# Mercury trade and supply in Indonesia

BALIFOKUS

June 2017

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# Abbreviation

| | |
|---|---|
| ASGM | Artisanal and Small-scale Gold Mining |
| ESDM | Energi dan Sumber Daya Mineral / Energy and Mineral Resources |
| GTIS | Global Trade Information Services |
| IPIECA | International Petroleum Industry Environmental Conservation Association |
| KLHK | Kementerian Lingkungan Hidup dan Kehutanan / Ministry of Environment and Forestry |
| PESK | Pertambangan Emas Skala Kecil |
| UN Comtrade | United Nations Commercial and Trade |
| UNEP | United Nations Environmental Program |
| USGS | United States Geological Survey |

**Respondents**

| | |
|---|---|
| Community leaders | 10 interviews |
| NGOs | 2 interview |
| National government officials | 4 interviews |
| Local government officials | 4 interviews |
| Mercury traders | 6 interviews |
| Others | 6 interviews |
| **Total** | 32 interviews |

1 US Dollar = 13,413.71 Indonesian Rupiahs (Nov 2016)

# Introduction

Mercury has been recognised and used in Indonesia since the 90s. As the gold price increasing and decentralisation or local autonomous administration implemented in the early 2000, illegal gold mining activities also increased.

Until 2014, Indonesia still imports mercury from various countries. But since 2015, when the EU and the United States imposed a ban on mercury exports, the Ministry of Trade of the Republic of Indonesia issued Regulation of the Minister of Trade No. 75 / M-DAG / PER / 10/2014 which prohibits the import, trade and use of mercury in the mining sector. In 2016, Indonesia became one of the largest mercury producers and exporters in the world, exporting 635 tons of mercury to 13 countries.

Various studies have shown an increase in the activity of Small Scale Gold Mining or ASGM and mercury-induced pollution in several provinces in Indonesia. Kania Dewi (2012) identifies mercury emissions from the ASGM sector as the main source of mercury emissions (57.5%) in Indonesia. Globally, UNEP (2013) identifies the ASGM sector as a major contributor to global mercury emissions (37%).

This research was conducted in 2016 using literature study methodology, desk research, interviews, and field works. This study aims to present the current situation of mercury trade and supply in Indonesia, identifying knowledge gaps and providing recommendations for policymakers and stakeholders.

Denpasar, June 2017
BaliFokus team

# Recommendations

For central government agencies:

- Ratify the Minamata Convention on mercury as early as possible before September 2017;
- Enforce Decree of the Minister of Trade No. 75 / M-DAG / PER / 10/2014 and improve monitoring of export, import and mercury trading and prohibit local production and mercury exports.
- Shut down the location of new cinnabar mining and illegal and unlicensed mercury refining.
- Shut down unauthorised merchants, traders and merchants and obliges them to clean up and assist the health costs of suspected toxic mercury victims.
- Investigate mercury export licenses and actors involved.
- Develop guidelines and steps to identify, characterise, and clean up mercury-contaminated land and establish a clean-up fund similar to the US Super-Fund.
- Persons or law enforcement officers should be prohibited from engaging in illegal and informal gold mining activities. Law must be enforced.
- Develop a work unit involving various stakeholders to cut the mercury supply chain, production, and trade of illegal mercury from primary cinnabar mining.
- Develop a strategy to regulate and manage mercury as a by-product and mercury-containing wastes, especially, from the oil and gas sector. Mercury recovered from waste and from oil and gas operations should not be recirculated to the market and must be solidified (using polymers, etc.). Include this strategy into the National Implementation Plan for mercury elimination in Indonesia.
- Facilitate the formalisation of the Artisanal and Small Scale Gold Mining (ASGM), regulate small-scale mine management, and introduce non-mercury gold extraction technology.
- Develop guidelines for treating and managing confiscated liquid mercury at temporary mercury storage facilities, especially at ASGM hotspots areas, and at the national level.
- Implementing the National Implementation Plan and enhancing stakeholder cooperation for mercury elimination in the ASGM sector.

For local government agencies:

- Prohibit trade and use of mercury in the ASGM sector in the respective jurisdiction.

- Enforce existing environmental regulations and conduct a strong monitoring program on mercury and ASGM activities.
- Improve environmental and health monitoring program at ASGM hotspot locations.
- Develop the Local Action Plans for mercury elimination in the ASGM sector.
- Identify mercury-contaminated lands and options for rehabilitating and recovering these lands.
- Identify alternative livelihoods for affected communities.
- Developed measures of health action for affected communities, especially children and women.

For academia, media, community leaders, and NGOs:

- Keep monitoring the circulation, flow of trade, production, and use of mercury in the ASGM sector.
- Advocating for prohibition of mercury use in ASGM sector and health sector.
- Supporting the National Action Plan and National Implementation Plan for mercury elimination in the ASGM sector.
- Supports environmental monitoring and health at ASGM hotspots areas.
- Provide input and participate in activities to enhance stakeholder capacity and knowledge about the long-term harmful effects of mercury.
- Work with local stakeholders to find sustainable solutions to solve mercury contamination.
- Encourage sustainable governance of ASGM practices, non-mercury and non-chemical gold processing methods, and the addition of gold values in the ASGM communities.

# Mercury trade and supply in Indonesia

## 1. Background

In the last 10 years, the global gold price was rising but the cost of gold exploration and production were increasing. Brook (2009) revealed that the remaining deposits of gold lies under the protected areas or national park and mostly within the territory of indigenous peoples. Gold and other minerals could only be reach by small mining operations or by group of small-scale miners.[1]

Globally, UNEP (2013) identified artisanal and Small-scale Gold Mining (ASGM) practiced in more than 70 countries, involving more than 10-15 million miners including 4-5 million women and children. This sector produces about 12-15% of the world's gold and released about 1400 tonnes of mercury per year to the environment, exposed harmful and irreversible effect to human health and the ecosystem. The latest finding made the ASGM sector as the largest single source of mercury emission from intentional use (UNEP 2013).

As the gold price raising, in the last 10 years, ASGM or *Pertambangan Emas Skala Kecil* (PESK previously known as PETI/Pertambangan Emas Tanpa Ijin) in Indonesia has been doubled and spread out in 27 provinces encroaching national parks, protected areas, grand forest and even in small islands (KLHK 2013). Like in other countries, most of the ASGM operation are illegal and backed up by powerful officials, police, military, politicians and invisible financiers.

Globally, the common sources of elemental mercury are identified from these following sources (Bell, DiGangi et al. 2014):

- Elemental mercury extracted from the primary mining of cinnabar ores;
- Elemental mercury recovered as a by-product from mineral mines (gold, copper, etc.);
- Elemental mercury recovered from decommissioned chlor-alkali plants;
- Elemental mercury from historical strategic stockpiles; and
- Elemental mercury recovered from recycling activities from products and wastes.

Mercury supplies available in Indonesia through importation, extraction from primary mining sites, and recovery from wastes containing mercury especially from the oil and gas sector. Mercury used in Indonesia for medical-devices (thermometer, sphygmomanometer, barometer), dental fillings, cosmetics ingredient, compact fluorescent lamp (CFL), to extract gold, electrical switches and relays with mercury,

[1] *Brook Larmer. 2019. The Real Price of Gold. National Geographic magazine. Published January 2009. http://ngm.nationalgeographic.com/2009/01/gold/larmer-text/3 Accessed by 20 November 2016.*

research, and military use.[2] Until 2012, there is no primary mercury mining exist or explored Indonesia.

Until 2014, Indonesia was the net importer of mercury, mainly illegally and the large transaction were not recorded in the Indonesian statistic of trade. However, one can always track the transaction or the traffic of commodities using the database of UN Comtrade (Commercial and Trade), from the Global Trade Information Services (GTIS) or USGS (United States Geological Survey) database.

## 2. Objectives

The objectives of the study are to understand and explore :

- mercury trade stakeholders
- the sources of mercury in Indonesia
- how mercury being produced and traded.

## 3. Methodology and timeframe

This study used qualitative method though literature review, desk study, interview and observation in the field conducted between January 2015 until December 2016.

## 4. System dynamic of mercury trade

Mercury trade and supplies in Indonesia affected by several factors that made mercury demand and supply very dynamic.

From a causal loop diagram in Fig. 1, we will see that mercury in trade will be affected by the demand from ASGM miners. When the demand is increasing, the amount of mercury in trade will be decreasing. But the low amount of mercury trade will be increased once the supply added the mercury stock into the market.

The mercury impact to people's health will be increased if mercury in trade also increased. However, the prohibition or trade ban of mercury will decrease the supply of mercury in trade.

The over supply of mercury in trade will increase the availability of mercury but the price of mercury will be decreasing. However, the availability of non-mercury method will reduce the supply of mercury in trade.

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[2] *Dewi, Kania; Ismawati, Yuyun. 2012. Inventory of mercury releases in Indonesia. BaliFokus. http://media.wix.com/ugd/13eb5b_a9f86852270f4c069cc255d1a4575ec3.pdf Accessed by 20 November 2016.*

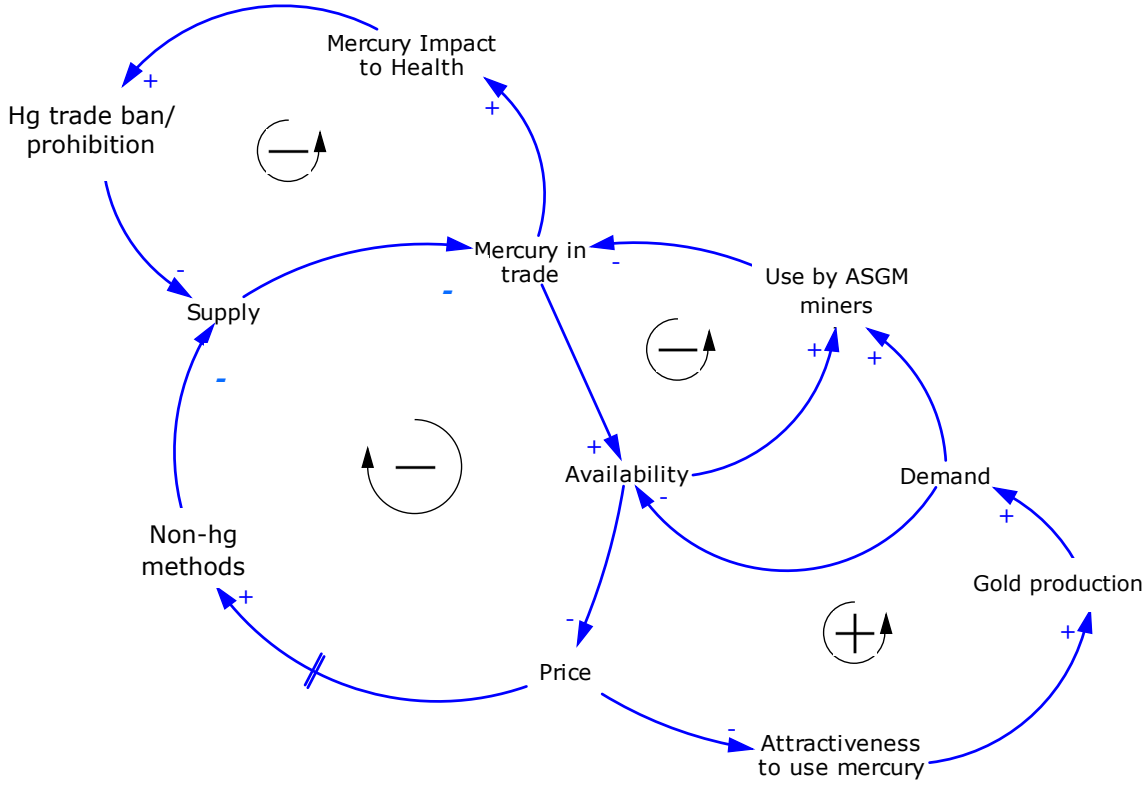


*Figure 1. Causal diagram loop of mercury supply and trade*
*Courtesy of Teten Avianto and Yuyun Ismawati, 2016*

## 5. Mercury stakeholders map

Stakeholders of mercury in Indonesia consisted of various actors at different level: national, sub-national, and local level.

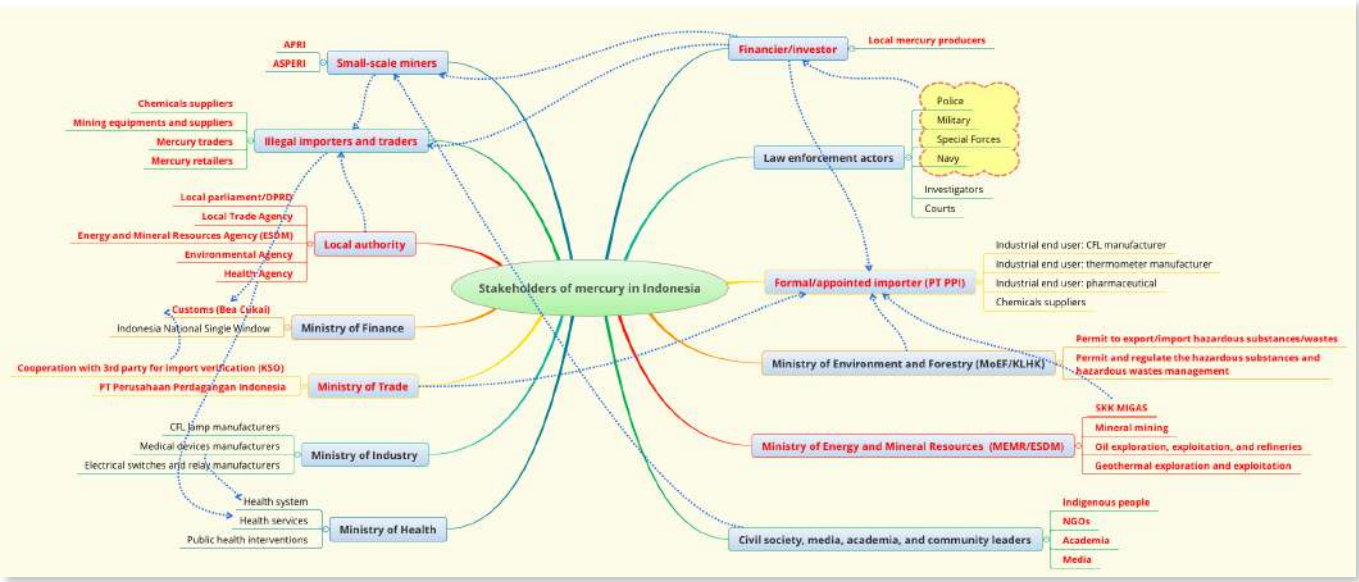


*Figure 2. The web of mercury stakeholders in Indonesia. Source: observation and interview.*

A brief description of the mercury stakeholders are as follow:

- Ministry of Environment and Forestry - role in granting export / import permits, environmental permits, restoration of contaminated land, the focal point of the Minamata Convention on Mercury, shareholders representing the Government of Indonesia at PT. PPLI (5%)[3], granting permission to import or export hazardous and toxic materials and wastes;
- Appointed importer of hazardous and toxic materials - PT Perusahaan Perdagangan Indonesia (PT PPI) plays a role in importing certain commodities on behalf of the Government of Indonesia, is the only company allowed to import large quantities of hazardous and toxic materials[4];
- Ministry of Energy and Mineral Resources - in charge of assessing and managing mineral and energy resources potential, primary mining of cinnabar, focal point for National Action Plan (RAN) to eliminate mercury in ASGM sector, monitoring of oil and gas sector;
- *Satuan Kerja Khusus Migas* (SKK Migas) - a special unit to manage and coordinate the oil and gas contracts with third parties under the Ministry of Energy and Mineral Resources[5];
- Financiers/investors - international/national/local investors that provide capitals and modalities for mercury import, export and productions, legal and or illegally;
- Law enforcement group - provide security protection for financiers/investors at the national and local level;
- Ministry of Industry - regulate and control industries that use mercury for their production, issue permits, and supervise the manufacturing of goods;
- Ministry of Health - provide health care services, monitor and regulate medical devices containing mercury, including dental amalgam, establish health system, coordinate health interventions;
- Ministry of Finance - regulate Indonesia's National Single Window system; supervise the import and export of goods delegated to the Indonesia's Customs (Bea Cukai); Customs sometimes collaborate with the illegal importers/exporter to falsify the bill-of-lading documents;

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*[3] Industri pengolahan limbah adalah bisnis masa depan http://www.menlhk.go.id/siaran-36--industri-pengolahan-limbah-adalah-bisnis-masa-depan.html - accessed by 5 December 2016*

*[4] PT Perusahaan Perdagangan Indonesia. http://www.ptppi.co.id/index.php/id/ - accessed by 5 December 2016*

*[5] Peraturan Presiden Nomor 9 Tahun 2013 tentang Penyelenggaraan Pengelolaan Kegiatan Usaha Hulu Minyak dan Gas Bumi*

- Ministry of Trade - appoint/develop cooperation with the third party to certify and verify the source and qualification of import and export goods, permit to import and export goods;
- Illegal/informal traders and producers - doing business without legal and formal paperworks, backed up by powerful law enforcement actors, sometimes use their identity as chemicals or mining suppliers, chemicals and mercury wholesalers, retailers at the local level;
- Civil society, media, academia and community leaders - watch dog, impacted communities, policy advocacy, pressure groups, sometimes work closely with miners;
- ASGM miners - main actor and main consumers of mercury, impacted group, men, women, young/child labours, transporters, tailing scavengers, backed up by financiers/investors and powerful law enforcement actors.

The web of mercury stakeholders in Indonesia is complex and sometimes invisible to the public but real on the ground.

## 6. Mercury exported to Indonesia

In 2013, UNEP released a famous mercury trade route map showing the traffic of mercury trade from one country to another country based on the database available at the UN Comtrade portal (https://comtrade.un.org/data/). Figure 3 below shows the mercury trade map. After 2012, the map changed as the EU and US' mercury export ban already enforced.

In the map below, the blue/green band from Singapore to Indonesia represented mercury exported from Singapore to Indonesia based on the export notification of Singapore with Indonesia as their trading partner. However, Indonesian statistics, showed that in the same year, Indonesia only imported 1.7 tonnes of mercury.

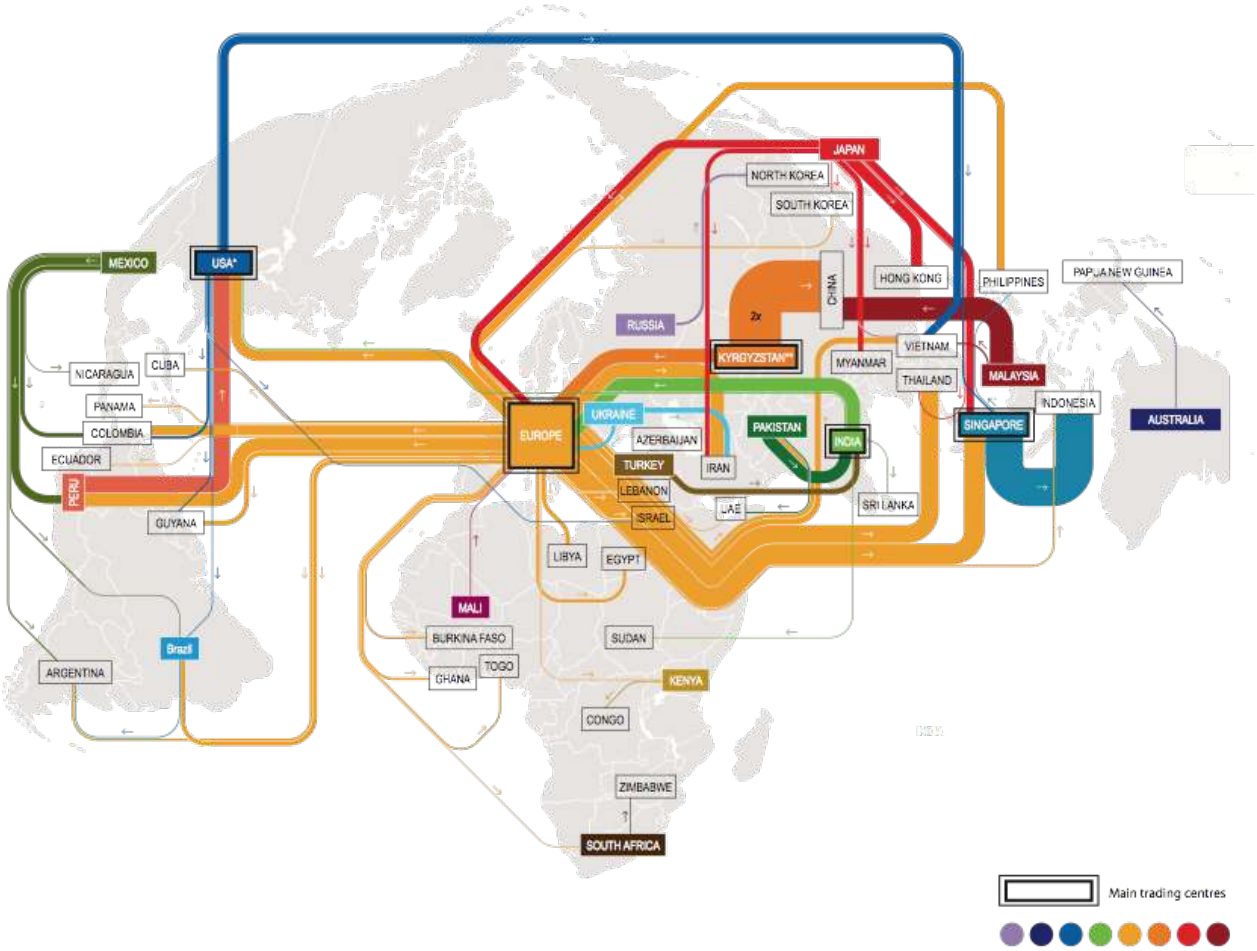



*Figure 3. Global mercury trade in 2011*
*(Source: Zoinet, 2011, data from UN Comtrade)*

Using the UN Comtrade database platform, one can browse commodity transaction (export, import, re-export, re-import) between countries for a specific commodity HS code. For elemental (liquid) mercury, the HS code is 280540. Figure 3 below shows the screen capture of the UN Comtrade database search. The picture shows the query for the desired data within the period of 2012-2016 reported by all (countries) whom imported mercury from Indonesia (as partner).

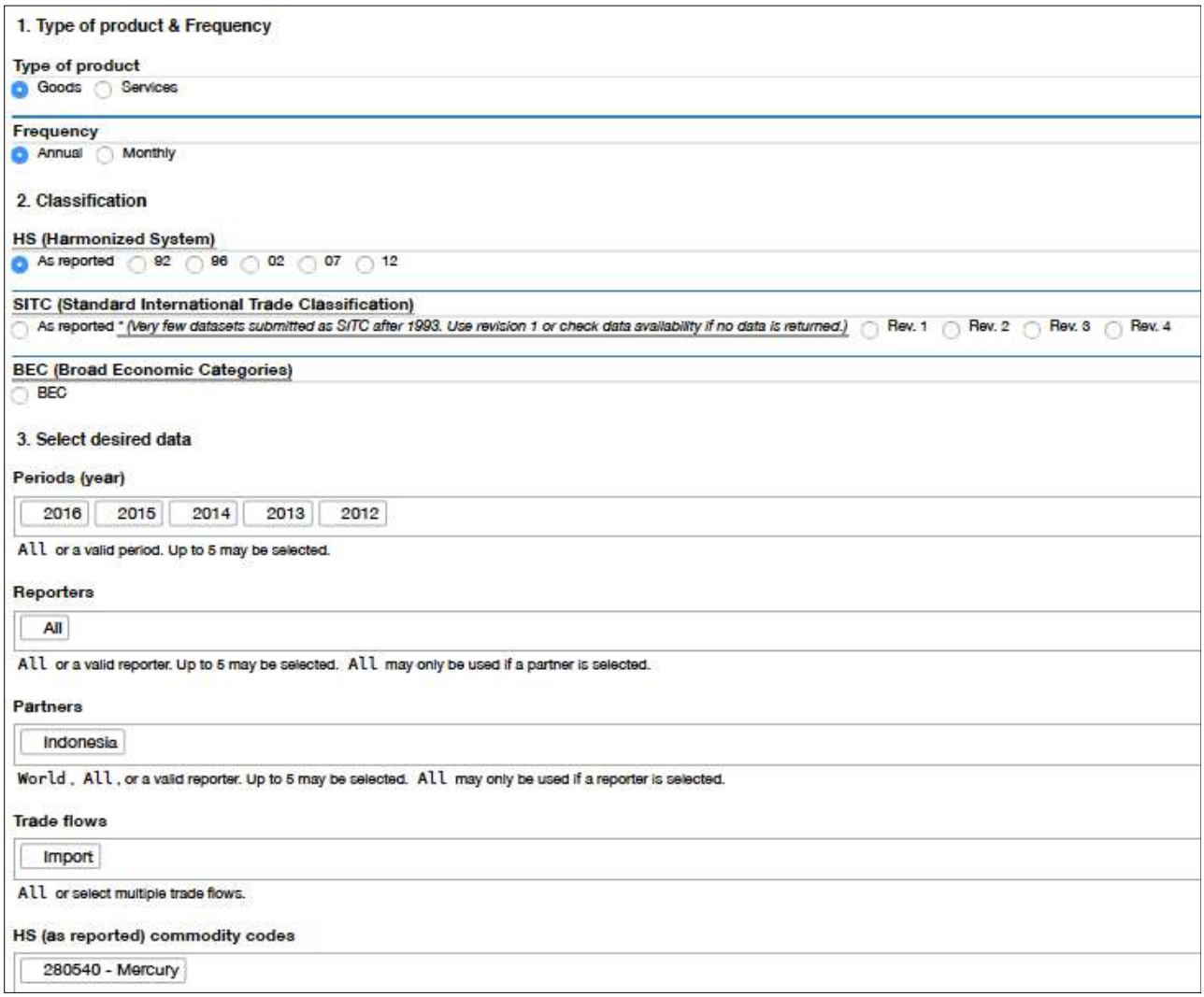
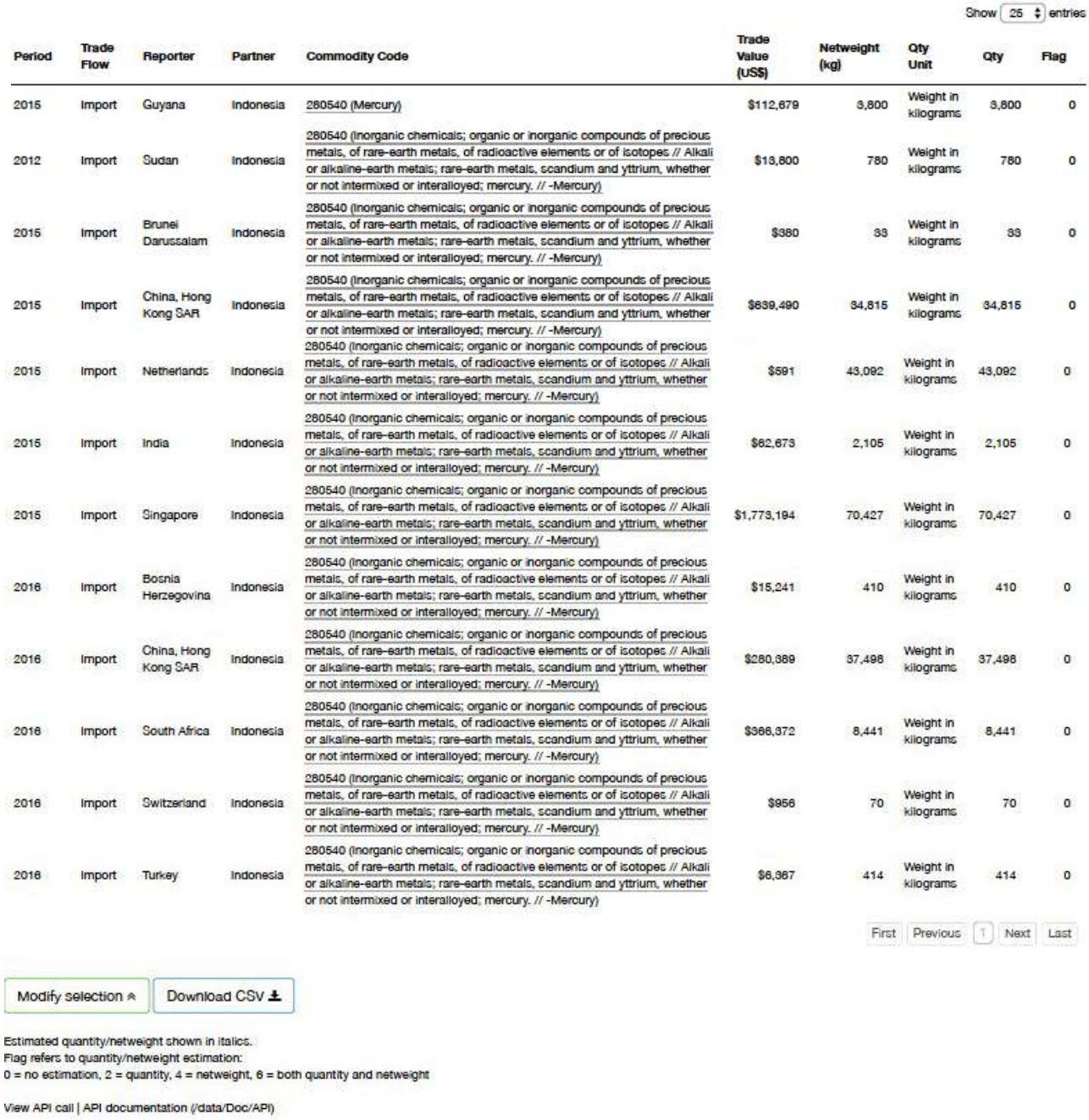



*Figure 4. Mercury import notifications query on the UN Comtrade database platform as reported by all countries as the trade partners of Indonesia.*
*Source: UN Comtrade database.*

The results of the query above displayed as shown in Figure 5.



