

Illegal and illicit mercury trade in Indonesia



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Abbreviation

ASGM	Artisanal and Small-scale Gold Mining
B2B	Business to Business
BPS	<i>Badan Pusat Statistik</i> / Indonesian Statistic Bureau
CAS	Chemistry Abstracts Services
ESDM	<i>Energi dan Sumber Daya Mineral</i> / Energy and Mineral Resources
GTIS	Global Trade Information Services
IPIECA	International Petroleum Industry Environmental Conservation Association
KLHK	<i>Kementerian Lingkungan Hidup dan Kehutanan</i> / Ministry of Environment and Forestry
MSDS	Material Safety Data Sheet
PESK	<i>Pertambangan Emas Skala Kecil</i> / ASGM
UN Comtrade	United Nations Commercial and Trade
UNEP	United Nations Environmental Program

Respondents

Community leaders	3 interviews
Local NGOs	2 interview
National government officials	1 interviews
Custom officer	1 interviews
Local government officials	4 interviews
Suppliers	5 interviews
Vendors	8 interviews
Total	24 interviews

1 USD = IDR 14,803.86 = €0.8624

Preface

This report developed to provide an overview of the illegal and illicit trade of mercury in Indonesia as a case study for HEJ Support, contributing to the *Illegal and Illicit Trade of Chemicals* prepared by GRID Arendal and UNEP.

The report provides the brief overview on the dynamics of mercury supply and trade in Indonesia, mercury suppliers and vendors, mercury pricing and labelling, and trade platform/mechanism.

This report is based extensively on recent work of the author, on [Mercury Trade and Supply in Indonesia](#), for the BaliFokus Foundation [1], and includes a number of updates of data and other relevant information built upon that foundation.

Jakarta, August 2018

Yuyun Ismawati

Illegal and illicit mercury trade in Indonesia

1. Background

Recent inventory of mercury releases report (2017) showed that Indonesia released approximately 380,000 kg of mercury per year. Artisanal and Small-scale Gold Mining or ASGM sector has been identified as the major source of mercury emissions and releases [2]. About 41% of the releases emitted to the air, 26% to water, 22% to land and the remaining 11% was released in form of by-products/impurities, general wastes and specific waste disposal.

Between 1996 until 2001, ASGM activities well known as PETI (*Pertambangan Emas Tanpa Ijin*) or illegal gold mining activities. As the world also shaken by economic turmoil, Indonesian decentralisation laws,¹ took effect on January 1, 2001 changed the mining landscape [3]. The political power and revenues shifted and devolved from central to *kabupaten/kota* similar to districts or regencies [4] [5].

Until 2014, Indonesia imported mercury from various countries, legally and illegally. Indonesian Statistic Bureau (BPS) recorded all the legal importation of mercury to Indonesia while the illegal transaction can be identified by observing the discrepancies between the volume of mercury imported by Indonesia and the volume exported by various trade partners of Indonesia as recorded in the UN Comtrade database and the Global Trade Information Services (GTIS).

Gap analysis conducted by the Indonesian Ministry of Trade showed that the amount of mercury imported by Indonesia from the world in 2009 according to BPS was 9.93 tonnes, while the volume of mercury exported by trade partners to Indonesia recorded in GTIS was about 291.07 tonnes [6]. Moreover, using accessible database from the UN Comtrade platform², a significant discrepancies between mercury imported by Indonesia legally and the mercury exported by trade partners of Indonesia between 1998 to 2014 has been observed. The amount of mercury entered Indonesia within the period of 1998-2014 was 7.5 times bigger than the amount exported by trade partners or only 13.2% reported as legal transactions. In total, the volume of discrepancies, from 2003 until 2014, was 1800 tonnes with discrepancy of trade values of -US\$ 74.4 million [1] or about 5% of the inorganic chemicals import values in 2016.³

¹ included Law No. 22/1999 on Regional Autonomy and Law No. 25/1999 on Fiscal Equalisation between Center and Regions

² UN Comtrade database is available and accessible on this link: <https://comtrade.un.org/data/>

³ Analysed using data provided by globalEDGE™, the International Business Center and the Eli Broad College of Business at Michigan State University (IBC), <https://globaledge.msu.edu/countries/indonesia/tradestats>. Accessed on 5 August 2018

Discrepancies occur due to differences in the method to identify trading-partners. Indonesia's current system only keep records of imports by country of origin and does not record the application and/or 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 (see Table 1).⁴

Table 1. 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

Kania Dewi (2018) report⁵ stated that Indonesian small-scale gold miners used more mercury, between 20 to 60 gram, to obtain 1 gram of gold (miners in other ASGM countries in average used 5–10 g of mercury per gram gold produced) [7, 8]. Most miners believed that the more they add mercury into the mixture, either in the ball-mills or during the panning, they will get more gold. In reality, that's not the case.

In 2017, ASGM practices -active and non-active- spread out in more than 1200 hotspots, located in 93 regencies in 30 out of 34 provinces of Indonesia [9]. Indonesian small-scale miners association (APRI/ Asosiasi Petambang Rakyat Indonesia) recently claimed that they have 1 million member of gold miners formally registered as APRI members and used mercury more than 3000 tonnes a year.⁶ As confirmed by other studies, most mercury used in ASGM hotspots are locally sourced or domestically produced in Seram Island, Maluku Province and West Kalimantan, and then distilled or processed in several places in Java (Bogor, Sukabumi, Bekasi, and Jombang) and sold in the local market cheaper compared to the imported mercury from Germany, Spain, etc. [10, 11].

⁴ Opcit

⁵ Opcit.

⁶ Personal communication with APRI leaders.

2. Brief overview of mercury regulatory framework

In Indonesia, mercury is included in the category of Hazardous and Toxic Substances (*Bahan Berbahaya dan Beracun or B3*) that will require permits to import and allowed for restricted use [12]. Article 1, Government Regulation No. 74 year 2001,⁷ restricted use of hazardous substances defined as “hazardous substances that are restricted in use or application, importation and or its production (*B3 yang dibatasi penggunaan, impor dan atau produksinya*). Further, in Article 7 and 8, for the exportation and the importation of hazardous substances with restricted use (mercury included in this category), exporter and or importers must send notification to the destination country as well as transit country/countries.

Under the Ministry of Trade regulations, mercury is classified as a Hazardous Material (*Bahan Berbahaya or B2*) whereby its circulation and trade procedures must meet certain requirements.⁸ The requirements to circulate and trade of hazardous materials as stipulated in the Article 1 of the regulation above are as follow:

- *The hazardous substance must be registered and has CAS number;*
- *Company who engages in a hazardous material, in any form individual or business or corporate body owned by Indonesian citizen, registered and located within the territory of Indonesia;*
- *Hazardous material producer, referred to as P-B2, is a domestic company producing B2, who has secured an industrial permit from the authorised agency;*
- *Hazardous material producer importer, referred to as IP-B2, is a producer importer recognised by the Director General of Foreign Trade and approved to import by themselves only to meet demand from the production activities of the relevant company (example: CFL producer, thermometer manufacturers, etc.);*
- *Registered hazardous material importer, referred to as IT-B2, is a non-producer importer, owner of general importer identification number (API-U) that receives approval and special task from the Director General of Foreign Trade to import (in this case is PT Perusahaan Perdagangan Indonesia, a state-owned company appointed to import certain hazardous materials);*
- *Hazardous material trade permit, referred as SIUP-B2, is a permit to engage in special B2 trade activities;*
- *Procurement of B2 is the process/activity carried out by P-B2, IP-B2 and IT-B2 to provide B2.*

⁷ Indonesian Government Regulation No. 74 year 2001 on Hazardous and Toxic Substances Management - <http://www.flevin.com/id/lgso/translations/JICA%20Mirror/english/32.PP%2074%20TAHUN%202001.eng.html> accessed 5 August 2018.

