Mercury material flow: Supply, demand and trade

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Contents

▶ Supply = Elemental mercury sources
▶ Demand = Elemental mercury uses
▶ Trade = Documented mercury transfers worldwide
▶ Key issues
Mercury supply (going to end uses*)

- 2015 global Hg supply (not including stocks) approx. 4,100 tonnes, within a range of uncertainty

- Mercury from recycled products & wastes, 30%
- Primary (mined) mercury, 46%
- Chlor-alkali residual mercury, 10%
- By-product mercury, 15%

*As compared with Hg going to storage or disposal

Source: UNEP 2017
Main sources of mercury (going to end uses)*

- Hg mining
  - Almadén (Spain) closed 2003; China ongoing
  - New mercury mining in Mexico and Indonesia; quantities highly uncertain
- By-product Hg mostly from smelting of non-ferrous ores - trends?
- Chlor-alkali residual Hg - gradual reduction as fewer facilities come off-line each year
- Recycling of mercury-added products and mercury wastes - trends?

*As compared with Hg going to storage or disposal
Rudimentary smelting of high-grade cinnabar in Jakarta
2015 Hg demand approx. 4,700 tonnes (within a range of uncertainty)

- ASGM and VCM production responsible for nearly 60% of total demand
- Hg use declining in chlor-alkali and batteries
- Hg in lamps and dental use also declining in most countries
- Hg in measuring devices declining largely due to initiatives in hospitals and clinics
- Switches and relays are targeted by regulations in Canada (import, mfg.), the U.S. (state regs), the EU (RoHS), and others

Difference between 4,100 t. Hg supply and 4,700 t. Hg demand implies either a drawdown of stocks, or possibly an underestimate of primary Hg mining
Global mercury uses, 2015*

*Includes diverse uses of mercury and mercury compounds in pesticides, fungicides, laboratory chemicals, catalysts, chemical intermediates, porosimeters, pycnometers, pharmaceuticals, mercury compounds in paints, traditional medicine, cultural and ritual uses, cosmetics such as eye make-up and skin-lightening creams, etc.

Source: UNEP 2017
Trends in global mercury use by sector, with uncertainties

Source: UNEP 2017
Mercury use (tonnes, 2015) in products by region and by application

Source: UNEP 2017
Regional mercury use in ASGM, 2015

Source: UNEP 2017
Global mercury supply & demand, 2015

Source: UNEP 2017
Mercury trade overview

- Significant reduction in global trade volumes:
  - reported imports 2,600 tonnes in 2010 down to 1,200 tonnes in 2015
  - reported exports 3,200 tonnes in 2010 (before EU export ban) down to 1,300 tonnes in 2015
- Major shift in international trading hubs 2010-15
- Evidence of informal or illicit transfers (Mexico, Indonesia, Colombia, etc.)
Mercury exports by Indonesia & Mexico

<table>
<thead>
<tr>
<th>Year</th>
<th>Indonesia</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>283,767</td>
<td>306,695</td>
</tr>
<tr>
<td>2016</td>
<td>*311,609</td>
<td>266,648</td>
</tr>
<tr>
<td>2017</td>
<td>151,853</td>
<td>200,191</td>
</tr>
<tr>
<td>2018</td>
<td>minimal</td>
<td>230,181</td>
</tr>
<tr>
<td>2019</td>
<td>minimal</td>
<td>62,572</td>
</tr>
</tbody>
</table>

*adjusted

Sources: Comtrade (Indonesia), SIAVI (Mexico)
Mercury traded worldwide 2000-2018

Source: Comtrade data as interpreted by Chatham House algorithms for <resourcetrade.earth>
2005: 3,400 t mercury traded worldwide

Source: Comtrade data as interpreted by Chatham House algorithms for <resourcetrade.earth>
2017: 984 t mercury traded worldwide

Source: Comtrade data as interpreted by Chatham House algorithms for resourcetrade.earth
Mercury trade issues (1)

- Uncertain quality of some data reported to Comtrade ("mirror" statistics, country of origin, quality control, coding mistakes, etc.)
- Limited transparency of some data due to confidentiality agreements, commercial protection, etc.
- 2-tier mercury price encourages illegal transfers (DELA Germany “waste” exports, circumventing China export ban, etc.)
Mercury trade issues (2)

- Scrutiny of Indonesia and Mexico Hg exports appears to have reduced legal Hg exports
- Increasing volume of illicit and informal Hg trade; therefore increased international attention
- Hg trade increasingly follows the same routes as gold trade (India, UAE, etc. intermediaries) or drugs (Colombia)
- Free trade zones also trading hubs (Singapore, Hong Kong, Panama, etc.)
Thank you!

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2010 - 3,700 t mercury traded worldwide

Source: Comtrade data as interpreted by Chatham House algorithms for <resourcetrade.earth>
2015 - 1,400 t mercury traded worldwide

Source: Comtrade data as interpreted by Chatham House algorithms for <resourcetrade.earth>