands and machinery, and do a variety of different tasks, then you might like to be a crusher operator/mechanic.

As such, you will operate and maintain all equipment associated with the crushing system. This includes all support equipment (trucks, loaders, dozers, forklifts and bobcats). You will also be required to perform physical work in an effort to keep the crushing system operational. You will need to be able to make decisions concerning the timeliness of repairs to lessen downtime.

To be a crusher operator/mechanic you will need a high school diploma or equivalent and will receive on-the-job training or vocational schooling. You will need to be in good physical condition, have a background in mechanics, and have good verbal and written skills to perform this job successfully.

Helpful high school courses: Math, English, Computer Science, Shop, and Physical Education.



DRILLER

Do you enjoy the feeling of accomplishment when you look back at the quantity and quality of work you have done? Do you like having things planned out for you? Do you enjoy working alone? If you enjoy these and think you might like to operate a drill then this is the choice for you.

As a driller, you will be required to operate your equipment safely and efficiently. You will have to perform all pre-shift inspections, drill holes to designated depths, collect cutting samples to the proper specifications, change bits and hammers on the drill to keep it operational, and fill out all required reports. You will also need to be able to communicate effectively.

To be a driller you will need a high school diploma or equivalent and a minimum of one to two years mining experience. You may also wish to have some blasting and or lab experience to help you understand the results of the job.

Helpful high school courses: Math, English, Science, and Auto Shop.



ELECTRICIAN

If you enjoy electronics, are curious about how electricity works, or just want to learn more about both, then maybe you would like to be an Electrician.

As an Electrician, you will work on electrical construction, instrumentation, and all electrical repairs on mine equipment. You will also be required to use electrical hand and power tools, plus electrical test equipment. In addition, you must have a working knowledge of Alternating Current (AC) and Direct Current (DC), electrical theory, and be able to work from schematics and blueprints.

You must be willing to train on programmable controllers and computers. You will also be required to pass a written test.

To be an Electrician you will need a high school diploma or equivalent and two (2) years experience in maintenance, electrical construction, instrumentation, or other associated electrical fields.

Helpful high school courses: Math, Physics, Drafting, Auto Shop, Computer Science, and any other opportunities that provide a background in electronics. Trade schools and the U. S. Military branches provide excellent technical training for this field.



ENVIRONMENTAL MANAGER

If you love the out-of-doors and want to see the environment managed carefully, if you are self-motivated with good negotiating skills and tact, then you might enjoy the job of Environmental Manager. In this position, you will work with all kinds of people on the mine site as well as State and Federal Environmental personnel.

As environmental manager, you will be responsible for water, soil, and air monitoring procedures, and for reports, implementing environmental programs that include reclamation and water management. In addition, you will guide on-site environmental tours and inspections.

To become an Environmental Manager, a college degree in Environmental Science, Engineering, Geohydrology, Metallurgy, Geology, Chemistry, or Resource Management is required. In addition, you will need one to 2 years experience in the mining industry.

Helpful high school courses: English, Chemistry, Earth and/or Biological Science, Computer Science, and Math.



ENVIRONMENTAL TECHNICIAN

Do you like working outdoors? Are you interested in nature? Are you self-motivated and do you have good communication skills? Are you interested in monitoring the impact of mining activities on the environment? Then consider becoming an Environmental Technician.

As an Environmental Technician, you will conduct water, soil, and air monitoring activities. You will be responsible for computer data entry and the proper documentation of your activities. You will interact with all kinds of people on the mine site, as well as State and Federal regulatory personnel. This is an entry-level position that may advance to Environmental Specialist or Engineer or Environmental Manager.

To become an Environmental Technician you will need a high school diploma or equivalent with one to two years experience in the mining industry. You will need to be in good physical condition, and have good verbal and written communication skills. In order to advance you will need a college degree in Environmental Science, Environmental Engineering, Geology, Biology, Chemistry, or Resource Management.

Helpful High School Courses: Math, English, Chemistry, Biology, Physics, Earth Science, Computer Science, and Typing.



EQUIPMENT OPERATOR

If you enjoy watching large equipment operate, maybe you should consider the job of Equipment Operator.

As an Equipment Operator, you will learn how to safely operate any one or more of the large pieces of equipment used on a mine site. Dozers, loaders, graders, shovels, and off-road haul trucks are some examples. In addition to the safe operation of the equipment, you will be required to perform the safety and mechanical inspections of the equipment you operate. You will need to be able to remain alert during a shift, climb a 10 foot ladder to get on the equipment, and communicate effectively both verbally and in writing.

Equipment operators receive training either on-the-job or from a heavy equipment trade school. You will also be required to have a high school diploma or equivalent and a minimum of one-year mining experience before being considered for training.