⁸ The Indonesian Minister of Trade Regulation No. 44/M-DAG/PER/9/2009 concerning Procurement, Distribution and Supervision of Hazardous Materials jo. Indonesian Minister of Trade Regulation No. 23/M-DAG/PER/9/2011 concerning Amendment to Regulation of the Indonesian Minister of Trade No. 44/M-DAG/PER/9/2009. <http://extwprlegs1.fao.org/docs/pdf/ins91862.pdf> accessed 5 August 2018.

The Article 1 of Permendag No. 44 year 2009, “hazardous materials, hereinafter, referred to as B2, are chemical and biological substances and materials, either in a single or mixed form, that may directly or indirectly, endanger human health and the environment, and have toxicity, carcinogenic, teratogenic, mutagenic, corrosive and irritation characteristics”. B2 category emphasises circulation and the trade system, while B3 category emphasises the impact of its use both on a small scale/low dose or large scale/high dose.

The definition of Hazardous and Toxic Substance (B3) is a material that due to its nature and/or concentration and/or its amount, either directly or indirectly, can pollute and or damage the environment, and/or can endanger the environment, health, survival of humans and living things other.⁹ While Hazardous Substances (B2) are substances, chemicals and biology, both in single and mixed forms which can endanger the health and the environment directly or indirectly, which have toxicity (carcinogenic), teratogenic, mutagenic corrosive and irritation.¹⁰ Table 2 showed relevant regulations on cinnabar ore and mercury trade.

Moreover, Article 2 and 3 of the Ministry of Environment Decree No. 2 year 2010 regarding the Use of Electronic System of Hazardous and Toxic Materials Registration in the Indonesia National Single Window (INSW) Framework, stipulated that exporter as well as importer of hazardous substances must register the traded substance(s) at the INSW platform and must include all of these informations (Article 5):

- a. Legal statute of company's establishment (*akta pendirian perusahaan*);
- b. Permit to do business (*surat izin usaha perdagangan* /SIUP);
- c. Trade registration number (*tanda daftar usaha perdagangan*);
- d. Tax payer registration number (*nomor pokok wajib pajak* /NPWP);
- e. Importer identification number (*angka pengenal impor* / API);
- f. Material Safety Data Sheet (MSDS);
- g. Certificate of analysis; and
- h. Pictures of storage room or warehouse.

Annex 1 of the Indonesian Minister of Trade Regulation No. 44/M-DAG/PER/9/2009 listed mercury with the Chemical Abstract Service (CAS) No.7439-97-6, and HS code 2805400000, is a type of hazardous material regulated by the import trade system. However, although the circulation of mercury based on the existing regulations is limited, in reality it can be traded easily including through the internet, in gold mine locations and nearby cities.

⁹ Article 1 paragraph (1) Government Regulation No. 74 year 2001 concerning Management of Hazardous and Toxic Materials.

¹⁰ Ibid

Table 2. Several relevant regulations on cinnabar ore and mercury

Form of mercury	Sector	Relevant Regulations
Cinnabar ore	Mining	Law of the Republic of Indonesia No. 4 year 2009 on Mineral and Coal Mining, Chapter 23, Criminal Provisions, Article 158-165
	Import	Law of the Republic of Indonesia No. 4 year 2009 on Mineral and Coal Mining no prohibition to import cinnabar
	Export	Prohibited by the Minister of Trade Regulation on Export Provisions of Mining Products of Processing and Purification of Mining Products, Permendag No.1 year 2017, Article 3. Law of the Republic of Indonesia No. 4 year 2009 on Mineral and Coal Mining. As of 2014 the law mandated mineral producers to build mining processing/smelters so that the minerals exported in form of 99% processed raw metals.
	Supply/ procurement and trade	Not prohibition, but could be a subject of Law of the Republic of Indonesia No. 4 year 2009 on Mineral and Coal Mining and the Ministry of Trade Decree No. 75 year 2014
Elemental mercury	Production	Law of the Republic of Indonesia No. 4 year 2009 on Mineral and Coal Mining, no prohibition
	Packaging & labelling	Government Regulation (<i>Peraturan Pemerintah</i>) No. 74 year 2001, Articles 15 and 16; Ministry of Environment Regulation No. 03 year 2008 regarding Symbol and Label of Hazardous Substances; Regulation of the Minister of Industry of the Republic of Indonesia No. 23/M-IND/PER/4/2013 concerning Amendment to the Regulation of the Min. of Industry No. 87/M-IND/PER/9/2009 on Harmonisation System.
	Supply/ procurement, and trade	The Min. of Industry and Trade Regulation No. 254/MPP/Kep/7/2000 concerning concerning the Procedures for the importation & Circulations of Certain Hazardous Materials, Min. of Industry and Trade, classified mercury as B2 (Haz. Substance) in the Annex I; Prohibited by the Ministry of Trade Decree No. 75 year 2014, but allowed for limited use by the Government Regulation (<i>Peraturan Pemerintah</i>) No. 74 year 2001; The Ministry of Trade & Industry Decree No. 478/MPP/KEP/7/2003.
	Import	Prohibited by Environmental Act No. 32 year 2009 article Article 69; the Ministry of Trade Decree No. 75 year 2014; notifications from trade partners required by Government Regulation (<i>Peraturan Pemerintah</i>) No. 74 year 2001. Ministry of Environment Decree No. 2 year 2010 regarding the Use of Electronic System of Hazardous and Toxic Materials Registration in the Indonesia National Single Window (INSW) Framework.
	Export	No prohibition to export mercury but subject to Government Regulation (<i>Peraturan Pemerintah</i>) No. 74 year 2001. Ministry of Environment Decree No. 2 year 2010 regarding the Use of Electronic System of Hazardous and Toxic Materials Registration in the Indonesia National Single Window (INSW) Framework.
Mercury wastes	Storage	Environmental Ministerial Regulation Number 30/2009 regarding Norm, Standard, Guideline and Criteria for Local Government Policy on Storage and Collecting Facilites of Hazardous Waste

The Ministry of Trade and Industry Decree No. 478/MPP/KEP/7/2003 concerning the importation of goods appointed PT. *Persero Perdagangan Indonesia* (PT PPI), a state-owned company, as a registered hazardous substances. The appointment of PT PPI was considered as a control and preventive measures of the misuse of hazardous substances in Indonesia.¹¹ However, despite the appointment as the sole importer of hazardous substances, PT PPI only imported 4 chemicals: Hydrogen Peroxide (H₂O₂), borax, sodium cyanide, and Triethanolamine.¹²

As mandated by the Minamata Convention that party has to develop the National Implementation Plan to implement all the agreed provisions in the treaty, Indonesian government and stakeholders currently developing the National Implementation Plan. The Indonesian Centre for Environmental Law (ICEL) identified several gaps in mercury regulatory framework as follow [13]:

1. For export and import provisions, it is necessary to stipulate in the National Implementation Plan or in the Minister of Trade Regulation which regulates additional requirements regarding written approval and certification applied for mercury export and import activities.
2. For cinnabar mining, there must be a revision of Government Regulation No. 23 year 2010 and ESDM Regulation No. 25 year 2016, that cinnabar or mercury is no longer included in metal mineral commodities.
3. For mercury release, it is necessary to immediately determine which release sources will be used as targets for controlling or reducing mercury release on National Action Plan on mercury emissions and releases.
4. For Artisanal and Small-scale Gold Mining (ASGM), the strategy for eliminating mercury use needs to be emphasised in the ASGM National Action Plan.
5. For Temporary Mercury Storage, it is necessary to set the technical standards and temporary storage requirements for mercury or other hazardous substances as commodities, to be specified in a Regulation issued by the Minister of Environment and Forestry.
6. For hazardous waste, there is a need for a revision of the Minister of Environment Regulation No. 5 year 2014 concerning Wastewater Quality Standards which in some industries also containing mercury. Current regulation show inconsistencies because the wastewater containing mercury can be interpreted as waste water and or categorised as hazardous waste.

