RHENIUM

A. Commodity Summary

The principal source of rhenium is molybdenum concentrates which are derived from porphyry copper deposits. Rhenium-containing products include ammonium perrhenate, perhennic acid, and metal powder. Rhenium is used in high-temperature superalloys (such as those used for manufacturing jet engine components) because it improves the strength properties of nickel alloys at high temperatures (1,000 °C). Rhenium alloys are used in thermocouples, temperature controls, heating elements, ionization gauges, mass spectrographs, electron tubes and targets, electrical contacts, metallic coatings, vacuum tubes, crucibles, electromagnets, and semiconductors. Rhenium is also used in petroleum-reforming catalysts for the production of high octane hydrocarbons for use in lead-free gasoline. Bimetallic platinum-rhenium catalysts have replaced many of the monometallic catalysts.[1] Rhenium is usually traded either as ammonium perrhenate or rhenium metal.[2]

According to the U.S. Bureau of Mines, ores containing rhenium are mined domestically by eight companies. Exhibit 1 presents the names and location of those companies generating molybdenum concentrates that contain rhenium.

EXHIBIT 1

SUMMARY OF RHENIUM FACILITIES

Facility Name	Location	Type of Operation
Chino Mines Co.	Hurley NM	Molybdenum concentrates
Cyprus-Climax	Sierrita, AZ	Molybdenum concentrates
Cyprus-Climax	Bagdad, AZ	Molybdenum concentrates
Kennecott Minerals Co.	Bingham Canyon, UT	Molybdenum concentrates
Magna Copper Corp.	San Manuel, AZ	Molybdenum concentrates
Magna Copper Co.	Miami, AZ	Molybdenum concentrates
Phillips Dodge Corporation	Morenci, AZ	Molybdenum concentrates
Sheilds Resources Inc. (Continental Pit)	Butte, MT	Molybdenum concentrates

[1] Blossom, J. W., "Rhenium," from Mineral Commodity Summaries, U.S. Bureau of Mines, 1995,
pp. 136-137.

[2] Blossom, J.W., "Rhenium," from Mineral Facts and Problems, 1985, p. 667.