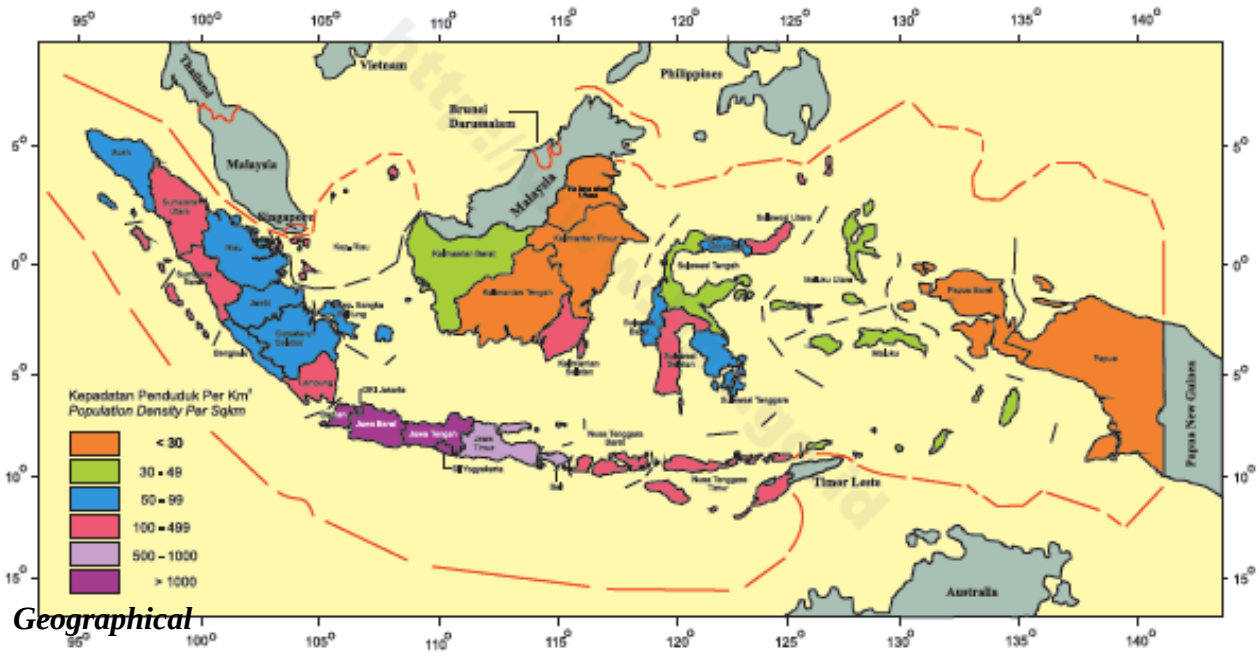
NATIONAL ASBESTOS PROFILE

INDONESIA

1. National Background Information

Keadaan Geografi dan Kepadatan Penduduk Indonesia, 2015

Geographic Situation and Population Density of Indonesia, 2015



Geographical

Diolah dari hasil Sensus Penduduk (SP) 2010 dan Proyeksi Penduduk Indonesia 2010-2035 / *Based on 2010 Population Census and Indonesia Population Projection 2010-2035*

Astronomically, Indonesia is located in the 6^0 04' 30''North Latitude and 11^0 00' 36''South Latitude, and 94^0 58' 21''East Longitude and 141^0 01' 10'' East Longitude, and passed by equatorial line in 0^0 latitude.

Geographically, Indonesia has land boundaries: North – Malaysia, Singapore, Vietnam, and Philippines, Thailand, Palau, and and South China Sea; South – Australia, Timor Leste, and Indian Ocean; East – Papua New Guinea, and Pacific Ocean. And those boundaries are situated in 92 external islands which must be managed and maintained appropriately. Those islands are used to determine the border lines between Indonesia and other countries. And half of the islands with its width less than or equal to 2000 km^2 are inhabited. (President Regulation No. 78, 2005 concerning management of external small islands).

