

US EPA ARCHIVE DOCUMENT

Primary Mercury Mining: Historical and Current Trends

Commodity Mercury Stakeholder Meeting
Denver, Colorado
July 24, 2007

Purpose

- Provide a summary of historic primary mercury mining activity and trends
- Discuss the current and future state of primary mercury mining in Kyrgyzstan and China
- Discuss private sector and governmental commitments to curb global primary mercury mining

Overview

- Historical Overview and Trends
- Current Primary Mercury Mining in Kyrgyzstan
- Current Primary Mercury Mining in China
- ICMM Commitment to Curb Primary Mercury Mining
- UNEP Commitment to Curb Primary Mercury Mining

Historical Overview and Trends

- Elemental Mercury
 - Nearly all mercury currently mined derived from mercury sulfide (i.e., cinnabar)

- Global Mercury Ore Deposits
 - Most minable deposits in areas of orogenic or volcanic activity
 - Spain to the Himalayas
 - Surrounding the Pacific Basin
 - Estimated Global Reserves 46,000 tons

Historical Overview and Trends (cont'd)

■ United States

- Primary mercury mining dates to 1850
 - Domestic production peaks in 1877 (2,700 m.t./yr)
- Primary mercury mining market collapsed in early 1970s
 - Reflected increased environmental and health concerns
 - Legislation led to elimination of mercury use in batteries and fungicides
- Final primary mercury mine closed in 1990

■ Global

- Primary mercury mining dates to 200 B.C.
- Primary mercury mining markets collapsed in 1990s
- Substantial primary mercury mine closures between 1990 and 2004
 - Algeria, Italy, Mexico, Peru, Slovakia, Slovenia, Spain, Turkey
- Ongoing primary mercury mining
 - China, Kyrgyzstan

Current Primary Mercury Mining in Kyrgyzstan

- Third largest global mercury reserves
 - >21,500 tons in estimated reserves
- Khaidarkan Mercury Plant (KMP)
 - Located in Batken region of southern Kyrgyzstan
 - Built in 1942 at base of second largest antimony-mercury deposit in the world
 - De facto state ownership and operation

Current Primary Mercury Mining in Kyrgyzstan (cont'd)

■ Annual Production

- Second largest global producer
- In 2005, KMP produced between 304 m.t./yr and 600 m.t./yr mercury
 - Believed to be operating at technical and practical capacity
 - Limited by technical difficulties

■ End Use of Product

- Exported as refined elemental mercury or unrefined mercury sulfide

Current Primary Mercury Mining in Kyrgyzstan (cont'd)

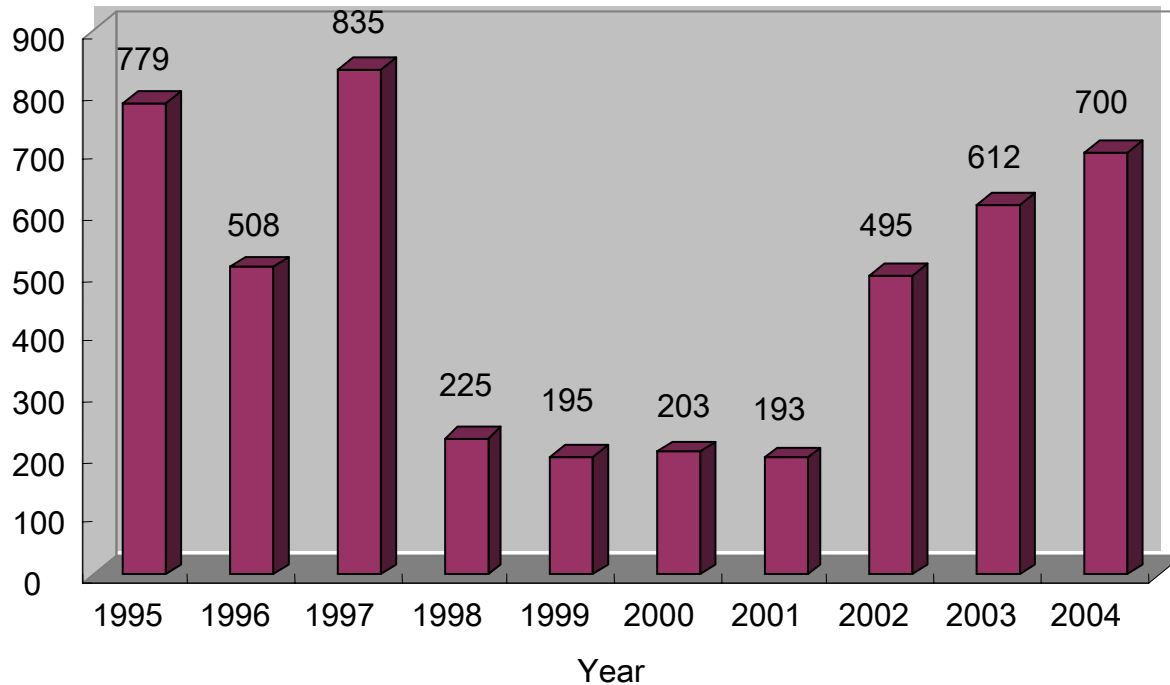
■ Historic Trends

- Since 1940s, approximately 40,000 tons mercury extracted
- Listed maximum production of 793 tons mercury in 1989
- Production fell to 200 m.t./yr and led to declaration of bankruptcy following collapse of Soviet Union
- Production between 2000 and 2005 ranged from 303 to 600 m.t./yr
- Until 2004, majority of yields exported to China