Helpful High School courses: Math, English, Computer Science, and Auto Shop.



GEOLOGIST

Are you curious about the earth and how it was formed? Do you like rocks and minerals? Do you want to know where mineral resources occur and how to mine them? If so, you might consider becoming a Geologist.

As a Geologist, you will study the relationship of geology (faults, rock types, structure, etc) to the formation of ore deposits. You will learn how to find and map ore deposits, and how to monitor ore grade during mining. Your time will be split between the office and working in the field. While in the office you will enter data into the computer, create maps, model ore deposits, and provide information to the engineers.

To be a Geologist you will need a college degree in Geology.

Helpful High School Courses: Earth Science, Chemistry, Physics, Biology, Computer Science, Math, Drafting, and English.



HUMAN RESOURCES

If you enjoy people, have an interest in learning State and Federal employment laws and company policies, and if you have no fear of enforcing such policies, then this may be the field for you.

As a Human Resource Manager, you will work to make sure all company policies are followed consistently, that all Federal and State Labor laws are correctly followed, and work to have a positive company image in the community and business climate. In addition, you will assist in the training and development of all employees, interview prospective employees, coordinate benefit programs, and mediate grievance cases.

To be a Human Resource Manager, you will need a college degree in Psychology, Sociology, Human Resource or a related field, and six to ten years experience working in a human resource environment.

Helpful High School courses: English, Speech and Computer Science.



HYDROLOGIST

Are you curious about the earth, how it was formed, and what part water played in mobilizing and depositing minerals? Do you want to know how water moves underground? If so, you might consider becoming a Hydrologist.

As a Hydrologist, you will study groundwater as it applies to a mine setting and study the relationship of geology (faults, rock types, structures, etc) to groundwater. You will learn how to find water by drilling, and how to establish wells to de-water the ore deposit so that it can be mined. Or you can learn how to find process water to support mineral production.

To be a Hydrologist you will need a college degree in Geologic Engineering or Geology.

Helpful High School Courses: Earth Science, Chemistry, Physics, Biology, Computer Science, Math, Drafting, and English.



INFORMATION SYSTEMS MANAGER

If you enjoy the challenge of computers and like working with people then consider becoming a Systems Manager.

As a Systems Manager, you will be responsible for the operation of all computer hardware and software on the mine site. In addition, you will provide new or updated programming via development or purchase, training and troubleshooting for personnel on hardware and software, and you will enforce company computer policy. You will need to be able to work with all types of people and be good at solving problems.

As a Systems Manager, you will need a college degree in Computer Science or related field. You will also need two to five years experience working with information (computer) systems.

Helpful high school courses: Math, Computer Science, English, and Business Machines.



MAINTENANCE PLANNER

If you enjoy coordinating and planning many different schedules for equipment repair and have knowledge of heavy equipment, you might want to look into becoming a maintenance planner.

In this job you will be responsible for scheduling all preventative repairs for all pieces of equipment on the site, and then handling any unscheduled ones with the least amount of impact to the operation.

Trade school or a degree in Mechanical Engineering will be necessary to handle this position.

Helpful High School courses include Math, English, Auto Shop, and Computers.



MECHANIC

Do you enjoy the challenge of machinery? Do you think you would have satisfaction from diagnosing to repairing a problem on equipment? Do you enjoy tools and working with your hands? If so then you could consider a career in maintenance.

As a mechanic you will diagnose, document, and repair (with technical assistance when required) all mobile equipment on the mine site. You will be trained on the operation of all mobile equipment, which includes loaders, trucks, graders, dozers, pickups, cranes, forklifts, shovels, etc. You will be knowledgeable about the proper use of tools and equipment for repair operations, and you will do some minor welding. To be a Mechanic you will need a high school diploma or equivalent and a minimum of two years experience in mobile equipment repairs. In addition you will need to be able to communicate both verbally and in writing.

Helpful High School courses: Math, Auto Shop, Welding, Computer Science, and English. You may decide to attend a trade school for diesel equipment repair.



METALLURGIST

Do you like science and math? Are you good at playing mind games? Do you like challenges? If so, you would like being a metallurgist.

As a metallurgist, you will monitor processing to maintain or increase production while keeping costs at a minimum. You will also keep records of the production on daily, monthly, and yearly reports. You will work with the process operators and work on computers. You will receive information concerning production, and then interpret and apply the information to the process system. You might have the opportunity to test new methods of extraction to improve production. Most metallurgists in the mining industry are extractive (removes product from rock) but some may specialize in physical metallurgy (combines different minerals or elements together to make a final product, for example: steel).

To be a metallurgist you will need a college degree in Metallurgical Engineering.