¹¹ PT PPI website, with 4 hazardous chemicals imported for mining sector <http://www.ptppi.co.id/id/produk-komoditi/perdagangan-luar-negeri/bahan-kimia-berbahaya.html>

¹² See <http://www.ptppi.co.id/id/produk-komoditi/perdagangan-luar-negeri/bahan-kimia-berbahaya.html>

7. For contaminated sites, including former cinnabar mining sites, it is necessary to develop a sustainable remediation strategy by establishing a list of national priorities for the sites to be characterised, sustainable remediation and rehabilitation measures and the sources of funds.
8. There is no technical regulation regarding the classification and standard of handling, storage and the final treatment process for mercury as confiscated goods. There absence of socialisation to the police and district attorney apparatus for handling and storing mercury as confiscated items.
9. For mercury-containing medical devices to be phase-out by 31 December 2018, there is a need to issue a regulation regarding the termination of hg containing medical devices production, clean up of the former production line, and monitoring plan. There is also a need to develop a guidance document for stakeholders, health care facilities and public in general on how to handle and manage the unused hg containing medical devices.

3. Mercury trade in Indonesia

3.1. Origins of mercury

Mercury used in Indonesia came from several sources:

a. Domestic sources:

- Cinnabar ore:
 - mined locally in West Seram Island, West Kalimantan, Southeast Sulawesi [1], West Kalimantan and Aceh [11] - all without mining permit/license (IUP);
 - processed/distilled locally in West Seram, Bogor, Sukabumi, Bekasi, Tulung Agung, Jombang, Tuban [9] - all without proper permit to produce/distill mercury.
- By-products of oil and gas [14] - handled/treated at PPLI Hazardous Waste facility in Cileungsi, Bogor and abroad (Netherlands and Germany).

b. Other countries:

- Cinnabar ore: mined in China, Spain, and Mexico. However, so far no data showing that Indonesian miners or financiers importing cinnabar ores to Indonesia.
- Recovered mercury from industrial waste recovery from the Netherlands and Germany.

3.2. Trade routes

Cinnabar and mercury transported via various routes: land, air and water. Table 3 showed various trade routes.

Table 3. Trade route of cinnabar ore and mercury

Form	Domestic sources	From other countries
Cinnabar ore	Trucks, cars, vans, ships, boats, air cargo	Ships, boats, air cargo
Mercury	In person, motorbikes, truck, van, shipping, train, cargo and door-to-door.	Ships, boats, air cargo

3.3. Trade platforms

Mercury sold and traded via several trade platforms. Table 4 showed various e-commerce or internet trading platform of cinnabar and mercury in Indonesia.

Currently, there is no regulations in Indonesia prohibiting selling mercury or other hazardous substances via online trading. In the last 10 years, online trading and e-commerce platforms, such as indotrading.com, bukalapak.com, and alibaba.com, as well as social media market place platform are increasing. The Indonesian's popular e-commerce platform, such as bukalapak.com and indotrading.com, are used by many Indonesian mercury and cinnabar traders. Although a high rank official at the Ministry of Trade already noticed this, no regulation has been issued to address this matter.

There is no information available in all these trading platforms and websites whether the traders or the exporters have permit to sell and export/import mercury or not. The Government Regulation (*Peraturan Pemerintah*) No. 74 year 2001 provisions for mercury as an allowed hazardous substance for limited use, mandated all the traders to be registered at the local environmental agency in their operational areas.

Most mercury traders do not have permit or proper registration number due to a complicated process. When they obtain a registration number, usually it will give them permit for a couple of years with expiry date. However, in reality, lack of enforcement and very little monitoring conducted by the local environment agencies made all the mercury transactions keep happening under the illegal setting and commonly known.

One of the largest mercury traders and suppliers in Indonesia PT TE, claimed in their online Alibaba trade platform that they have the capacity to produce 1000 tonnes of mercury every month.¹³ From an interview in 2011 with the author, the owner of PT TE admitted that he received support from high rank police and military officers to protect his business including import and export of mercury.

¹³ https://www.alibaba.com/product-detail/Cinnabar-Cinnabar-Stone-Cinnabar-ore-Red_50011440646.html?spm=a2700.7724838.2017115.49.29902b6euB5jec accessed 1 August 2018

Table 4 shows electronic trading platform and e-commerce for electronic transaction that are used by the Indonesian mercury and cinnabar traders to do business domestically, as well as regional and globally.

Table 4. Trade/e-commerce platform of cinnabar ore and mercury in Indonesia

Form	Domestic trade platform	Regional/international trade platform
Cinnabar ore	https://www.indotrading.com/product/batu-cinnabar-p211201.aspx	https://www.alibaba.com/product-detail/Cinnabar-ore-Hgs-mercurysulfide_50011480488.html
	Buying/looking for cinnabar ore in huge amount https://fjb.kaskus.co.id/product/58e786ee1ee5df4d1d8b456d/bersedia-beli-batu-cinnabar-jumlah-berapa-banyakpun/	Pure Red Mercury Sop, a Premium Online Mercury Shop in India +49 178 7120515 (whatsapp only) info@puremercury.com https://puremercury.com/#top
	Business opportunity https://www.facebook.com/149773995681/posts/dijual-batu-mercury-batu-cinnabar-ore-batu-merah-kadar-2790-ready-stock-ber-ton-/10150986861580682/	PT Taman Eden, Indonesia, capacity 5000 tonnes/month and up to 1000 tones mercury/month https://www.alibaba.com/product-detail/Cinnabar-cinnabar-stone-cinnabar-red-cinnabar_50013851989.html?spm=a2700.7724857.normalList.42.7473515dCdF0qn
	https://www.indonetnetwork.co.idhttps://www.indotrading.com/product/batu-cinnabar-p211201.aspx	—
	https://www.indotrading.com/merkuri_2872/	—
Mercury	https://www.facebook.com/malikalwiasli/	https://www.exportersindia.com/search.php?term=Merccury&id=mobile_search&srctype=product
	https://www.facebook.com/JualAirRaksa77/	https://www.facebook.com/Mercuryforsalepurity999-1832189290373430/
	https://www.bukalapak.com/p/kesehatan-2359/obat-suplemen/obat-obatan/2v18sb-jual-air-raksa?from=omnisearch&product_owner=normal_seller&search%5Bkeywords%5D=air%20raksa	https://indonesia.exportersindia.com/manufacturers/mercury.htm
	https://m.bukalapak.com/p/industrial/industrial-lainnya/2au7w7-jual-jual-air-raksa-mercury-goold-99-999	https://www.go4worldbusiness.com/suppliers/indonesia/mercury.html?region=worldwide&pg_buyers=1&pg_suppliers=1
	CV KimiaJaya Pro - sell cheap mercury https://www.airraksamurah.blogspot.com	https://www.exportersindia.com/cv-cipta-logam-utama/

3.4. ASGM miners access to mercury

ASGM miners have easy access to buy mercury as it is available in the market in various sizes and packaging. Although Article 17 of the Ministry of Trade Regulation No. 75 year 2016¹⁴ regarding the Procurement, distribution and monitoring of Hazardous Materials already forbidden mercury import, trade and distribution to be use in gold mining sector, Government Regulation No. 74 year 2001, Articles 15 and 16 and the Ministry of Environment Regulation No. 03 year 2008 regarding Symbol and Label of Hazardous Substances, provide a clear prohibition and guidance for traders, but due to lack of monitoring and enforcement, there is no strong control over mercury trade or selling points. Miners can access mercury 24 hours, 7 days from various outlets, in form of cash, loan or credit, in small amount of 100 gram in a small plastic bag of 25 kg or less or in in a plastic jug. Miners can access mercury easily from several outlets/routes as shown in Figure 1-4 below and in the following page.