Indonesian territory is composed of 34 provinces located in five major islands and four islands. They are **Sumatra Island;** (including Aceh, North Sumatra, West Sumatra, Riau, Jambi, South Sumatra, Bengkulu, and Lampung), **Riau Islands;** (Riau Islands), Bangka Belitung Islands (Bangka Belitung Islands), **Java Island;** (including DKI Jakarta/ The Special Capital Region of Jakarta, West Java, Banten, Central Java, DI Yogyakarta/ The

Special Region of Yogyakarta, and East Java), **The Lesser Sunda Islands;** (including Bali, West Nusa Tenggara, and East Nusa Tenggara, **Kalimantan Island;** (including West Kalimantan, Central Kalimantan, South Kalimantan, East Kalimantan, and North Kalimantan), **Sulawesi Island;** (including North Sulawesi, Gorontalo, Central Sulawesi, South Sulawesi, and Southeast Sulawesi, **Maluku Islands**: (including Maluku and North Maluku, and **Papua Island;** (including Papua and West Papua).

As an archipelagic state, Indonesia has thousand islands and is connected to straits and seas. According to Geospatial Information Agency (2014), there were 13.466 islands officially registered. According to the report of Ministry of Home Affairs in 2004, administratively Indonesia consisted of 17.504 islands with its width of area 1.913.578,68 km^2. Currently, Indonesia has 416 adiministrative areas/ regencies, 98 big cities with 7.071 districts, 81.396 villages.

Demographic Characteristics

Central Bureau Statistics (BPS) shows that since independence of Indonesia, national censuses have been undertaken for six times, in 1961, 1971, 1980, 1990, 2000, and 2010. The total population of Indonesians according to 2010 national census was 237.641.300 millions. With the population growth rate 1.38% per year, it is estimated that the number of population will reach 255.461.700 million people in 2015.

Based on the data collected in 2015 census, it was reported that the population density of Indonesia, particularly in Java Island, was 15.328 people per square kilometer in DKI Jakarta, 1.320 people per square kilometer in West Java, 1.237 people per square kilometer in Banten, 1.174 people per square kilometer in D.I Yogyakarta, and 1.030 people per square kilometer in Central Java. This condition is distinctly contrast to the east areas of the country, such as in Maluku and North Maluku where the population density was only 36 people per square kilometer, and 9 to 10 people per square kilometer in West Papua and Papua. The number of households in the 2010 national census was 61.390.300 people and estimated to reach 65.558.400 in 2015 with the average of four people within a household.

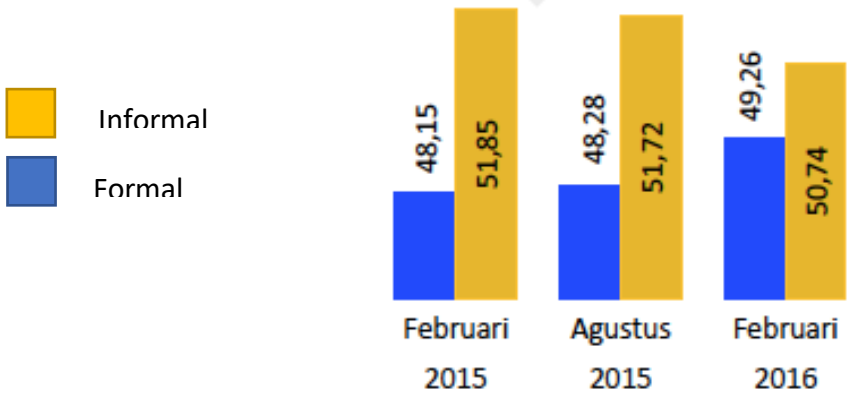
Economy

With the productive age labor (15 years old) stipulated by the government, the labor force in Indonesia is growing higher. The number of labor force reaches 122.380.021 people. They are all in the productive age (15 years old or more); consisting of full-employed, under-employed, and unemployed people. The number of employed people in 2015 was 114.819.199 people, and most of them are 25-44 years old.