Helpful high school courses: Math, Chemistry, Physics, English, and Computer Science.



METALLURGY TECHNICIAN

Do you like chemistry and math? Are you detail oriented and good at researching and solving problems? Do you enjoy people? Do you like both physical and mental work? If so then consider becoming a Metallurgical Technician.

Metallurgy can be either extractive (removes product from rock) or physical (combines different minerals or elements together to make a final product). As a Metallurgical Technician, you will monitor the process system to optimize production while minimizing costs. You will learn to keep daily, monthly and yearly production records and reports.

To become a Metallurgical Technician you will need a high school diploma or equivalent. You will need to be in good physical condition and have good verbal and written communication skills. To become a Metallurgist you will need a college degree in Metallurgical or Chemical Engineering. Helpful High School Courses: Math, English, Chemistry, Physics and Computer Science.



MINE ENGINEER

Do you like to determine cause and effect, ask and answer questions? Do you like to work with numbers and enjoy design work? If so, an Engineering career may be for you.

As an Engineer, you may learn to optimize mine operations to reduce costs. This can be achieved through mine design, mine planning, modeling, equipment selection and production reporting. Alternatively, you could supervise the construction of processing facilities, design and monitor the development of heap leach pads, design dewatering pumping systems, or design the reclamation of waste rock dumps and heap leach pads.

To be an Engineer you will need a college degree in Mining, Geological, Environmental, Civil Engineering or related engineering field.

Helpful High School Courses: Earth Science, Chemistry, Physics, Biology, Computer Science, Math, Drafting, and English.



PROCESS OPERATOR

Does the idea of working with electronically controlled equipment appeal to you? Are you someone who does not mind physical activity on the job? If so, then maybe you should consider being a Process Operator.

As such, you will be responsible for the safe and productive use of all process equipment including solutions and reagents. You will need to understand the production process and to respond when problems arise. You will need to be able to operate some equipment including conveyors, screens, feeders, mills, pumps, and numerous pieces of mobile equipment. You will need to update logbooks recording the production process and enter that information on a computer. You may be required to keep all systems clean and operational as well as troubleshoot any problems.

To be a process operator you will need a high school diploma or equivalent and receive either on-the-job training or go through vocational training. You will need to be able to communicate clearly through written and verbal instructions and be able to train new employees.

Helpful high school courses: Math, English, Computer Science, and Shop.



PURCHASING AGENT

Do you enjoy buying things? Do you like finding the best price for an item? Do you like dealing with people and consider yourself a wheeler and dealer? If so, you might like to become a Purchasing Agent.

As a Purchasing Agent, you will be responsible for locating, purchasing, and obtaining delivery of all goods and services at a mine site. These tasks may be accomplished through the supervision of purchasing personnel and the use of computers. In addition, you will make sure that a good relationship is developed and maintained between the company and its suppliers. You must also be familiar with all the phases of the mine operation (mining, crushing and processing), as well as be aware of the vendor supplied equipment and parts that match the company systems.

To be a purchasing agent you will need a high school diploma and must have a minimum of five to ten years experience in purchasing. You will also require contract negotiation experience and be able to communicate with all types of people.

Helpful high school courses: Math, English, Speech, Computer Science, Accounting, and Business.



REFINER

Do you like working alone, and are you in good physical shape? Do you like the idea of being the first to see the final product? Do you think you can handle working in a very secure area? If this sounds good then consider the job of Refiner.

In this position, you will be responsible for the operation of all equipment used in the refining process. You will learn how to mix fluxes, know the various methods of extracting the product, know how to operate the furnace, pour and mark the bars, and you will need to be able to tolerate extreme heat. You will be expected to troubleshoot any problems that arise and to keep accurate records of production. You will need to work with minimal supervision and be self-motivated.

To become a refiner you will need a high school diploma or equivalent and receive on-the-job training. You will also need to satisfactorily complete a stringent background check. You will need to be able to communicate effectively in writing. Physical work is required so you will need to be in good physical condition.

Helpful high school courses: Math, English, Chemistry, Computer Science, Physical Education, and Shop.



SAFETY COORDINATOR

Do you like working and talking to people? Do you enjoy helping others learn new things and helping them perform them safely? Are you very organized? Then consider becoming a Safety Coordinator.

As a Safety Coordinator, you will conduct all aspects of safety training, perform workplace inspections, review material safety data sheets, and conduct industrial hygiene monitoring. You will maintain personnel records of all employees as well as reports required for State Industrial Insurance, Mine Safety and Health Administration (MSHA), State Mine Inspectors and the company. This job may lead to that of a Safety Manager position.