Show 25 entries

| Period | Trade Flow | Reporter | Partner | Commodity Code | Trade Value (US$) | Netweight (kg) | Qty Unit | Qty | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 2015 | Import | Guyana | Indonesia | 280540 (Mercury) | $112,679 | 3,800 | Weight in kilograms | 3,800 | 0 |
| 2012 | Import | Sudan | Indonesia | 280540 (Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes // Alkali or alkaline-earth metals; rare-earth metals, scandium and yttrium, whether or not intermixed or interalloyed; mercury. // -Mercury) | $13,800 | 780 | Weight in kilograms | 780 | 0 |
| 2015 | Import | Brunei Darussalam | Indonesia | 280540 (Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes // Alkali or alkaline-earth metals; rare-earth metals, scandium and yttrium, whether or not intermixed or interalloyed; mercury. // -Mercury) | $380 | 33 | Weight in kilograms | 33 | 0 |
| 2015 | Import | China, Hong Kong SAR | Indonesia | 280540 (Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes // Alkali or alkaline-earth metals; rare-earth metals, scandium and yttrium, whether or not intermixed or interalloyed; mercury. // -Mercury) | $639,490 | 34,815 | Weight in kilograms | 34,815 | 0 |
| 2015 | Import | Netherlands | Indonesia | 280540 (Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes // Alkali or alkaline-earth metals; rare-earth metals, scandium and yttrium, whether or not intermixed or interalloyed; mercury. // -Mercury) | $591 | 43,092 | Weight in kilograms | 43,092 | 0 |
| 2015 | Import | India | Indonesia | 280540 (Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes // Alkali or alkaline-earth metals; rare-earth metals, scandium and yttrium, whether or not intermixed or interalloyed; mercury. // -Mercury) | $62,673 | 2,105 | Weight in kilograms | 2,105 | 0 |
| 2015 | Import | Singapore | Indonesia | 280540 (Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes // Alkali or alkaline-earth metals; rare-earth metals, scandium and yttrium, whether or not intermixed or interalloyed; mercury. // -Mercury) | $1,773,194 | 70,427 | Weight in kilograms | 70,427 | 0 |
| 2016 | Import | Bosnia Herzegovina | Indonesia | 280540 (Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes // Alkali or alkaline-earth metals; rare-earth metals, scandium and yttrium, whether or not intermixed or interalloyed; mercury. // -Mercury) | $15,241 | 410 | Weight in kilograms | 410 | 0 |
| 2016 | Import | China, Hong Kong SAR | Indonesia | 280540 (Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes // Alkali or alkaline-earth metals; rare-earth metals, scandium and yttrium, whether or not intermixed or interalloyed; mercury. // -Mercury) | $280,389 | 37,498 | Weight in kilograms | 37,498 | 0 |
| 2016 | Import | South Africa | Indonesia | 280540 (Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes // Alkali or alkaline-earth metals; rare-earth metals, scandium and yttrium, whether or not intermixed or interalloyed; mercury. // -Mercury) | $366,372 | 8,441 | Weight in kilograms | 8,441 | 0 |
| 2016 | Import | Switzerland | Indonesia | 280540 (Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes // Alkali or alkaline-earth metals; rare-earth metals, scandium and yttrium, whether or not intermixed or interalloyed; mercury. // -Mercury) | $956 | 70 | Weight in kilograms | 70 | 0 |
| 2016 | Import | Turkey | Indonesia | 280540 (Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes // Alkali or alkaline-earth metals; rare-earth metals, scandium and yttrium, whether or not intermixed or interalloyed; mercury. // -Mercury) | $6,367 | 414 | Weight in kilograms | 414 | 0 |

First Previous 1 Next Last

Modify selection Download CSV

Estimated quantity/netweight shown in italics.
Flag refers to quantity/netweight estimation:
0 = no estimation, 2 = quantity, 4 = netweight, 6 = both quantity and netweight

View API call | API documentation (/data/Doc/API)

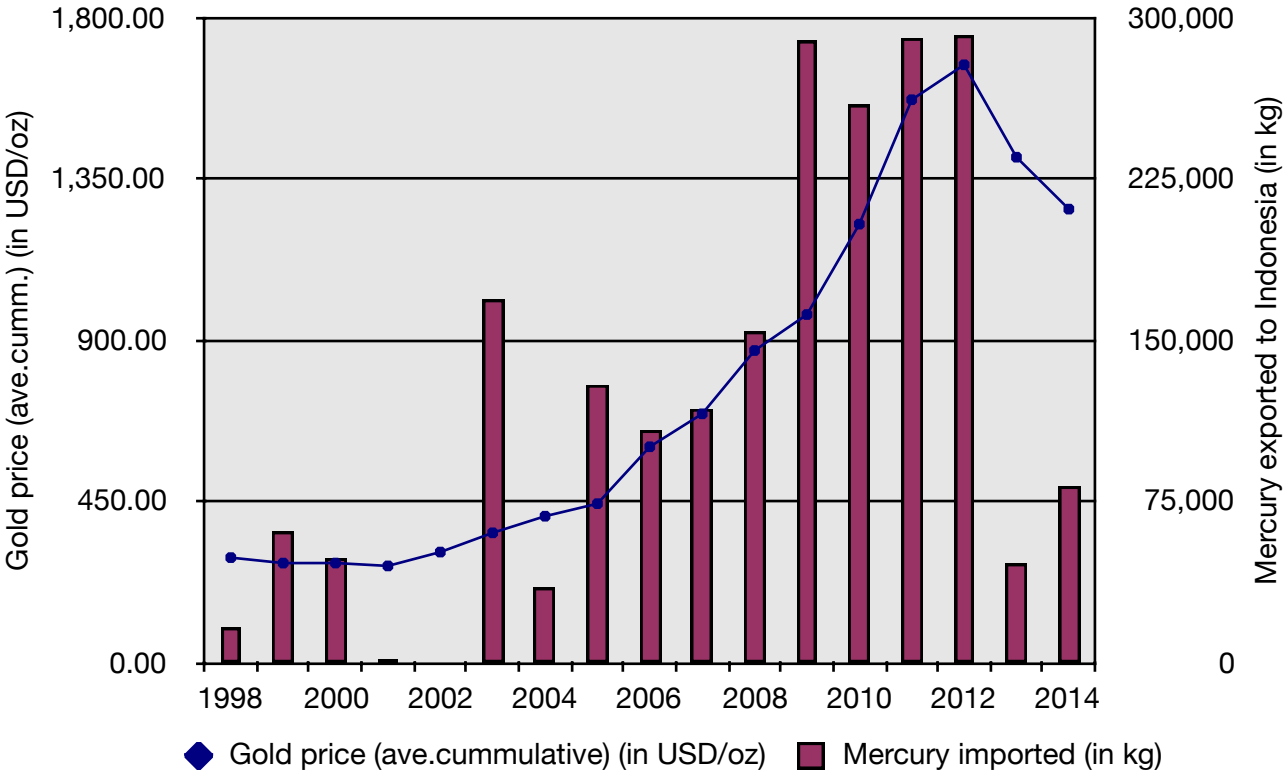
*Figure 5. The notifications of mercury (HS code 280540) imported from Indonesia released by various countries as the trade partner of Indonesia. Source: UN Comtrade database.*

Using the method described above, data obtained from UN Comtrade shown an increased number of mercury exported to Indonesia as reported by various countries took place between 1998 until 2014. Indonesia has been a net mercury importer since 1980s but the earliest data available on the UN Comtrade database for HS code 280540 was from 1989 until to date.

Figure 6 shows the amount of mercury exported to Indonesia based on export notifications of several countries from 1998 to 2014 following the price of gold price in total more than 2000 ton. Based on this database, the total values of mercury exported to Indonesia up to 2014 was about USD 76 million.

In 1998, Indonesia experienced political turmoil and the step-down of Soeharto from his Presidency. Following the event, decentralisation or administration and local autonomous era introduced. The period of 2001-2002 was the beginning of decentralisation era. Many local government busy preparing their new administration system. This situation provided windows and opportunities for ASGM miners and gold prospectors to mine gold in several rich-gold areas of Indonesia.

***Figure 6. Mercury exported by trade partner to Indonesia (in kg) and gold price (in USD/oz) in 1998-2014***




*Source: UN Comtrade and Kitco.com*

Table 1 shows the country of origin and the trade partners of Indonesia. Note that since 2012, the EU has enacted the mercury export ban and the US followed the same mercury export ban effectively since 2013.

**Table 1. Annual amount of mercury exported to Indonesia (in kg), trade values (in USD) and mercury trade partner of Indonesia period of 1998-2014**

| Year | Hg exported by trade partner (in kg) | Trade values (USD) | Trade partners |
|---|---|---|---|
| 1998 | 16,281 | $ 80,921 | Spain |
| 1999 | 61,611 | $ 180,758 | Japan, Spain, USA |
| 2000 | 48,686 | $ 161,048 | Australia, Germany, Japan, Netherlands, Spain, USA |
| 2001 | 1,286 | $ 14,561 | Australia, Japan, Spain, USA |
| 2002 | 466 | $ 10,751 | Australia, China, Germany, Japan, Singapore, USA |
| 2003 | 169,412 | $ 1,182,023 | Japan, Singapore, Sweden, USA |
| 2004 | 34,542 | $ 120,672 | Germany, Singapore, Spain |
| 2005 | 129,441 | $ 2,063,253 | Germany, Indonesia*, Singapore, Spain, USA |
| 2006 | 108,605 | $ 1,656,058 | Belgium, China, Hungary, Japan, Germany, Singapore, Spain, Thailand, USA |
| 2007 | 118,524 | $ 1,823,301 | Germany, Singapore, Spain, USA |
| 2008 | 154,545 | $ 2,526,591 | Germany, Singapore, Spain, USA |
| 2009 | 288,844 | $ 4,008,330 | Germany, Netherlands, Singapore, Spain, USA |
| 2010 | 259,690 | $ 5,964,795 | Japan, Germany, Netherlands, Singapore, Spain, Thailand, USA |
| 2011 | 290,040 | $ 14,916,230 | India, Japan, Germany, Netherlands, Singapore, Spain, Thailand, USA |
| 2012 | 291,553 | $ 31,572,421 | Japan, Germany, Netherlands, Singapore, Spain, Thailand, USA |
| 2013 | 45,885 | $ 4,305,645 | Japan, Singapore |
| 2014 | 82,713 | $ 6,315,207 | Australia, Singapore |
| **TOTAL** | **2,102,124** | **$ 76,902,565** | |

*Source: UN Comtrade*

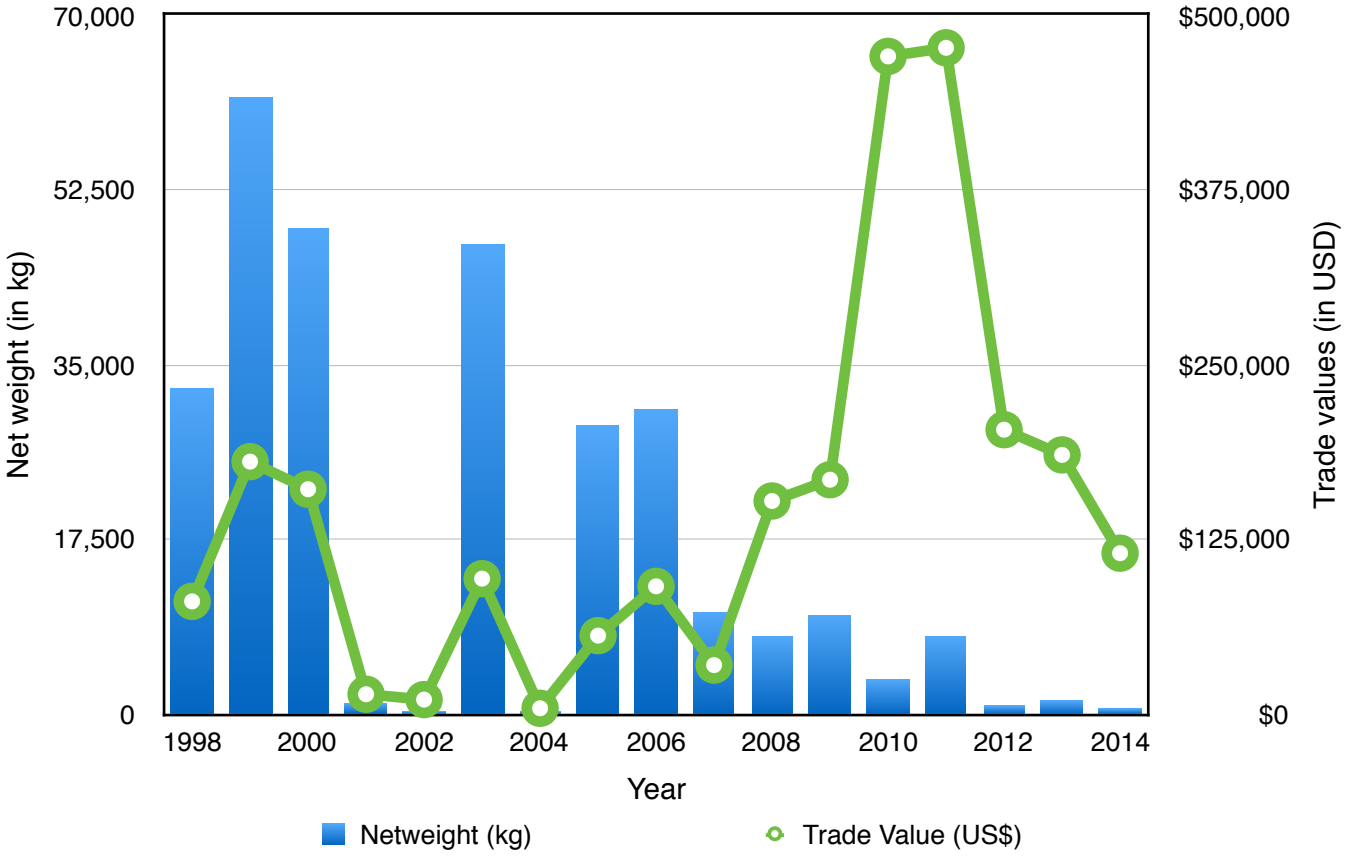
** Unclear data but recorded/captured in UN Comtrade database as export notification from Indonesia to Indonesia, amounted 25,040 kg and trade values USD 5,260.*

Within the period of 1998 until 2014, total amount of mercury exported by Indonesia's trade partners was approx. 2,100 ton and worth approx. USD 77 million. However, the amount of mercury that legally imported by Indonesia was different.

## 7. Mercury imported by Indonesia

In reverse, if look for the HS code 280540 import notification as reported by Indonesia between 1998-2014, a different number will be shown when we compare the export notification of its trade partners, which was much less than the amount declared by the trade partners. Figure 7 shows mercury import notification reported by Indonesia captured in UN Comtrade database.

*Figure 7. Mercury imported by Indonesia 1998-2014 (in kg) and trade values (in USD)*




*Source: UN Comtrade*

Table 2 shows the amount of mercury imported in kg and the trade values (in USD) from trade partners between 1998 until 2014 based on Indonesia's import notification captured in UN Comrade database. In contrary, to the export notifications of Indonesia's trade partners, the amount of mercury imported by Indonesia period 1998-2014 was approx. 277 ton (vs 2,100 ton see Table 1) with trade values of USD 2.5 million (vs USD 77 million in Table 1).

*Table 2. Amount of mercury imported (in kg) and values of mercury trade (in USD), a as reported by Indonesia from trade partners in 1998-2014*

| Year | Qty (kg) | Trade Value (US$) | Trade Partners |
|---|---|---|---|
| 1998 | 16,281 | $ 80,921 | Areas, nes, Spain |
| 1999 | 61,611 | $ 180,758 | China, France, Japan, Philippines, Spain, USA |
| 2000 | 48,686 | $ 161,048 | Australia, Germany, Japan, Netherlands, Spain, USA |
| 2001 | 1,286 | $ 14,561 | Australia, Japan, Spain, USA |
| 2002 | 466 | $ 10,751 | Australia, China, Germany, Japan, Singapore, USA |
| 2003 | 47,100 | $ 97,165 | Japan, Singapore, Sweden. USA |
| 2004 | 356 | $ 4,548 | Germany, Spain |
| 2005 | 28,866 | $ 56,458 | Germany, Indonesia*, Spain, USA |
| 2006 | 30,630 | $ 91,671 | Belgium, China, Germany, Hungary, Japan, Spain |
| 2007 | 10,303 | $ 35,402 | Germany, Singapore, Spain, USA |
| 2008 | 7,791 | $ 152,641 | Germany, Singapore, Spain, USA |
| 2009 | 9,928 | $ 167,838 | Germany, Netherlands, Spain, USA |
| 2010 | 3,494 | $ 470,293 | Germany, Japan, Netherlands, Spain, Thailand, USA |
| 2011 | 7,862 | $ 476,411 | Germany, India, Japan, Netherlands, Spain, Thailand, USA |
| 2012 | 994 | $ 203,582 | Germany, Japan, Netherlands, Thailand, USA |
| 2013 | 1,320 | $ 185,569 | Japan, USA |
| 2014 | 732 | $ 115,356 | Germany, USA |
| **Total** | **277,706** | **$ 2,504,973** | |

*Source: UN Comtrade database*
** Indonesia imported mercury from Indonesia amounted 25,040 kg and trade values USD 5,260.*

The only possible explanation for the import data of 2005 by Indonesia was the importation of mercury recovered from waste collected from the oil and gas sector through a profit-sharing mechanism with waste processor(s) in Europe.[6]

In 2013, the Ministry of Trade analysed the discrepancy between the data provided in the *Badan Pusat Statistik* (BPS) and compare it with data provided by GTIS (the Global Trade Information System). In 2012, BPS recorded the imported mercury was only 0.99 metric ton while the GTIS data recorded the mercury exported from the world to Indonesia was 366 metric ton. These figures consistent with data obtained from UN Comtrade database.

[6] *Notes from the discussion of BaliFokus team with SKK MIGAS in 2012 from mercury storage project*

***Table 3. Discrepancies of mercury export notifications and import notifications of trade partners and Indonesia 1998-2014 (for HS code 280540)***

| Year (1) | Mercury export notification reported by trade partners | | Mercury import notification reported by Indonesia | | Discrepancies | |
|---|---|---|---|---|---|---|
| | (2) Hg exported by trade partner (in kg) | (3) Trade values (USD) | (4) Netweight (kg) | (5) Trade Value (US$) | (4) - (2) Netweight (kg) | (5) - (3) Trade Value (US $) |
| 1998 | 16,281 | $ 80,921 | 16,281 | $ 80,921 | 0 | $ 0 |
| 1999 | 61,611 | $ 180,758 | 61,611 | $ 180,758 | 0 | $ 0 |
| 2000 | 48,686 | $ 161,048 | 48,686 | $ 161,048 | 0 | $ 0 |
| 2001 | 1,286 | $ 14,561 | 1,286 | $ 14,561 | 0 | $ 0 |
| 2002 | 466 | $ 10,751 | 466 | $ 10,751 | 0 | $ 0 |
| 2003 | 169,412 | $ 1,182,023 | 47,100 | $ 97,165 | -122,312 | $ (1,084,858) |
| 2004 | 34,542 | $ 120,672 | 356 | $ 4,548 | -34,186 | $ (116,124) |
| 2005 | 129,441 | $ 2,063,253 | 28,866 | $ 56,458 | -100,575 | $ (2,006,795) |
| 2006 | 108,605 | $ 1,656,058 | 30,630 | $ 91,671 | -77,975 | $ (1,564,387) |
| 2007 | 118,524 | $ 1,823,301 | 10,303 | $ 35,402 | -108,221 | $ (1,787,899) |
| 2008 | 154,545 | $ 2,526,591 | 7,791 | $ 152,641 | -146,754 | $ (2,373,950) |
| 2009 | 288,844 | $ 4,008,330 | 9,928 | $ 167,838 | -278,916 | $ (3,840,492) |
| 2010 | 259,690 | $ 5,964,795 | 3,494 | $ 470,293 | -256,196 | $ (5,494,502) |
| 2011 | 290,040 | $ 14,916,230 | 7,862 | $ 476,411 | -282,178 | $ (14,439,819) |
| 2012 | 291,553 | $ 31,572,421 | 994 | $ 203,582 | -290,559 | $ (31,368,839) |
| 2013 | 45,885 | $ 4,305,645 | 1,320 | $ 185,569 | -44,565 | $ (4,120,076) |
| 2014 | 82,713 | $ 6,315,207 | 732 | $ 115,356 | -81,981 | $ (6,199,851) |
| **TOTAL** | **2,102,124** | **$ 76,902,565** | **277,706** | **$ 2,504,973** | **-1,824,418** | **$ (74,397,592)** |

*Source: UN Comtrade database*

The Ministry of Trade had identified the differences between the volume of mercury imports of Indonesia from the Central Statistics Agency (BPS) and from the Global Trade Information Services, Inc. with the export data for the same product from Indonesia to partner countries shown in Table 4.

***Table 4. Discrepancy Data Import Indonesia (BPS) with Export Multiple Partner Countries to Indonesia (GTIS) 2008-2013, in Tons***

| Country | Import volume of Indonesia from the World (BPS) (in ton) | | | | | | | Export volume of partner country to Indonesia (in ton) | | | | | | | Discrepancy of import data of Indonesia (BPS) from various countries (in ton) | | | | | | | Percentage of discrepancy vs BPS data (2012) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2008 | 2009 | 2010 | 2011 | 2012 | Jan-Aug | | 2008 | 2009 | 2010 | 2011 | 2012 | Jan-Aug | | 2008 | 2009 | 2010 | 2011 | 2012 | Jan-Aug | | |
| | | | | | | 2012 | 2013 | | | | | | 2012 | 2013 | | | | | | 2012 | 2013 | |
| World | 7.79 | 9.93 | 3.49 | 7.85 | 0.99 | 0.70 | 1.01 | 156.00 | 301.00 | 279.00 | 285.00 | 366.00 | 295.00 | 366.00 | (148.21) | (291.07) | (275.51) | (277.15) | (365.01) | (294.30) | (364.99) | (36,870%) |
| USA | 0.00 | 0.03 | 0.40 | 0.73 | 0.50 | 0.39 | 0.88 | 0.00 | 0.00 | 0.00 | 0.00 | 75.00 | 75.00 | 252.00 | 0.00 | 0.03 | 0.40 | 0.73 | (74.50) | (74.61) | (251.12) | (14,900%) |
| Japan | 0.00 | 0.00 | 0.00 | 0.05 | 0.08 | 0.08 | 0.13 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | (2.00) | (1.00) | (1.00) | (0.95) | (0.92) | 0.08 | 0.13 | (1,150%) |
| Thailand | 0.00 | 0.00 | 0.94 | 0.03 | 0.10 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.94 | 0.03 | 0.10 | 0.10 | 0.00 | 100% |
| Singapore | 2.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 147.00 | 279.00 | 256.00 | 282.00 | 291.00 | 220.00 | 14.00 | (144.60) | (279.00) | (256.00) | (282.00) | (291.00) | (220.00) | (14.00) | |
| India | 0.00 | 0.00 | 0.00 | 4.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.13 | 0.00 | 0.00 | 0.00 | |
| Netherlands | 0.00 | 4.08 | 0.62 | 0.73 | 0.12 | 0.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.08 | 0.62 | 0.73 | 0.12 | 0.12 | 0.00 | 100% |
| Germany | 1.60 | 3.78 | 0.03 | 1.03 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | (0.40) | 1.78 | (1.97) | 1.03 | 0.00 | 0.00 | 0.00 | 0% |
| Spain | 3.79 | 2.03 | 1.45 | 1.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.79 | 2.03 | 1.45 | 1.14 | 0.00 | 0.00 | 0.00 | |
| EU27 (External trade) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.00 | 19.00 | 20.00 | 3.00 | 0.00 | 0.00 | 0.00 | (5.00) | (19.00) | (20.00) | (3.00) | 0.00 | 0.00 | 0.00 | |
| Total | 15.58 | 19.85 | 6.93 | 15.69 | 1.79 | 1.39 | 2.02 | 312.00 | 602.00 | 558.00 | 571.00 | 733.00 | 590.00 | 632.00 | (296.42) | (582.15) | (551.07) | (555.31) | (731.21) | (588.61) | (629.98) | |

*Source: Analysed by the Centre for the Study of Foreign Trade, Ministry of Trade, 2014. Data taken from BPS Indonesia and GTIS.*

From Table 4, it was identified that mercury imported by Indonesia from the world in 2008 based on the GTIS data showed a big difference compared to the BPS data about 20 times (BPS 7.79 tons, GTIS 156 tons). The volume of mercury imported in 2009 according to BPS data was increased about 27.47% or 9.93 tonnes, while the import data showed in GTIS was about 291.07 tons.

## 8. Causes of Data Discrepancies

Differences import data recording as presented in Table 3 are caused by differences in the method to identify trading-partners where Indonesia's current system only keep records of imports by country of origin. The current system does not record the application and the presence of a transit consignment of goods in the third country before the ship carrying the goods to the export destinations (destination country) as implemented by the other partner countries (shown in Table 5).

***Table 5. Trading Partner Identification Acknowledgement***

| | Partner countries | Indonesia |
|---|---|---|
| For Import | Country of origin + Country of consignment | Country of origin |
| For Export | Country of last-known destination + Country of consignment | Country of last-known destination |

*Source: Direktur Jenderal Bea Cukai - Badan Pusat Statistik - BI*

For example, in 2012 the Central Bureau of Statistics of Indonesia only kept the records of mercury imported from the United States about 0.69 tons and did not keep the records of the imported mercury from Singapore. In contrast, in 2012, the United States recorded mercury exports to Indonesia about 75 tonnes and Singapore recorded the same products exported to Indonesia amounted 291 tonnes (GTIS, 2013) as presented in Table 4.

The gap analysis report explored further how other countries keep their import-export notification by looking at the mercury export-import of the US and Singapore. Data obtained from the U.S. Department of Commerce, Bureau of Census (2013) noted no mercury exports to Singapore in 2012 (Table 6).

However, Table 7 shows that Singapore imported product mercury from the United States in 2012 amounted to 457 tonnes (International Enterprise Singapore, 2013). This indicates that differences in recording methodologies as factors causing differences in the import data - did not match with other trade database references.

Another factor that allegedly can also cause differences in the data of Indonesia's foreign trade was due to the illegal importation of goods. This is clarified by the Surveyor's Report (*Laporan Surveyor/LS*) over the product VPTI mercury recorded by KSO (Joint Operation) in Table 8 who conducted the verification of the technical origin of importation/VPTI *(Verifikasi Penelusuran Teknis Impor)* of mercury (HS Code 280540) from Japan as the country of origin, that has a lower import volumes than those recorded by the Centre of Statistic Agency of Indonesia in Table 4.

Annex 3 of this report provides a brief mercury export report from major exporting countries such as Spain, Singapore, China, Germany, South Africa and the UK for 2012-2016. Data is downloaded from the UN Comrade database in April 2017.