Agricultural, fishery, hunting and forestry industries are generally dominated by workers who never take or fail to complete any basic formal education while trade sector such as restaurants and hotels are mostly dominated by junior-secondary school graduates.

The sectors of manufacturing industry are generally dominated by vocational or high school graduates. The same thing occured in the construction industry, of more than 8 million people working in construction industry sectors, more than 5 millions are primary and junior-secondary school graduates.

Generally, Indonesian labors working in agricultural, hunting, forestry, and fishery sectors have reached the number of 37,7 million people, then followed by trade sectors; 25,68 millions, manufacturing industry sectors; 15, 3 millions, and construction industry sectors; 8,2 million in 2015. Data extracted from National Labor Force Survey (Sakernas) in February 2016 reported that 50, 74% (61, 22 million people) of 120, 65 millions of employed people were working in informal sectors, while the number of whom working in formal sectors has reached 49, 26% in percentage.

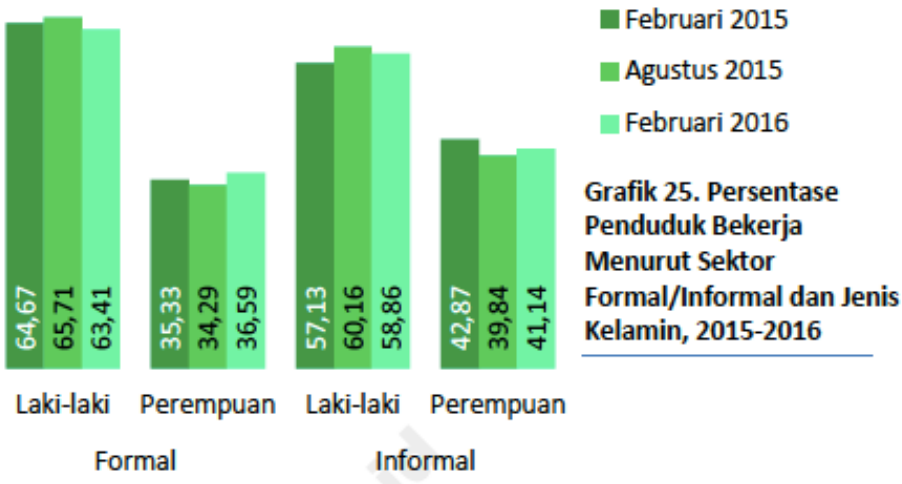


Percentage of Labor Force Based on main sector of industries, 2015-2016 (BPS-Central Bureau Statistics)

Lapangan Pekerjaan Utama	2015		2016
	Februari	Agustus	Februari
(1)	(2)	(3)	(4)
Total	**100,00**	**100,00**	**100,00**
Pertanian	**33,20**	**32,88**	**31,74**
Manufaktur	**21,37**	**21,84**	**21,05**
Pertambangan	1,18	1,15	1,09
Industri	13,56	13,29	13,24
Listrik, Gas dan Air	0,26	0,25	0,33
Bangunan	6,38	7,15	6,39
Jasa-jasa	**45,43**	**45,28**	**47,21**
Perdagangan	22,05	22,37	23,62
Transportasi	4,30	4,45	4,30
Keuangan	3,02	2,84	2,89
Jasa Kemasyarakatan	16,06	15,62	16,40

(**note:** Lapangan Pekerjaan Utama (main sector of industry), pertanian (agriculture), manufaktur (manufacture), pertambangan (mining), industry (industry), listrik, gas dan air (electricity, gas, and water), bangunan (construction), keuangan (monetary), Jasa Kemasyarakatan (public services).

Based on gender differences, National Labor Force Survey (Sakernas) reported that 63, 41% of formal sectors were mostly still dominated by men in February 2016, then 64, 67% in February 2015, and 65, 71% in August 2015. In facts, informal sectors are also dominated by men though not in significant quantity differences. In February 2016, it was reported that the percentage number of male employess working in informal sectors was 58,86%, while female was 41,14%.