Figure 1. Non-standard mercury packaging as home/cottage industry. Source: Facebook page.

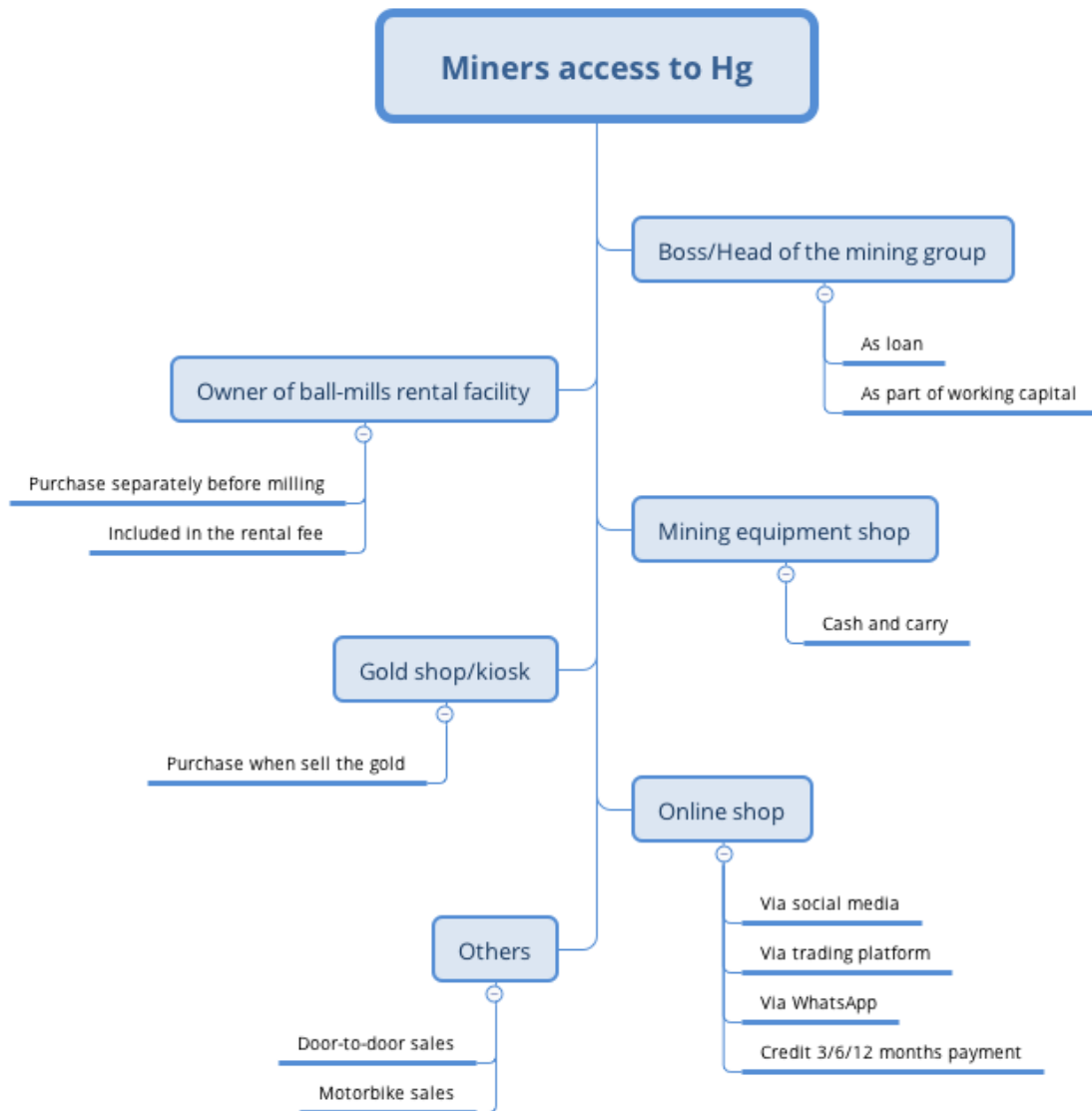


Figure 2. Confiscated mercury from 3 houses in East Java that produced mercury. Source: <https://news.detik.com/berita-jawa-timur/d-3680236/polisi-gerebek-3-home-industri-penghasil-700-kg-merkuri-di-jombang>

Figure 3. Three containers of confiscated mercury in Maluku in cooking oil jerrycan @25kg. Source: <http://www.siwalimanews.com/post/hendak-jual-bb-merkuri-tiga-anggota-polisi-diciduk>

¹⁴ Peraturan Menteri Perdagangan No.75/M-DAG/PER/10/2016 http://www.scisi.co.id/scisi/repository/upload/mod_commodity_files/1425441111picfc24e39ffd5.pdf accessed 10 August 2018

Figure 4. Miners access to mercury



Recently, more online traders offered credit scheme without interest to buy mercury from their companies. Some e-gadget aware miners choose to buy mercury from the e-commerce trading platform because they considered the traders are more reliable and acknowledged in the reviews section.

Miners who work in ASGM hotspots in Sumatera bought mercury in Java every 3 months when they go home for a break. Their bosses ‘assigned’ them to buy, at least, 3 kg of mercury per person (there are 5 miners in every group) when they return to the ASGM sites after the break and the boss will reimburse it. West Java miners bought it directly from the main supplier/producer in Sukabumi, Bekasi or Bogor.¹⁵

¹⁵ Interview with ASGM miners in Dharmasraya, West Sumatera

3.5. Packaging and labelling of mercury

Packaging and labelling of mercury are regulated under the Government Regulation or *Peraturan Pemerintah* No. 74 year 2001 (PP 74/2001), Articles 15-16 and the Ministry of Environment Regulation No. 3 year 2008. According to PP 74/2001 Chapter 2 Article 5, there are 15 categories of hazardous substances as follow:

- | | | |
|---|---|--|
| a) mudah meledak (explosive); | f) amat sangat beracun (extremely toxic); | k) bersifat iritasi (irritant); |
| b) pengoksidasi (oxidizing); | g) sangat beracun (highly toxic); | l) berbahaya bagi lingkungan (dangerous to the environment); |
| c) sangat mudah sekali menyala (extremely flammable); | h) beracun (moderately toxic); | m) karsinogenik (carcinogenic); |
| d) sangat mudah menyala (highly flammable); | i) berbahaya (harmful); | n) teratogenik (teratogenic); and |
| e) mudah menyala (flammable); | j) korosif (corrosive); | o) mutagenik (mutagenic). |

According to the Ministry of Industry Regulation No. No. 23/M-IND/PER/4/2013¹⁶ all the producers of hazardous substances must provide symbol, pictogram, signal words, hazard statements, and precautionary statements. The substance also must be equipped with MSDS comply with the Globally Harmonized System of Classification and Labelling of Chemicals for all type of packaging in Bahasa Indonesia, including the transfer packaging (if the item moved to a smaller packaging).

The pictogram of hazards for mercury (GHS US and EC) are shown in Figure 5.



Figure 5. Hazard pictograms of mercury

Although Indonesia already has the necessary regulations related to packaging and labelling for hazardous substances such as mercury, in reality, none of the packaging of mercury sold in ASGM villages and hotspots is provided with proper symbol,

¹⁶ <https://www.global-regulation.com/translation/indonesia/7204966/regulation-of-the-minister-of-industry-number-23-m-ind-per-4-2013-2013.html>

pictograms, hazard statements or MSDS. The existing regulation also requires traders to obtain permit and be registered at the relevant local departments of the relevant agencies, such as Trade and Industry Agency (*Dinas Perdagangan dan Perindustrian*), and the Environmental Agency / Body (*Dinas/Badan Lingkungan Hidup*).