***Table 6. Mercury Exported from United States of America to destination countries within 2008 to 2012, Jan-Aug 2012 and 2013 (in Tonnes)***

| No. | Trade partners | Calendar year | | | | | Calendar year | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2008 | 2009 | 2010 | 2011 | 2012 | 08/2012 | 08/2013 | % Change |
| | World | 705 | 681 | 461 | 133 | 103 | 100 | 359 | 257.69 |
| 1 | Indonesia | 0 | 0 | 0 | 0 | 75 | 75 | 352 | 368.97 |
| 2 | Nigeria | 0 | 0 | 14 | 0 | 18 | 18 | 0 | -100.00 |
| 3 | Peru | 13 | 110 | 38 | 0 | 5 | 5 | 0 | -100.00 |
| 4 | Canada | 7 | 2 | 6 | 96 | 4 | 2 | 0 | -100.00 |
| 5 | South Africa | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 104.55 |
| 6 | Germany | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -100.00 |
| 7 | France | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n/a |
| 8 | Korea, South | 0 | 7 | 0 | 0 | 0 | 0 | 0 | -100.00 |
| 9 | Nicaragua | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -100.00 |
| 10 | Guatemala | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 331.43 |
| 11 | Switzerland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -100.00 |
| 12 | Singapore | 0 | 16 | 0 | 0 | 0 | 0 | 0 | n/a |
| 13 | Equatorial Guinea | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -100.00 |
| 14 | Hong Kong | 3 | 0 | 0 | 0 | 0 | 0 | 0 | n/a |
| 15 | Costa Rica | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n/a |
| 16 | Brazil | 4 | 0 | 0 | 0 | 0 | 0 | 0 | n/a |
| 17 | Italy | 1 | 0 | 0 | 0 | 0 | 0 | 0 | n/a |
| 18 | Chile | 0 | 2 | 0 | 0 | 0 | 0 | 0 | n/a |
| 19 | Kuwait | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n/a |
| 20 | United Kingdom | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n/a |
| 21 | India | 28 | 105 | 14 | 0 | 0 | 0 | 0 | n/a |
| 22 | Australia | 10 | 21 | 31 | 11 | 0 | 0 | 0 | n/a |
| 23 | Netherlands | 535 | 345 | 295 | 0 | 0 | 0 | 0 | n/a |
| 24 | St. Helena | 0 | 2 | 0 | 2 | 0 | 0 | 0 | n/a |
| 25 | Cayman Islands | 0 | 0 | 0 | 0 | 0 | 0 | 1 | n/a |
| 26 | Guyana | 7 | 4 | 16 | 22 | 0 | 0 | 0 | n/a |
| 27 | Mexico | 0 | 10 | 0 | 0 | 0 | 0 | 0 | n/a |
| 28 | Spain | 0 | 0 | 10 | 0 | 0 | 0 | 0 | n/a |
| 29 | Colombia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n/a |
| 30 | Turkey | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n/a |
| 31 | Austria | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n/a |
| 32 | Vietnam | 97 | 41 | 36 | 2 | 0 | 0 | 0 | n/a |

*Source of data: US Department of Commerce, Bureau of Census. Analisis Diskrepansi Data Perdagangan Produk Air Raksa (Merkuri) (HS2805.40.00.00) Direktur Jendral Kerjasama Perdagangan Internasional, Kementerian Perdagangan Republik Indonesia. 2014.*

| Table 7. Import of mercury by country of origin by Singapore from 2008 to 2012, Jan-Aug 2012 and 2013 (in Tonnes) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| No. | Trade partners | Calendar year | | | | | Calendar year | | |
| | | 2008 | 2009 | 2010 | 2011 | 2012 | 08/2012 | 08/2013 | % Change |
| | World | 179 | 292 | 332 | 567 | 609 | 322 | 301 | -6.63 |
| 1 | United States | 42 | 72 | 23 | 275 | 457 | 195 | 93 | -52.24 |
| 2 | Belize | 0 | 0 | 0 | 18 | 49 | 44 | 21 | -52.05 |
| 3 | Russia | 0 | 0 | 0 | 0 | 40 | 40 | 104 | 159.74 |
| 4 | Kyrgystan | 0 | 0 | 0 | 0 | 26 | 26 | 0 | -100.00 |
| 5 | Japan | 38 | 54 | 39 | 23 | 17 | 9 | 9 | 5.50 |
| 6 | Switzerland | 0 | 0 | 0 | 19 | 4 | 0 | 19 | n/a |
| 7 | Thailand | 0 | 0 | 6 | 0 | 4 | 0 | 0 | n/a |
| 8 | Spain | 78 | 67 | 106 | 98 | 3 | 3 | 0 | -100.00 |
| 9 | Peru | 0 | 0 | 7 | 0 | 3 | 0 | 0 | n/a |
| 10 | Mexico | 0 | 0 | 0 | 0 | 3 | 3 | 0 | -100.00 |
| 11 | India | 0 | 0 | 0 | 92 | 2 | 2 | 0 | -100.00 |
| 12 | China | 0 | 0 | 0 | 21 | 0 | 0 | 0 | -100.00 |
| 13 | Germany | 21 | 10 | 23 | 0 | 0 | 0 | 0 | n/a |
| 14 | Hong Kong | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n/a |
| 15 | Brunei Darussalam | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n/a |
| 16 | Netherlands | 0 | 88 | 67 | 2 | 0 | 0 | 0 | n/a |
| 17 | Other Europe, NES | 0 | 0 | 12 | 0 | 0 | 0 | 0 | n/a |
| 18 | Other Latin America, NES | 0 | 0 | 8 | 0 | 0 | 0 | 0 | n/a |
| 19 | Belgium | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n/a |
| 20 | Poland | 0 | 0 | 0 | 17 | 0 | 0 | 0 | n/a |
| 21 | Taiwan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n/a |
| 22 | Turkey | 0 | 0 | 0 | 0 | 0 | 0 | 44 | n/a |
| 23 | Ukraine | 0 | 0 | 24 | 3 | 0 | 0 | 11 | n/a |
| 24 | United Kingdom | 0 | 0 | 17 | 0 | 0 | 0 | 0 | n/a |
| *Sumber data: International Enterprise Singapore* | | | | | | | | | |

*Source: Analisis Diskrepansi Data Perdagangan Produk Air Raksa (Mercury) (HS 2805.40.00.00) Direktur Jendral Kerjasama Perdagangan Internasional, Kementerian Perdagangan Republik Indonesia. 2014.*

| Table 8. Summary of Surveyor Report regarding VPTI mercury (HS 280540) (in ton) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Country of origin | Loading port | Unloading port | 2011 | | 2012 | | 2013 | | Total | |
| | | | Volume (in ton) | Values (in USD) | Volume (in ton) | Values (in USD) | Volume (in ton) | Values (in USD) | Volume (in ton) | Values (in USD) |
| Japan | Narita | Soekarno-Hatta | 0.08 | 4,071.76 | 0.17 | 8,116.47 | 0.06 | 2,597.27 | 0.31 | 14,785.50 |

*Source: Kerjasama Operasi Sucofindo - Surveyor Indonesia (KSO SCISI) data processed by Centre for International Trade Assessment, Ministry of Trade of Indonesia (Pusat Kajian Perdagangan Luar Negri, Kementerian Perdagangan Indonesia)*

## 9. Mercury exported from Indonesia 2015-2016

In 2015-2016, Indonesia became mercury exporter (HS code 280540) to some countries, mainly illegally, because the transaction is not recorded in the Central Bureau of Statistics report. The following data were obtained from the UN Comtrade database by searching for export notifications that Indonesia reported to trading partners in 2015 and 2016 presented in Table 9 and Table 10 respectively.

| | Table 9. Mercury (HS 280540) export notification from Indonesia and trade value (in USD) to partner countries by 2015 | | | | | |
|---|---|---|---|---|---|---|
| Year | Trade flow | Reporter | Trade partners | Netweight (kg) | Trade Value (US$) | |
| 2015 | Export | Indonesia | China | 211 | $ | 1,918.00 |
| 2015 | Export | Indonesia | Eritrea | 3,105 | $ | 89,378.00 |
| 2015 | Export | Indonesia | China, Hong Kong SAR | 105,053 | $ | 1,505,060.00 |
| 2015 | Export | Indonesia | Malaysia | 184 | $ | 1,010.00 |
| 2015 | Export | Indonesia | Netherlands | 36,896 | $ | 600.00 |
| 2015 | Export | Indonesia | Papua New Guinea | 25 | $ | 3,875.00 |
| 2015 | Export | Indonesia | Poland | 62 | $ | 20,451.00 |
| 2015 | Export | Indonesia | Timor-Leste | 450 | $ | 420.00 |
| 2015 | Export | Indonesia | India | 6,417 | $ | 64,481.00 |
| 2015 | Export | Indonesia | Singapore | 40,828 | $ | 485,951.00 |
| 2015 | Export | Indonesia | Viet Nam | 19,175 | $ | 267,525.00 |
| 2015 | Export | Indonesia | Switzerland | 63,422 | $ | 124,575.00 |
| 2015 | Export | Indonesia | Thailand | 24 | $ | 63.00 |
| 2015 | Export | Indonesia | United Arab Emirates | 7,863 | $ | 37,931.00 |
| 2015 | Export | Indonesia | USA | 52 | $ | 12,761.00 |
| | | **TOTAL** | | **283,767** | **$** | **2,615,999** |

*Source: UN Comtrade database, accessed by 30 April 2017.*

*Table 10. Mercury export notification (HS 280540) from Indonesia with trade partners and trade values (in USD) 2016*

| Year | Trade flow | Reporter | Trade partners | Netweight (kg) | Trade Value (US$) |
|---|---|---|---|---|---|
| 2016 | Export | Indonesia | Colombia | 5,175 | $ 155,250 |
| 2016 | Export | Indonesia | China, Hong Kong SAR | 51,160 | $ 584,471 |
| 2016 | Export | Indonesia | Japan | 368,830 | $ 2,128 |
| 2016 | Export | Indonesia | Pakistan | 3,416 | $ 70,701 |
| 2016 | Export | Indonesia | Panama | 3,105 | $ 55,890 |
| 2016 | Export | Indonesia | Papua New Guinea | 90 | $ 454 |
| 2016 | Export | Indonesia | India | 67,540 | $ 1,186,206 |
| 2016 | Export | Indonesia | Singapore | 110,405 | $ 980,760 |
| 2016 | Export | Indonesia | Viet Nam | 22,705 | $ 355,805 |
| 2016 | Export | Indonesia | South Africa | 1,035 | $ 31,050 |
| 2016 | Export | Indonesia | Thailand | 1,035 | $ 14,490 |
| 2016 | Export | Indonesia | United Arab Emirates | 45,944 | $ 682,180 |
| **Total** | | | | **680,440** | **$ 4,119,385** |

*Source: UN Comtrade database, accessed by 30 April 2017.*

Table 11 below presents a summary of mercury exports from Indonesia 2015-2016.

***Table 11. Summary of mercury export notifications (HS 280540) from Indonesia and trade values (USD) reported in 2015-2016***

| Year | Trade partners | Net weight (kg) | Trade value (USD) |
|---|---|---|---|
| 2015 | China, Eritrea, China Hong Kong SAR, Malaysia, Netherlands, Papua New Guinea, Poland, Timor-Leste, India, Singapore, Viet Nam, Switzerland, Thailand, United Arab Emirates, USA | 283,767 | $ 2,615,999.00 |
| 2016 | Colombia, China, Hong Kong SAR, Japan, Pakistan, Panama, Papua New Guinea, India, Singapore, Viet Nam, South Africa, Thailand, United Arab Emirates | 680,440 | $ 4,119,385.00 |
| **Total** | | 964,207 | $ 6,735,384.00 |

*Source: UN Comtrade database, accessed by 30 April 2017*

The Annex 2 of this report provides some images and photos downloaded from various social media platforms as promotion materials and mercury export service to send them to Dubai, etc. Although on several occasions in 2015-2016, media covered the stories of the victories made by the Indonesia Customs in preventing the illegal exportation of cinnabar

ore and liquid mercury abroad, where officials from the MoEF (KLHK) also provide firm statements of the crack down, delivery transactions to country and import notices reported by other partner countries stated otherwise.

Until now, in Indonesia there is no ban on mercury exports (as commodity with HS code 280540). Permendag No.75/2014 and previous regulations only prohibit the import, trade and use of mercury in the context of procurement.

There is no official explanation why the export notification from Indonesia is unavailable but there are several possible explanations :

1) Some mercury online traders offer their services to export mercury to other countries. Several countries released their mercury import notification from Indonesia immediately as soon as the business settled and the order delivered. The problem lies on the paperworks from the Indonesian exporter or customs;
2) Delayed notification or reporting from Indonesia side; or
3) Exportation of mercury from Indonesia were done under the table.

With the trade volume between 280 to 680 tons of mercury being exported annually and trading value between USD 2.6 million to USD 4 million plus domestic mercury trade of more than 1000 tons per year with transaction value of more than USD 10 million (about Rp 133 billion), there is considerable risk and potential for mercury contamination. Once the mercury comes out of the bottle and is released into the environment, it will be difficult to catch them again. The legacy of the gold rush in California in the 1840s left mercury contamination in the environment for more than 150 years and is still detected today (Alpers, Hunerlach et al. 2005).

A recent study by Trasande et.al. (Trasande, DiGangi et al. 2016) stated that mining communities in Indonesia are losing more than 12 – 24 billion rupiah (approx. $961,000 - $1,630,000) in earning potential every year due to mercury contamination. The report estimates economic losses due to IQ damage from mercury pollution in Indonesia and 14 other countries.

Therefore, any explanation of this existing hypothesis needs to be further investigated to prevent further losses from losing potential state revenues and losses to the environment, health, national security, and other socio-economic factors.

## 10.Mercury records of imports and exports from trading partners and other countries

As a comparison of mercury data imported and exported from several countries, conducted a search using the UN Comtrade database for the period of 2012-2016. These countries import and export large quantities of mercury every year. From the ASEAN region, Singapore and Malaysia were the fantastic mercury importers and exporters, although both countries has no big mercury-based industry such as the Artisanal and Small Scale Gold Mining industry (ASGM) like in Indonesia and the Philippines or the chlor-alkali industry.

***Table 12. Major importers of mercury (HS 280540) period of 2012-2016***

| No. | Reporter | Import | |
|---|---|---|---|
| | | Net weight (ton) | Trade Value (Million US$) |
| 1 | Singapore | 1,227.92 | $ 86.940 |
| 2 | India | 886.61 | $ 46.930 |
| 3 | Malaysia | 623.35 | $ 3.705 |
| 4 | China | 590.42 | $ 41.840 |
| 5 | USA | 386.24 | $ 8.050 |
| 6 | Netherlands | 359.11 | $ 12.592 |
| 7 | South Africa | 187.68 | $ 11.969 |
| 8 | Spain | 147.45 | $ 6.580 |
| 9 | United Arab Emirates | 138.00 | $ 10.698 |
| 10 | Germany | 125.59 | $ 4.170 |
| 11 | UK | 81.18 | $ 0.550 |
| 12 | Mexico | 32.77 | $ 1.530 |
| 13 | Japan | 15.00 | $ 0.056 |
| 14 | Switzerland | 8.32 | $ 0.094 |
| 15 | Indonesia | 3.78 | $ 0.620 |

*Source: UN Comtrade database*

***Table 13. Major exporters of mercury (HS 280540) period 2012-2016***

| No. | Country | Export | |
|---|---|---|---|
| | | Net weight (ton) | Trade value (mio USD) |
| 1 | Spain | 4,091.95 | $ 15.76 |
| 2 | Mexico | 1,403.84 | $ 86.10 |
| 3 | Singapore | 1,131.96 | $ 99.68 |
| 4 | Indonesia | 942.25 | $ 6.05 |
| 5 | Netherlands | 634.21 | $ 26.20 |
| 6 | China | 531.44 | $ 49.72 |
| 7 | Switzerland | 516.00 | $ 9.64 |
| 8 | United Arab Emirates | 487.70 | $ 37.35 |
| 9 | Japan | 460.46 | $ 23.53 |
| 10 | Germany | 308.01 | $ 15.87 |
| 11 | India | 272.17 | $ 8.68 |
| 12 | UK | 57.42 | $ 0.31 |
| 13 | USA | 52.42 | $ 0.78 |
| 14 | Malaysia | 30.13 | $ 1.10 |
| 15 | South Africa | 13.29 | $ 0.67 |

*Source: UN Comtrade database*

After the European Union and the United States imposed a ban on mercury exports (HS 280540) in 2012 and 2013, Singapore became a mercury trade hub in Asia and in the world. In the last 5 years (2012-2016), Singapore imported mercury almost 1230 tons and worth about USD 87 million.

Table 12 shows the 15 largest mercury importing countries and Table 13 shows the 15 largest exporters between 2012 until 2016. From the two tables above, it is shows that based on import declarations from 15 countries, Singapore is the largest mercury importer in the world even though Singapore has no mercury-based industries. India in second place has a chlor-alkaline industry that needs mercury as a catalyst of the industrial process and possibly for gold purification noting that India is one of the largest gold-consuming countries in the world. Meanwhile, Malaysia within the period of 2012-2016, does not have a large mercury-based industry. Malaysia could be of the largest importers for mercury stockpiling. Meanwhile, although China owns the cinnabar primary mine and says it will not be shut down due to the huge demand of China's PVC industry, it still imports mercury from other countries.

For mercury exports, during the period 2012-2016, Spain was the largest exporter although Almaden cinnabar mining site had been officially closed in 2004 (Garcia Gomez, Caballero Klink et al. 2007). Mexico, Singapore and Indonesia as well as the Netherlands ranks next as the global mercury exporters. Mexico and Indonesia are the 'recent mercury players' and do not have a long history of mercury production before.

However, Mexico and Indonesia are both countries with large numbers of small-scale gold mining (ASGM) sites that use mercury. In one of the side events regarding mercury trading organised by IPEN and the Zero Mercury Working Group at the 6th inter-governmental negotiation committee (INC6) of mercury treaty in Bangkok 2014, a Mexican representative stated that they currently allowing 5000 small-scale miners to exploit the potential of cinnabar to gain economic benefits from high demand of mercury in the Southern hemisphere especially from Mexico's neighbouring countries that host ASGM practices. Meanwhile, Indonesia, starting in 2015 became the largest mercury producer and exporter in the Asia-Pacific region. Like the small-scale gold mining, all mercury or cinnabar-mining related activities in Indonesia are also illegal and have no license or permit.

In 2016, the landscape of importers and exporters of global mercury is changing. Table 14 and Table 15 show mercury volumes and trade values based on the report of 15 countries downloaded from the UN Comtrade database platform.

Table 14. Major exporters of mercury in 2016 (HS 280540)

| No. | Reporter | Export | | Destination country |
|---|---|---|---|---|
| | | Net weight (ton) | Trade value (mio USD) | |
| 1 | Indonesia | 634.50 | $ 3.44 | China, Hong Kong SAR, Colombia, India, Japan, Pakistan, Panama, Papua New Guinea, Singapore, South Africa, Thailand, United Arab Emirates, Viet Nam |
| 2 | Mexico | 266.70 | $ 9.65 | Argentina, Bolivia (Plurinational State of), Brazil, Chile, Colombia, Cuba, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Spain |
| 3 | Japan | 146.77 | $ 3.61 | Brazil, Myanmar, Colombia, Rep. of Korea, Other Asia, nes, Pakistan, Peru, India, Singapore, Viet Nam, Egypt |
| 4 | Singapore | 108.30 | $ 3.00 | Brazil, Colombia, Rep. of Korea, India, Indonesia, Togo, Kenya, Papua New Guinea, South Africa |
| 5 | India | 47.97 | $ 1.63 | Bangladesh, Bolivia (Plurinational State of), Brazil, Myanmar, Sri Lanka, Chile, China, Colombia, Cuba, France, Ghana, Guyana, Italy, Kenya, Kuwait, Morocco, Singapore, Spain, Togo, Turkey, Yemen, Areas, nes |
| 6 | United Kingdom | 36.76 | $ 0.12 | Belgium, China, Denmark, Germany, Ireland, Italy, Kuwait, India |
| 7 | Switzerland | 29.12 | $ 1.46 | Australia, Austria, Brazil, Estonia, France, Germany, India, Iran, Israel, Italy, Côte d'Ivoire, Japan, Rep. of Korea, Morocco, Norway, Portugal, Serbia, Singapore, South Africa, Spain, Tunisia, Turkey, United Kingdom, USA |
| 8 | China, Hong Kong SAR | 17.91 | $ 1.02 | Brazil, India |
| 9 | Germany | 1.85 | $ 0.18 | Austria, Belgium, Bulgaria, Czechia, Estonia, Finland, France, Greece, Hungary, Ireland, Italy, Netherlands, Poland, Portugal, Romania, Singapore, Slovakia, Slovenia, Spain, Sweden, Tunisia, United Kingdom, United Rep. of Tanzania |
| 10 | South Africa | 0.34 | $ 0.00 | Botswana, Namibia, Swaziland |
| 11 | Netherlands | 0.14 | $ 0.08 | Belgium, Bunkers, Croatia, Estonia, Finland, France, Germany, Greece, Italy, Poland, Spain, Sweden, United Kingdom |
| 12 | Spain | 0.01 | $ 0.01 | Belgium, Portugal |
| 13 | USA | 0.00 | $ 0.00 | — |
| 14 | Malaysia | 0.00 | $ 0.00 | — |
| 15 | UAE | 0.00 | $ 0.00 | — |

*Source: UN Comtrade database*

Table 15. Major importers of mercury in 2016 (HS 280540)

| No. | Country | Import | |
|---|---|---|---|
| | | Net weight (ton) | Trade value (mio USD) |
| 1 | India | 349.03 | $ 8.17 |
| 2 | China, Hong Kong SAR | 55.08 | $ 0.36 |
| 3 | Singapore | 52.18 | $ 1.19 |
| 4 | Netherlands | 38.54 | $ 0.21 |
| 5 | South Africa | 36.20 | $ 1.62 |
| 6 | USA | 24.34 | $ 0.28 |
| 7 | UK | 11.24 | $ 0.12 |
| 8 | Germany | 7.93 | $ 0.45 |
| 9 | Mexico | 5.18 | $ 0.18 |
| 10 | Spain | 4.72 | $ 0.17 |
| 11 | Malaysia | 3.24 | $ 0.00 |
| 12 | Switzerland | 2.72 | $ 0.00 |
| 13 | Japan | 0.01 | $ 0.02 |
| 14 | Indonesia | 0.00 | $ 0.00 |
| 15 | UAE | 0.00 | $ 0.00 |

*Source: UN Comrade database*

Table 14 and Table 15 present the mercury import and export data from 15 major countries in 2016. India became the largest importer of mercury in 2016 by nearly 700 tons, followed by China (Hong Kong SAR), Singapore, South Africa and the United Kingdom.

Table 16. Mercury import notifications (as HS 280540) reported by trade partners within the period of 2012-2016

| No. | Country | Mercury imported from 15 countries based on partner countries report | |
|---|---|---|---|
| | | Net weight (ton) | Trade value (mio USD) |
| 1 | USA | 1,492.62 | $ 125.47 |
| 2 | Mexico | 1,116.25 | $ 72.05 |
| 3 | China | 729.32 | $ 8.56 |
| 4 | Japan | 551.46 | $ 21.92 |
| 5 | Germany | 530.43 | $ 21.02 |
| 6 | India | 403.75 | $ 7.54 |
| 7 | Indonesia | 346.15 | $ 6.53 |
| 8 | Netherlands | 271.39 | $ 14.90 |
| 9 | Singapore | 216.49 | $ 7.88 |
| 10 | Malaysia | 185.85 | $ 2.52 |
| 11 | Switzerland | 169.46 | $ 9.52 |
| 12 | UK | 136.66 | $ 6.82 |
| 13 | United Arab Emirates | 46.98 | $ 2.51 |
| 14 | South Africa | 38.58 | $ 0.98 |
| 15 | Spain | 0.16 | $ 6.14 |

Indonesia, the Netherlands and the United Arab Emirates did not import mercury in 2016 or its reports have not been published. Among the 5 largest exporter countries in 2016, Indonesia ranks the first with approx. 635 tons, followed by Mexico (267 tons), Japan (147 tons), Singapore (108 tons) and India (48 tons).

This information is interesting because, for the first time, Indonesia exports mercury in massive volume but it is not reported or not recorded in the 2016 Indonesian Statistic Agency report. Although there is no ban on mercury exports, if the mineral was mined, extracted and processed illegally, export to other countries should not be allowed because it does not have adequate permitting documents in every stage.

However, if we are using the reverse method, by looking for mercury import notification from the above 15 countries reported by their trading partners, a different rank of mercury-exporting countries (or country of origin) will be shown compared to the export notifications of these 15 countries. Table 16 presents the ranks of mercury-exporting countries according to the import notifications as reported by the recipient country in the period 2012-2016.

Import notification reported by the trading partners from 15 major mercury exporting countries in Table 16 and Table 17, obtained using the query from the UN Comtrade database platform. From the search, for example, it was revealed that some countries apparently imported mercury from USA as the country of origin even though the USA's export notification 2016 says there is no export to other countries.

Table 17. Mercury imported from 15 major countries (HS 280540) in 2016 as reported by trade partners

| No. | Reporter | Country of origin | Net weight (ton) | Trade value (mio USD) |
|---|---|---|---|---|
| 1 | Bosnia Herzegovina, Brazil, Colombia, China Hong Kong SAR, Pakistan, India, Rep. of Korea, Singapore, South Africa, Switzerland, Turkey | Indonesia | 191.09 | $ 3.93 |
| 2 | Canada, Colombia, Germany, China, Hong Kong SAR, Malaysia, India, South Africa, Togo, Guyana | Singapore | 141.97 | $ 4.01 |
| 3 | Brazil, Colombia, Rep. of Korea, Mexico, India, South Africa, Egypt, Philippines | Japan | 105.24 | $ 2.75 |
| 4 | Colombia, Paraguay, South Africa, Spain | Mexico | 53.61 | $ 1.84 |
| 5 | Belgium, Bulgaria, Belarus, Croatia, Cyprus, Czechia, Denmark, Estonia, France, Greece, Hungary, Ireland, Israel, Italy, Norway, Poland, Romania, Serbia, India, Slovakia, Spain, Sweden, United Kingdom, United Rep. of Tanzania | Germany | 45.62 | $ 1.17 |
| 6 | Brazil, Sri Lanka, Colombia, France, Malaysia, South Africa, Togo, USA, Guyana | India | 40.14 | $ 1.11 |
| 7 | Australia, Bosnia Herzegovina, Brazil, Chile, France, Germany, Ireland, Israel, Italy, Norway, Poland, Portugal, Serbia, India, Slovakia, South Africa, Spain, Turkey, United Kingdom, United Rep. of Tanzania, USA | Switzerland | 32.43 | $ 1.32 |
| 8 | Belgium, Colombia, Czechia, Italy, Portugal | Spain | 27.89 | $ 0.82 |
| 9 | Armenia, Belgium, Bermuda, Brazil, Canada, Czechia, Estonia, France, Germany, China Hong Kong SAR, Ireland, Japan, Rep. of Korea, Paraguay, Poland, India, Egypt, United Rep. of Tanzania, Philippines | USA | 26.46 | $ 1.76 |
| 10 | China, Hong Kong SAR, Rep. of Korea, India, South Africa, Switzerland, Togo, Egypt, United Rep. of Tanzania | China | 23.10 | $ 0.37 |
| 11 | Belgium, France, Germany, Italy, Luxembourg, Poland, United Kingdom | Netherlands | 22.95 | $ 0.60 |
| 12 | Brazil, Ethiopia, Guyana, France, Germany, Hungary, Ireland, India, Spain, United Kingdom | United Kingdom | 21.84 | $ 0.88 |
| 13 | Brunei Darussalam, China, Hong Kong SAR, EU-27, Hungary | Malaysia | 7.66 | $ 0.01 |
| 14 | Botswana | South Africa | 0.002 | $ 0.0001 |
| 15 | — | United Arab Emirates | 0.00 | $ 0.00 |

*Source: UN Comtrade database*

Various sources state that the import figures rarely matches the source of the exporter index. The reasons for different import-export statistics include lagged time, mis-allocation or misclassification of HS codes, different trade reporting systems (recognising transit countries or not), different quantity measurements and the relevant state secrecy regulations. In addition, transport and insurance costs are sometimes also added to the total trade value of imports.

Table 17 shows mercury imports notification of 2016 from 15 countries of origin reported by their trade partner countries. Once again, in 2016, Indonesia is rank first as the mercury exporting country (191 tons), although it's not as much as Indonesia's export notification (680 tons).

Lee Bell et.al. Stated that the Mercury Convention prohibits the opening of new cinnabar mining. However, the state government of the data parties permits the opening of new mercury mines before the treaty is ratified and goes into effect. If the country delays ratification, then the country has a longer chance to develop a new cinnabar mine (Bell, DiGangi et al. 2014).

In Article 3 of the Minamata Convention, the primary mercury (cinnabar) mining that existed prior to the convention will be prohibited 15 years from the date the agreement entered into force.

After the ratification, mercury from primary mining can only be used to make products permitted or used in an allowed process (such as VCM, etc., described in Articles 4 and 5 of the Convention), or disposed of in accordance with the terms of the agreement. This implies that mercury from primary mining should not be used in the ASGM sector after a country ratify the convention.

Under the Minamata Convention, although identifying mercury stocks greater than 50 metric tons is optional but countries "should endeavour" to do so. This chapter deals with Article 10 regarding the Interim Storage. Countries with ASGM activities might import mercury more than 10 metric tons per year. Parties may prepare a more comprehensive identification report by entering information on the annual capacity of the temporary storage facility, explaining what the storage objectives and plans for their future use will be.

To send mercury to another country, there is a reporting mechanism that must be obeyed and agreed upon by the parties to the Minamata Convention. Importers are also required to fill out a form and state the purpose of mercury use and how the importing country will handle mercury pollution on the environment and address the public health.

In the mercury treaty, a public listing of mercury merchants and exporters shall be prepared and administered by the Secretariat and shall contain notices of approval or import-export permits. If a non-party country exports mercury to a party to Minamata Convention, then the non-party country must state that the mercury being delivered is not from a prohibited source or an illegal source (UNEP 2013).

## 11. Mercury trade regulation

The Ministry of Trade also reviewed recent regulations that was released in 2009 regarding the importation of hazardous substances. The implication of the enforcement of the new government regulation regarding procurement, distribution and supervision of hazardous substances *(Bahan Berbahaya or B2)* - including mercury - in *Peraturan Menteri Perdagangan (Permendag)* No. 44/M-DAG/PER/9/2009, released on 15 November 2009, reduced the legal importation of mercury drastically.

The 2009 regulation control the importation of hazardous substances by the licensed importers can only be done through 4 sea ports and international airports (Belawan, Tanjung Priok, Tanjung Emas, Tanjung Perak, and Soekarno-Hatta) through Verification of Technical Assessment of Importation (*Verifikasi atau Penelusuran Teknis Impor* or VPTI) by certified Surveyors. Government of Indonesia also appointed PT Perusahaan Perdagangan Indonesia as the only company with license to import hazardous substances for end-consumers (CFL lamp factories, cosmetics, etc.) (KLHK 2013).

From an interview[7] with one of Indonesia's largest mercury trader and distributor, it was confirmed that mercury came to Indonesia under the table. The trader claimed that he was helped by his brokers abroad and backed by powerful officials and capitals. In 2012 alone, the values of mercury imported by Indonesia illegally was about USD 32 million.

To improve the export-import process of goods and commodities, the Ministry of Trade developed new procedure to obtain import permit for hazardous substances is quite comprehensive and accessible online on the Inatrade platform/application (http://inatrade.kemendag.go.id/index.php/perijinan/get_perijinan_detail/010010). The registration is also part of the Indonesia National Single Window managed by the Ministry of Finance (http://www.insw.go.id/). Further, any traders also will have to obtain the permit from local agencies.

[7] *Yuyun Ismawati, personal interview with the owner of PT. Taman Eden*

In November 2014, the Ministry of Trade issued an updated Permendag No. 44/2009 as the Ministerial Decree (*Peraturan Menteri Perdagangan*) No.75/M-DAG/PER/10/2014 regarding the procurement of hazardous substances including mercury. The new and updated Ministry of Trade decree prohibits the importation, trade and use of mercury especially in mining sector (Article 17) and re-packing the hazardous substances/ commodity (Article 18).

