

incorporated in Canada and at least 50% of the issued shares are owned by Canadian citizens or the shares are listed on a recognized Canadian stock exchange. A new mine beginning production is not required to pay royalties for 36 months.

### 10.8.3 Provincial laws and regulations

In general, Crown mineral lands within provincial boundaries (with the exception of those in Indian reserves, national parks and other lands under federal jurisdiction) are administered by the province.

Granting of land in any province except Ontario no longer carries with it mining rights on or under the land. In Ontario, mineral rights are expressly reserved. In Nova Scotia, the only mineral rights belonging to the owner of the land pertain to gypsum, agricultural limestone and building materials. In Newfoundland, mineral and quarry rights are expressly reserved. Some early grants in the four western provinces, and in New Brunswick, Quebec and Newfoundland included certain mineral rights. Otherwise, mining rights must be obtained separately by lease or grant from the provincial authority. Mining activities may be classified as placer, general minerals (veined minerals and bedded minerals), fuels (coal, petroleum and gas) and quarrying.

In provinces where placer deposits occur, regulations define the size of placer holdings, the terms under which they may be acquired and the royalties to be paid.

**General minerals** are sometimes described as quartz, lode, or minerals in place. The most elaborate laws and regulations apply in this division pertaining to prospector or miner licences to search for mineral deposits, staking and recording claims, time limits, recording fees where required, work of a specified cost to be performed in some provinces, and renewals of development licences. Mining taxation is applied most frequently as a percentage of net profits of producing mines.

**Coal, petroleum and natural gas.** In provinces where coal occurs, specifications include the size of holdings, and their conditions of work and rental. In the search for petroleum and natural gas, an exploration permit or reservation is usually required; in Saskatchewan, Alberta and British Columbia leases usually follow when a discovery of oil or gas is made; exploration costs may be applied to the lease rental. In other provinces, discovery of oil or gas is usually a prerequisite to obtaining a lease or grant of a limited area, subject to carrying out drilling obligations and paying a rental, a fee, or a royalty on production.

**Quarrying regulations** define the size of holdings and the terms of lease or grant concerning quarryable substances (ordinary stone, building and construction stone, sand, gravel, clay, limestone and peat moss). In several provinces, such substances belong to the owner of the land, but regulations vary. Copies of

mining legislation including regulations and other details may be obtained from provincial authorities.

## 10.9 Energy, Mines and Resources Canada

The department of energy, mines and resources was created in October 1966 from the former department of mines and technical surveys. It has jurisdiction over federal matters related to energy, mines, minerals and other non-renewable resources, technical surveys and explosives. The department is responsible for federal mineral and energy policies and for conducting technical surveys and research related to mineral and energy resources. The surveys and research are conducted in three sectors: research and technology, earth sciences and energy.

### 10.9.1 Research and technology

This sector is responsible for research and development in mining, minerals, metals and fuels technologies, remote sensing and explosives. The work is conducted in-house and by contract in three branches: a Canada centre for mineral and energy technology (CANMET), a Canada centre for remote sensing (CCRS) and an explosives branch.

CANMET programs in mining R&D are aimed at mine safety and the development of new mining technologies. Mine safety R&D investigates reduction of emissions from diesels operating underground, control of radiation in uranium mines, explosions in coal mines, and mine dusts and noise. Important to both safety and production technology are ground control and rock mechanics to increase stability in mines, minimize rockfalls and enhance productivity. CANMET also conducts explosives research and testing on behalf of the explosives branch.

Research on processing of minerals is aimed at improving the efficiency of current techniques by developing computer simulation of processes for application to specific mills to maximize operating efficiency. R&D is also conducted to develop processes for Canadian ores such as fine-grained sulphides not amenable to concentration and separation by conventional techniques.

Metallurgical laboratories conduct R&D in the properties and processing of metals to improve efficiency of Canadian metallurgical operations and to determine such properties as fracture and fatigue resistance of metals required in large projects such as pipelines and structures designed to operate in the Arctic and offshore regions.

Fuels research concentrates on non-renewable fuels, especially coal, oil sands and heavy oils. Extensive coal R&D facilities include a coal beneficiation pilot plant, pilot coke ovens and a complete pilot scale combustion laboratory investigating combustion efficiency of coals and wood and developing new methods of combustion such as fluidized beds for industrial and domestic use.