■ Future Projections

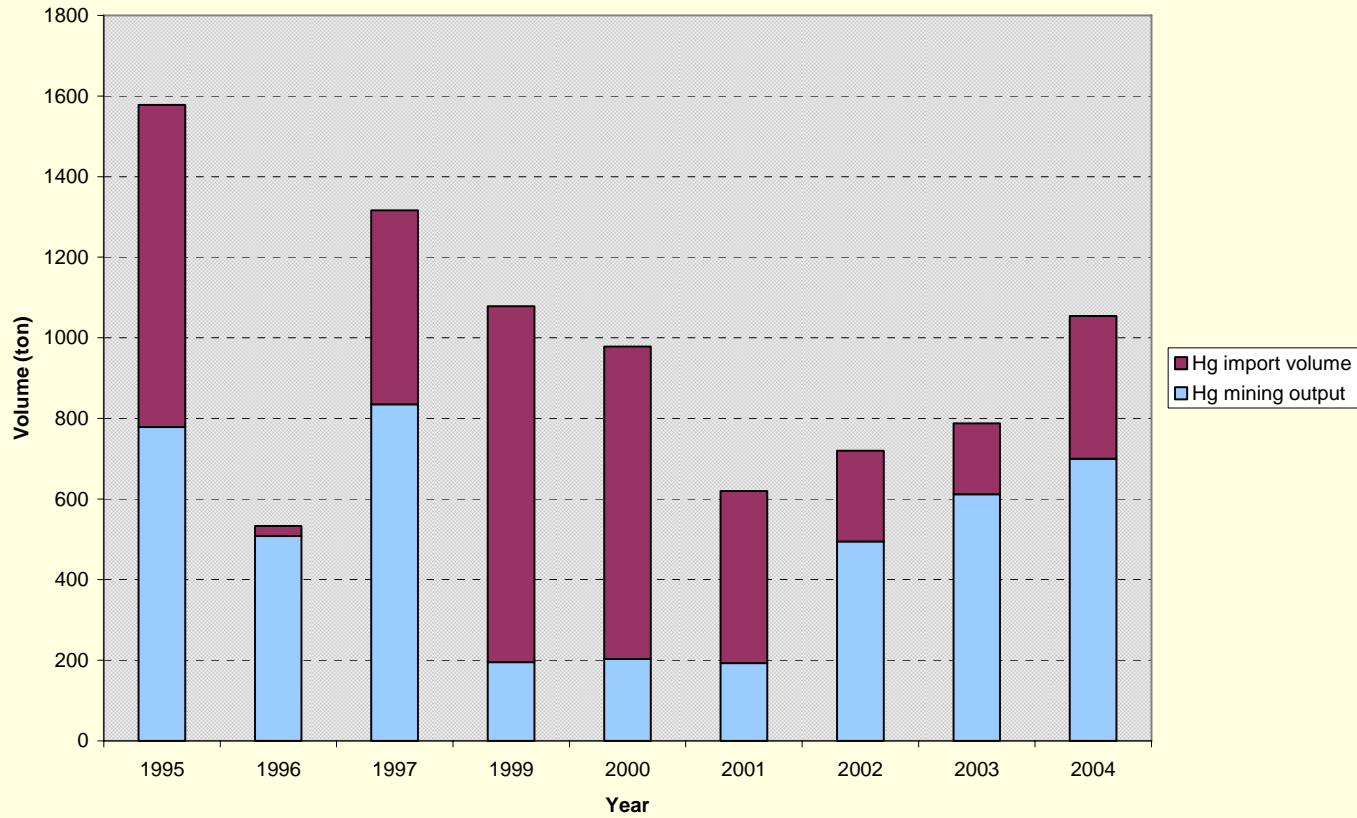
- Reported to be interested in cessation of primary mercury mining
- Believed to continue to produce mercury at technical and practical capacity as means of sustaining labor force
- Believed to be limited by technical and maintenance difficulties

China Mining Production



China Mining and Imports

China's Legal Mercury Mining Output and Mercury Imports, 1995-2004



Recent China Mining/Import Data

- 2004 mining output reported as 1140 MT in China yearbook (and consequently by USGS), but this may include mercury catalyst recycling
- No mining output data officially reported for 2005 or 2006, according to SEPA
- 2005 reported imports of 0.18 MT, according to COMTRADE data base (# 280540)
- No import data reported for 2006

China's Mercury Mining Forecast

- Grade A-C reserves were 19,636 MT in 2000, and estimated 16,293.8 MT in 2004.
- No significant new reserves have been discovered since 1995
- Largest mine producing 300+ tons has estimated life of 5 years
- Grade A-C reserves will be exhausted in next 10 years, if not sooner
- Grade D reserves of 60,372 MT in 2000, but this grade of low quality and sparsely explored. Only 19 tons of mercury produced from Grade D reserves over 5 year period

Principal China Demand Sectors (2004 as example year)

■ Batteries	153 MT
■ VCM	610 MT
■ Lamps	55 MT
■ Measuring Devices	292 MT
■ Small-Scale Gold Mining (estimated)	200 MT
■ Total	1310 MT

ICMM Commitment to Curb Primary Mercury Mining

- [Please refer to “International Council on Mining and Minerals.pdf”]

UNEP Commitment to Curb Primary Mercury Mining

- UNEP Governing Council Decision 24/3
 - Commits to “increased efforts to address the global challenges to reduce risks from releases of mercury” via reduction of mercury supply and primary mining
 - Urges Governments to “gather information on means to reduce risk that may be caused by the supply of mercury” via reduction of “reliance on primary mercury mining in favor of environmentally preferable sources of mercury”

Conclusions

- Ability of Kyrgyzstan and China to increase primary mining appears very limited, due to geologic, economic, and political challenges
- China's future supply situation is now documented by SEPA and will be used as important basis for additional demand reduction activities in key sectors
- ICMM and UNEP commitments reflect serious private and governmental steps toward curbing global primary mercury mining activity