In general, the legal basis for export-import of hazardous substances in Indonesia are based on the regulations as follows:

a. Regulation of Ministry of Trade No. 44/M-DAG/PER/9/2009 about Procurement, Distribution and Control of Hazardous and Noxious Substance, stipulated at September 15, 2009;[8]
b. Regulation No. 23/M-DAG/PER/9/2011 about the amendments of Regulation No. 44/M-DAG/PER/9/2009, stipulated at November 7, 2011;[9]
c. Regulation No. 75/M-DAG/PER/10/2014[10] about the 2nd (second) amendment of Regulation No. 44/M-DAG/PER/9/2009, stipulated at October 14, 2014;
d. Decree of Ministry of Trade No. 1014/M-DAG/KEP/10/2011[11] about Appointment of Surveyor as performer for Hazardous and Noxious Substance VPTI, stipulated at October 28, 2011.[12]

## 12. Sources of mercury and cinnabar mining

### 12.1. Primary mining of cinnabar

In November 2015, Director General of Indonesian Custom, Ministry of Finance, aborted the exportation of 80 containers containing illegal mineral, including cinnabar ore, valued approx. IDR 73.8 billion or approx. USD 5.5 million. This is the biggest case in 2015. The illegal minerals were plan to be exported to the Netherlands, Taiwan, Korea, Hong Kong, India, Singapore and Thailand.[13]

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[8] See http://extwprlegs1.fao.org/docs/pdf/ins91862.pdf

[9] See http://extwprlegs1.fao.org/docs/pdf/ins107107.pdf

[10] See http://www.scisi.co.id/scisi/repository/upload/mod_commodity_files/1425441111picfc24e39ffd5.pdf

[11] See http://www.scisi.co.id/scisi/repository/upload/mod_commodity_files/1425440985picc8257dabf2.pdf

[12] See http://www.scisi.co.id/scisi/repository/upload/mod_commodity_files/1477899851MEKANISME%20VPTI%20BAHAN%20BERBAHAYA%20(X.21).pdf

[13] See http://bisnis.liputan6.com/read/2361250/bea-cukai-gagalkan-80-kontainer-ekspor-ilegal-minerba

*Figure 8. The Directorate General of Indonesian Custom together with 7 Head of relevant agencies, showed the minerals that was confiscated from 80 containers, including cinnabar ore. Photo credit: Fiki Ariyanti/Liputan6.com*

Prior to this, in August 2015, the Indonesian Custom halted 13,1 ton of cinnabar ore at Tanjung Priok Port that was going to be exported by 3 companies to Hong kong and Eritrea.[14] The MoEF officials stated that the exporters failed to provide proper paperworks where the cinnabar ore had been mined and could not show the permit to mine cinnabar ore. No further information available.

Indonesia has several potential cinnabar mining sites, spread out in Central Kalimantan, Southeast Sulawesi, and Seram islands (Zientek and Page 1990). Cinnabar very often present in association with gold (Idrus, Meyer et al. 2016). The processing of cinnabar ore in Indonesia mostly taking place in Java, around Sukabumi, Bekasi and East Java areas and then distributed all over Indonesia. Ironically, in West Kalimantan Province, where the local government already issued a mercury trade prohibition in 2007, a 1000 hectare cinnabar mining site obtained the permit to mine from the Kapuas Hulu Regency but has no environmental permit or Environmental Impact Assessment study.[15]

The knowhow and technology to extract cinnabar into elemental mercury available widely on the internet. One website in particular offer their services to train people to

[14] See http://www.jpnn.com/news/kerja-sama-penyidik-klhk-dan-bea-cukai-gagalkan-ekspor-ilegal-cangkang-kerang-dan-sonokeling 26 August 2016

[15] See http://www.kalimantan-news.com/berita.php?idb=13746 accessed 20 August 2016

extract cinnabar using the various techniques.[16] Mercury processing facility and the production process in several cities of Indonesia can be found easily on the internet and used by the producers as part of the marketing strategy. Several references and videos of cinnabar processing to obtain elemental mercury shown in Table 18 below. Some video coverage of mercury processing by a leading TV station can also be found online.

*Table 18. Information and knowledge for cinnabar processing in Indonesia*

| URL | Title | Owner/presenter | Method |
|---|---|---|---|
| http://video.metrotvnews.com/metro-realitas/8koX3pWK-racun-merkuri-made-in-sukabumi-1 Available online 26 Jan 2017 | Racun Merkuri Made In Sukabumi (1) Mercury poison made in Sukabumi | MetroTV Realitas | Documentary |
| http://video.metrotvnews.com/metro-realitas/GNlGzpVK-racun-merkuri-made-in-sukabumi-2 Available online 26 Jan 2017 | Racun Merkuri Made In Sukabumi (2) Mercury poison made in Sukabumi | MetroTV Realitas | Documentary |
| http://video.metrotvnews.com/metro-realitas/0Kvmvpwk-racun-merkuri-made-in-sukabumi-3 Available online 26 Jan 2017 | Racun Merkuri Made In Sukabumi (3) Mercury poison made in Sukabumi | MetroTV Realitas | Documentary |
| https://www.youtube.com/watch?v=L9XH2jEsgg4 Published on Dec 13, 2016 | Tahap akhir Proses Merkuri dari limbah Cinnabar (Last stage of mercury extraction from cinnabar tailings) | IstanaSains Eko Hari Sutopo | Chemical/hydro-metallurgy process, using Aluminium and HCl |
| https://www.youtube.com/watch?v=fQhJHhUfUEo Published on Feb 22, 2016 | Vidio Proses Pengolahan Air Raksa Mercury Sistem Pembakaran (Video Process Extraction Of Mercury Using Distillation Process) | Air Raksa Merkuri Murah HB:0838-95839294 | Pyrometallurgy process/distillation using heat |
| http://bestekin.com/metalurgi-mineral/e-book-metalurgi/pembuatan-merkuri-dari-cinnabar/ | Pembuatan Merkuri dari Cinnabar (Process to extract mercury from cinnabar) | www.bestekin.com Pusat Info IPTEK, Bona Indah Plaza Blok A2/B3 , Jl. Karang Tengah Raya, Lebak Bulus, Jaksel Contact: 0812 8576 9587 | E-book (purchase) |

[16] *See http://bestekin.com/metalurgi-mineral/pelatihan-pengolahan-mineral/pelatihan-pengolahan-merkuri-dari-cinnabar/ accessed 26 August 2016*

| URL | Title | Owner/presenter | Method |
|---|---|---|---|
| http://bestekin.com/metalurgi-mineral/pelatihan-pengolahan-mineral/pelatihan-pengolahan-merkuri-dari-cinnabar/ | Pelatihan Pengolahan Merkuri dari Cinnabar (Training course to extract mercury from cinnabar) | www.bestekin.com Pusat Info IPTEK, Bona Indah Plaza Blok A2/ B3 , Jl. Karang Tengah Raya, Lebak Bulus, Jaksel Contact: 0812 8576 9587 | Web-based resources and further contact for registration. |
| https://www.youtube.com/watch?v=Cab5Q8-8nWs Published on Nov 23, 2012 | Ngerambang air raksa | Paulus Bong | Hydro-metallurgy process: washing and soaking cinnabar using cassava leaves |
| http://carapengolahanemas.blogspot.de/2015/11/video-cara-penyulingan-air-raksa-atau.html | Video Cara Penyulingan Air Raksa Atau Retort Merkuri | Copyright@ 2010 Informasi Tambang Emas Di Dunia. Designed by Technology Industry Of Gold Mining | Pyrometallurgy process/distillation using fire torch |
| http://trisulankara.indonetwork.co.id/product/jasa-penyulingan-sinabar-pembuatan-mercury-destilasi-air-raksa-5629265 | Jasa Penyulingan Sinabar / Pembuatan Mercury / Destilasi Air Raksa (Service provider to extract mercury from cinnabar) | PT Tri Sulankara | Service provider, pyrometallurgy process |
| *Source: taken from various website and trade platform* | | | |

*Figure 9. Cinnabar distillation facility for hire offered by PT Tri Sulankara.*
*Source: http://img.indonetwork.xyz/products/thumbs/600x600/2015/03/30/15fc60583fb4175004b3c77e73754ab6.jpg*


*Figure 10. Cinnabar ore from Seram Island, ready to be transferred by Garuda Cargo to Jakarta and then to Sukabumi.*
*Photo credit: Community report/WALHI*


*Figure 11. Mercury in flasks packaging for export. Photo credit: http://jualairraksamurah.web.indotrading.com/product/liquid-mercury-p187148.aspx*

*Figure 12. A cinnabar distillation facility in Sukabumi.*
*Source: PT. Tri Sulankara*


*Figure 13. Simple cinnabar distillation facility in Parakansalak district, Sukabumi Regency covered by the Metro TV Realitas program 2 Jan 2017. Women involved in the distillation process.*
*Source: http://cdn.metrotvnews.com/dynamic/videos/2017/01/26/648419/ZhceSTtiPz.jpg?w=635*

***Box 1:***
***Business model of cinnabar distilleries***

*In Parakansalak district, Sukabumi Regency, about 30 cinnabar distilleries operated by local people supported by powerful financiers and individual investors, produced in total, at least 36 ton of elemental mercury per day.*

*Raw materials:*

| | |
|---|---|
| *Cinnabar ore* | *: IDR 30,000 - IDR 200,000/sack -> 1 sack = 15-20 kg* |
| *Capacity per stove* | *: 1.5 ton cinnabar ore = 600 kg of Hg* |
| *Hg price* | *: min. IDR 320,000/kg up to IDR 1,200,000/kg (depending on purity)* |
| *Daily production* | *: 60 stoves x 600 kg Hg = 36,000 kg Hg = 36 ton Hg or approx. 1000 flasks* |
| *Revenue/day* | *: 36,000 kg x IDR 320,000/kg = IDR 11.52 billion (approx. USD 820,000)* |
| *Distilleries for hire* | *: IDR 35,000 per kg cinnabar ore, minimum 1000 kg.* |

*Source: Metro TV Realitas, Racun mercury made in Sukabumi, January 2017*

12.2. By-product from oil and gas sector

Beside mercury primary mining, another source of mercury supplies in Indonesia is from oil and gas sector. Mercury is an extremely rare element in the Earth's crust and is a part of the formations from which oil and gas are produced. Mercury may be found in crude oil and natural gas condensate and follows the production flow in different chemical forms. Elemental mercury produced as by product of the oil drilling activities and natural gas refineries activities (Pirrone, Cinnirella et al. 2010) (Lang, Gardner et al. 2012) (Naerheim 2013) (Visvanathan 2014).

In the Southeast Asia region, the production and extraction of gas brings large quantities of rock fragments, called "cuttings" and "drilling muds" that each facility could released approximately between 60,000 to 300,000 gallons per day. Additionally, a typical offshore gas platform also releases "produced water" approximately 400,000 gallons are returned back into the ocean every day. Due to its high toxicity, the "produced water" containing lead, zinc, mercury, benzene and toluene, have to be treated with chemicals (Sovacool 2009).

However, the paucity of data available in the public domain means that there are large uncertainties in the quantities of mercury contained in the oil and gas processed and in consequent releases to the environment. These difficulties of estimation are exacerbated by substantial variations in the mercury contents of oil and gas derived from different sources, ranging globally from 0.1 to 20,000 µg/kg in crude oil and 0.05 to 5000 µg/Nm3 in

natural gas (Lang, Gardner et al. 2012). Although mercury concentrations are less than 2 parts per billion (ppb) in most crudes, mercury has the potential to accumulate and cause operational issues in refining facilities (IPIECA 2014).

Elementary mercury is the most common form. Reservoirs with sweet crude oil (low content of $H_2S/CO_2$) and high temperature or pressure seem to experience the highest content of mercury. Elementary mercury has been detected in particular in the light fraction of hydrocarbons (C3-C5) and in oil sludge (Naerheim 2013).

Mercury reacts with many metals and also tends to accumulate in process equipment. All surfaces inside process equipment that has been in contact with a process stream with elementary mercury should be treated as contaminated even though mercury is not observed. Mercury may partly be absorbed by the steel piping and equipment but does not accumulate in stainless steel (Lang, Gardner et al. 2012) (Naerheim 2013). The two species of mercury that are believed to be prevalent in refineries are elemental mercury and mercury sulphide (IPIECA 2014).

Mercury is a prevalent contaminant to hydrocarbon reservoir in Asia (Figure 14) and falls in category *Incidental release-manufacturing processes.* The solubility of mercury in petroleum liquids and its volatility in gaseous state, means that mercury and mercury compounds contaminate essentially the entirety of production, processing and petrochemical manufacturing systems (Visvanathan 2014).

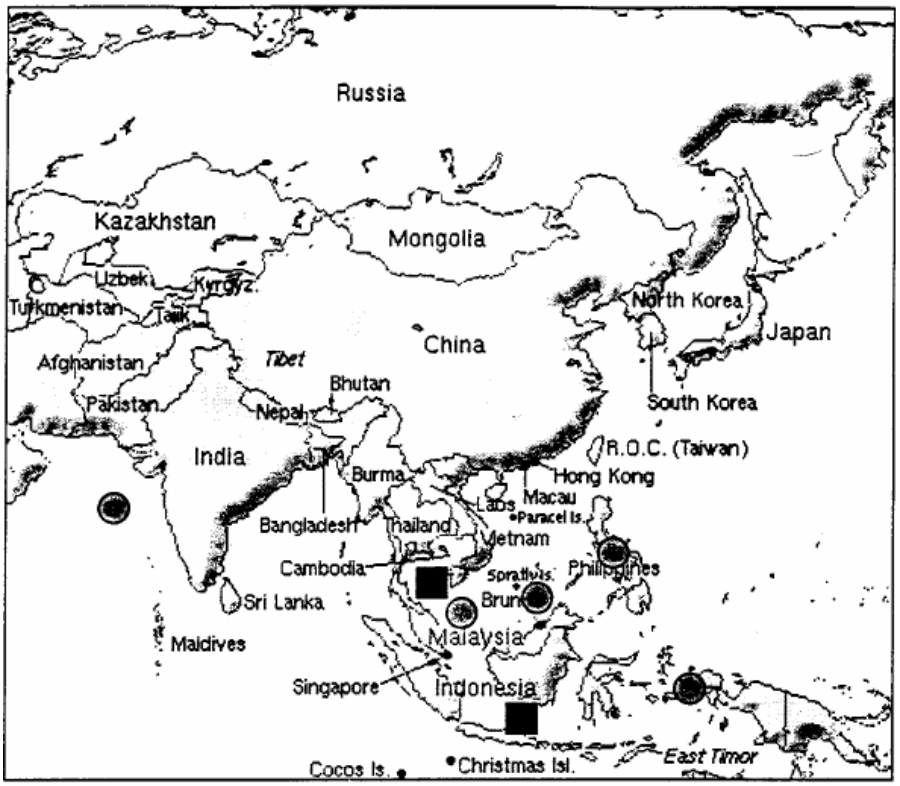


*Figure 14. Mercury contents of Asian gas and gas liquid*

*Source: Visvanathan,2014*

*< 100 µg/m3 (gas); < 100 ppt (liquids)*

*> 100 µg/m3 (gas); > 100 ppt (liquids)*

The range of mercury in the South East Asian gas and gas liquid is about three orders of magnitude, from approximately 1 to 1000 µg/m3 in gas and 1 to 1000 ppb in liquids. Gas field operation can produce waste containing mercury. All the segments of production, processing and chemical manufacturing complex that utilise hydrocarbons in Asia are affected by the complications caused by the presence of mercury in process fluids. However, IPIECA found that majority of mercury contained in the oil and gas samples from the Pacific and Indian Ocean 41% are ≤2 ppb and only 8% contained mercury >100 ppb (IPIECA 2014).

According to Lang et.al. (2012) mercury has been identified to produce several impacts on gas processing operations as follows:

- Mercury deposits in cryogenic fractionation equipment causing cracking of welds in the headers of aluminium exchangers;
- Mercury contaminates gas treatment processes such as molecular sieve and glycol dehydration units, chloride removal systems, and acid gas removal systems;
- Mercury sorbent materials, when spent, constitute a generated hazardous waste that plant operators must store or process for disposal;
- Mercury poisons catalysts in ethylene, aromatics and olefins manufacture;
- Mercury contamination of equipment poses a health and safety risk for workers involved in maintenance or inspection activities.

The most important concern for production operations, apart from market image, economic and treatment liabilities, are the toxic nature of sludge that accumulates in separators and heat exchangers, water discharge - especially from offshore platforms - and mercury accumulation in transportation systems such as tankers and pipelines (Lang, Gardner et al. 2012) (Visvanathan 2014).

In 2010, Singapore was looking at putting safeguards in place after traces of mercury were found in Indonesian natural gas they had imported from West Natuna. With natural gas coming in from both Indonesia's West Natuna and South Sumatra, and also Malaysia, the Singapore's Energy Market Authority (EMA) had asked their consultant to study potential locations where mercury could be accumulated. Singapore started imported the liquefied natural gas shipped in starting of mid-2013. One of the gas importers, the Gas Supply Pte Ltd (GSPL), which sources its gas from South Sumatra, aware about the mercury issue but consider it as "not an uncommon problem". The CEO of GSPL pointed out that the Arun gas field in Aceh at the end period also 'had a lot of mercury coming out'.[17]

[17] *Ronnie Lim. 2010. Mercury traces in natural gas supplied in Singapore. Business Times 9 Mar 2010; http://wildsingaporenews.blogspot.co.uk/2010/03/mercury-traces-in-natural-gas-supplied.html#.WPeERFPyvVo Accessed by 10 December 2016*

Rasio Ridho Sani of the Ministry of Environment of Indonesia, presented the Management of Mercury containing Wastes from Oil and Gas Operation in Indonesia at the First INC (Intergovernmental Negotiation Committee) of mercury convention in 2012 stated that some of gas reservoirs in Indonesia produced mercury as by-products of the exploitation process. Figure 15 shows the distribution of oil and gas operations in Indonesia and Table 19 shows the estimation of mercury captured from gas processing in Indonesia from various gas field and Liquefied natural gas (LNG) facilities.

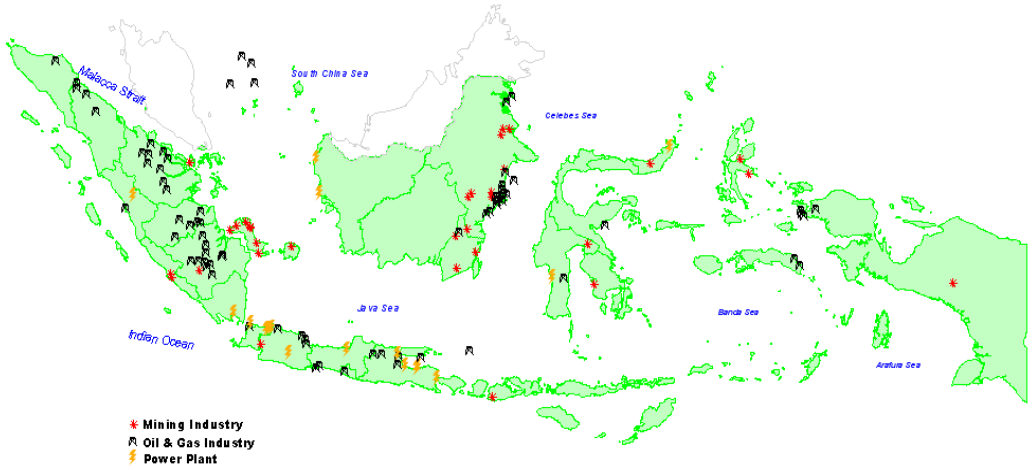


*Figure 15. Major oil and gas operations in Indonesia. Source: Ministry of Environment, 2012*

Table 19. Estimation of mercury captured from gas processing in Indonesia (from various gas field and LNG facilities)

| Type of mercury | Amount of Waste (kg/year) | Mercury Concentration (ppm) | Total Hg/year (kg) | Sources |
|---|---|---|---|---|
| Elemental Mercury **) | 684 | Pure | 684 | Gas Field |
| Spent Catalyst | 0.052 | 300 – 700 | 15.6 -36.4 | Gas Field |
| Activated Carbon | 0.024 | < 5 | 0.12 | LNG |
| Sludge | 0.01 | < 5 | 0.05 | LNG |

**) Amount of mercury produced vary from one to other reservoir*
***) Elemental mercury based on data : Nov 1991- Dec 1995 = 85 kg/month*
*Jan 1996-July 1997 = 29 kg/month*
*Source: Ministry of Environment of Indonesia, 2012*

The concentration of mercury generated from the oil and gas sector is not evenly spread across Indonesia and not equally divided among gas and oil. One time, it can be said that mercury concentrations in waste generated from gas production are much higher, but at the same time also unpredictable. Despite the uncertainties, various sources and studies identified the highest concentrations of mercury could be found at the Natuna Sea, Madura Strait, and Sumatera up to a certain degree.

Table 20. Potential mercury concentration in several oil and gas concession areas of Indonesia

| Concession area | Potential mercury concentration |
|---|---|
| Natuna | High |
| Sumatera | High |
| Madura Strait | High |
| Papua | Low |
| Kalimantan | Low |

*Source: From various studies*

There is no accurate data available regarding mercury generated and captured in the oil and gas industry in Indonesia. Based on the available studies, approximation and guidance from the UNEP mercury inventory toolkit, Kania Dewi (2012) projected the number as 36,482.7 kg per year.

The current infrastructure for the hazardous waste management is available and can be utilised to resolve issues of low mercury containing waste, as part of the solution for the excess mercury in Indonesia. An integrated hazardous waste facility in Bogor, PT. PPLI, currently has a capability of stabilisation, macro-encapsulation and secure landfill for environmentally sound management of the low level mercury containing waste (<260 mg Hg/kg).[18] For waste containing high concentration of mercury (≥260 mg Hg/kg), the facility exports the waste to Europe for recovery and disposal (Hidayat 2012).

Most of wastes containing mercury from the oil and gas sector in Indonesia sent to PT. PPLi to be processed. The oil and gas industry has a long history of compliance and comprehensive monitoring especially related to Health, Safety and Environment issues. Mercury containing wastes ≥260 mg Hg/kg will be sent to the Netherlands and or Germany to be processed (recovered). Before 2012, mercury recovered in Europe from the recovery process, was recirculated to the market and profit sharing scheme applied to the sender.[19] Table 21 shows waste containing mercury analysis from PT Badak NGL.

[18] *PT. PPLi. Stabilization and solidification processes. http://www.wastemanagementindonesia.com/web/index.php?option=com_content&view=article&id=63&Itemid=72*

[19] *Personal interview with oil and gas industry resource person*

Table 21. Waste containing mercury analysis of PT Badak NGL, East Kalimantan, 2005-2009

| Year | No. | Type of waste | Mercury concentration (ppm) | Source of waste containing mercury | Total quantity of wastes containing mercury (Ton) | Remarks |
|---|---|---|---|---|---|---|
| 2005 | 1 | Sulfur Impregnated Activated Carbon (SIAC) | <5 | Unit Mercury Removal Plant # 2 Train C | 24,5 | Sent to PT. PPLI Cileungsi, Bogor |
| 2006 | No mercury wastes | | | | | |
| 2007 | 1 | Sludge | <5 | Unit Knock Out Drum (KOD) Plant # 21 | 7,6 | Sent to PT. PPLI Cileungsi, Bogor |
| | 2 | Sludge | <5 | Unit Hydrocarbon Condensate Stabilizer Plant # 16 | 6,0 | Sent to PT. PPLI Cileungsi, Bogor |
| 2008 | 1 | Sludge | <5 | Unit Knock Out Drum (KOD) Plant # 21 | 16,1 | Sent to PT. PPLI Cileungsi, Bogor |
| 2009 | No mercury wastes | | | | | |

*Source: Manajemen Pengelolaan Limbah Mengandung Merkuri di PT Badak NGL, presentation, 3 March 2011*

In 2010, ExxonMobil closed their operation in North Aceh field. However, a group of children and local villagers who were digging the land to find metal scraps found drums and gallons of mercury buried 60 cm on the ground. The site was a former warehouse and metal workshop and supposed to be cleaned after the final clean up verified by an independent auditor.

A former local staff of ExxonMobil, stated that the company's operation in Aceh produced mercury as a by-product from 4 clusters in the eastern part of North Aceh Regency since the beginning of their exploitation period in 1977. On the same year ExxonMobil started to channelling the first gas and condensate to PT. Arun LNG. Co. One year later, the activities continued in the second cluster, and the third cluster in 1983 (Hutabarat 2015).

*Figure 16. Mercury found 60 cm below the soil surface in the former ExxonMobil site in North Aceh (2010).*

*Source: http://1.bp.blogspot.com/-621zV57cMWE/VMy2-sg_BUI/AAAAAAAAAFY/xcytdbaA-00/s1600/20100729150543.jpg*

Since 1967, ExxonMobil had been conducted exploration activities in 64 production wells, 11 injection wells, 4 observation wells, 24 well closures, and 8 well that left untreated. During their golden period in Aceh, annually, ExxonMobil generated gas approximately 3.4 million ton. According to the former employee of ExxonMobil, the mercury by-product mostly generated in the Hueng Landeng village, Tanah Luas sub-district. Not clear where they stored the mercury at that time and the management kept the information tightly due to the economic value of mercury.[20] However, ExxonMobil management denied that the company produced mercury.[21]

*Figure 17. Mercury contaminated site at the former ExxonMobil area (2 hectare) left wide open can be accessed by the cattle and public despite high mercury concentration found in the soil.*

*Source: http://4.bp.blogspot.com/-U69yEmq39ss/UnNfzYN75AI/AAAAAAABRjE/jQ1WLUa-ydo/s640/Lahan+Tercemar+Merkuri+xxon.jpg*

[20] *ExxonMobil Produksi Mercury Sejak 1977. 2010. http://www.jpnn.com/news/exxonmobil-produksi-mercury-sejak-1977 - accessed by 10 December 2016.*

[21] *Exxon diminta tangani merkuri di Aceh. 2010. http://www.bbc.com/indonesia/berita_indonesia/2010/08/100827_exxonmercury.shtml - accessed by 10 December 2016.*

So far, from the total of 4.2 hectare former ExxonMobil warehouse and workshop, about 225 square meter, and depth between 15-60 cm, had been identified by the Ministry of Environment of Indonesia as highly contaminated by mercury. Laboratory results analysed by the Centre for Environmental Impact of the Ministry of Environment *(Pusat Pengendalian Dampak Lingkungan)* revealed that 2 soil samples from the main area contained mercury as high as 303,379 ppm and 43,030 ppm. The Ministry of Environment also collected samples at the radius of 15 meter to 25 meter from the main areas which show Hg concentration about 88 ppm and 21 ppm respectively.[22] Additionally, a high concentration of lead (Pb) also found in the soil as high as 294,7 ppm within 20 centimetre below the surface.[23]

ExxonMobil followed up the instruction from the Ministry of Environment to clean the contaminated soil and sent 50 tonnes of hg-contaminated soil to PT. PPLI in Bogor to be treated. ExxonMobil also constructed a concrete block at the main area where people found mercury on the ground.

Three years after the event, the Environmental Agency of North Aceh and ExxonMobil agreed to rehabilitate and utilise the former ExxonMobil site converted into a Biodiversity Park with conservation activities and rare trees to plant in the 2.5 Hectare land. The local community claimed that there is no activity until now and they are not aware about the Biodiversity Park. They said that the site is well-known as the Mercury Park instead of the Biodiversity Park and many people in that area had been fell ill.[24] Despite the pressures from WALHI (the environmental advocacy group) and local community, until now, no action have been taken neither by ExxonMobil, the Ministry of Environment nor by the local government. The former ExxonMobil and PT Arun areas are now being prepared as the Special Economic Zone *(Kawasan Ekonomi Khusus)*.[25]

A comprehensive regulatory infrastructure related to the industrial hazardous waste management is currently in place in Indonesia (Paramita and Raditio 2012) (Hidayat 2012). The regulations cover for the hazardous waste temporary storage, transportation, collection, treatment, utilisation and disposal. Most of these regulations may also be

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*[22] Inilah Taman Kehati di Kawasan Limbah Merkuri Exxon Mobil di Desa Hueng. 2013. http://www.acehbaru.com/inilah-taman-kehati-di-kawasan-limbah-merkuri-exxon-mobil-di-desa-hueng/ - accessed by 10 December 2016.*

*[23] Exxonmobil Siap Bersihkan Merkuri. 2010. http://m.jpnn.com/news/exxonmobil-siap-bersihkan-merkuri - accessed by 10 December 2016.*

*[24] Proyek Kehati di Exxon Mobil. 2012. http://theglobejournal.com/lingkungan/proyek-kehati-di-exxon-mobil/index.php - accessed by 06 August 2016.*

*[25] Kawasan Ekonomi Khusus di Bekas Arun dan Exxon Tunggu PP. 12 Feb 2016. http://aceh.tribunnews.com/2016/02/12/kek-di-bekas-arun-dan-exxon-tunggu-pp accessed by 16 December 2016*

adopted for the management of the excess mercury in Indonesia. However, regulatory framework for the concept of excess mercury management, including detailed technical requirement for its long term storage, shall be further developed (Hidayat 2012). An interview with an oil and gas consultant who provided his service to catch the oil spills from the offshore oil rigs, revealed a significant amount of mercury captured during their works.[26]

By the time this study conducted, Indonesia is preparing the National Implementation Plan (NIP) to eliminate and manage mercury as an obligation of the Minamata Convention on mercury ratification. Data and information about the potential sources of mercury supplies should be identified and included in the NIP as well as the measures to tackle waste containing mercury to Europe. Under the Minamata Convention on mercury there will be no incentive to recirculate the recovered mercury into the market. All recovered mercury should be stored in the long-term storage and solidified so it will not be able to be extracted any longer (UNEP 2013).

## 13. Local regulation on mercury trade

In 2009, the Law on mineral and coal No. 4 year 2009 issued by the Ministry of Energy and Mineral Resources regulating the mining permit, concession areas, exploration, exploitation and other relevant issues. Community mining addressed in the Article 20 and Article 66 until 73 of the Act with some criteria to be applied and adopted by the local governments. Regulatory framework of hazardous materials and toxic waste management are stipulated in the Government Regulation No. 18 of 1999 jo. PP No. 85 of 1999 regarding the management of hazardous and toxic substances. Before 2007, licensing and management of hazardous waste was handled by the national authority (in this case the Ministry of Environment).

However, since the issuance of the Government Regulation No. 38 of 2007 regarding the division of government affairs between the central government, provincial, local and regional government of regency/city, the licensing authority and supervision of the management of hazardous wastes and toxic substances as well as supervision of the implementation of remediation and clean up due to pollution from hazardous and toxic waste is part of the local government in accordance with their responsibilities.[27] Based on this framework, the Minister of Environment issued Decree No. 30 of 2009 on Procedures

[26] *Personal interview with Mr. B, oil and gas consultant*

[27] *See Article 9 PP No. 38 year 2007*

for Licensing and Supervision Management of Hazardous and Toxic Pollution and Control Recovery due Hazardous and Toxic by local governments.

