

## **POSITION PAPER MINERAL EFFICIENCY**

*By Northern Alaska Environmental Center, Southeast Alaska Environmental Center and the Center for Science in Public Participation*

Developing sustainable environmental and economic practices will require that Alaska and the rest of the country adopt a mineral policy that promotes increased mineral efficiency. A mineral efficiency policy would reduce the energy and water requirements and the environmental impacts associated with mining by 1) reducing demand of virgin minerals and promoting the reuse/recycling of metals already in circulation, and 2) improving mining technologies to reduce the amount of minerals "lost" as pollution.

### **Reducing Demand for Minerals**

The primary objective in increasing mineral efficiency is to reduce the amount of new materials extracted from the earth. Achieving this goal will require:

- 1) Optimizing use of the minerals presently circulating in the global economy;
- 2) Reducing consumption of mineral-bearing goods;
- 3) Substituting non-metals for metals (e.g., using glass fiber optic cables in place of copper wires for communications); and,
- 4) Reusing and recycling metals.

### **Increasing Efficiency in Mineral Production**

A policy aimed at increasing efficiency in mineral production would address a number of factors, including the efficient use of energy and water (at all stages of production). Furthermore, efficient mineral production would aim to reduce the output of "wastes" (e.g., metals lost as effluent or airborne emissions; as well as the amount of waste rock, tailings, etc.). The mineral industry as a whole is among the world's largest users of energy, accounting for between 5 and 10% of world energy use. The mining industry, therefore, is a major contributor to the environmental impacts related to energy use, including climate change. The extraction of ore from the ground is an energy intensive process, which is only going to increase with time. As higher-grade, easily accessible ores are mined, more effort will be spent removing larger amounts of low grade ores and overburden, resulting in higher energy expenditures per unit of metal mined.

Where mineral production is concerned, there are a number of methods for improving efficiency. Attention must be paid to the influence of government subsidies and tax expenditure programs; and a greater emphasis should be placed on research and development of more efficient mining technologies. Some forms of subsidy provided by the government to the mineral and metal mining industries include the protection from environmental liability, as well as the provision of infrastructure, energy and water at less than the full cost. If energy subsidies are removed, some mines may be proven to be so inefficient that they become uneconomical. The removal of corporate tax breaks, combined with the use of market-oriented mechanisms such as assessing taxes on the amount of waste material generated and water and energy used, could lead to a more efficient use of resources. Improvements in mine design and management practices at mines and processing plants can also significantly affect the mineral recovery rates from particular ore types. A few percentage points difference in recovery rates can capture many tons of metal at little extra cost. At the present time there are few new, market-ready, energy-efficient process technologies, especially for technologies used to process ore concentrates. As mentioned previously, industry research tends to focus on ways to increase mineral production rather than minimize wastes. Here, tax breaks might serve as positive incentives for the mining industry to develop research projects or pilot programs that target more efficient use of water and energy, and minimize wastes.

*Source: Environmental Mining Council of B.C. 2001.*