Hazards statements of mercury according to GHS-USA are shown in Table 5.

Table 5. Hazards Statements of Mercury

H330	Fatal if inhaled
H360	May damage fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
<i>Source: GHS-USA</i>	

Survey conducted in the field showed that none of the mercury sold in the ASGM villages comply with all the regulations above. Moreover, there is no monitoring conducted to check and investigate these in-compliances by the relevant law enforcement agencies such as the local Resort Police or the Environmental investigator.

In several ASGM sites, many of the law enforcement officers are involved in ASGM business in various degrees of involvements. It is a common knowledge and well known that the local unit of Police force, Military, Marine, or Special Forces unit play their active roles in protection service of ASGM activities, ranging from protection of the supplies of the raw materials, the mining sites, working materials and capitals, and gold productions and transportation to the nearby town. When the financiers or the boss of the miners hired helicopter and brought several plastic jugs of mercury to the site in the jungle, the protectors also must secure the landing and the heli pad.¹⁷

Table 6 shows various type of mercury packaging in ASGM hotspots of Indonesia. All mercury packaging sold in Indonesia's ASGM hotspots have no pictograms, no hazard statements, and no MSDS as required by the law. Most miners and communities who bought mercury did not know where the mercury came from. Some of the packaging in the shop, labelled as mercury from Germany or Spain to sell them in a higher price compared to the locally produced mercury from Sukabumi or Bekasi.¹⁸ Most gold kiosks and mining equipment from local stores could not show the permit to sell hazardous substances from local agencies and did not know where exactly the mercury came from except the information provided by the middle men.



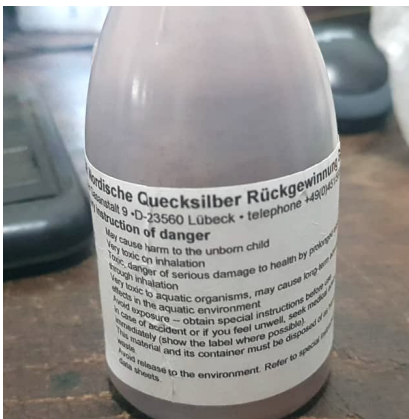
¹⁷ Interview with a resource person from Korowai, Mappi Regency, Papua.

¹⁸ Interview with shop owner in Wonogiri, Central Java.

Table 6. Various type of mercury packaging sold in Indonesia's ASGM hotspots and its price

Packaging	Place to buy	Price (per kg)
 <p>1 bottle = 100 gram</p>	<p>Vendor/mining equipment shop Sekotong, West Lombok</p>	<p>100 gram = IDR 150,000.00 = USD 10.28 or USD 102.80/kilogram</p>
	<p>A vendor in West Lombok. The bottle was labelled as mercury from "Germany" printed in a sticker label</p>	<p>1 botol = 1 kilogram = IDR 600,000.00 = USD 41.05</p>
 <p>1 bottle = 1 kilogram</p>	<p>CV. Kimia Jaya Pro - Big Hg supplier https:// www.airraksamurah.blogspot.com/p/ jual-air-raksa-hb.html accessed 12 Aug 2018</p>	<p>1 kilogram = IDR 460,000.00 = USD 31.50</p> <p>Ready to supply up to 500-1000 kg per week Contact Malik Alwi HP +62(0)83895839294</p>
 <p>1 bottle = 1 kilogram</p>	<p>Anugrah Agung Perkasa, Hg supplier https://www.bukalapak.com/p/ kesehatan-2359/obat-suplemen/ obat-obatan/2v18sb-jual-air-raksa accessed 1 Aug 2018</p>	<p>1 kilogram = IDR 1,750,000.00 = USD 120.00 Credit 0% for: - 3 months payments IDR 583,333 per month - 6 months payments IDR 291,666 per month - 12 months payments IDR 145,833 per month</p>

Table 6. Various type of mercury packaging sold in Indonesia's ASGM hotspots and its price

Packaging	Place to buy	Price (per kg)
	A vendor in West Java	1 botol = 1 kilogram = IDR 450,000 = USD 30.40
	From a supplier, order/contact via facebook account/WhatsApp	1 plastic jug = 25 kilogram = IDR 6,875,000 = USD 460.00
 1 bottle = 100 ml = 1.35 kg	CV Tara Sarana Kimia, chemical / Hg supplier (via facebook messenger) imported and purchased from Remondis QR (http://www.remondis-qr.de/en/mercury-for-sale/) accessed 26 Jul 2018	Mercury from Germany 1 kilogram = IDR 1,500,000.00 = USD 101.00 1 bottle = 1.35 kg = IDR 2,025,000 = USD 136.4

4. Mercury trade partners

From 2015, there was no record of Indonesia importing mercury from any trade partner countries presumably due to the increased supply from domestic sources. Cinnabar ores mined in Seram Island, West and Central Kalimantan, Aceh and Southeast Sulawesi, processed in Java [1, 11]. One company claimed that they have the capacity to produce >1000 tonnes of mercury per month while another company, both near Jakarta, claimed that they produce 50 tonnes/month.¹⁹ There is no formally recorded data about the license for this cinnabar mining.

¹⁹ Source: informant

Database available to be obtained at the Ministry of Energy and Mineral Resources regarding permit released for all type of mining license and commodities shows only non-metal mining permit for possible category of cinnabar mining. Although an official at the Ministry of Energy and Mineral Resources stated that there is only one legal cinnabar mining site registered in West Kalimantan Province,²⁰ there is no further information available about the legal cinnabar mining site and license. Mercury trade partners of Indonesia from 1998 until 2014 are shown in Table 7 in the following page.

Table 7. Indonesia's mercury trade partners period of 1998-2014 as reported in UN Comtrade database

Year	Qty (kg)	Trade Partners	Remarks
1998	16,281	Areas, nes* Spain	
1999	61,611	China, France, Japan, Philippines, Spain, USA	
2000	48,686	Australia, Germany, Japan, Netherlands, Spain, USA	
2001	1,286	Australia, Japan, Spain, USA	
2002	466	Australia, China, Germany, Japan, Singapore, USA	
2003	47,100	Japan, Singapore, Sweden, USA	
2004	356	Germany, Spain	
2005	28,866	Germany, Indonesia*, Spain, USA	
2006	30,630	Belgium, China, Germany, Hungary, Japan, Spain	
2007	10,303	Germany, Singapore, Spain, USA	
2008	7,791	Germany, Singapore, Spain, USA	
2009	9,928	Germany, Netherlands, Spain, USA	
2010	3,494	Germany, Japan, Netherlands, Spain, Thailand, USA	
2011	7,862	Germany, India, Japan, Netherlands, Spain, Thailand, USA	
2012	994	Germany, Japan, Netherlands, Thailand, USA	EU banned Hg export
2013	1,320	Japan, USA	USA & EU banned Hg export
2014	732	Germany, USA	USA & EU banned Hg export
Total	277,706		

* According to the explanation on UN Comtrade website, Area nes "Areas NES (not elsewhere specified)" is used (a) for low value trade and (b) if the partner designation was unknown to the country or if an error was made in the partner assignment. The reporting country does not send out the details of the trading partner in these specific cases. Sometimes reporters do this to protect company information. So, one could say that "Area nes" is a group of partner countries, but the components of the group vary by reporter, by year and by commodity.