Although until now only a few community gold mining permit already issued at the local level, the illegal practice of ASGM still rampant. The Secretary general of *Asosiasi Petambang Rakyat Indonesia* (association of community miners), claimed that their members are currently working in small-scale/informal mining sector approximately 3 million people. APRI members currently spread out in 33 provinces *(Dewan Pimpinan Wilayah)* of Indonesia and 350 local councils *(Dewan Pimpinan Cabang)*. APRI members consisted of gold miners, sand miners, rocks miners, old oil pit explorers, salt miners, sulphur miners, gemstones miners, diamond miners, cinnabar miners, processors/metallurgist, financiers, academia, and others. APRI claimed that about 1 million members of APRI, use mercury to extract gold approx. 3500 ton per year.[28]


*Figure 18. Indonesia's border with Sarawak, Malaysia stretch approx. 900 km (thick red line) is one of the route for mercury smuggling from Malaysia. Photo credit: http://s203.photobucket.com/user/duke3e/media/paralel.jpg.html*

At the local level, several governments already issued the provincial regulation or Mayor/Regent Decree to prohibit mercury trade and use in mining sector. Only a few provincials and local regulations have issued the prohibition to trade and use of mercury. West Kalimantan Provincial government issued a Decree No.4 year 2007 regarding the Distribution and Control of mercury use and its compound *(Peraturan Daerah Provinsi Kalimantan Barat No. 4 Year 2007 tentang Pengendalian Distribusi dan Penggunaan Merkuri Serta Bahan Sejenisnya)*.[29]

[28] *Informal conversation with a resource person from APRI*

[29] *See http://database.kalbarprov.go.id/_hukum/berkas_hukum/perda_4_2007.pdf*

Prior the issuance of the decree, the local police conducted a survey and investigation to trace the trade of mercury in their areas. The 2007 study revealed the smuggling of mercury through the border of West Kalimantan with Sarawak by smugglers from syndicate from Kyrgyzstan 285 kilogram Rp132 million. The border between Indonesia and Malaysia in West Kalimantan stretched almost 900 kilometre, made it difficult to control.

In a separate report, based on the communication between BaliFokus team, BAN Toxics' researcher traveled to border towns in Sarawak in Malaysia and West Kalimantan in Indonesia. Sintang Regency in West Kalimantan is a major artisanal and small-scale mining area in Indonesia and one of the oldest gold mining sites documented in 1850s (Heidhues 2003). West Kalimantan is the only Indonesian province that has border access by road access to another country, Malaysia, making the area conducive to trade, legal and illegal. Figure 18 shows three old major Chinese settlement related to gold mining works.


Field research in Malaysia and Indonesia affirm just how easy it is to smuggle mercury across borders and openly sell mercury at ASGM sites. Checkpoints at the crossing between Singapore and Malaysia are lax, even during a security alert due to the threat of an ISIS (the Islamic State of Iraq and Syria) attack. According to BAN Toxics researchers, *"[The] customs office took five minutes to check the boot of the car [and] did the same with other cars."* Government departments in charge of checking toxic materials like the National Pollution Control Department *"had counters [which] were closed on the day, during office hours… signage boards to inform the public on restricted and controlled or prohibited items were general, no mention of chemicals or mercury-related products"* (BanToxics 2017).

*Figure 19. Three major Chinese settlement involved in gold mining activities in West Kalimantan 1810. Source: Heidhues, 2003*

At Sintang, West Kalimantan, a well-known ASGM site in Indonesia, BAN Toxics' researchers saw evidence of how ASGM is being practiced in the open, along rivers and near the homes of fishermen who use the river water for household use.

Several attempts already conducted by West Kalimantan Provincial government and the Landak Regency to eradicate the gold processing practice along the river but not successful. The plan to raid the operations always leaked and miners left the "ponton" or floating station one day before the raid. After 6 months, miners returned to the sites with the new strategy.

*Figure 20. ASGM activities in Serantangan Lake, outside of Sintang City, West Kalimantan, in 2015. Photo credit: Mongabay accessed by 10 July 2016*

*Figure 21. ASGM activities in Sintang City in 2016. Photo credit: Ban Toxics.*

In 2012, in Central Sulawesi, local police confiscated mercury flask from China smuggled via Palu port and transferred to Poboya ASGM site packed in a box labelled as "Fuso spare part". The smuggler explained that he picked up the box from the boat at the harbour as ordered by his boss claimed knew nothing about the content.

In one of the ASGM hotspots in West Nusa Tenggara province, Sekotong and Pelangan areas, at least about 30 metric tonnes of mercury distributed per week to serve about 10,000 ball-mills at the price of IDR 1,5 million per kg.[30] Mercury was transported to West Lombok from Surabaya via sea freight in medium-size cargo car and packed in bottles and flasks. The cargo car exited the harbour, sale and distributed mercury directly to the consumers/user (door-to-door sales). The local sources stated that there are about 5-6 cargo cars operate as sales and distributors of mercury all over Lombok.[31] The local government of West Lombok Regency already released the local government decree to prohibit mercury sales and use in gold mining sector. However, the enforcement is lacking.

According to the Ministry of Trade regulation No. 75/P/MENDAG/10/2014 no mercury allowed to be imported, traded and used in mining sector. Companies must obtain several permits from the national agencies, local government agencies, trade permit, business entity registration, environmental permit, and to some degree, conducted a simple environmental impact assessment. None of these requirement periodically monitored, neither at the national level nor at the local level.

Several times police officers in Aceh, Palu, Lombok, Pongkor, Gunung Botak in Buru Island, Maluku, and other ASGM hotspots areas, conducted serious monitoring, clearing up the areas and confiscated mercury as well as gold from miners but never follow up the cases into the court. Some miners and gold traders in Aceh and Bombana were kept at the police office for 3 days and then released after they paid the fine, about 1.5 million rupiah to bail out their equipments.

## 14. Mercury traders in Indonesia

In the last 3 years, as the EU and USA export ban regulation already enforced and the Ministry of Trade regulation prohibited the importation of mercury for mining sector, there are an increased number of mercury production using local cinnabar ore from the West side of Seram Island, Southeast Sulawesi, and Central Kalimantan. Sales and marketing of local mercury products can

[30] *Interview with a mercury trader, Mr. N*

[31] *Interview with a mercury trader, Mr. Z*

be found easily online through various trading platforms and social-media platforms (facebook, instagram, twitter, blogspot, etc.).

In several websites, traders not only showing the packaging of mercury in flasks but also the smaller packaging/repackaging. A medium size mercury trader in Lombok admitted that he changed the label of his mercury packaging sold in Sekotong-Pelangan ASGM hotspots areas with Germany label because miners believed that German mercury is the best quality. Further, he explained that according to his boss/supplier in Surabaya, they imported the mercury from Canada.[32]

Additionally, another trick to sell mercury legally with 'permit' is using the trade permit from one city/regency and then copy the permit and displayed it at the shops in other place claimed that they have received the permit to sell hazardous substances. The trader said that customers rarely asked whether the mercury product that they bought is legal or not.[33] No information available about the turnover of mercury business by the traders. Most of them combine mercury sales with gold extraction equipment or combine it with other chemicals for gold and mining operations.

Traders also shows their identity (photos) including their bank accounts or receipts of transaction/payments as part of their accountability measures to their customers. Some pictures on Figure 22 were taken from the field. More details address and websites of the mercury traders available in online platform, websites and blog page are provided in the annex. Figure 23 shows some pictures from various online sources.

According to the National Action Plan to eliminate mercury in ASGM sector, the government of Indonesia appointed only one company to import mercury for end-users/customers, *PT Perusahaan Perdagangan Indonesia* (PT PPI). But if we visit PT PPI's website and go to the "Products and Services" folders, sub-folder Hazardous Substances, we will find TEA,[34] borax and sodium cyanide.[35] Mercury (HS 280540) is not listed on the PT PPI website.

*PT Perusahaan Perdagangan Indonesia* (Persero) or PPI, known as the Indonesia Trading Company or ITC, is the only state-owned company that serving as a trading house and engaged in the import, export and distribution.

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[32] *Interview with Mr. Z*

[33] *Interview with Mr. TE*

[34] *Triethanolamine, often abbreviated as TEA, is a viscous organic compound that is both a tertiary amine and a triol. A triol is a molecule with three alcohol groups. Source: wikipedia*

[35] *See http://www.bumn.go.id/ppi/application#*

***Box 2: License to kill***

*At the main intersection of an ASGM town in Central Sulawesi, miners come to Upriani's small shop to buy mercury. She is the only 'legal' mercury seller in town. She was busted once by the local government administrative police because she sold mercury without any permit. Upriani, 38, said she sells at least 35 kilograms a day for the equivalent of $133 each bottle, individually wrapped. She spends some of it buying gold from miners. At times, business is so brisk she shoves rupiah notes haphazardly into a desk drawer overflowing with cash.*

*Although it has became a public secret that none of the shops, gold traders and mercury traders have no permit or license, in several ASGM hotspots areas periodical raid for survey are performed by a task force team consisted of representatives from various local enforcement agencies including local police office. When Upriani also got caught and interrogated at the police station, she was told that she was busted because she has no permit to sell mercury.*

*She asked the police how to obtain the permit and then the police officer gave her a name and a contact number. Apparently, the name given by the police is the guy, Mr. J, who owned a trading company that have an MOU or cooperation agreement with the local state-owned trading company or Perusahaan Daerah Kota Palu to sell chemicals, including mercury and cyanide, for gold mining activities.*

*After meeting and established a business arrangement with Mr. J, Upriani always displayed Mr. J's company permit to sell mercury in gold kiosk. And she never been asked by the police anymore.*

*Source: Larry C. Price & Rick Paddock/Pulitzer Centre on Crisis Reporting, 2015 http://cironline.org/reports/hunt-gold-southeast-asia-poisons-child-workers-environment-5678 accessed 22 December 2016*


*Figure 22. A local shop selling all necessary gold mining and processing equipments including capitals. Photo credit: BaliFokus, Aug 2015.*

*Figure 23. Mercury packaging from Indonesia's online traders and the field. Photo credit: BaliFokus*


*Figure 24. Mercury bottle labelled form "Germany" (left) and attractive packaging (right). Photo credit: BaliFokus, Aug 2015*

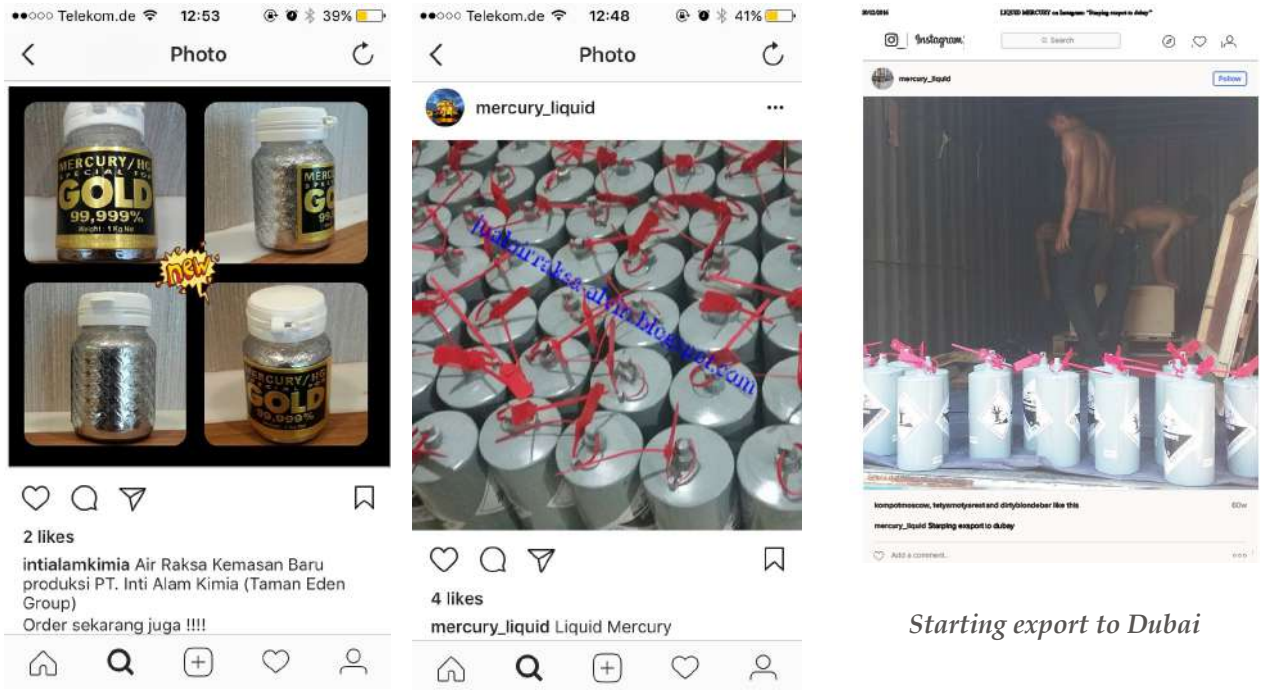
*Figure 25. (right) Ibu Meri sold mercury in 1 kg (1.5 million IDR) on her left hand and 100 gram (150,000 IDR) on her right hand. (Photo credit: BaliFokus)*

In 2014, BaliFokus team meet Ibu Meri who sold mercury in her shop on the main road in one the ASGM villages. She was persuaded by her son to sell mercury due to its promising return of investment. She bought mercury from a city 3 hours away from her village. She repacked the mercury into smaller bottles of 1 kg and a small plastic bag for 100 gram. Because mercury is priceless, she stored 10 bottles of mercury under her bed.

Recently, she learned that many of her neighbours became very ill and some children were born with birth defects suspected due to mercury intoxication. By early 2016, she stopped selling mercury.

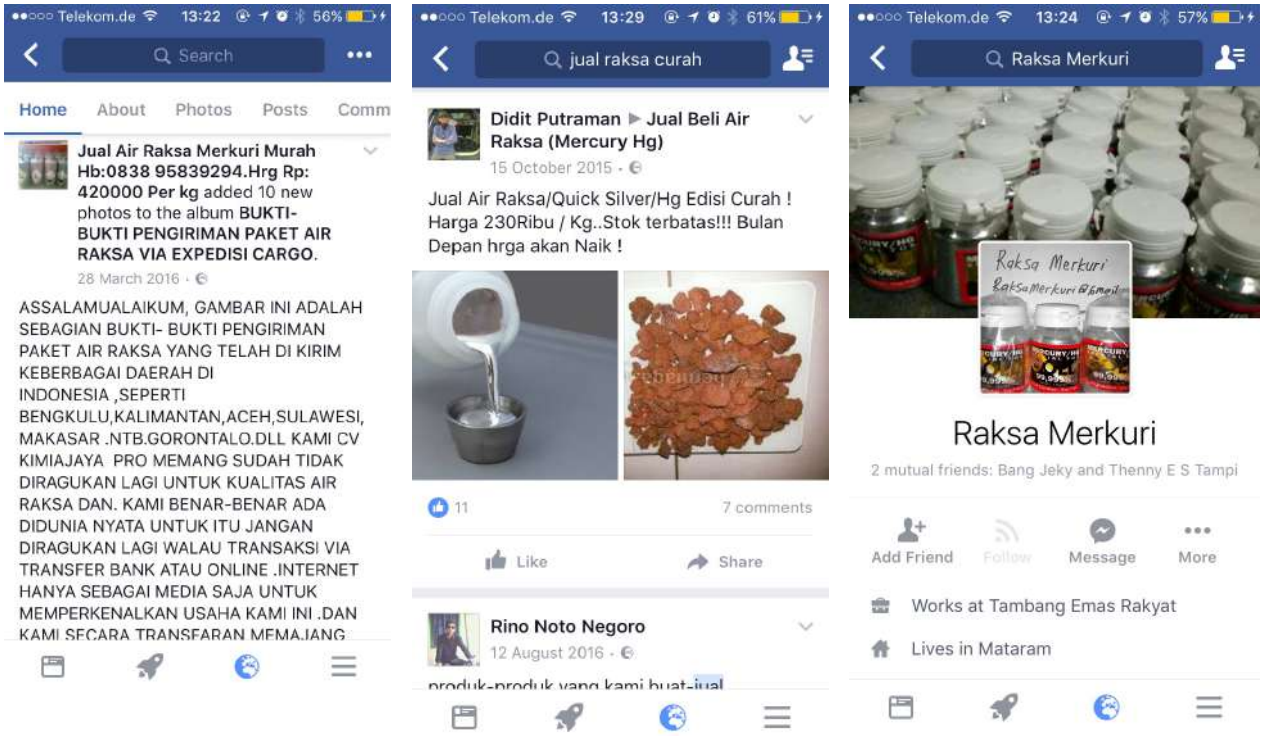
*Figure 26. Various pictures from the mercury traders websites*


*Figure 27. Various pictures from the mercury traders page in social media instagram*




*Starting export to Dubai*

*Figure 28. Various pictures from the mercury traders page in social media facebook*




At the local level, mercury sold at the local shop openly with various sizes and packaging. Usually, the shop also sell various tools and equipment needed by miners as shown in the picture below.

*Figure 29. Mercury 100 gram packaging sold at the local shop in Lombok sold at IDR 60,000 - IDR 75,000. Photo credit: BaliFokus.*


*Figure 30. Mercury/hg special for GOLD, 1 kg, 99.999% purity, already activated, individually wrapped sold in many gold buying kiosk.*
*Photo credit: Larry C. Price/Pulitzer Centre on Crisis Reporting*

*Figure 31. Mercury 13 kg packaging sold and used in a ball-mill unit in Sulawesi.*
*Photo credit: BaliFokus*

*Figure 32. Miner most of the times burned the amalgam in front of the gold kiosk.*
*Photo credit: Larry C. Price/Pulitzer Centre on Crisis Reporting.*

In many gold kiosks, the amalgam burning unit are located in the front side of the simple kiosk. Sometimes with simple stacks, mostly without. Her 5 years old daughter was

always by her side. Upriani was not aware that she was risking her daughter to mercury vapour exposures every day, 10 hours a day.

In regards with Perusda, every city and regency of Indonesia can establish a Perusda with the same business vision as *PT Perusahaan Perdagangan Indonesia*: to do business on behalf of the government (national or local). However, as or economy becoming more liberal, the role of a state-own trading company does not seem fit anymore. Almost all trade and commercial transactions can now be done by the private company as well as any state-owned company.

*Figure 33. Gold buyer and mercury seller can always be found in one in ASGM hotspots areas. In many places, women mainly are handling the gold buying and mercury selling business because it is an easy job for women.*
*Photo credit: Larry C. Price/Pulitzer Centre on Crisis Reporting.*

However, in the case of Perusda Kota Palu, it was now being reviewed by Palu parliament because the company has never been reported their revenues and profit-loss statements for a while. The local parliament member critique the performance of the Perusda for selling cyanide and called them as a parasite to the Palu city administration.[36]

[36] http://www.metrosulawesi.com/article/komisi-b-minta-walikota-palu-bubarkan-perusda

*Figure 34. Regular surveillance and check by the local law enforcement task force, also include the confiscation of the pump, generator set and mercury. The picture above was from Kalimantan. Photo credit: Mahendra/kriminalitas.com (2015)*

Once the mercury containers confiscated, it will be brought and kept either at the police office or at the evidence rooms belong to the Local Court and Justice Department. A visit to Central Sulawesi's evidence holding/storage house showed how the hazardous chemicals listed and kept in a room with very minimum inventory and safety measures including ventilations. There is no further information or regulation how long the evidence will be kept in the hold room and what will be the final measures.


*Figure 35. Hazardous substances received or delivered to the holding house of a provincial court displayed at the entrance of the room. Photo credit: Yuyun Ismawati/BaliFokus*

*Figure 36. The storage/holding room for hazardous substances and explosives belong to the Central Sulawesi provincial court. Mercury, cyanide and hand-made bombs are kept in the same room. Photo credit: Yuyun Ismawati/BaliFokus*

*Figure 37. Confiscated mercury and cyanide inside the holding room with minimum ventilation. Photo credit: Yuyun Ismawati/BaliFokus*

*Figure 38. Confiscated mercury inside the holding room next to the hand-made bombs. Photo credit: Yuyun Ismawati/BaliFokus*

More pictures with obvious phone numbers available in the **Annex 2** of the report.

## 15. Information gaps

The study found several information gaps:

- Sources of mercury in Indonesia:
  - Currently no comprehensive data/information available regarding the potential of cinnabar geominerals distribution in Indonesia;
  - There is no official data of how much gold is generated from ASGM sector in Indonesia. From the average ratio (conservative calculation) the use of mercury to produce gold Gold:Mercury (Au: Hg) = 1:10, and mercury produced 1000 tons per year, an estimated 100 tons of gold per year (greater than national gold production from large scale gold mines). No data available where the gold produced from ASGM sector sold or ended;
  - There are many informal/illegal mercury distilleries operated in several provinces. If the process legalised, will mercury production still be allowed in Indonesia? According to Article 3 Minamata Convention on mercury, after 2018 there will be no new mercury primary mining allowed to opened in countries that are party to the treaty. What will be the position of Indonesia in this matter?
  - Rough and limited information available but, currently, there is no information/data how much exactly mercury by-products generated from oil and gas sector in Indonesia and where the hg by-product will be stored;
  - In the past, waste containing mercury ≥260 mg Hg/kg from oil and gas sector were sent to the Netherlands or Germany to be recovered and recirculated to the market with profit-sharing basis. No information available on how waste containing mercury from oil and gas sector will be treated by Indonesian's contractors after the Minamata Convention entry into force;
  - In some areas, local police started to confiscate illegal mercury and other chemicals in ASGM hotspots areas. However, there is no information about the storage plan for mercury or how to store the confiscated mercury and mercury recovered from wastes.
- Trade, export-import and use of mercury (HS code 280.540):
  - The Ministry of Trade Decree No.75/PER/MDAG/10/2014 prohibited the importation, trade and use of mercury in mining sector. However, there is no prohibition to exploit cinnabar primary mining and process it into elemental mercury;
  - With Minamata Convention on mercury in mind, currently there is no information available in Indonesia whether exporting elemental mercury allowed or not;
  - Other commodity HS code for mercury compound that need to be investigated further as the potential route of smuggling (both import or export) mercury are:
    - HS code 2843 - Precious metal colloids, compounds and amalgam;

  - HS code 300640 - Dental cements and other dental fillings, bone cements;
  - HS code 901849 - Instruments and appliances, used in dentistry.
- We can find a long list of online mercury traders easily. What are the sanction/penalties for online mercury traders and how the Indonesian government will tackle them? The Article 3 and 4 of the mercury treaty recommended the public listings of mercury traders. Will public registry of illegal mercury traders help stop the illegal trade?
- How the mercury polluted soil, water, air, and the environment will be cleaned? Who will cover the costs? Will mercury traders also liable for the pollution they created at the downstream?

- Gold shops are also the main users and traders of mercury. A source at the local level confirmed the use of mercury for gold shops and purchased mercury from gold shops. However, until now there is no data available about this information. Currently, there is no official figure how much gold produced by artisanal and small-scale miners and where the gold ended up.

## 16. Recommendations

For national government agencies:

- Ratify the Minamata Convention on mercury as soon as possible before September 2017;
- Enforced the Ministry of Trade decree No. 75/M-DAG/PER/10/2014 and improve the export, import and mercury trade monitoring as well as prohibit the local production, and export of mercury.
- Shut down the location of cinnabar mining and unlicensed mercury refining practices.
- Take action against unauthorised merchants, merchants and merchants, and require them to clean up and assist the health costs of suspected mercury intoxication victims.
- Investigate mercury export licenses and actors involved in this matter.
- Develop guidance and measures to identify, characterise, and clean up mercury contaminated sites and establish a clean up fund similar to the US Super-Fund.
- Law enforcement actors should be prohibited to get involved in gold mining activities especially the illegal and informal ones. Law should be enforced.
- Develop multi-stakeholders task force to cut the supply chain of mercury, illegal mercury production and trade from primary cinnabar mining.
- Develop strategy to regulate and manage mercury by-product and waste containing mercury especially from the oil and gas sector. Recovered mercury from wastes and oil

and gas operation cannot be recirculated into the market and should be solidified in a fix form (using polymer, etc.). Include this strategy into the National Implementation Plan to eliminate mercury in Indonesia.

- Facilitate the formalisation of Artisanal and Small-scale Gold Mining (ASGM), regulate the governance of ASM, and introduce the non-mercury method.
- Develop guidance and measures to handle and manage confiscated liquid mercury in a temporary mercury storage facility especially in ASGM hotspots areas and at the national level.
- Implement the National Action Plan and enhance the multi-stakeholders cooperation to eliminate mercury in ASGM sector.

For local government agencies:

- Prohibit the mercury trade and use in ASGM sector in your jurisdiction areas.
- Enforced the existing environmental regulation and conduct vigorous monitoring program on mercury and ASGM activities.
- Enhance environmental and health monitoring program in ASGM hotspots.
- Develop Local Action Plan(s) to eliminate mercury in ASGM sector.
- Identify mercury contaminated sites and options to rehabilitate and remediate the sites.
- Identify alternative livelihoods for the impacted communities.
- Develop health related measures for the impacted communities especially children and women.

For academia, media, community leaders, and NGOs:

- Keep watching the circulation, flow, trade, production, and use of mercury in ASGM sector.
- Advocate for the real ban to use mercury, especially, in ASGM and health sectors.
- Support the National Action Plan to eliminate mercury in ASGM sector and the National Implementation Plan of the Minamata Convention on mercury.
- Support the environmental and health monitoring in ASGM hotspots areas.
- Provide inputs and participate in any actions to increase the capacity and knowledge of stakeholders about the long-term harmful impact of mercury.
- Working with local stakeholders to find a sustainable solutions to tackle mercury pollution.
- Promote non-mercury and non-chemicals gold processing method and added value of gold in ASGM communities. —oOo—

## Annex 1

List of mercury traders available online

**Table 22. List of mercury traders available online**

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| PT. Kimia Indah Makmur | - | - | https://ptkimia.wordpress.com/ | USA, Spanyol, Germany, China, Taiwan, Rusia | 0857 7331 1973 | - | Distributor / Supplier |
| Tambang Emas Aceh Minerals | Tambang Emas Aceh Mineral di Kec. Geumpang Kab. Pidie | Aceh | http://tambangemasacehmineral.blogspot.com/2011/02/product-air-raksa-mercury-tipe-air.html | Germany, USA, Spanyol | 081373665898 / 082374418555 | - | Supplier |
| Maju Selaras | Jl.Impres 13B Gg.Alun 04/02 No.55, Gaga - Larangan Tangerang 15154 | Banten | http://majuselaras.com/ dan http://majuselaras.indonetwork.co.id/ | USA | 081585556782 / 021-98849016 / 081289270182 | majuselaras@gmail.com | Trading peralatan Laboratorium |
| PT. Quantum Marhaba | Jl. Sunan Bonang Cigading Pasar Cilegon 42445, Banten Indonesia | Banten | http://quantummarhabacv.indonetwork.co.id/1370908/mercury-teknis-lab-air-raksa-hg.htm | USA, Spanyol, China | 0811123026 / 0254 315450 | Tuan Sutoha, quantummarhaba@gmail.com | Trading, distributor |
| Datra Chemical | Dukuh Zamrud, Legenda Park C8-15 Pedurenan Mustika Jaya Bekasi, Jawa Barat | Bekasi | http://datrachemical.indonetwork.co.id/5041914/cinnabar.htm#_ga=1.182371361.726076947.1427209686 | Cinnabar | PIN BlackBerry: 23BB88D0 / 08562212262 / 021-8261 4731 / 021 - 8261 4850 | datrachemical@gmail.com | |
| Indotec Production | Perumahan Resident Ai 18 Bekasi Indonesia | Bekasi, Jawa Barat | http://jualairraksa-alvin.blogspot.de/ | Lokal | Telp 087884360065 Whatshaap 08568222061 | Alvin, indotecproduction@gmail.com | Trader, export service |

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| PD. Wika Chemical | Jl. Perum Harapan Jaya Alexindo Blok-B No.106, Bekasi Utara 17124 | Bekasi, Jawa Barat | http://pdwikachemical.indonetwork.co.id/profile/pd-wika-chemical.htm; http://pdwikachemical.indonetwork.co.id/5297334/jual-air-raksa-mercury-99-99-aktik.htm | Jerman, China | 081289281645 | Tuan Rudy T, rudy.wikachel@gmail.com | Distributor |
| CV. Moejaya Abadi | Perumahan Harapan Jaya (Alexindo) Blok B No. 105, Bekasi Utara, Jawa Barat | Bekasi, Jawa Barat | http://moejaya.indonetwork.co.id/3377811/air-raksa.htm#_ga=1.187245614.726076947.1427209686; http://www.moejaya.com/produk.html | USA, China, Jerman, Spanyol, Rusia, Jepang, Swiss | 0812 9628 0934 / 0878 8251 8015 / Pin BBM 233F2983 | Nona Titin (Direktur/ CEO/Manajer Umum) marketing@moejaya.com | |
| CV. Surya Bakti Mandiri | Jl. Pengasinan RT. 01 / RW. 01, Kelurahan Pengasinan, Kecamatan Rawa Lumbu Bekasi | Bekasi, Jawa Barat | http://suryabaktimandiri.com/article/154213/jual-merkuri--air-raksa-sudah-diaktifkan.html | Lokal | 0812 - 1901 - 3090 (call / sms) | Bakti, admin@suryabaktimandiri.com | Trader, supplier |
| Mineral Indo Tech | Sumarecon Bekasi Blok BH 11 Bekasi Barat | Bekasi, Jawa Barat | https://www.indotrading.com/product/mercury-pure-p187130.aspx | Lokal | Mobile : 0812 8528 5457 International : +62 812 8528 5457 | mineralindotech@gmail.com | |