As a Safety Technician, you will need to have a High School diploma, and one-year or more experience in mining. You will need to have computer knowledge, to be certified as an MSHA Instructor, and to be certified as a First Responder, and be willing to continue to the level of Emergency Medical Technician (EMT). A four-year degree in Occupational Health and Safety is preferred.

Other helpful knowledge could be gained by becoming an emergency volunteer. Helpful high school courses: Math, Science, English, Chemistry, Psychology, and Computer Science.



SAMPLE PREP TECHNICIAN

Do you like repetitive work and don't mind getting dirty? Do you like to work with your hands? Can you tolerate standing for long periods? Then consider becoming a Sample Prep Technician in the Assay Lab.

As a Sample Prep Technician you will process samples from the mine by splitting, drying, crushing, and pulverizing them to the consistency of talcum powder without cross contamination of samples. This requires the operation and maintenance of small crushers and pulverizers. You may also be required to do computer data entry.

To assume the duties of a Sample Prep Technician you will need a high school diploma or equivalent and other on-the-job training. You will also need to be in good physical condition. This is an entry-level position and advances to other positions in the Assay Lab.

Helpful High School Courses: Math, English, Chemistry, and Computer Science.



SECURITY GUARD

If you are someone who likes quiet time intermixed with occasional bursts of excitement, and you are calm under pressure and like people, you might consider becoming a Security Guard.

In the position, you will protect and safeguard mine site employees, secure of any company assets against loss, and be responsible for recording the entry and departure of all individuals to the site. In addition, you will monitor activities in various locations around the mine site through electronic and visual surveillance. You will also be required to assist in life threatening situations. You will have to communicate with all areas of the mine site both verbally and in writing, and demonstrate sound judgment.

To be a Security Guard you will need a high school diploma or equivalent, and you may have to have previous experience or training in a security position. You might take law enforcement training from a vocational school or community college. You will be required to obtain advanced first aid training as a First Responder or Emergency Medical Technician. You may also be required to obtain hazard training and emergency response training.

Helpful high school courses: English, Math, Computer Science, and Physical Education.



SURVEYOR

Do you like working outdoors? Do you find it challenging to work math problems, especially algebra and trigonometry? Do you like both physical and mental work? If so, you might look into becoming a Surveyor.

A surveyor provides all sorts of information to personnel on a mine site. The information may include the locations of ore and waste, buildings, fences, or power lines. You may be called upon to locate underground utilities, historic underground workings, drill bits stuck in drill holes, or just to survey elevations of de-watering wells or other features around the mine site.

To be a Chief Surveyor you will need a degree in surveying (2 years) from a college certified by the Accreditation Board for Engineering & Technology (ABET), or you may have an engineering degree with a surveying emphasis. Entry-level positions also exist on a mine survey crew but advancement is limited without a degree.

Recommended High School Courses are Math, Drafting, Computer Science, and English.



UNDERGROUND MINER

If you don't mind being underground in tunnels, enjoy seeing what is under the surface, and can tolerate some heat, you might consider becoming an underground miner.

Working underground, you will cut channels to facilitate blasting, operate power drills to bore the blast holes in the walls, and operate special heavy equipment. Good physical condition is necessary; safety in all aspects of these jobs is demanded.

Helpful High School Courses are Math, English, and Computers. Many companies have special training programs High School Graduates can apply for.



WAREHOUSE PERSON

If you like inventory control, working with people, and doing a variety of tasks, then consider warehouse work.

A Warehouse Person stores and issues supplies, maintains supply levels, and keeps a running inventory of all supplies on a computer. In addition, you will perform inventory audits, operate light equipment, and maintain a clean work environment. Some physical work (lifting and moving) is required. You will need to be able to understand and follow both oral and written instructions.

To be a warehouse employee a high school diploma or equivalent and one-year experience in store keeping and inventory work is required.

Helpful high school courses: Math, English, Computer Science, Accounting, Speech, Inventory Control.



WELDER

Do you enjoy working with your hands? Does the idea that you can fix heavy mobile and stationary equipment appeal to you? If this is your interest and you want a skilled career, then consider becoming a Welder.

As a Welder in the Minerals Industry, you might work on many types of equipment from light vehicles to large crushers. You will generally work in either Mobile Maintenance or Crusher Maintenance. In either department, you will be required to identify and document the majority of welding related problems, communicate the problems through channels, and solve the problem. You must be able to perform the majority of required welding repair jobs and use all tools and equipment properly. You may have the opportunity to be task trained in operating the equipment as well.

To be a mine welder you will need a High School diploma and about one to two years experience with welding. You must be able to communicate effectively both in writing and verbally.

Helpful high school courses: Math, English, Auto Shop, Welding and Computer science. You might consider a trade school to learn this Welding.