²⁰ Kasus Merkuri Ilegal Diungkap di Tanjung Mas Semarang. Seorang WNA Asal Sudan Jadi Tersangka. <http://infoplus.co.id/kasus-merkuri-ilegal-diungkap-di-tanjung-mas-semarang/> Indoplus.co.id - accessed 7 Aug 2018

Within the period of 2015-2017, about 1 million tonnes of mercury, worth USD 8.5 million, were exported from Indonesia to several countries and were not recorded at the Indonesian Statistic Bureau reports but recorded in the UN Comtrade platform. Table 8 shows mercury exported from Indonesia and imported by trade partners as reported in UN Comtrade database.

Table 8. Mercury exported from Indonesia and imported by other countries as reported in UN Comtrade database (HS 280540)

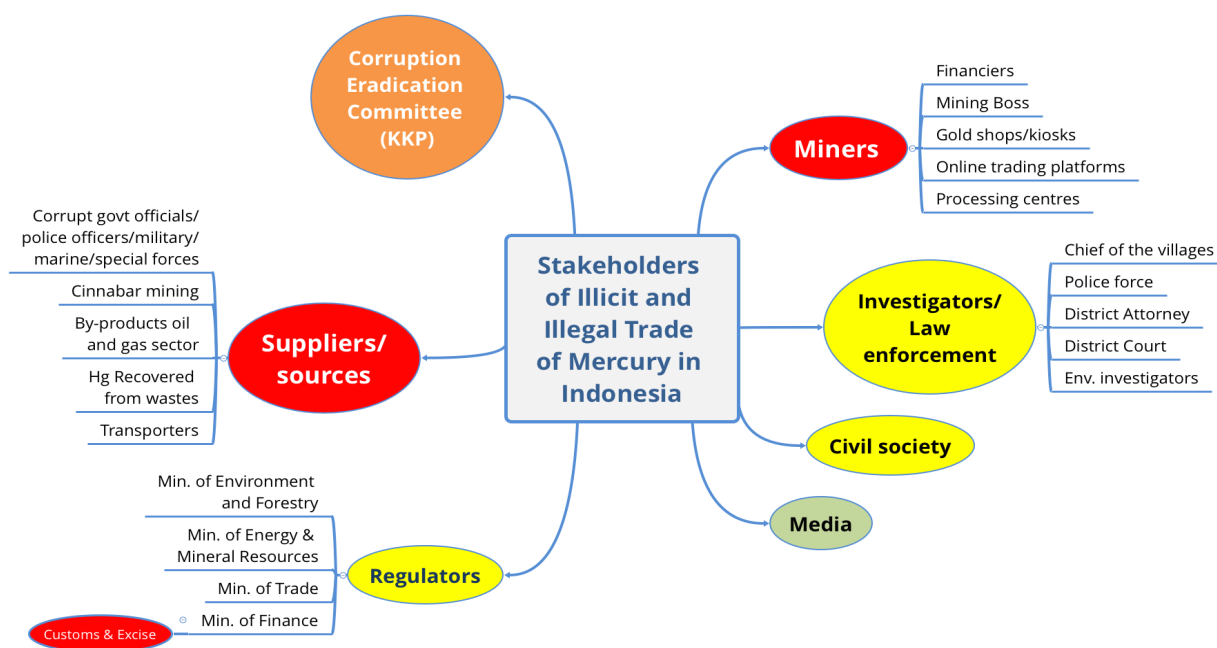
Year	Hg exported as reported by Indonesia to trade partners (as HS 280540)			Hg imported from Indonesia as reported by trade partners (as HS 280540)			Discrepancies		
	Volume (in kg)	Trade values (US \$)	Trade partners	Volume (in kg)	Trade values (US \$)	Trade partners	Volume (in kg)	Trade values (US \$)	Remarks
2015	283,767	\$2,615,999	Viet Nam, USA, UAE, Timor-Leste, Thailand, Switzerland, Singapore, Poland, Papua New Guinea, Netherlands, Malaysia, India, Eritrea, China HK SAR, China	154,272	\$2,589,032	Brunei Darussalam, China HK SAR, Netherlands, India, Singapore, Guyana	-129,495	\$(26,967)	Some trade partners did not report Hg imported from Indonesia and Indonesia did not report several trade partner countries (Brunei Darussalam and Guyana)
2016	680,440	\$4,119,385	Viet Nam, United Arab Emirates, Thailand, South Africa, Singapore, Papua New Guinea, Panama, Pakistan, Japan, India, Colombia, China HK SAR	203,359	\$4,003,894	Bosnia Herzegovina, Brazil, Colombia, China HK SAR, Rep. of Korea, Pakistan, India, Singapore, South Africa, Switzerland, Turkey	-477,081	\$(115,491)	Some trade partners did not report Hg imported from Indonesia and Indonesia did not report several trade partner countries (Bosnia Herzegovina, Brazil, Rep. of Korea, Switzerland, and Turkey)
2017	69,016	\$1,790,436	Viet Nam, United Arab Emirates, Togo, Thailand, South Africa, Singapore, Netherlands, Japan, India, China HK SAR, China	101,618	\$1,200,621	Bosnia Herzegovina, China HK SAR, India, South Africa, Singapore	32,602	\$(589,815)	Some trade partners did not report Hg imported from Indonesia and Indonesia did not report several trade partner countries (Bosnia Herzegovina)
	1,033,223	\$8,525,820		459,249	\$7,793,547		-573,974	\$(732,273)	
Source: UN Comtrade database									

5. Stakeholders of illicit and illegal mercury trade

Stakeholders of illicit and illegal mercury trade in Indonesia can be identified in Figure 6 as follow:

- Miners: main actors and victims of illegal and illicit mercury trade. They are connected directly to the mining financiers/investors, mining boss, gold shops/kiosks, online trading platforms and processing centres. The Indonesian Community Miners Association (APRI) claimed that their 1 million members of ASGM miners use about 3500 tonnes of mercury per year;
- Suppliers/sources: main actors who are mainly benefitted from the illicit and illegal trade of mercury and potentially also gold. They are connected to the cinnabar ore mining site owners, corrupt high rank officials, producers of Hg by-products from oil and gas sector, companies that recover Hg from wastes, and transport/shipment companies;
- Investigator/law enforcement: actors who are responsible to investigate, prevent the violations and enforce the existing law. They are consists of chief of the village/community leaders, civilian/community police, police forces, district attorney, district court, and environmental investigators. Some police and military officers involved in mercury trade and gold mining business protection services;
- Regulators: consists of relevant ministries such as Ministry of Trade, Ministry of Environment and Forestry, Ministry of Energy and Mineral Resources and Ministry of Finance with Custom and Excise unit. At the local level, some officers from the local trade agency, environmental agency, and other relevant agencies also involved in hg trade and gold trade business and transactions;
- Civil society: consists of NGOs, public interests groups, community groups. women's group, right-based groups and health-based groups. These groups provided informations, acting as watchdog and communicate with the law enforcement agencies;
- Media: newspapers, television, electronic journalists can play important roles in addressing the illicit and illegal trade of mercury and the relevant legal process;
- The Indonesian Corruption Eradication Committee plays important roles especially to investigate and bring down some government officials, governors, mayors, state high rank officials suspected receiving grafts and bribery from mining related investors.

Figure 6. Stakeholders map of Hg illicit and illegal trade in Indonesia



6. Nation-wide mercury raid and follow up

From the national mercury operation conducted between September 2017 until March 2018, as of March 13, 2018 - 23 Local Police Resorts and Police Crime Units handled a number of cases as follow:²¹

- handled 112 cases;
- confiscated about 34.90 tonnes of mercury;
- confiscated approx. 36.29 tonnes of cinnabar; and
- crime suspects: 125 people.

However, an official statement²² revealed that until the 30th of Oct 2017, the Indonesian Police already confiscated:

- 40.04 tonnes of mercury, and
- about 25.63 tonnes of cinnabar ores.