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| PT. Uyabo - anak perusahaan PT. Taman Eden | Jln PB Sudirman, Komplek Ruko Sudiman Agung Blok B. 09 Denpasar Denpasar 80225, Bali Indonesia | Denpasar | http://tambangemasindonesia.com/index.php/produk-kami/produk-kimia-tambang-emas/2-latest/48; http://webcache.googleusercontent.com/search?q=cache:ddbXCsNooCIJ:tamanedeen.indonetwork.co.id/profile/pt-taman-eden.htm+&cd=1&hl=en&ct=clnk&gl=uk linked to PT. Taman Eden | Jerman, Spanyol, USA | 021 915 11111 / 0821 4403 9333 / 087773208775 / 08123601111 / 081932195555 / PIN BBM: 28361700 / 26962082 / 51CECF95 / 0361 – 745 1000 / HP: 081 2360 1111 | Tio Efrat, Direktur email : tio_efrat@yahoo.com | Importir, trading, supplier |
| PT. Inti Alam Kimia | Jakarta | Jakarta | http://www.intialamkimia.com/air-raksa-kimia-tambang-emas/; | Jerman, Spanyol, USA | 021 915 11 11 1 / 0821 44 03 9 333 / 087773208775 / 08123601111 / 081932195555 / PIN BBM: 28361700 / 26962082 / 51CECF95 | | |
| PT. Inti Adonai Kimia Perkasa | Jakarta Selatan | Jakarta | http://ptintiadonaikimia.indonetwork.co.id/profile/pt-inti-adonai-kimia-perkasa.htm; http://homepageadonai.blogspot.co.uk/p/kontak-kami.html managed by PT. Inti Alam Kimia | Jerman, Spanyol, USA | 021 8347 7919, Jakarta: Call/sms :081 3260 1111 Lombok: Call/sms :0819 3229 50888 Sumbawa: Call/sms :0878 882 950 888 Palu: Call/sms :0811 454 354 | info.intiadonaikimiaperkasa@gmail.com | Importir, trader terbesar bahan kimia tambang |

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| PT. Taman Eden - berhubungan dengan PT. Inti Alam Kimia | Pantai Indah Kapuk Jakarta Utara | Jakarta | http://tambangemas.co.id/ | Jerman, Spanyol, USA | 087773208775 / 08123601111 / 081932195555 / 021 91511111 / 082144039333 | | Importir |
| PT. Taman Eden (airraksa.com) | Jakarta | Jakarta | http://www.airraksa.com/p/tentang-kami.html | Jerman, Spanyol, USA | 021 915 11111 / 0821 4403 9333 / 087773208775 / 08123601111 / 081932195555 / PIN BBM: 28361700 / 26962082 / 51CECF95 | | Importir, trading, supplier |
| PT. Adonai Perkasa | Jakarta | Jakarta | http://homepageadonai.blogspot.co.uk/ managed by PT. Inti Alam Kimia | Jerman, Spanyol, USA | 021 8347 7919, Jakarta: Call/sms :081 3260 1111 Lombok: Call/sms :0819 3229 50888 Sumbawa: Call/sms :0878 882 950 888 Palu: Call/sms :0811 454 354 | | Importir, trading, supplier |
| PT. Orlando Medika Chemical | Jl. Raya Bekasi Km.25,5 Jatinegara, Jakarta Timur | Jakarta | http://ptorlandomedikac.blogspot.com/2013/03/distributor-suplayer-chemical-air-raksa.html | USA, Spanyol, Germany, China | 021-85395946 (Hunting) / 021 85798226 | ptorlandomedikachemical@yahoo.com | Distributor / Supplier |

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| PD. Gemilang Sakti | Jl. Tanah Abang VIII Jakarta Pusat | Jakarta | http://gemilangsakti.web.indotrading.com/ | USA, China | +62 87742686794 / +62 2134635455 | | Importir |
| PT. Inti Selaras Pratama | Jl, Jenderal Gatot Subroto Kav. 36-38. Jakarta 12190 DKI Jakarta 12190 | Jakarta | http://ptintiselarasprata ma.indonetwork.co.id/ | USA, Spanyol, Jerman, China | 0813 1927 6382 / 021 4457 9944 / 021 44579945 | | Importir |
| PT. Abadi Perkasa Kimia | Gedung KPP Madya Jakarta Lantai 6 JL. M.I Ridwan Rais No. 5A-7 Jakarta Pusat 10110 | Jakarta | http://ptabadiperkasa.blogspot.com/ | Spanyol, USA, Jerman, China, Jepang | 021 3640 5617 | | Importir |
| PT. Sinar Mercury Service | Jl. Senen Raya, Komp. Ruko Segitiga Blok M No. 28G, Kec. Senen, Jakarta Pusat (Kota) | Jakarta | http://bisnisukm.com/+pt-sinar-mercury-service | Rusia, Spanyol, Jerman, China, USA | +62 21 3582 0169 | mahendra_sms@ymail .com | Importir / distributor |
| PT. Anugerah Inti Artha | Jln. Otista III No. B.25, Jakarta Timur | Jakarta | http://www.anugerahinti.com/ | Jerman, Spanyol, China | 021-8194547 / 021-8198838 | | Importir |
| PT. Pitra Telaga Traksa | Jl. Raya Cakung Cilingcing No 103 Km 3/5, Jakarta Utara 19910 | Jakarta | http://pitratelagatraksa.blogspot.com/ | USA, Spanyol, Germany, China, Taiwan, Rusia | TEGUH HERMAWAN 0878-8348-9697 / 021-4630-0885 | teguhhermawan209@yahoo.co.id | Importir |
| PT. Adhi Jaya Chemical | Jl. Laksda Yos Sudarso 29 - Tanjung Priok - Indonesia Jakarta Utara 14320, Jakarta Indonesia | Jakarta | http://adhichemicaljaya.indonetwork.co.id/4319459/jual-air-rakasa-mercury-aktif.htm#_ga=1.137889846.726076947.1427209686 | Spanyol | Heru Ferdian, HP +6285 372 833 697 / 021 4971 2077 | adhi.chemicaljaya@gmail.com | Trader |

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| PT. Aiga Indonesia | - | Jakarta | http://ptaigaindonesia.blogspot.com/ | USA, Spanyol, Germany, China, Taiwan, Rusia | 0813 8026 0487 / Fax 62-21-8430 3472 | - | Trader / Distributor |
| BC-Partners Trading | Jl. Kemayoran Serdang Gg. F4 No.31, Kemayoran Jakarta Pusat 10560, Jakarta | Jakarta | http://www.indonetwork.co.id/bc-partners_trading/3346456/retail-supplier-air-raksa-mercury-hg.htm | USA, China, Swiss, Rusia | Mustiko HP. 087770077477 , 081319292369 / Richard HP. 083890411169 / Eko HP. 02199505614 / Hermawan HP. 02195249852 / 0878 8251 8015 / 0812 9628 0934 / Pin BBM: 233F2983 | Richard / Bayu Mustiko, rezhad@yahoo.com, pt_adhikarya@yahoo.co.id | Supplier |
| CV. Mandiri Jaya Ebadia | Jl. Pulomas 1B No. 17 RT 11 / RW 12, Jakarta Timur 13210 | Jakarta | http://mandirijaya.co.id/ | Lokal, etc | 0821-146-333 33 / 0818-061-966 66 / 0822-657-111 11 / 021-29833463 / PIN BB 2A71CCDD dan 227E1007 | | Importir |
| PT. Aneka Megah Industri | Jl. Cikini Raya No.120 Cikini Menteng - Indonesia Jakarta Pusat 10330, Jakarta - Indonesia | Jakarta | www.jualairraksamercury.blogspot.com | Amerika, China, Spanyol, Rusia | 021-31757821 | pt.anekamegahindustri@gmail.com | Importir |

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| PT. Mitra Asia Packing (MAP) | Jl. Tegal Parang Selatan No. 2 C, Mampang Prapatan Jakarta Selatan 12790 | Jakarta | http://www.indonetwork.co.id/mitrapacking/5393059/air-raksa-mercury.htm | Lokal | 021-79192484 / 021-79192672 / 0811-92-5822 / 0858-1489-6469 | Tuan Chaerul, chaerul@mitrapacking.com | Perusahaan packing dan distributor (raksa) |
| PT. Inkey Berkah Abadi | Equity Tower 49th Floor, Jalan Jendral Sudirman, Kav. 52-53 SCBD, Jakarta Selatan 12190 | Jakarta | http://www.mercuryforsale.com; http://www.asianmetal.com/trade/getIntTradeInfoEn.am?bargainingId=146468 | Indonesia | 021-2965 1145 / 021-2965 1222 | Ms. Rika Zulchairy, Director / Murat Birsen, info@ptinkey.com | Manufacturing / Supplier / Trading company & iron flask chemical grade plastic bottle producer, 50 tons/mo |
| Sentra Teknik Utama | Mega Glodok Kemayoran (MGK) Lantai UG Blok A2 No.23 Jl.Angkasa Kav.B-6, Jakarta Pusat 10610 | Jakarta | http://sentrasafetyglodok.indonetwork.co.id/4706268/air-raksa-perak-34-5-kg.htm | Jerman, Spanyol, USA | 021-290 70241, 0821 132 62 123/ 0817 6414926 | Tuan Doli Pangaribuan (Direktur) sentrasafety@gmail.com / sentrateknikutama@gmail.com / salespertama@gmail.com | Trading Alat Lab dan alat safety |
| PT. Von & Fuer Lobugala Teknik | Lindeteves Trade Center, Lt.2, Blok B 12 No.3, Jl. Hayam Wuruk No. 127, Glodok, Jakarta Barat | Jakarta | lobugala.indonetwork.co.id; http://lobugala.indonetwork.co.id/4457791/mercury-air-raksa-hg-usa.htm | USA, Spanyol, Jerman | 021-6230 3292 / 081287311357 / 081288588347 / 0812 8648 9205 / 083894748996 / 08999769492 / Pin BB: 7FA39EA6 | lobugala@gmail.com; lobugalateknik@yahoo.co.id | Trading |

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| PT. Djims Kurnia Mercury | Jl. Tebet Dalam 4 Rt.12 Rw.01 No. 19, Tebet Barat, Jakarta Selatan 12810 | Jakarta | http://www.indonetwork.co.id/ptdjimskurniamercury/profile/pt-djims-kurnia-mercury.htm | USA, Spanyol, Jerman, Rusia, China | 021 - 8332 7385 (Hunting) / HP 0852 1230 2196 / Fax. 021 - 832 7358 | Tuan Djims Kurnia info.dkmindonesia@gmail.com | Trading |
| CV. Anugrah Berkah Technik | Mega Kemayoran (MGK),Lantai GF Block D9 No.9 Kemayoran 11010, Jakarta | Jakarta | http://www.indonetwork.co.id/airperaksejahtera/profile/ud-anugrah-berkah-technik.htm | Jerman, USA, Spanyol, China | PIN BBM 2B2BB1E0 / 0896 587 55 313 / 021-65866198 | Tn. Fredian Saputra (Pemilik), airperak179@yahoo.com | Trading, importir |
| PT. Airraksa Maret | Jl. Pintu Air Raya No.26 Jalan Pintu Air Raya, Kelurahan Pasar Baru, Sawah Besar Jakarta Pusat 10710 | Jakarta | http://airraksa-maret.webnode.com/; http://airraksa-maret.webnode.com/kami-menjual-semua-kebutuhan-tambang-emas-mulai-dari-air-raksa-mercury-karbon-aktif-super-activated-carbon-platinum-sodium-cyanide-sianida-sianit-borak-soda-api-caustic-soda-power-gold-ph-digital-ph-kertas-mikroskop-digital-timb/ | USA, China, Jerman, Spanyol, | 081 284 8383 54 / 021-3433 0965 | airraksa.maret@gmail.com | Trading |
| PT. Wira Mercury | Jl. Raya Jatinegara Barat No. 102 Jatinegara, Jakarta Timur 13320 | Jakarta | http://ptwiramercury.blogspot.com/ | USA, Spanyol, Germany, China | 081316320809 / 021-85374072 | info.wiramercury@gmail.com | Trading |

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| PT. Asiatida Utama Raya | Jl. Otto Iskandar Dinata Raya No. 74B Jatinegara Jakarta Timur | Jakarta | http://asitarapt.indonetwork.co.id/profile/pt-asiatida-utama-raya.htm | - | 082310711295 | info_asiatidautamaraya@yahoo.co.id | Trading |
| PT. Mustika Farma | Jl. Raya Kebayoran Lama No.557 DKI Jakarta 12220 | Jakarta | http://ptmustikafarma.indonetwork.co.id/profile/pt-mustika-farma.htm | China, Jerman, USA, Spanyol | 0852 1218 0167 / 021 3689 8760 (Hunting) / 021- 3698768 | Khairul Fahmi, mustikafarma_pt@yahoo.co.id | Trading, importir |
| UD. Harry Purnama | Jl.Jepara No.7 Komplek KBN Marunda Cilincing - Jakarta Utara 14120, | Jakarta | http://udharrypurnama.indonetwork.co.id/; http://udharrypurnama.indonetwork.co.id/#_ga=1.215942673.726076947.1427209686 | China, Jerman, USA, Spanyol | 021-4628 4736 (Hunting) / 081283124215 / Fax. 021-4474 6469 | Tuan Raffa Yudika infomercury@gmail.com | Trading, Importir |
| PT. Tryasa Nagamas Farma | Jl. Raya Udang No. 75 Kawasan Industri Pulogadung Jakarta 13920 Dki Jakarta Indonesia DKI Jakarta 13920 | Jakarta | http://pttryasanagamas.indonetwork.co.id/profile/pt-tryasa-nagamas-farma.htm | USA, Spanyol, Jerman, China | 081210727322 / 021 4469 7540 / 021 4475 469 | Julius Kristian (Direktur/ CEO), tryasanagamas_pt@yahoo.co.id | Trading |
| SS Mercury Gold | Wisma Laena Lt.5, Jln.KH.Abdullah Syafei No.6 Casablanca,Tebet Jakarta Jakarta Selatan 12860 | Jakarta | http://www.indonetwork.co.id/ssmercu/profile/air-raksa-mercury-bahan-tambang-emas-ss-mercury-gold.htm | Spanyol, Jerman, Rusia, China, USA | 021-83687127 | ssmercu@gmail.com | Supplier |

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| PT. Waruna Nusa Chandra | Jl. Gatot Subroto No. 37 Jakarta Pusat 10270 | Jakarta | http://jakarta-pusat.infoisinfo.co.id/kartu/pt-waruna-nusa-chandra/120260 | Spanyol, Jerman, China, USA | 021-5116 8708 / 0812 8176 3625 | pt.warunanusachandra@gmail.com | Trading |
| PT. Alam Mercury Indonesia | Jl.Teuku Cik Ditiro No.102-Menteng, Jakarta, Jakarta Pusat, 10350 | Jakarta | http://ptalammercury.indonetwork.co.id/4908671/mercury-air-raksa.htm | USA, Spanyol, Jerman, China | 021-3590 9896 / 021-3177 8132 | pt.alammercury@gmail.com | Supplier |
| GSC Intrade/ Geoscanner Indonesia | Jl. Alaydrus No. 29 Jakarta Pusat, Head office: Gajah Mada Tower, 18th Floor, Room 1808, Jl. Gajah Mada No. 19-26. Jakarta 10130. Indonesia; Jl. Kh. Zainul Arifin No.32, Petojo Utara, Gambir, Kota Jakarta Pusat, Daerah Khusus Ibukota Jakarta 10130, Indonesia | Jakarta | http://www.indonetwork.co.id/gsc_intrade/profile/gsc-intrade.htm; http://www.indonetwork.co.id/gsc_intrade/5243264/mercury-air-raksa-hg-untuk-pengolahan-emas.htm ; http://gsc-mineral.blogspot.co.uk/ • http://www.exportersindia.com/geoscanner-indonesia/ • http://gscmineral.en.ec21.com/ | Lokal, Cinnabar | Slamet (Penjualan), 0817800292 | Fifiyanti, Phone +62 - 819 - 05387822 | Trading |

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| PT. Interchem Plasagro Kimia | Wisma SMR Lantai 5 Unit 503 Jl. Yos Sudarso kav. 89, Jakarta Utara 14350 | Jakarta | http://www.interchem.co.id/ dan http://www.chemicalindonesia.com/cdet/34/profile/interchem-plasagro-jaya | Amerika, Spanyol, Germany, Ex China | 62-21 – 65308462 / 021 3848 31310 | http://www.interchem.plasagro.kimia@gmail.com/ dan plasagro@pacific.net.id | Trading |
| CV. Kimiatama Chemical | Mutiara Taman Palem Blok B2 No.39 Jl.Kamal Raya Outer Ring Road Cengkareng | Jakarta | http://www.kpindo.com/produkdetail8950-Jual-Air-Raksa.html | USA, Spanyol, Jerman, China | FREDY 0813 1668 5050, 087883725339 | - | Distributor |
| CV. Pandu Kimia | Jl. Jend. Basuki Rachmat No. 19, Cipinang Muara, Jakarta Timur 13430, Jakarta Indonesia | Jakarta | http://pandukimiacom.indonetwork.co.id/5544742/air-raksa-galonan.htm#_ga=1.137767094.726076947.1427209686 | USA, Spanyol, Jerman | 021-85485514 | Tuan Pandu (Pemasaran) info.pandukimia@gmail.com | Trading, importir |
| CV. Call Istana Jegez | JL. Otista Raya, Maribaya Building 2Nd Floor N0.141 Jakarta Timur 13330, Jakarta | Jakarta | http://www.indonetwork.co.id/Cij_International/3435439/air-raksa.htm | USA, Jerman, China | 021 851 2007 / 0812 8605 9997 | Tuan Alfha H, SH (Direktur/ CEO/Manajer Umum) cij_alfha@yahoo.com | Trading, importir |
| PT. Raisah Chemical | Jl. Kodam Raya Jakarta Selatan 10460, Jakarta | Jakarta | http://ptraisahchemical.indonetwork.co.id/#_ga=1.215942673.726076947.1427209686 | USA, Spanyol, Jerman, China | 0812 1899 4245 | Sukrawan (Pemasaran) ptraisah@gmail.com | Trading |

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| CV. Abadi | Grogol Jakarta 11450 | Jakarta | | Lokal, Cinnabar | 0813 4076 7789 / 0813 5580 9606 / 0812 8618 0432 | Ovan SE, | Trading |
| PT. Era Masindo | Jl. Luar Batang IX no. 2A, rt 3 rw 4 Penjaringan, Jakarta Utara, Jakarta, Indonesia | Jakarta | https://www.indotrading.com/company_merkuri_2872/ | Lokal, Cinnabar | HP 081328326865 5-0878821195 13 | | Trading |
| NN | - | Jakarta | http://jualairraksakimia.blogspot.com/ | Jerman, USA, Spanyol, China | 021-36168480 | | |
| CV. Moejaya Abadi | Perum Harapan Jaya (Alexindo) Blok B No. 105 Bekasi Utara | Jawa Barat | http://www.moejaya.com/ | Amerika, Spanyol, China, Rusia | 0878 8251 8015 / 0812 9628 0934 | marketing@moejaya.com | Importir |
| Ir. Eko Setiawan | JL Palem Hijau 4 Blok G 10 No 15A, Perum. Bulevar Hijau Harapan Indah, Bekasi Barat | Jawa Barat | www.airraksamercury.blogspot.com | USA, Spanyol, Germany | 08161823953 (MENTARI) 087887566851 (XL) 085711459982 (M3) 081286867260 (SIMPATI) 02199785747 (ESIA) 02188985924 (RUMAH) | | Penjual peroran gan |
| PT. Nyk Gilang Sentosa | Bekasi Office: MM2100 Industrial Town Block J No. 10 Cikarang Barat Bekasi 17520, Jawa Barat | Jawa Barat | http://tokoterlengkap.com/88/73/60/jual-mercury-air-raksa-untuk-tambang-emas_pt-nyk-gilang-sentosa.htm | USA, Spanyol, Germany, China, Rusia | Jameil Mufad +62812 1851 8763 | nyk_gilangsentosa@yahoo.co. id | Importir |

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| CV. Mulia Mandiri Sentosa | Komplek LIPI Baranang Siang B No. 111 Bogor, Jawa Barat Indonesia | Jawa Barat | http://cvmuliasentosa.indonetwork.co.id/profile/cv-mulia-mandiri-sentosa.htm ; http://cvmuliasentosa.indonetwork.co.id/5443793/air-raksa.htm | - | 081218259112 / 081212308944 / 085692372350 / 0251-8385775 (Hunting), PIN BBM 526bef95 | info_mms@yahoo.co.id | Fabrikasi, Trader. Supplier |
| PT. Golden Metal Indonesia | Permata Kopo Blok F No.137 Bandung 40228 | Jawa Barat | http://goldenmetalindonesia.indonetwork.co.id/profile/golden-metal-indonesia.htm | Spanyol, Jerman | 081 222 674 889 / 022-7516 1599 / PIN BB 28D08848 | - | Trading |
| A & J Mineral Indonesia | Jl. Kedung Halang 15 B Bogor 16158 | Jawa Barat | http://indonetwork.co.id/a_jmineralindonesia | USA, Spain, Germany, China, Indonesia (Lokal) | 081227201233 / 081288345135 / 085882662749 | Tn. Azam Riyanto [Direktur/ CEO/Manajer Umum] | Trading |
| PT. Mineral Indo Tech | Perumahan Sumarecon Blok BH 11 Cluster Acasia, Sumarecon Bekasi / Taman Malaka Barat Blok E9 no.16, Jakarta 13460, Jakarta Indonesia | Jawa Barat, Jakarta | http://www.jualcairankimia.com/; http://mineralindotech.indonetwork.co.id/5155213/air-raksa-merkuri.htm#_ga=1.187245614.726076947.1427209686; http://en.indotrading.com/company/pt-mineral-indo-tech.aspx | Spanyol, USA, Jerman, China | 021 9492 5257 / 0812 8528 5457 / 0856 9491 5577 | | General Trading & Konsultan |

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| PT. Indo Guna Cipta | Jl. Kusumawardani H-14 Kec. Semarang Selatan Semarang 50342 | Jawa Tengah | http://www.indogunacipta.co.vu/; http://www.indonetwork.co.id/PT_Indo_Guna_Cipta/4155314/air-raksa-mercury-china-99-99.htm | China | (024) 747320 | pt.indogunacipta@gmail.com | Trading |
| PT. Nusa Indah Megah | Jalan Raya Menganti Kedurus no 26 Kedurus, Karang Pilang, Surabaya | Jawa Timur | http://www.supplierbahankimia.com/, http://www.nusaindahmegah.com/ | Spanyol, USA | +62 317666846 +62 81217666676 +62 87777789894 | info@nusaindahmegah.com | Importir |
| PT. Adhi Jaya Chemical | Taman Perkantoran Citra Raya. Jl. Citra Raya Utama Kav. 1/ 7A-B. Citra Raya, Surabaya 60219 | Jawa Timur | http://info-adhijayachemicalpt.blogspot.com/ ; http://info-adhijayachemicalpt.blogspot.co.uk/ | USA, Spanyol, Jerman, China, Peru (TMC Corporation) | 031 – 773 20 957 / 081331161157 (Hary Widjaja) / 082328787897 (Dody Semiarto) / | info.adhijayapt@ yahoo.co.id; | Importir |
| CV. Eddy Kimia | JL. BKR Pelajar NO.43 Surabaya | Jawa Timur | http://iklanpangandaran.com/ads/jual-air-raksa-mercury/ | USA, Spanyol, Jerman, China, Rusia | 0899-2706-126 | eddykimia@gmail.com | Supplier |
| UD. Joyo Jaya | Calukan RT.4 RW.5 No.78 B, Desa Keboan Sikep - Gedangan (belakang bekas pabrik Sasa) Sidoarjo 61254, Jawa Timur | Jawa Timur | http://joyodjaja.indonetwork.co.id/4354857/jual-air-raksa-mercury-hg-eceran-50-gram-an-dari-spanyol.htm | Spanyol | 082329292947 / 031-40058555 / 0898 8855 333 / PIN BBM 53dc0f75 | Andrey Wijaya (Pemilik), joyojaya@ymail.com | |

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| CV. Intan Permata Jaya | Jl. Ki Ageng Gribig 7/6 Malang | Jawa Timur | http://www.indonetwork.co.id/proses_mineral/3671697/air-raksa.htm dan http://tungkupeleburlogam.wordpress.com/ | USA | 081358000551 / | mineraltambang@yahoo.co.id | Trading |
| Mustamin Ahmad | Jl. Daeng Tantu 1 No. 19 Rappokalling Tallo, Makassar | Sulawesi Selatan | http://mustaminahmad.blogspot.com | Spanyol, USA, Jerman, China | 0821 4403 9333 / 087773208775 / 08123601111 / 081932195555 / PIN BBM: 28361700 / 26962082 / 51CECF95 | mustaminahmad@gmail.com | Penjual peroranan |
| CV. Jaya Raksa | JL.Sutoyo Siswomiharjo No.10 Kel. Pasar Baru Sibolga | Sumatera Utara | - | USA, Spanyol, Jerman, China | 0631-7006548 | - | Supplier |
| PT. Imperium Centrebiz (PTICB) | Pantai Mentari W3, Kenjeran 60000 Surabaya | Surabaya | http://mesinemas.blogspot.de/p/kursus-mineral-processing-kurs.html | Spanyol, USA, Germany | Telp / Fax : 031.3896159 HP : 081213064569 Pin BB : 2A3C85AA | Hary Setiawan, pticbiz@gmail.com | Trading, courses, consultancy |
| PT. Insoclay Acidatama | Ruko Villa Pamulang, C1 No. 2-3 Pamulang, Tangerang Selatan | Tangerang, Banten | http://insoclay.com/, https://www.indotrading.com/product/merkuri-mercury-p318844.aspx | Germany | 021-29510551 (fix line) 081315349998 (hot line) Sales 021 2951 0551 0812 1360 9885 0859 6650 2485 | info@insoclay.com | Trader, importer |

| Company | Address | Prov. | Website | Hg origin | Phone/Fax | Email | Remark |
|---|---|---|---|---|---|---|---|
| UD. Tansah Rahayu | Mas Wijaya (pemilik), Desa Gedang Rejo, Karang Mojo, Gunung Kidul 55981 Andry Wijaya, Calukan RT4/ RW 5 No.78, Desa Keboan Sikep, Kec. Gedangan, Sidoarjo, Jawa Timur | Yogyakarta, Sidoarjo | http://www.indonetwork.co.id/tansah_rahayu/4647444/jual-air-raksa-mercury-hg-lokal-hub-082329292947-53dc0f75.htm | Lokal | 082329292947 / PIN BBM 53dc0f75, 031-40058555 | tansah_rahayu@yahoo.com | Trading |

## Annex 2

More pictures of mercury sales and trade from community report, trade platform, electronic media, and social media


*Fig. 39. Weighing the cinnabar ores in sacks.*
*Source: Community report to WALHI*

*Fig. 40. Cinnabar ore stock ready to be transferred to buyers.*
*Source: Community report to WALHI*


*Fig. 41. Online ad with price and contacts. http://1.bp.blogspot.com/-Pk3OSJcAeME/U7SfB5X_82I/AAAAAAAAAAk/dU4EFXs0w84/s1600/aa.jpg - accessed 09.12.2016*

*Fig. 42. Mercury in 1 kg bottles. http://4.bp.blogspot.com/-1KEDNI9Po6Q/VvpJyBp3D-I/AAAAAAAABPs/qaefO7mc_hAcn0K_oWHhnbEYceEi65jbg/s302/botoll%2B5.JPG - accessed 08.12.2016*


*Fig. 43. Shipment receipts. https://4.bp.blogspot.com/-CZ0ZqAUuY_w/Vxj3IQ14MvI/AAAAAAAABWA/6Bg4esxlDKIDgEDpr6z1QLfoZgdaYEWbwCK4B/s1600-r/bukti%2Bresi%2B10.JPG - accessed 10.12.2016*

*Fig. 44. Supplier yang Tidak Terverifikasi PT. TAMAN EDEN [Indonesia]. Harga Fob: US $ 16-20. Pelabuhan: Tanjung Priok, Jakarta-Indonesia. Jumlah Pesanan Minimum: 20 Ton/ton Cinnabar batu. https://indonesian.alibaba.com/product-detail-img/cinnabar-cinnabar-batu-cinnabar-merah-cinnabar-cinnabar-bijih-50013851989.html Accessed by 11 Dec 2016*


*Fig. 45. PT. TAMAN EDEN [Indonesia] https://indonesian.alibaba.com/product-detail-img/cinnabar-cinnabar-batu-cinnabar-bijih-merah-cinnabar-cinnabar-batu-50011440646.html Accessed by 11 Dec 2016*

PEMERINTAH KABUPATEN SUKABUMI
KECAMATAN CIAMBAR
KANTOR DESA WANGUNJAYA

Alamat: Jl Cisarua No 16 Wangunjaya Ciambar_Sukabumi Telp:081398481147 E-mail:desawangunjaya3@gmail.com Web: http://desawangunjaya.blogspot.com

SURAT KETERANGAN USAHA

Nomor :141/219/wj/01/2015

Yang bertanda tangan di bawah ini, Kepala desa Wangunjaya Kecamatan Ciambar Kab Sukabumi
Dengan ini Menerangkan bahwa

| | |
|---|---|
| Nama Lengkap | : MALIK ALWI |
| Nomor Nik | :3202470505750004 |
| Tempat /Tanggal Lahir | : Sukabumi 05 -05-1975 |
| Jenis Kelamin | : Laki-Laki |
| Setatus Perkawinan | : Kawin |
| Warga Negara | : Indonesia |
| Agama | : Islam |
| Pekerjaan | : Wiraswasta |
| Alamat Lengkap | : Kp Simagalih Rt 001 Rw 0012 Desa wangunjaya Kec Ciambar Kab Sukabumi Jawa Barat indonesia |

Nama diatas Benar-benar Warga Desa Wangunjaya Kec Ciambar Kab Sukabumi Jawa Barat yang Bertempat tinggal di alamat di Atas,Dan Berdasarkan penelitian kami nama tersebut memiliki usaha

Jenis Usaha:== [JUAL AIR RAKSA[MERCURY] DAN JASA KEUANGAN ==

Demikian surat keterangan Usaha ini Dibuat dengan sebenar nya,Kepada

Pihak yang Berkepentingan Agar mengetahui ,dan Bisa di Pergunakan seperlunya

Wangunjaya, 4 Januari 2015
Kepala desa Wangunjaya

MALIK ALWI . MM

MISWAHIDIN

*Fig. 46 Permit to trade mercury and financial service belong to Malik Alwi, issued by the Wangunjaya Village, Ciambar Sub-disctrict, Sukabumi Regency – accessed by 10 December 2016*

