

### Unit 3

## LAND USE AND THE ENVIRONMENT

By the end of this unit, you must be able to....

- define ore
- identify some existing and former mining operations in NL, and minerals extracted. Include: (I) Labrador West (ii) Baie Verte Peninsula (iii) Voisey's Bay (iv) Buchans (v) Bell Island (vi) Millertown and (vii) St. Lawrence
- describe the economic impacts of mining in NL.... Include: (i) increased Gross Domestic Product (GDP) (ii) increased employment (iii) improved salary (iv) increased secondary services
- list the stages in a mining cycle. Include: (i) exploration (ii) ore extraction (iii) processing (iv) closure/rehabilitation/ reclamation
- identify different mineral exploration methods. Include: (i) satellite imaging (ii) magnetometers (iii) core drilling (iv) ground exploration (grab samples, panning, geochemical)
- distinguish between above ground and underground mining techniques
- identify impacts of open pit mining. Include: (i) disturbance of topography/viewscape (ii) loss of habitat (iii) pollution (noise, dust, water) (iv) erosion
- recognize that mitigation efforts are necessary to limit the impacts of open pit mining. Include: (i) mine design (ii) waste rock and tailings management (iii) dust control (iv) remediation planning
- identify impacts of underground mining. Include: (i) ground subsidence (ii) human health issues (iii) disturbance of topography/ aesthetics (iv) loss of habitat (v) pollution (noise, dust, water) (vi) erosion
- distinguish between dry and wet milling processes
- define ore concentration
- outline physical and chemical concentrating methods. Include: (i) gravity separation (ii) magnetic separation (iii) heap leaching (iv) floatation

- identify new approaches to waste water/mine waste treatment. Include: (i) containment ponds (ii) treatment of effluent (iii) tailings piles
- discuss the potential risks associated with treating and/or containing mine wastewater and mining wastes. Include: (i) dam failure (ii) leakage
- define smelting
- identify the environmental issues resulting from the separation of minerals from ores. Include: (I) heap leaching (ii) pyromet (blast furnaces) (iii) hydromet
- contrast the traditional method of smelting nickel with the new hydromet method. Include: (I) method of extraction (ii) energy requirements (iii) waste products (iv) cost and reliability
- discuss the implications of putting an ore processing facility in Newfoundland and Labrador. Include: (i) social (ii) economic (iii) environmental
- recognize the need for an environmental impact assessment (EIA) before an ore body is developed, and describe the environmental impact assessment process
- compare prevention techniques with remediation / reclamation techniques as a means of dealing with environmental impacts of mining operations
- describe the immediate and long term costs and savings associated with prevention techniques
- identify occupations related to the environmental sector of the mining industry