There is no clear information which figures are the correct or updated ones although both of these numbers came from the Police Force officials. At the moment, most of the

²¹ Source: personal communication with a high rank official at the Criminal Investigation Agency, Police Headquarter (Bareskrim Mabes Polri)

²² West Nusa Tenggara Police Public Relation officer in "Polisi Sita Barang Bukti Merkuri Total Seberat 40,04 Ton" <http://tribrataneews.ntb.polri.go.id/2017/10/30/polisi-sita-barang-bukti-merkuri-total-seberat-4004-ton/>

evidence (elemental mercury and cinnabar ores) are kept at every police office's warehouse or in their offices. When the paperworks already handed over to the district attorney office, the police will move these evidences to the attorney's warehouse called *Rupbasan (Rumah Penyimpanan Barang Sitaan Negara)*, where the court keep and store all the crime evidences until the final decision made or order them to be destroyed or move somewhere else.

So far, most of the verdict of the court processes ordered the police or the environment agency or the Ministry of Environment & Forestry (MoEF or KLHK) to "destroy" the evidence. There is no information available regarding the method use by KLHK to "destroy" mercury and cinnabar ores.

There are various ways of trading mercury licitly and illicitly. Some mercury in flasks were found at the bottom of the ship in Jakarta harbour ready to sail to India and Sudan.²³ Another way to smuggle mercury to cross the border was reported as an automotive spare part.²⁴

Once the case recorded at the local police station, the compiled paperworks will be sent to the District Attorney office to be processed further. The number of registered case can be traced and followed until the verdict and decision made. With the registered case number, the verdict of all cases in court can be found on The Supreme Court website (<https://putusan.mahkamahagung.go.id>).

²³ *Polisi Sita 4 Ton Merkuri Siap Ekspor Buatan Indonesia* <https://bisnis.tempo.co/read/1023290/polisi-sita-4-ton-merkuri-siap-ekspor-buatan-indonesia/full&view=ok>

²⁴ Interview with local Police in Central Sulawesi

A case of illegal and illicit mercury trade:

Sudanese bought 20.9 tonnes of mercury from Indonesia and sentenced to jail

The largest case of mercury raid in Indonesia was found in Semarang harbour, Central Java. The alleged case of illegal mercury trade involved a Sudanese citizen, Awad Khalfalla Mohamed Ahmed Farah, named as a suspect in possession of illegal mercury. Awad was a buyer searched for mercury via the internet and found a trader from Indonesia CV Cipta Logam in January 2017.

In February 2017, Awad meet made his 1st order to Lasmino from CV Cipta Logam, 10 tonnes of mercury and agreed to pay IDR 420 million (approx. USD 28,710). Awad received all of his orders in stages until September 2017 and stored it in a rented warehouse belong to PT Teduh Makmur.

When the local Police raid the warehouse due to a suspicious movement, they found 3 lots of mercury in boxes with the total volume of 20.9 tonnes. Lasmino bought a large block of mercury from Eko, from Bekasi on the 9th of July 2017.* The transaction for the purchase of mercury was carried out around the East Bekasi Bulakapal toll gate (Bulakapal area) on 9 July 2017.

The purchased mercury was immediately transported to Semarang by truck, then dismantled to be stored in the Teduh Makmur warehouse in Semarang. The confiscated mercury were found without legal documents, nor proof of the origin of the goods. It did not equipped with a legal Mining Business License (IUP), nor Special Mining Business Permit (IUPK).

Awad bought mercury not all at once, but since February 2017 collected little by little. Awad stored 41 mercury minerals (mercury) from February to May 2017 by renting a warehouse belong to PT Teduh Makmur in Tanjung Mas harbour, Semarang. Atong is, a worker at PT Teduh Makmur Building, who is in charge in Tanjung Mas Village.

The export documents was sent to Yuli Widiyanto, Director of PT Satria Lintas Intermoda who was engaged in a Marine Ship Freight Forwarding (EMKL) service. Export documents are managed through Sigit Cahyono, Head of PT MR Forwarding Indonesia Branch as an agent that manages containers for the export of mercury to Vietnam, India, Saudi Arabia/Dubai, Thailand dan Singapore.

The Sudanese buyer was sentenced to jail for 1 year and fined IDR 1 billion (approx. USD 68,120), the 1st warehouse worker (Atong) was sentence to jail for 2 years, and fined IDR 150 million (approx. USD 10,215), while the 2nd warehouse owner, Teti, sentenced to jail for 7 months and fined IDR 50 million (approx. USD 3,400).

They have been charged with the Article 161 in conjunction with Article 37, 40 paragraph (3), article 103 paragraph (2), article 104 paragraph (3), article 105 paragraph (1) of the RI Law No. 4 of 2009 concerning Mineral and Coal Mining.



Sources:

<https://www.cnnindonesia.com/nasional/20170910003302-20-240675/polda-jateng-gagalkan-penyelundupan-209-ton-merkuri> - accessed by 10 August 2018

<https://klikrdi.my.id/divonis-7-bulan-pengacara-pemilik-merkuri-di-semarang-ilegal-kecewa/> - accessed by 10 August 2018

* See Eko's website here: <http://klikinformasimenambangemas.blogspot.com> - accessed by 10 August 2018

7. Conclusion

Due to high demand for mercury to extract gold in many illegal gold mining sites in 93 regencies of Indonesia and lack of law enforcement, until the 1st quarter of 2018, mercury still traded in Indonesia and exported to several countries illegally and illicitly.

According to an official at the Ministry of Energy and Mineral Resources, the only legal cinnabar mining site registered and obtained a formal license is located in Kapuas Hulu Regency, West Kalimantan Province with mercury concentration up to 80%. After the ratification of the Minamata Convention, the existing cinnabar mining will still be allowed to be mined for 15 years after the ratification of the treaty. However, the Indonesian government is currently preparing a roadmap to reduce and eliminate mercury and in the process of developing the National Implementation Plan of the Minamata Convention on mercury.

Moreover, The Ministry of Trade and Industry Decree No. 478/MPP/KEP/7/2003²⁵ already appointed *PT (Persero) Perusahaan Perdagangan Indonesia* (PT PPI) as the only company that have the permit to import and distribute certain hazardous substances. Other than PT PPI, only several registered mercury importers for own use allowed, such as CFL manufacturers and Hg-containing medical devices, will be able to continue or extend their import permit as the IP-B2 (*Importir Produsen Bahan Berbahaya*) permit holder.

For cinnabar and elemental mercury exports, to be consistent with the objective of the Minamata Convention and Indonesian Act No. 11 year 2017 regarding the ratification of Minamata Convention, as well as the National Implementation Plan and the sectoral National Action Plans on ASGM, products and emissions & releases, cinnabar ore mining should not be allowed. Moreover, any type and size of mercury distillation process should also be forbidden by law.

There was limited measures can be done through Custom and Excise unit. Strong involvement of corrupt officials, politicians, law enforcement officers on the ground and at the national level, become the barrier to shut down the illegal and illicit trade of mercury. Currently, legal sentence for mercury traders are not strong enough to stop them from doing it and do not considered the long-term impact or consequences of their acts.