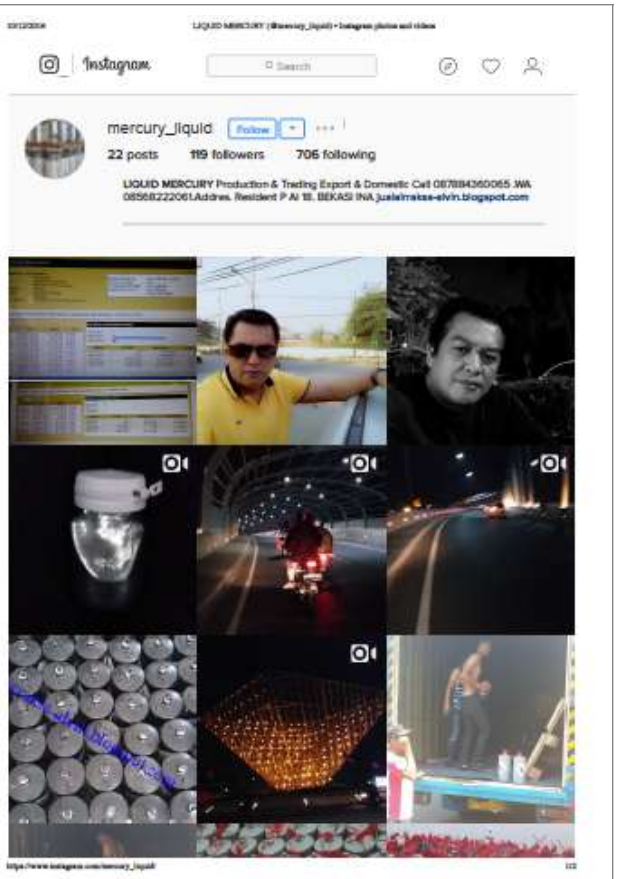



*Fig. 47. Instagram account @mercury_liquid - accessed 10.12.2016*


*Fig. 48. Mercury package ready to be sent to silver-gold smiths in Gianyar, Bali prepared by PT. Kimiajaya Pro.*


*Fig. 49. Cinnabar ore from West Seram ready to be transferred by Garuda Cargo to Jakarta and then Sukabumi. Source: Community report to WALHI*


Instagram
liquid_mercury
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Contact: Mr. Rachmat Suryadi
Email: sales@liquid-mercury.com
Phone: +62 878 7773 8259
Adress: Villa Mutiara Cinere Depok, West Java Indonesia
Company Profil
Our company is engaged ir
We've experienced for app
the processing of mine suc
• Cigaru Sukabumi, West J
• Sekotong and Praya, Lom
• Durian River, Kalimantan
• Mandailing Natal, Sumate
• Buru Island, Ambon Indor
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mercury_liquid Starping export to dubay
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*Fig. 54. Mercury export ad. http://3.bp.blogspot.com/-AVyT3lBU8_w/VdflHcKiz1I/AAAAAAAAAbA/5ToljlrX30E/s1600/alvin%2Bmer.jpg - accessed 11.12.2016*


*Fig. 55. Ad to promote mercury 'activator' with a very obvious contact number.*

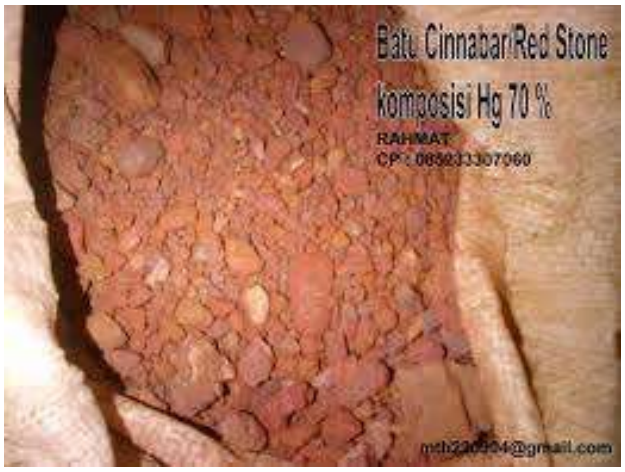


*Fig. 56. Cinnabar ore trader - http://img.indonetwork.xyz/products/thumbs/600x600/2014/04/27/5b4bbac3663620fa986d68c634fe4a39.jpg - accessed 12.12.2016*


*Fig. 57. Another type of 1 kg of mercury packaging. https://www.fobuma.com/mini/thb/agungmitramercury/agungmitramercury_4_fu.jpg - accessed 12.12.2016*

*Fig. 58. Mercury packaging in glass bottles. http://4.bp.blogspot.com/-PsD0jlHK3aM/U0t_51mqZoI/AAAAAAAAABs/VB0LrqKaELc/s1600/123.jpeg*


*Fig. 59. Cinnabar ore trader - http://img.indonetwork.xyz/products/thumbs/600x600/2014/04/27/d8249b199d3073f792ac494e304c3be5.jpg - accessed 13.12.2016*


*Fig. 60. Email contact of mercury exporter. https://image1ws.indotrading.com/s3/productimages/co18387/p187148/w300-h300/995e0a21-728f-46ec-8220-e33c86b9141dw.jpg*


*Fig. 61. Another form of individual packaging. http://3.bp.blogspot.com/-M-oYEukFhk0/UNzCteQ67BI/AAAAAAAAAEQ/komNjs7Bifk/s640/PT.ABADI+PERKASA+kimia+JPG+10.jpg*


Fig. 62. Another packaging of mercury 'German activator' .http://1.bp.blogspot.com/--vOKhG8lImE/VTJcJcKrh9I/AAAAAAAAAMU/687PKFvRL_A/s1600/download%2B%25281%2529.jpg - accessed 09.12.2016


Fig. 63. Labelling. https://image1ws.indotrading.com/s3/productimages/co18926/p116229/w200-h200/544b0195-8f85-436e-905b-2748a8fd206cw.jpg - accessed 10.12.2016


Fig. 64. Different type of labelling. https://s1.bukalapak.com/img/190606124/w-300/Mercury_Air_Raksa.png - accessed 11.12.2016


Fig. 65. Labelling in black for 'gold catcher'. http://lh5.googleusercontent.com/-qMmlh5MzscU/AAAAAAAAAAI/AAAAAAAAAGE/juWr5pEYA8s/s512-c/photo.jpg - accessed 10.12.2016


*Fig. 66. Wooden packaging to transfer mercury. http://jualairraksamerkurimurah.blogspot.co.uk/ - accessed 10.12.2016*


*Fig. 67. Kwik Klin, mercury cleaner/purifier https://s3.bukalapak.com/img/82122184/m-1000-1000/20150725_114352.jpg - accessed 10.12.2016*

*Fig. 68. Cinnabar ore trader http://1.bp.blogspot.com/-XPRhFK-XPto/VI2BwyTa7II/AAAAAAAAAPA/jGvhBjeP7uY/s1600/IMG_20141012_185604.jpg - accessed 13.12.2016*

*Fig. 69. Cinnabar ore trader - http://2.bp.blogspot.com/-81ETPqI5zzE/VI2Bw6BI0CI/AAAAAAAAAPE/PVUTN1Kf2AY/s1600/2014-10-27%2B17.53.18.jpg - accessed 13.12.2016*


Fig. 70. Packaging in plastic jerry can. https://storage.jualo.com/original/1170463/image_20150605-13572-11yi0sl.jpg


Fig. 71. Clear address and contact of a mercury trader. http://1.bp.blogspot.com/-TY38ffch3yI/UNzBKUJiT6I/AAAAAAAAADA/sbZefJZ9knE/s640/PT.ABADI+PERKASA+kimia+JPG+1.jpg - accessed 08.12.2016

Fig. 72. Green flask for China mercury market. http://1.bp.blogspot.com/-ej-AxgeHu0k/VSUxE0Y2uRI/AAAAAAAAAIs/gdP46cOeoWg/s1600/30A1375C-3411-408C-A29A-89A6A7712292.jpg - accessed 12.12.2016


Fig. 73. Another ad of mercury trader. http://1.bp.blogspot.com/-h1dOd_-zNdM/U3sS26rawII/AAAAAAAABxQ/Tutxq4fmJCM/s1600/MERCURY+MURAH+EDIT+05.png - accessed 20.12.2016


*Fig. 74. Advertorial for mercury made in Sukabumi. https://www.google.co.uk/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&ved=0ahUKEwju8rCatIDTAhUDzxQKHW-bAU0QjxwIAw&url=http%3A%2F%2Fpeluangusahaagenlistrik.blogspot.com%2Fp%2Fjual-air-raksa-murah.html&bvm=bv.151325232,d.ZGg&psig=AFQjCNESXIPnXgq4EaihK2_ixq24Rl2GSg&ust=1491036553191551 - accessed 10 Dec 2016*


*Fig. 75. Another ad with contact number and the name of company. http://4.bp.blogspot.com/-lSCFX4yc134/Vd59R20jULI/AAAAAAAAAcA/4RFP4zxcOYk/s1600/indotec%2B788.jpg - accessed 13.12.2016*


*Fig. 76. Black flask packaging for export. https://storage.jualo.com/original/1817322/tabung-galon-mercur-lain-lain-1817322.jpg - accessed 11.12.2016*


*Fig. 77. Stainless steel packaging with name of company and contact number. http://img.indonetwork.xyz/products/thumbs/600x600/2012/10/07/e7fe492e321f76462c0e7392259210af.jpg - accessed 11.12.2016*


*Fig. 78. Mercury package in a 1-kg bottle labelled as "made in Spain". http://cikarang.biz/wp-content/uploads/imgupload/2014/01/23/8821-2.jpg - accessed 10.12.2016*

Fig. 79. Another type of 1-kg mercury packaging. https://image1ws.indotrading.com/s3/productimages/co38638/p329120/w300-h300/d31b7c8c-2b9c-41f4-933b-f47535fb8d61w.jpg - Accessed11 Dec 2016


Fig. 80. The label said “99.99%" and “special for gold’s”, “already activated” . http://karkoon.com/wp-content/uploads/2016/02/Air-raksa.jpg - Accessed 11 Dec 2016


Fig. 81. Mercury from “Spanyol”. http://1.bp.blogspot.com/-dSM0geg0ME8/U4_KazThG9I/AAAAAAAAAFA/vcQ06T7ZGZM/s1600/10352829_762997043745283_4850540477369109065_n.jpg - Accessed 12 Dec 2016


Fig. 82. Another type of labelling. http://www.intialamkimia.com/wp-content/uploads/2016/10/jual-air-raksa.jpg - Accessed 12 Dec 2016

## Annex 3

Table 23. Flow of mercury export-import of Indonesia and import notification as reported by trade partner of Indonesia 2012-2016 (for HS 280540)

| Year | Import | | | Export | | | Mercury import notification from Indonesia as reported by trade partners | | |
|---|---|---|---|---|---|---|---|---|---|
| | Net weight (ton) | Trade value (mio US$) | Partner | Net weight (ton) | Trade value (mio US$) | Partner | Net weight (ton) | Trade value (mio US$) | Reporter |
| 2012 | 0.99 | $ 0.20 | Germany, Japan, Netherlands, Thailand, USA | 16.25 | $ 0.01 | Malaysia, Timor Leste | 0.78 | $ 0.014 | Sudan |
| 2013 | 1.32 | $ 0.19 | Japan, USA | 6.98 | $ 0.00 | Timor Leste | 0 | $ 0.000 | — |
| 2014 | 0.73 | $ 0.12 | Germany, USA | 0.81 | $ 0.00 | Timor Leste | 0 | $ 0.000 | — |
| 2015 | 0.73 | $ 0.12 | USA | 283.72 | $ 2.60 | China, China Hongkong SAR, Eritrea, India, Malaysia, Netherlands, Papua New Guinea, Poland, Singapore, Switzerland, Thailand, Timor Leste, United Arab Emirates, USA, Vietnam | 154.28 | $ 2.589 | Brunei Darussalam, China Hong Kong SAR, Guyana, India, Netherlands/ EU-27, Singapore |
| 2016 | 0.00 | $ 0.00 | 0 | 634.50 | $ 3.44 | China, Hong Kong SAR, Colombia, India, Japan, Pakistan, Panama, Papua New Guinea, Singapore, South Africa, Thailand, United Arab Emirates, Viet Nam | 191.092 | $ 3.928 | Bosnia Herzegovina, Brazil, Colombia, China Hong Kong SAR, Pakistan, India, Rep. of Korea, Singapore, South Africa, Switzerland, Turkey |
| **Total** | **3.777** | **$ 0.62** | | **942.25** | **$ 6.05** | | **346.152** | **$ 6.531** | |
| **Discrepancy between export notification vs partner's import notification** | | | | **596.10** | **$ (0.48)** | | | | |

*Source: UN Comtrade database based on mercury import-export notifications reported by Indonesia and import notification from Indonesia as reported by trade partners.*

Table 24. Flow of mercury export-import of Singapore and import notification as reported by trade partner of Singapore 2012-2016 (for HS 280540)

| Year | Import | | | Export | | | Mercury import notification from Singapore as reported by trade partners | | |
|---|---|---|---|---|---|---|---|---|---|
| | Net weight (ton) | Trade value (mio US$) | Partner | Net weight (ton) | Trade value (mio US$) | Partner | Net weight (ton) | Trade value (mio US$) | Reporter |
| 2012 | 608.89 | $ 55.65 | Belize, China, Germany, Japan, Kyrgyzstan, Mexico, Peru, Russian Federation, India, Spain, Switzerland, Thailand, USA | 478.32 | $ 51.63 | Brazil, Colombia, Croatia China, Curaçao, Guyana, Hong Kong SAR, India, Indonesia, Japan, Kenya, Malaysia, New Zealand, Nigeria, Norway, Papua New Guinea, Peru Philippines, Rep. of Korea, South Africa, Togo, Turkey, USA, Uzbekistan | 15.90 | $ 0.86 | Croatia, China Hong Kong SAR, Rep. of Korea, Papua New Guinea, Ghana, India, South Africa |
| 2013 | 327.84 | $ 18.87 | Belize, China Hong Kong SAR, Japan, Russian Federation, Switzerland, Turkey, Ukraine, United Kingdom, USA | 293.13 | $ 29.71 | Brazil, Brunei Darussalam, Colombia, China, Hong Kong SAR, Indonesia, India, Kenya, Rep. of Korea, Malaysia, Myanmar, Papua New Guinea, Peru, South Africa, Togo, United Arab Emirates, Uzbekistan | 8.43 | $ 0.75 | Malaysia, South Africa, United Rep. of Tanzania |
| 2014 | 113.08 | $ 7.67 | Germany, Japan Mexico, Other Asia, nes, Turkey, Ukraine, USA | 111.77 | $ 8.83 | Myanmar, Canada, Ghana, Indonesia, Kenya, Malaysia, Papua New Guinea, Peru, India, South Africa, United Arab Emirates | 15.79 | $ 1.39 | Malaysia, Peru, South Africa |
| 2015 | 125.94 | $ 3.55 | Indonesia, Japan, Switzerland, Thailand, Ukraine, USA | 140.43 | $ 6.50 | Brazil, Colombia, Ghana, Guyana, India, China Hong Kong SAR, Kenya, Rep. of Korea, Papua New Guinea, Philippines, South Africa, Togo, United Arab Emirates | 34.41 | $ 0.87 | China, Hong Kong SAR, India, South Africa, Togo |
| 2016 | 52.18 | $ 1.19 | Belgium, Indonesia, Japan, Thailand, United Kingdom | 108.30 | $ 3.00 | Brazil, Colombia, Rep. of Korea, India, Indonesia, Togo, Kenya, Papua New Guinea, South Africa | 141.97 | $ 4.01 | Canada, Colombia, Germany, China, Hong Kong SAR, Malaysia, India, South Africa, Togo, Guyana |
| **Total** | **1,227.92** | **$ 86.94** | | **1,131.96** | **$ 99.68** | | **216.49** | **$ 7.88** | |
| **Discrepancy between export notification vs partner's import notification** | | | | **915.47** | **$ 91.80** | | | | |

*Source: UN Comtrade database based on mercury import-export notifications reported by Singapore and import notification from Singapore as reported by trade partners.*

Table 25. Flow of mercury export-import of Spain and import notification as reported by trade partner of Spain 2012-2016 (for HS 280540)

| Year | Import | | | Export | | | Mercury import notification from Spain as reported by trade partners | | |
|---|---|---|---|---|---|---|---|---|---|
| | Net weight (ton) | Trade value (mio US$) | Partner | Net weight (ton) | Trade value (mio US$) | Partner | Net weight (ton) | Trade value (mio US$) | Reporter |
| 2012 | 55.00 | $ 2.12 | Australia, Belgium, Germany, Italy, Netherlands, USA | 950.83 | $ 3.97 | Austria, Belgium, Colombia, Denmark, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Netherlands, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, United Kingdom | 51.25 | $ 1.13 | Colombia, Netherlands, Portugal, Singapore, Sudan, Guyana, India, Morocco |
| 2013 | 70.33 | $ 3.73 | Belgium, Germany, Italy, Netherlands, Portugal, USA | 2,017.91 | $ 7.81 | Austria, Belgium, Colombia, Czechnia, Denmark, Finland, France, Germany, Italy, Latvia, Lithuania, Netherlands, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Sweden, United Kingdom | 20.95 | $ 1.84 | Algeria, Argentina, Austria, Belgium, Colombia, Morocco, Netherlands, Portugal, Romania, India |
| 2014 | 10.06 | $ 0.34 | World, Belgium, China, France, Germany, Italy, Madagascar | 1,123.19 | $ 3.96 | Algeria, Belgium, Bulgaria, China, Denmark, Finland, France, Germany, Italy, Latvia, Lithuania, Netherlands, Poland, Portugal, Romania, Russian Federation, Saudi Arabia, India, Slovakia, Slovenia, United Kingdom, Venezuela | 40.56 | $ 1.15 | Andorra, Colombia, Morocco, Netherlands, Poland, India |
| 2015 | 7.35 | $ 0.22 | World, Belgium, China, Germany, Italy, United Kingdom | 0.01 | $ 0.00 | Algeria, Chile, Colombia, Dominican Rep., Mexico, Norway, Russian Federation, USA | 20.53 | $ 1.19 | Argentina, Colombia, Czechnia, Germany, Malaysia, Netherlands |
| 2016 | 4.72 | $ 0.17 | World, Germany, Italy, Mexico, Switzerland, United Kingdom | 0.01 | $ 0.01 | Belgium, Portugal | 27.89 | $ 0.82 | Belgium, Colombia, Czechnia, Italy, Portugal |
| **Total** | **147.46** | **$ 6.58** | | **4,091.95** | **$ 15.76** | | **161.17** | **$ 6.14** | |
| **Discrepancy between export notification vs partner's import notification** | | | | **3,930.78** | **$ 9.62** | | | | |

*Source: UN Comtrade database based on mercury import-export notifications reported by Spain and import notification from Spain as reported by trade partners.*

Table 26. Flow of mercury export-import of Mexico and import notification as reported by trade partner of Mexico 2012-2016 (for HS 280540)

| Year | Import | | | Export | | | Mercury import notification from Mexico as reported by trade partners | | |
|---|---|---|---|---|---|---|---|---|---|
| | Net weight (ton) | Trade value (mio US$) | Partner | Net weight (ton) | Trade value (mio US$) | Partner | Net weight (ton) | Trade value (mio US$) | Reporter |
| 2012 | 26.59 | $ 1.20 | Argentina, China, Switzerland, USA | 261.85 | $ 21.45 | Bolivia (Plurinational State of), Brazil, Chile, Colombia, Ecuador, El Salvador, Eritrea, France, Germany, Guatemala, Guinea, Guyana, Honduras, Kenya, Curaçao, Nicaragua, Panama, Peru, Senegal, India, Singapore, Sudan, USA, Venezuela | 228.91 | $ 18.27 | Bolivia (Plurinational State of), Brazil, Chile, Colombia, El Salvador, Guatemala, China, Hong Kong SAR, Rep. of Korea, Nicaragua, Paraguay, Peru, Singapore, Sudan, USA, Ecuador, Guyana, India |
| 2013 | 0.73 | $ 0.11 | Germany, USA | 267.65 | $ 23.41 | Bolivia (Plurinational State of), Myanmar, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Eritrea, Guyana, Honduras, Kenya, Nicaragua, Panama, Paraguay, Peru, India | 268.71 | $ 23.31 | Bolivia (Plurinational State of), Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guyana, Guatemala, Kenya, Nicaragua, Paraguay, Peru, India, Turkey, United Rep. of Tanzania |
| 2014 | 0.03 | $ 0.01 | USA | 300.94 | $ 17.68 | Argentina, Bolivia (Plurinational State of), Myanmar, Canada, Colombia, Cuba, Ecuador, Eritrea, Guatemala, Guyana, Haiti, Honduras, Kenya, Nicaragua, Panama, Paraguay, Peru, Singapore, United Arab Emirates, Uruguay, Venezuela | 246.73 | $ 14.68 | Argentina, Bolivia (Plurinational State of), Canada, Colombia, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Nicaragua, Paraguay, Peru, India, Singapore, United Arab Emirates, Uruguay |
| 2015 | 0.24 | $ 0.04 | USA | 306.70 | $ 13.91 | Bolivia (Plurinational State of), Canada, Chile, Colombia, Cuba, Guatemala, Guyana, Honduras, Kenya, Nicaragua, Panama, Paraguay, Peru, India, South Africa, United Arab Emirates, USA, Uruguay | 318.29 | $ 13.95 | Bolivia (Plurinational State of), Canada, Chile, Colombia, Guatemala, Nicaragua, Paraguay, Peru, India, South Africa, United Arab Emirates, Uruguay |
| 2016 | 5.18 | $ 0.18 | Japan | 266.70 | $ 9.65 | Argentina<br>Bolivia (Plurinational State of), Brazil, Chile, Colombia, Cuba, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Spain | 53.61 | $ 1.84 | Colombia, Paraguay, South Africa, Spain |
| **Total** | **32.77** | **$ 1.53** | | **1,403.84** | **$ 86.10** | | **1,116.25** | **$ 72.05** | |
| **Discrepancy between export notification vs partner's import notification** | | | | **287.586** | **$ 14.05** | | | | |

*Source: UN Comtrade database based on mercury import-export notifications reported by Mexico and import notification from Mexico as reported by trade partners.*

Table 27. Flow of mercury export-import of United Kingdom and import notification as reported by trade partner of United Kingdom 2012-2016 (for HS 280540)

| Year | Import | | | Export | | | Mercury import notification from United Kingdom as reported by trade partners | | |
|---|---|---|---|---|---|---|---|---|---|
| | Net weight (ton) | Trade value (mio US $) | Partner | Net weight (ton) | Trade value (mio US $) | Partner | Net weight (ton) | Trade value (mio US$) | Reporter |
| 2012 | 21.04 | $ 0.11 | Belgium, Germany, Ireland, Netherlands, Switzerland, USA | 5.52 | $ 0.11 | Belgium, Brazil, Germany, Ireland, Netherlands, India, Spain, USA | 40.74 | $ 2.55 | Australia, Austria, Belgium, Colombia, Czechia, France, French Polynesia, Germany, Hungary, Ireland, Italy, Lebanon, Netherlands, New Zealand, Poland, Sri Lanka, Dominica, Cameroon, Guyana, Malaysia, Rwanda, Zimbabwe, South Africa, United Arab Emirates |
| 2013 | 41.84 | $ 0.19 | Belgium, Germany, Ireland, Netherlands, Sweden | 3.41 | $ 0.03 | Belgium,Cyprus, Germany, Ireland, Netherlands, Malaysia, Singapore, Sweden | 17.08 | $ 1.20 | Algeria, Bangladesh, Brazil, Brunei Darussalam, Czechia, Finland, France, Germany, Ghana, Hungary, Ireland, Malaysia, Oman, Morocco, Netherlands, New Zealand, Pakistan, Poland, Singapore, South Africa, Trinidad and Tobago, United Arab Emirates |
| 2014 | 4.26 | $ 0.05 | Belgium, Denmark, Germany, Netherlands | 10.42 | $ 0.02 | Belgium, Denmark, France, Germany, Ireland, Malaysia, Netherlands, Saudi Arabia, India, USA | 22.60 | $ 1.24 | Algeria, Brazil, Brunei Darussalam, Sri Lanka, France, Guyana, Germany, Hungary, Ireland, Morocco, Oman, Netherlands, Poland, South Africa |
| 2015 | 2.80 | $ 0.08 | Belgium, Germany, Netherlands | 1.32 | $ 0.04 | Belgium, Canada, France, Germany, China Hongkong SAR, Ireland, Italy, Mexico, Netherlands, Thailand, India | 34.40 | $ 0.95 | Austria, Bangladesh, Belgium, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Kuwait, Morocco, Netherlands, New Caledonia, Poland, Guyana, Trinidad and Tobago, Spain, United Arab Emirates |
| 2016 | 11.24 | $ 0.12 | Belgium, Denmark, Germany, Netherlands, Switzerland, UK | 36.76 | $ 0.12 | Belgium, China, Denmark, Germany, Ireland, Italy, Kuwait, India | 21.84 | $ 0.88 | Brazil, Ethiopia, Guyana, France, Germany, Hungary, Ireland, India, Spain, United Kingdom |
| **Total** | **81.18** | **$ 0.55** | | **57.42** | **$ 0.31** | | **136.66** | **$ 6.82** | |
| **Discrepancy between export notification vs partner's import notification** | | | | **-79.24** | **$ (6.50)** | | | | |

*Source: UN Comtrade database based on mercury import-export notifications reported by United Kingdom and import notification from United Kingdom as reported by trade partners.*

Table 28. Flow of mercury export-import of USA and import notification as reported by trade partner of USA 2012-2016 (for HS 280540)

| Year | Import | | | Export | | | Mercury import notification from USA as reported by trade partners | | |
|---|---|---|---|---|---|---|---|---|---|
| | Net weight (ton) | Trade value (mio US$) | Partner | Net weight (ton) | Trade value (mio US $) | Partner | Net weight (ton) | Trade value (mio US$) | Reporter |
| 2012 | 248.88 | $ 4.96 | Argentina, Canada, Chile, France, Germany, Mexico, Switzerland, Ukraine | 47.46 | $ 0.243 | Canada, Equatorial Guinea, France, Germany, Guatemala, Indonesia, Nicaragua, Nigeria, Peru, Rep. of Korea, Singapore, South Africa, Switzerland, World | 958.29 | $ 83.44 | Australia, Austria, Brazil, Canada, Colombia, Costa Rica, Czechia, Dominican Rep., Estonia, France, Germany, Guatemala, Honduras, China Hong Kong SAR, Indonesia, Ireland, Israel, Japan, Rep. of Korea, Mexico, Panama, Peru, Poland, Singapore, Viet Nam, South Africa, Spain, Sweden, Switzerland, Thailand, United Arab, Emirates, Tunisia, Turkey, United Kingdom, Angola, Bahamas, Ecuador, Ethiopia, Guyana, Malaysia, Other Asia, nes, New Caledonia, India, Togo, Philippines |
| 2013 | 37.70 | $ 0.91 | Canada, Czechnia, Germany, Switzerland | 4.92 | $ 0.537 | Mexico, South Africa, Brazil, Cayman Islands, Costa Rica, Guatemala, Indonesia | 293.38 | $ 27.64 | Algeria, Argentina, Australia, Austria, Brazil, Canada, Colombia, Dominican Rep., Ecuador, Estonia, France, Germany, Guatemala, China Hong Kong SAR, Indonesia, Israel, Japan, Rep. of Korea, Malaysia, Mexico, Other Asia, nes, New Zealand, Panama, Peru, Poland, India, Singapore, Viet Nam, South Africa, Spain, Thailand, United Arab Emirates, Turkey, Uganda, United Rep. of Tanzania, Angola, Guyana, Jamaica, Kenya, New Caledonia |
| 2014 | 49.47 | $ 1.30 | Canada, Germany, Netherlands | 0.00 | $ 0.000 | — | 139.11 | $ 8.93 | Australia, Brazil, Barbados, Dominican Rep., El Salvador, France, Germany, Guatemala, China Hong Kong SAR, Indonesia, Jamaica, Japan, Malaysia, Mexico, Other Asia, nes, New Caledonia, Pakistan, Peru, Qatar, India, Singapore, Viet Nam, South Africa, United Arab Emirates, Mauritania, Nigeria |
| 2015 | 25.85 | $ 0.61 | Canada, France, Germany, India, Switzerland | 0.03 | $ 0.003 | Mexico | 75.38 | $ 3.70 | Australia, Belgium, Brazil, Canada, Czechia, Denmark, Ecuador, Estonia, France, Germany, China Hong Kong SAR, Indonesia, Ireland, Japan, Rep. of Korea, Malaysia, Mexico, Other Asia, nes, Morocco, New Caledonia, Pakistan, Poland, Saudi Arabia, India, Singapore, Viet Nam, Slovenia, South Africa, Sweden, Tunisia, United Arab Emirates |
| 2016 | 24.34 | $ 0.28 | Canada, France, India, Switzerland | 0.00 | $ 0.000 | — | 26.46 | $ 1.76 | Armenia, Belgium, Bermuda, Brazil, Canada, Czechia, Estonia, France, Germany, China Hong Kong SAR, Ireland, Japan, Rep. of Korea, Paraguay, Poland, India, Egypt, United Rep. of Tanzania, Philippines |
| **Total** | **386.24** | **$ 8.05** | | **52.42** | **$ 0.783** | | **1,492.62** | **$ 125.472** | |
| **Discrepancy between export notification vs partner's import notification** | | | | **-1,440.20** | **$ (124.69)** | | | | |

*Source: UN Comtrade database based on mercury import-export notifications reported by USA and import notification from USA as reported by trade partners.*

Table 29. Flow of mercury export-import of Germany and import notification as reported by trade partner of Germany 2012-2016 (for HS 280540)

| Year | Import | | | Export | | | Mercury import notification from Germany as reported by trade partners | | |
|---|---|---|---|---|---|---|---|---|---|
| | Net weight (ton) | Trade value (mio US $) | Partner | Net weight (ton) | Trade value (mio US $) | Partner | Net weight (ton) | Trade value (mio US $) | Reporter |
| 2012 | 53.46 | $ 0.58 | Austria, Belgium, China, Czechia, Denmark, France, Hungary, Italy, Japan, Netherlands, Norway, Peru, Poland, Portugal, Slovenia, Switzerland, United Kingdom, USA | 102.65 | $ 6.59 | Austria, Belgium, Brazil, Bulgaria, Czechia, Denmark, Estonia, Finland, France, Greece, Hungary, Indonesia, Iran, Ireland, Israel, Italy, Lithuania, Mexico, Morocco, Netherlands, Poland, Portugal, Romania, Russian Federation, Serbia, Slovenia, Spain, Sweden, Switzerland, Thailand, Tunisia, Turkey, United Kingdom, USA | 192.96 | $ 7.70 | Algeria, Argentina, Austria, Belgium, Brazil, Bulgaria, Canada, Colombia, Cyprus, Czechia, Denmark, El Salvador, Egypt, Estonia, Finland, France, Greece, Hungary, Indonesia, India, Ireland, Israel, Italy, Rep. of Korea, Lithuania, Mauritius, Netherlands, New Zealand, Other Asia, nes, Pakistan, Poland, Portugal, Romania, Serbia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Togo, Tunisia, United Kingdom, USA |
| 2013 | 40.05 | $ 1.66 | Austria, Belgium, Bulgaria, China, Czechia, Finland, France, Hungary, Italy, Luxembourg, Netherlands, New Zealand, Poland, India, Switzerland, United Kingdom, USA | 133.63 | $ 5.17 | Austria, Belgium, Brazil, Bulgaria, Czechia, Denmark, Estonia, Finland, France, Greece, Hungary, Ireland, Israel, Italy, Rep. of Korea, Libya, Luxembourg, Mexico, Morocco, Netherlands, Poland, Portugal, Russian Federation, Serbia, Slovakia, Viet Nam, Slovenia, Spain, Sweden, Switzerland, Thailand, United Arab Emirates, United Kingdom, USA | 168.51 | $ 8.63 | Austria, Belgium, Brazil, Brunei Darussalam, Bulgaria, Cyprus, Czechia, Denmark, El Salvador, Finland, France, Georgia, Greece, Hungary, India, Ireland, Israel, Italy Rep. of Korea, Kenya, Mexico, Other Asia, nes, Netherlands, Poland, Portugal, Qatar, Romania, Serbia, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Tunisia, Turkey, United Kingdom, United Rep. of Tanzania, USA, |
| 2014 | 19.25 | $ 1.12 | Austria, Belgium, China, Czechia,France, Hungary, Italy, Luxembourg, Netherlands, Poland, India, Switzerland, United Kingdom, USA | 57.94 | $ 3.28 | Algeria, Austria, Belgium, Brazil, Bulgaria, Croatia, Czechia, Denmark, Estonia, Finland, France, State of Palestine, Greece, Hungary, Ireland, Israel, Italy, Luxembourg, Mauritania, Netherlands, Poland, Portugal, Romania, Singapore, Slovakia, Viet Nam, Slovenia, Spain, Sudan, Sweden, Switzerland, Thailand, Tunisia, United Kingdom, USA | 90.78 | $ 2.31 | Austria, Belgium, Brazil, Bulgaria, Sri Lanka, Croatia, Cyprus, Czechia, Denmark, El Salvador, Estonia, Finland, France, Greece, Hungary, Indonesia, Ireland, Israel, Italy, Other Asia, nes, Netherlands, Poland, Romania, Singapore, Slovakia, Spain, Sweden, Switzerland, Thailand, Tunisia, United Kingdom, United Rep. of Tanzania, USA |
| 2015 | 4.89 | $ 0.35 | Austria, Belgium, China, Czechia, France, Other Asia, nes, Netherlands, Norway, India, Spain, Switzerland, United Kingdom, USA | 11.94 | $ 0.65 | Austria, Belgium, Bulgaria, Colombia, Cuba, Czechia, Denmark, Estonia, Finland, France, Greece, Hungary, Ireland, Italy, Lithuania, Morocco, Mozambique, Netherlands, Poland, Portugal, Romania, India, Slovakia, Slovenia, Spain, Sweden, Thailand, Tunisia, United Kingdom | 32.57 | $ 1.23 | Algeria, Argentina, Austria, Belgium, Bulgaria, Chile, Croatia, Cyprus, Czechia, Estonia, Finland, France, French Polynesia, Greece, Hungary, Ireland, Israel, Italy, Lithuania, Other Asia, nes, Netherlands, Paraguay, Poland, Romania, India, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tunisia, Turkey, United Kingdom, USA |
| 2016 | 7.93 | $ 0.45 | Austria, Belgium, Canada, Czechia, France, Italy, Netherlands, Singapore, Switzerland, United Kingdom, USA | 1.85 | $ 0.18 | Austria, Belgium, Bulgaria, Czechia, Estonia, Finland, France, Greece, Hungary, Ireland, Italy, Netherlands, Poland, Portugal, Romania, Singapore, Slovakia, Slovenia, Spain, Sweden, Tunisia, United Kingdom, United Rep. of Tanzania | 45.62 | $ 1.17 | Belgium, Bulgaria, Belarus, Croatia, Cyprus, Czechia, Denmark, Estonia, France, Greece, Hungary, Ireland, Israel, Italy, Norway, Poland, Romania, Serbia, India, Slovakia, Spain, Sweden, United Kingdom, United Rep. of Tanzania |
| **Total** | **125.59** | **$ 4.17** | | **308.01** | **$15.87** | | **530.43** | **$ 21.02** | |
| **Discrepancy between export notification vs partner's import notification** | | | | **-222.42** | **$ (5.16)** | | | | |

*Source: UN Comtrade database based on mercury import-export notifications reported by Germany and import notification from Germany as reported by trade partners.*

Table 30. Flow of mercury export-import of South Africa and import notification as reported by trade partner of South Africa 2012-2016 (for HS 280540)

| Year | Import | | | Export | | | Mercury import notification from South Africa as reported by trade partners | | |
|---|---|---|---|---|---|---|---|---|---|
| | Net weight (kg) | Trade value (US$) | Partner | Net weight (kg) | Trade value (US$) | Partner | Net weight (kg) | Trade value (US$) | Reporter |
| 2012 | 39,555 | $ 2,009,591 | Germany, Netherlands, Singapore, South Africa, United Kingdom, USA | 2,213 | $ 131,803 | Botswana, Dem. Rep. of the Congo, Mozambique,Namibia, Zimbabwe, United Rep. of Tanzania, Zambia | 9,585 | $ 658,165 | Namibia, Botswana, Malaysia, Mozambique, Zimbabwe, South Africa, United Arab Emirates, Zambia |
| 2013 | 32,290 | $ 3,237,146 | Germany, China Hong Kong SAR, Singapore, Switzerland, United Kingdom, USA | 2,318 | $ 98,594 | Angola, Botswana, Dem. Rep. of the Congo, Mauritania, Namibia, Zimbabwe, Swaziland, Turkey, Zambia | 28,818 | $ 306,052 | Angola, Botswana, Nigeria, Namibia, Turkey, Zimbabwe |
| 2014 | 28,089 | $ 2,242,229 | Guatemala, India, Singapore, Ukraine, United Kingdom, USA | 1,503 | $ 96,673 | Botswana, Dem. Rep. of the Congo, Mozambique, Namibia, Zimbabwe, Swaziland, United Rep. of Tanzania | 109 | $ 15,947 | Namibia, Zimbabwe |
| 2015 | 51,547 | $ 2,861,705 | Japan, Mexico, India, Singapore, Switzerland, United Arab Emirates, USA | 272 | $ 4,547 | Botswana, Namibia, Swaziland, Zambia | 66 | $ 476 | Botswana, Zimbabwe, Zambia |
| 2016 | 36,203 | $ 1,618,470 | Austria, China, Indonesia, Japan, Mexico, India, Singapore, Switzerland | 341 | $ 3,078 | Botswana, Namibia, Swaziland | 2 | $ 126 | Botswana |
| **Total** | **187,684** | **$11,969,141** | | **6,647** | **$ 334,695** | | **38,580** | **$ 980,766** | |
| **Discrepancy between export notification vs partner's import notification** | | | | **-31,933** | **-$646,071** | | | | |

*Source: UN Comtrade database based on mercury import-export notifications reported by South Africa and import notification from South Africa as reported by trade partners.*

Table 31. Flow of mercury export-import of China, China Hong Kong SAR, China Hong Kong Macau and import notification as reported by trade partners 2012-2016 (for HS 280540)

| Year | Import | | | Export | | | Import notification from China, China Hong Kong SAR, and China Hong Kong Macau reported by trade partners | | |
|---|---|---|---|---|---|---|---|---|---|
| | Netweight (ton) | Trade Value (mio US$) | Partner country | Netweight (ton) | Trade Value (mio US$) | Partner country | Netweight (ton) | Trade Value (mio US$) | Reporter |
| 2012 | 347.79 | $ 30.74 | Israel, Japan, Mexico, Netherlands, Panama, Peru, Singapore, USA | 244.91 | $ 25.66 | Australia, Brazil, Burkina Faso, Colombia, Guyana, India, Kenya, Malaysia, Papua New Guinea, Philippines, Singapore, South Africa, Sudan, Togo, United Arab Emirates | 422.09 | $ 4.01 | Angola, Bermuda, Bolivia (Plurinational State of), Colombia, France, Germany, Rep. of Korea, Morocco, Mexico, Nicaragua, Papua New Guinea, Singapore Viet Nam, Sudan, United Arab Emirates, Uruguay, Ghana, Guyana, Malaysia, India, Zimbabwe, Togo, United Rep. of Tanzania |
| 2013 | 107.82 | $ 9.56 | Italy, Kyrgyzstan, India, United Arab Emirates, USA | 149.39 | $ 13.77 | Brazil, Colombia, Guyana India, Japan, Kenya, Singapore, South Africa, Sudan, Togo, USA | 120.27 | $ 2.15 | Australia, Bangladesh, Bolivia (Plurinational State of), Bosnia Herzegovina, Cameroon, Canada, Colombia, Germany, Ghana, Rep. of Korea, Malaysia, Paraguay, Peru, Serbia, India, Singapore, Viet Nam, South Africa, Zimbabwe, United Arab Emirates, Uruguay, Ethiopia, Guyana, Guyana, Togo, Egypt |
| 2014 | 1.73 | $ 0.13 | Peru, USA | 102.49 | $ 8.22 | Australia, Brazil, Guyana, India, Kenya, Malaysia, Papua New Guinea, Singapore, South Africa, Sudan, Togo | 54.79 | $ 0.80 | France, Germany, Rep. of Korea, Malaysia, India, Spain, United Rep. of Tanzania, Guyana, Togo |
| 2015 | 78.01 | $ 1.04 | Indonesia, Japan, Malaysia, Singapore, USA | 20.20 | $ 1.13 | Australia, China, Kenya, South Africa, USA | 109.08 | $ 1.24 | Belgium, Canada, Dominican Rep., Ethiopia, France, Germany, Rep. of Korea, Malaysia, Nepal, India, Spain, Togo, Sudan |
| 2016 | 55.08 | $ 0.36 | China, Indonesia, Malaysia, Singapore, USA | 17.91 | $ 1.02 | Brazil, India | 23.10 | $ 0 | China, Hong Kong SAR, Rep. of Korea, India, South Africa, Switzerland, Togo, Egypt, United Rep. of Tanzania |
| | **590.42** | **$ 41.84** | | **534.89** | **$ 49.80** | | **729.319** | **$ 8.56** | |
| **Discrepancy between export notification vs partner's import notification** | | | | **-194.434** | **$ 41.24** | | | | |

*Source: UN Comtrade database based on mercury import-export notifications reported by China, China Hong Kong SAR, China Hong Kong Macau and import notification as reported by trade partners.*

Table 32. Flow of mercury export-import of United Arab Emirates (UAE) and import notification as reported by trade partners 2012-2016 (for HS 280540)

| Year | Import | | | Export | | | Import notification from UAE as reported by trade partners | | |
|---|---|---|---|---|---|---|---|---|---|
| | Net weight (kg) | Trade value (US$) | Partner | Net weight (kg) | Trade value (US$) | Partner | Net weight (kg) | Trade value (US$) | Reporter |
| 2012 | 70,885 | $ 6,522,886 | Belgium, France, China, Hong Kong SAR, Kyrgyzstan, Russian Federation, India, South Africa, Ukraine, United Kingdom, USA | 114,314 | $ 9,888,670 | Afghanistan, Iran, Iraq, Malaysia, Sudan, Free Zones | 25,821 | $ 987,877 | Netherlands, Sudan, Malaysia, Zimbabwe |
| 2013 | 56,537 | $ 3,942,224 | China, Russian Federation, India, United Kingdom, USA | 220,523 | $21,042,915 | Iran, Kenya, Portugal, Saudi Arabia, Singapore, Sudan, Free Zones | 15,011 | $ 1,312,492 | Angola, China, Hong Kong SAR, Oman |
| 2014 | 1,864 | $ 59,184 | Mexico, Ukraine, USA | 94,644 | $ 4,721,972 | Chad, Eritrea, Iran, Kenya, Lebanon, Sudan | 60 | $ 1,402 | Oman |
| 2015 | 8,712 | $ 174,056 | Mexico, Switzerland, Ukraine, United Kingdom, USA | 58,219 | $ 1,691,491 | Chad, Colombia, Ethiopia, Eritrea, Djibouti, Iran, Kuwait | 6,086 | $ 203,340 | South Africa, Sudan |
| 2016 | 0 | $ 0 | — | 0 | $ 0 | — | 0 | $ 0 | — |
| **Total** | **137,998** | **$ 10,698,350** | | **487,700** | **$37,345,048** | | **46,978** | **$ 2,505,111** | |
| | | | **Discrepancy between export notification vs partner's import notification** | **440,722** | **$34,839,937** | | | | |

*Source: UN Comtrade database based on mercury import-export notifications reported by UAE and import notification as reported by trade partners.*

Table 33. Flow of mercury export-import of Japan and import notification as reported by trade partners 2012-2016 (for HS 280540)

| Year | Import | | | Export | | | Import notification from Japan as reported by trade partners | | |
|---|---|---|---|---|---|---|---|---|---|
| | Net weight (kg) | Trade value (US$) | Partner | Net weight (kg) | Trade value (US$) | Partner | Net weight (kg) | Trade value (US$) | Reporter |
| 2012 | 2 | $ 7,809 | USA | 68,903 | $ 6,228,308 | Bangladesh, Brazil, Colombia, Indonesia, Iran, Rep. of Korea, Other Asia, nes, Pakistan,India, Singapore, Viet Nam, Thailand, Egypt | 183,439 | $ 4,460,175 | Bangladesh, Brazil, Egypt, Germany, China, Hong Kong SAR, Indonesia, India, Rep. of Korea, Other Asia, nes, Pakistan, Singapore, Viet Nam, Thailand |
| 2013 | 2 | $ 7,402 | USA | 72,840 | $ 6,197,258 | Bangladesh, Brazil, Colombia, Indonesia, Rep. of Korea, Malaysia, Other Asia, nes, Pakistan, Philippines, India, Singapore, Viet Nam, Thailand, Egypt | 87,070 | $ 6,787,517 | Bangladesh, Brazil, France, Indonesia, Rep. of Korea, Malaysia, Other Asia, nes, Pakistan, India, Singapore, Viet Nam, Thailand, United Rep. of Tanzania, Kenya |
| 2014 | 4 | $ 15,826 | USA | 69,688 | $ 4,244,345 | Bangladesh, Brazil, Myanmar, Colombia, Iran, Rep. of Korea, Other Asia, nes, Philippines, India, Singapore, Viet Nam, Thailand, Turkey, Turkmenistan, Egypt | 60,688 | $ 4,221,953 | Algeria, Brazil, Hungary, Rep. of Korea, Other Asia, nes, India, Singapore, Viet Nam, Thailand, Turkey |
| 2015 | 2 | $ 7,710 | USA | 102,257 | $ 3,240,776 | Bangladesh, Myanmar, Colombia, Rep. of Korea, Pakistan, Philippines, India, Singapore, Viet Nam, Thailand, Egypt | 115,027 | $ 3,698,661 | Bangladesh, Belgium, Colombia, China, Hong Kong SAR, Egypt, Hungary, Rep. of Korea, Pakistan, India, Singapore, South Africa, Thailand |
| 2016 | 5 | $ 16,873 | USA | 146,769 | $ 3,614,380 | Brazil, Myanmar, Colombia, Rep. of Korea, Other Asia, nes, Pakistan, Peru, India, Singapore, Viet Nam, Egypt | 105,239 | $ 2,747,601 | Brazil, Colombia, Rep. of Korea, Mexico, India, South Africa<br>Egypt<br>Philippines |
| **Total** | **15** | **$ 55,620** | | **460,457** | **$ 23,525,067** | | **551,463** | **$ 21,915,907** | |
| **Discrepancy between export notification vs partner's import notification** | | | | **-91,006** | **$ 1,609,160** | | | | |

*Source: UN Comtrade database based on mercury import-export notifications reported by Japan and import notification as reported by trade partners.*

Table 34. Flow of mercury export-import of Switzerland and import notification as reported by trade partners 2012-2016 (for HS 280540)

| Year | Import | | | Export | | | Import notification from Switzerland as reported by trade partners | | |
|---|---|---|---|---|---|---|---|---|---|
| | Net weight (kg) | Trade value (US$) | Partner | Net weight (kg) | Trade value (US$) | Partner | Net weight (kg) | Trade value (US$) | Reporter |
| 2012 | 5,342 | $ 71,153 | Germany, USA | 164,584 | 2,751,110 | Austria, China, France, Germany, India, Israel, Italy, Japan, Rep. of Korea, Madagascar, Netherlands, Norway, Singapore, Spain, Tunisia, Turkey, United Kingdom, USA, Yemen | 11,952 | $ 731,709 | Austria, Ethiopia, France, Germany, India, Israel, Madagascar, Mexico, New Zealand, Norway, Other Asia, nes, Poland, Singapore, Sudan, Tunisia, Turkey, United Kingdom, USA |
| 2013 | 246 | $ 20,936 | Austria, Germany | 132,780 | 2,208,208 | Australia, Austria, China, Colombia, France, Germany, China, Hong Kong SAR, Hungary, India, Israel, Italy, Japan, Rep. of Korea, Kuwait, Latvia, Other Asia, nes, Morocco, Norway, Portugal, Singapore, South Africa, Tunisia, Turkey, United Kingdom, USA | 58,648 | $ 4,493,268 | Austria, Czechnia, Finland, France, Germany, Hungary, India, Israel, Norway, Poland, Portugal, Singapore, Slovakia, South Africa, Tunisia, USA, Kenya, Morocco |
| 2014 | 0 | $ 44 | Germany | 87,462 | 1,367,097 | Australia, Colombia, France, Germany, Israel, Italy, Japan, Rep. of Korea, Madagascar, Other Asia, nes, Nigeria, Norway, Portugal, Seychelles, India, Singapore, Spain, Turkey, United Kingdom, United Rep. of Tanzania, USA | 3,702 | $ 309,087 | Czechnia, France, Germany, India Israel, Italy, Madagascar, Other Asia, nes, New Zealand, Norway, Poland, Portugal, Slovakia, Turkey, Nigeria, Seychelles |
| 2015 | 7 | $ 484 | Germany | 102,054 | 1,853,932 | Algeria, Australia, Austria, Bosnia Herzegovina, Colombia, Eritrea, France, Germany, Greece, Guatemala, India, Israel, Italy, Japan, Rep. of Korea, Other Asia, nes, Norway, Philippines, Singapore, South Africa, Spain, United Arab Emirates, Turkey, United Kingdom, USA | 62,726 | $ 2,665,562 | Australia, Austria, Bosnia Herzegovina, Czechnia, Estonia, France, Germany, Guatemala, India, Israel, Italy, Other Asia, nes, New Zealand, Norway, Poland, Singapore, Slovakia, South Africa, Sweden, Turkey, United Arab Emirates, United Kingdom |
| 2016 | 2,724 | $ 1,672 | China, Hong Kong SAR, Indonesia, Israel | 29,121 | 1,458,682 | Australia, Austria, Brazil, Estonia, France, Germany, India, Iran, Israel, Italy, Côte d'Ivoire, Japan, Rep. of Korea, Morocco, Norway, Portugal, Serbia, Singapore, South Africa, Spain, Tunisia, Turkey, United Kingdom, USA | 32,429 | $ 1,322,879 | Australia, Bosnia Herzegovina, Brazil, Chile, France, Germany, Ireland, Israel, Italy, Norway, Poland, Portugal, Serbia, India, Slovakia, South Africa, Spain, Turkey, United Kingdom, United Rep. of Tanzania, USA |
| **Total** | **8,319** | **$ 94,289** | | **516,001** | **$ 9,639,029** | | **169,457** | **$ 9,522,505** | |
| **Discrepancy between export notification vs partner's import notification** | | | | **346,544** | **$ 116,524** | | | | |

*Source: UN Comtrade database based on mercury import-export notifications reported by Switzerland and import notification as reported by trade partners.*

Table 35. Flow of mercury export-import of Netherlands and import notification as reported by trade partners 2012-2016 (for HS 280540)

| Year | Import | | | Export | | | Import notification from Netherlands as reported by trade partners | | |
|---|---|---|---|---|---|---|---|---|---|
| | Net weight (kg) | Trade value (US$) | Partner | Net weight (kg) | Trade value (US$) | Partner | Net weight (kg) | Trade value (US$) | Reporter |
| 2012 | 150,223 | $5,607,163 | Belgium, Bulgaria, Denmark, France, Germany, Greece, Italy, Poland, Spain, United Arab Emirates, United Kingdom | 134,546 | $ 11,435,423 | Algeria, Belgium, Bulgaria, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Iran, Ireland, Italy, Latvia, Lithuania. Luxembourg, Poland, Spain, Sweden, United Kingdom, Bunkers | 53,053 | $ 3,445,472 | Belgium, Denmark, France, Germany, China, Hong Kong SAR, Indonesia, Ireland, Italy, Luxembourg, Poland, South Africa, Spain, United Kingdom, Togo |
| 2013 | 124,697 | $6,677,645 | Belgium, France, Germany, Hungary, Italy, Poland, Spain, United Kingdom | 129,990 | $ 12,681,685 | Belgium, Bulgaria, Croatia, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, Malta, Poland, Spain, Sweden, Egypt, United Kingdom, United Rep. of Tanzania, Bunkers | 89,413 | $ 6,752,764 | Belgium, Denmark, Finland, France, Germany, Italy, Luxembourg, Poland, India, Spain, United Kingdom |
| 2014 | 2,122 | $ 82,734 | Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Norway, Poland, Spain, United Kingdom | 3,612 | $ 450,588 | Belgium, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Luxembourg, Poland, Romania, Spain, Sweden, Ukraine, United Kingdom, Bunkers | 65,341 | $ 2,943,911 | Belgium, Denmark, France, Germany, Ireland, Italy, Luxembourg, Poland, India, United Kingdom, United Rep. of Tanzania,USA |
| 2015 | 43,531 | $ 9,735 | Austria, Belgium, Denmark, France, Germany, Indonesia, Italy, Poland, Romania, Slovakia, Spain, Sweden, United Kingdom | 365,919 | $ 1,555,332 | Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Other Europe, nes, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom, Bunkers | 40,630 | $ 1,158,501 | Belgium, France, Germany, Ireland, Italy, Latvia, Luxembourg, Poland, India, United Kingdom |
| 2016 | 38,541 | $ 214,581 | Belgium, Germany, Sweden | 140 | $ 76,260 | Belgium, Bunkers, Croatia, Estonia, Finland, France, Germany, Greece, Italy, Poland, Spain, Sweden, United Kingdom | 22,948 | $ 596,305 | Belgium, France, Germany, Italy, Luxembourg, Poland, United Kingdom |
| **Total** | **359,114** | **$12,591,858** | | **634,207** | **$ 26,199,288** | | **271,385** | **$ 14,896,953** | |
| | | | **Discrepancy between export notification vs partner's import notification** | **346,544** | **$ 116,524** | | | | |

*Source: UN Comtrade database based on mercury import-export notifications reported by Netherlands and import notification as reported by trade partners.*

Table 36. Flow of mercury export-import of India and import notification as reported by trade partners 2012-2016 (for HS 280540)

| Year | Import | | | Export | | | Import notification from India as reported by trade partners | | |
|---|---|---|---|---|---|---|---|---|---|
| | Net weight (ton) | Trade value (mio US$) | Partner | Net weight (ton) | Trade value (mio US$) | Partner | Net weight (ton) | Trade value (mio US$) | Reporter |
| 2012 | 122.99 | $ 10.52 | Austria, Belgium, China, Finland, Germany, Italy, Japan, Kyrgyzstan, Malaysia, Mexico, Other Asia, nes, Oman, Singapore, Spain, Switzerland, USA | 50.30 | $ 0.73 | Australia, Brazil, Myanmar, Sri Lanka, Congo, France, Ghana, Jordan, Kenya, Dem. People's Rep. of Korea, Mali, Oman, Nepal, Nigeria, Papua New Guinea, Saudi Arabia, Singapore, Spain, Sudan, Turkey, United Kingdom, USA, Zambia | 223.95 | $ 5.27 | Algeria, Bangladesh, Bhutan, Papua New Guinea, Singapore, Sudan, United Arab Emirates, Tunisia, Uganda, Sri Lanka, Ghana, Malaysia, Nepal, Nigeria |
| 2013 | 182.63 | $ 16.98 | China, Germany, China, Hong Kong SAR, Japan, Rep. of Korea, Kyrgyzstan, Mexico, Netherlands, Spain, Swaziland, Switzerland, Turkey, USA | 99.26 | $ 4.75 | Australia, Belgium, Myanmar, Sri Lanka, France, Ghana, Guinea, Kenya, Liberia, Malaysia, Nigeria, Qatar, Saudi Arabia, Singapore, Spain, Sudan, United Arab Emirates, Turkey, USA | 75.57 | $ 0.50 | Belgium, Sri Lanka, France, Germany, China, Hong Kong SAR, Kuwait, Malaysia, Other Asia, nes, Nepal, Peru, Zimbabwe, United Arab Emirates, Ethiopia, Kenya |
| 2014 | 78.08 | $ 4.83 | China, China, Hong Kong SAR, Japan, Kyrgyzstan, Mexico, Netherlands, Spain, Switzerland, Ukraine, USA | 10.87 | $ 0.71 | Argentina, Bangladesh, Myanmar, Belarus, Sri Lanka, Ethiopia, Kenya, Maldives, Mali, Morocco, Oman, Nepal, Nigeria, Pakistan, Papua New Guinea, South Africa, Spain, United Arab Emirates, Turkey, United Rep. of Tanzania, USA | 15.51 | $ 0.20 | Sri Lanka, Fiji, France, Germany, Kuwait, Maldives, Nepal, Norway, Pakistan, South Africa, United Rep. of Tanzania, Togo, Morocco |
| 2015 | 153.88 | $ 6.42 | China, Germany, Indonesia, Japan, Mexico, Netherlands, Singapore, Switzerland, Ukraine, USA | 63.78 | $ 0.85 | Bangladesh, Myanmar, Sri Lanka, Chad, France, Ghana, Iraq, Kenya, Nepal, Nigeria, Pakistan, Saudi Arabia, South Africa, Spain, United Arab Emirates, Turkey, Uganda, United Rep. of Tanzania | 48.59 | $ 0.45 | Argentina, Australia, Bangladesh, Sri Lanka, Ecuador, France, Germany, Rep. of Korea, Kuwait, Maldives, Nepal, Pakistan, South Africa, Togo, United Rep. of Tanzania, USA |
| 2016 | 349.03 | $ 8.17 | China, France, Germany, China, Hong Kong SAR, Indonesia, Italy, Japan, Singapore, Switzerland, Tajikistan, Thailand, United Kingdom, USA | 47.97 | $ 1.63 | Bangladesh, Bolivia (Plurinational State of), Brazil, Myanmar, Sri Lanka, Chile, China, Colombia, Cuba, France, Ghana, Guyana, Italy, Kenya, Kuwait, Morocco, Singapore, Spain, Togo, Turkey, Yemen, Areas, nes | 40.14 | $ 1.11 | Brazil, Sri Lanka, Colombia, France, Malaysia, South Africa, Togo, USA, Guyana |
| **Total** | **886.61** | **$ 46.93** | | **272.17** | **$ 8.68** | | **403.75** | **$ 7.54** | |
| **Discrepancy between export notification vs partner's import notification** | | | | **-131.59** | **$ 1.14** | | | | |

*Source: UN Comtrade database based on mercury import-export notifications reported by India and import notification as reported by trade partners.*

Table 37. Flow of mercury export-import of Malaysia and import notification as reported by trade partners 2012-2016 (for HS 280540)

| Year | Import | | | Export | | | Import notification from Malaysia as reported by trade partners | | |
|---|---|---|---|---|---|---|---|---|---|
| | Net weight (kg) | Trade value (US$) | Partner | Net weight (kg) | Trade value (US$) | Partner | Net weight (kg) | Trade value (US$) | Reporter |
| 2012 | 519,530 | $ 2,745,394 | Australia, China, Hong Kong SAR, India, South Africa, Thailand, United Arab Emirates, United Kingdom, USA | 19,398 | $ 544,556 | China, Iran | 13,124 | $ 1,098,660 | Brunei Darussalam, India, Papua New Guinea |
| 2013 | 76,781 | $ 708,672 | China, China, Hong Kong SAR, India, Japan, Other Asia, nes, Singapore, United Kingdom, USA | 5,186 | $ 379,529 | Iran, Philippines, United Arab Emirates | 0 | $ 0 | — |
| 2014 | 21,825 | $ 214,151 | China, Hong Kong SAR, Singapore, USA | 5,541 | $ 176,437 | India, United Arab Emirates | 142,312 | $ 1,363,940 | Canada, Brunei Darussalam, Uganda |
| 2015 | 1,972 | $ 32,707 | China, Spain, USA | 0 | | | 22,755 | $ 39,739 | China, Hong Kong SAR, Uganda |
| 2016 | 3,238 | $ 4,517 | India, Singapore | 0 | | | 7,659 | $ 13,584 | Brunei Darussalam, China, Hong Kong SAR, EU-27, Hungary |
| **Total** | **623,346** | **$ 3,705,441** | | **30,125** | **$ 1,100,522** | | **185,850** | **$ 2,515,923** | |
| **Discrepancy between export notification vs partner's import notification** | | | | **-155,725** | **$(1,415,401)** | | | | |

*Source: UN Comtrade database based on mercury import-export notifications reported by Malaysia and import notification as reported by trade partners.*

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