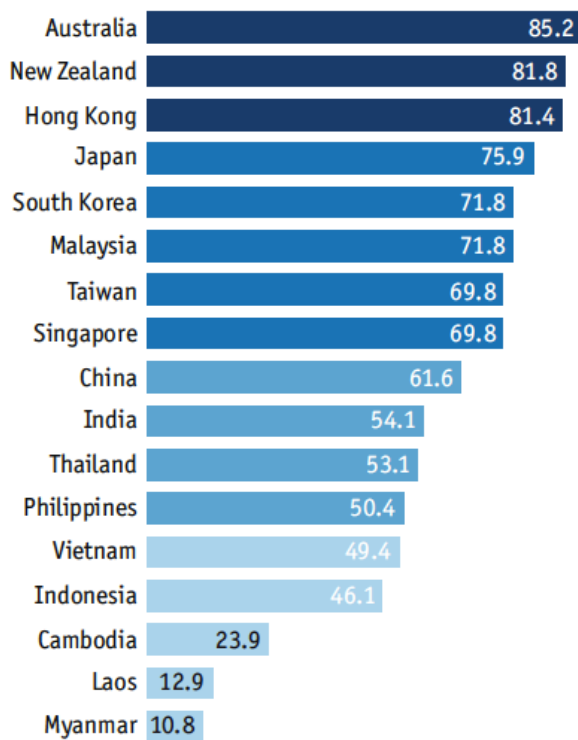
Illicit trade tends to follow the same routes as licit trade. The Asian region continues to integrate through agreements like the Trans-Pacific Partnership, the Regional Comprehensive Economic Partnership, and the ASEAN Economic Community, that will provide opportunities for both types of trade.

²⁵ http://www.flevin.com/id/lgso/translations/JICA%20Mirror/english/315.No.478_MPP_2003-E.html

In 2016, the Economist Intelligence Unit released the Illicit Trade Environment Index [15] to score 17 economies in Asia on the extent to which they enable illicit trade. Countries with good economy performance have high scores or put strong efforts to prevent illicit trades. In contrary, countries with weak economy performance have low scores in preventing illicit trades.

The Index was developed based on the assessment of 4 indicators with scores range from 0 to 100: 1) Intellectual property, 2) Transparency and trade; 3) Customs environment; and 4) Supply and demand.

The results showed that Indonesia was ranked 4th from the bottom with the score 46.1. out of 100. See the position of Indonesia in Figure 7. Individual scores for every indicator are as follow: a) Intellectual Property: 20.0; b) Transparency and trade: 78.0; c) Customs environment: 41.8; d) Supply and demand: 44.4. Indonesia's total score is 46.1. Although under the transparency and trade indicators Indonesia scored 78.0, in Customs environment, only scored 41.8.



Source: The Economist Intelligence Unit

Figure 7. Illicit Trade Environment Index

Based on an interview with a Custom officer, there is a need to improve the preventive measures of illegal exportation and importation of mercury.

Moreover, the potential sources of mercury supply need to be controlled and regulated, including by-products sources from oil and gas sector. Law enforcement and regulation to manage confiscated mercury as hazardous waste will prevent further use of mercury that has been mined, processed and traded illegally and illicitly.

In the future there should be an integrated reporting or tracking mechanism to monitor the legal steps taken regarding illegal and illicit trade of mercury to ensure the confiscated mercury stored in a secure location and not recirculated into the market.

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Annex 1

Matrix results of interview with mercury suppliers

Clusters	Suppliers questions	Responses from 5 suppliers
Origins	<ul style="list-style-type: none"> a. Do suppliers know where mercury originally comes from? b. What is written on labels? c. What kind of packaging they receive mercury in? d. Can the suppliers understand the language used on the packages (national language)? 	<ul style="list-style-type: none"> a. All said yes, they knew where Hg comes from: cinnabar & recovered from wastes/ recycling. b. <i>Air raksa</i>, Mercury for Gold, Mercury special for gold 99,999%, Premium Quality 99 - Gold Catcher, blank c. In flask, plastic jerry can or plastic jugs 25 kg, plastic bottles 1 kg and 13 kg. d. Yes, mostly English word “mercury” followed by some Bahasa Indonesia or some words in English “Premium quality”, “gold catcher”
Routes	<ul style="list-style-type: none"> a. Where mercury is traded by - ports, airports, road? b. Do they sell mercury to local vendors or also to international customers? c. Any orders by Internet? 	<ul style="list-style-type: none"> a. Ports, villages shops, gold kiosk/shops, door-to-door delivery. b. Both: to local vendors and also international customers (exported). c. Yes, using social media and e-commerce trading platform.
Quality	<ul style="list-style-type: none"> a. What features and qualities do they look for when purchasing mercury? b. Do they know about the quality of mercury? c. Do they have any indications if the mercury is pure or mixed? d. Are they aware of any test done in order to review the products quality / conformity? 	<ul style="list-style-type: none"> a. Concave surface shape, clean/no dirt, 99.999% purity. b. Yes, all suppliers interviewed knew, between 70% up to 99.999%. c. No, they don’t know. d. They relied on the certificates provided by the producers/manufacturers although sometimes they don’t understand what was written/said in the certificates.
Amounts	<ul style="list-style-type: none"> a. What are the sales estimates? b. How much does it cost? Are there any factors (e.g. quality, source etc.) affecting the profit margin? 	<ul style="list-style-type: none"> a. Sold about 20-50 tonnes per month or approx USD 200,000 up to 1,250,000 per month. b. No details information obtained. Nobody want to tell how much their profit margin is.
Actors	Who get involve?	Helper, transporters, warehouse boy, accounting, couriers, powerful military or police officers (for protection).
Awareness	Do they know whether mercury trade and use is legal/illegal?	<p>All of the suppliers knew that mercury trade and use is illegal.</p> <p>One of the suppliers are also a producer of mercury. He used a permit to trade hazardous substances from a local government for limited jurisdiction but used that certificate/license to sell all over Indonesia.</p>

Annex 2

Matrix results of interview with mercury vendors

Clusters	Vendors questions	Responses from 8 vendors
Origins	<ul style="list-style-type: none"> a. Do vendors know where mercury originally comes from? b. What is written on labels? c. What kind of packaging they receive mercury in? d. Can the vendors understand the language used on the packages (national language)? 	<ul style="list-style-type: none"> a. Yes, all of the vendors knew where mercury came from: from cinnabar ore extraction (domestically sourced) and industrial recycling (imported hg). b. 4 vendors had blank/no labels, 3 vendors sold Hg in bottles with labels “Mercury special for gold 99,999%”, 1 vendor sold Hg in Red Bull bottles. c. Plastic bottle 1 kg, plastic jerry can 25 kg. d. 7 vendors yes, understood a short English words on the label, 1 vendor did not care too much.
Quality	<ul style="list-style-type: none"> a. What features and qualities do they look for when purchasing mercury? b. Do they know about the quality of mercury? c. Do they have any indications if the mercury is pure or mixed? d. Are they aware of any test done in order to review the products quality / conformity? 	<ul style="list-style-type: none"> a. Good quality like ‘Germany’ mercury quality. b. All vendors claimed that they know/ aware about the quality of mercury: 70% up to 99,999%. Chinese mercury is around 70%, while mercury from ‘Germany’ and ‘Spain’ are mostly 99,999%. c. No clue at all. d. Trust their suppliers and what the suppliers said (certificates and lab results posted on social media or vendors’ websites).
Amounts	<ul style="list-style-type: none"> a. What are the sales estimates? b. How much does it cost? Are there any factors (e.g. quality, source etc.) affecting the profit margin? 	<ul style="list-style-type: none"> a. In average, sold about 10-100 kg per month or approx. USD200 (IDR 3 millions) up to USD2,700 per month (IDR 40 millions). b. No information. Nobody want to tell how much their profit margin is.
Actors	<ul style="list-style-type: none"> a. Are the suppliers the same every year? b. How many suppliers do vendors have? 	<ul style="list-style-type: none"> a. In average: bought from different suppliers every year. b. In average: 3 different suppliers.
Awareness	Do they know whether mercury trade and use is legal/illegal?	All knew or somewhat knew that hg is now prohibited for mining but do not care too much. One of the vendor said that if get caught by the police, they were willing to be ‘jailed’ or having a break at the police office for 1 week up to 1 month and then their family or business partners will bail them out and paid some amount of money to the police to be released.