Grafik 25. Persentase Penduduk Bekerja Menurut Sektor Formal/Informal dan Jenis Kelamin, 2015-2016

National Labor Force Survey (Sakernas) in February 2016 reported that Indonesia's unemployement rate had reached 5.50% and this explained that from 100 people of labor force, there are 5 to 6 people were identified as unemployed, mostly women. This explained unemployed people aged 5 to 6 had increased in quantity. National Labor Force Survey (Sakernas) released in February 2016 also implied that from 18 of 100 youths aged 15 to 24 were identified as unemployed and based on this group classification, unemployed female workers had increased in quantity.

In terms of contrustion sectors, the number of construction companies in Indonesia had increased from 4.210 companies in 2014 to 134,029 companies in 2015. But it was not comparable to the number of employees which was small in quantity. However, the number of freelancers in constructuion sectors had ranked high from 1, 38 billion people per day in 2014 to 1, 47 billion people per day in 2015.

The number of developing and big manufacturing industries frequently increased by 23.698 in 2013, to 24.529 in 2014, to 25.249 in 2015. This situation was followed by the increase of workers from 5.180.531 to 5.156.672 in 2015. This was a smaller increase comparing to micro and macro businesses hiring more people; 5, 4 million people were employed in 2013 to 6.5 million in 2015.

2. Current Regulation on the Different Form of Asbestos

Until 2016 there were no government laws which regulated the ban use of asbestos. The government regulation No.03/1985 on Safety and Health at Workplace by the Ministry of Manpower had been stipulated to ban the use of crocidolite materials in any production process. Currently, more strictly government laws concerning on the ban use of asbestos have not yet been issued.

Up to now, Ministry of Manpower has been making several regulations regarding the use of asbestos in industrial sectors. This indicates that the government is fully concerned with the hazard of asbestos containing materials in industry. This also explained that those working in asbestos manufacturing industry are susceptible to the hazard of asbestos.

However, the government's concern regarding the hazard of asbestos is actually inadequate. Most regulations are only limited to the safe use of asbestos and this isn't effective enough to totally ban the use of asbestos and warn the companies to provide healthcare for their employees threathen by the hazard of asbestos.

The first government regulation concerning on the safe use of asbestos was issued by Ministry of Manpower No 01/1980. This regulation strictly warns all construction industries and workers about the safe use of asbestos. The article No. 85 said that:

(1) Asbestos shall be used only when other less dangerous materials are not available.
(2) When asbestos is used, precautions shall be taken to prevent workers from inhaling asbestos fibers.

The phrase "*when other less dangerous materials are not available*" implies that the government is actually aware of the hazard of asbestos. But at the same time, the government permits "*the use of less dangerous*" materials. Since advanced technologies which can replace asbestos with other safe materials have not been developed yet in the country, this implies that the use of asbestos is officially allowed. This can be the major reason why the second point of the article says that "When asbestos is used, precautions shall be taken to prevent workers from inhaling asbestos fibers."

In the political economy context, asbestos business owners are using laws to gain big profits to improve their business. They only focus on preventing their workers from inhaling asbestos fibers. Personal Protective Equipment (ADP) is given to workers as a solution, but at the same time it limits their work mobility.

Ministry of Manpower again issued regulation concerning on occupational safety and health in the use of asbestos. The law No. Per. 02/Men/1985 strictly said that all asbestos containing buildings must be equipped with special detectors.

In 1985, Ministry of Manpower established regulations mainly concerning occupational safety and health which strictly bans the use of Crocodolite containing materials. The third article of the regulation firmly stated that any construction projects (e.g. building construction, infrastructure development, and demolition) exposing hazardous materials (including crocodolite) are strictly banned. This can be considered aa s better step regarding the issue even though the government has not yet ratified ILO (International Labor Organization) Convention No. 162/ 1986 concerning safety in the use of asbestos in Indonesia.

The regulation of Ministry of Manpower No. 03/1985 specifically controls the use of asbestos in the production process. This regulation refers to Law No. 1/1970 about Occupational Safety and concerns on 'the safety use of asbestos' and also strictly emphasizes the standard self-protector for workers.

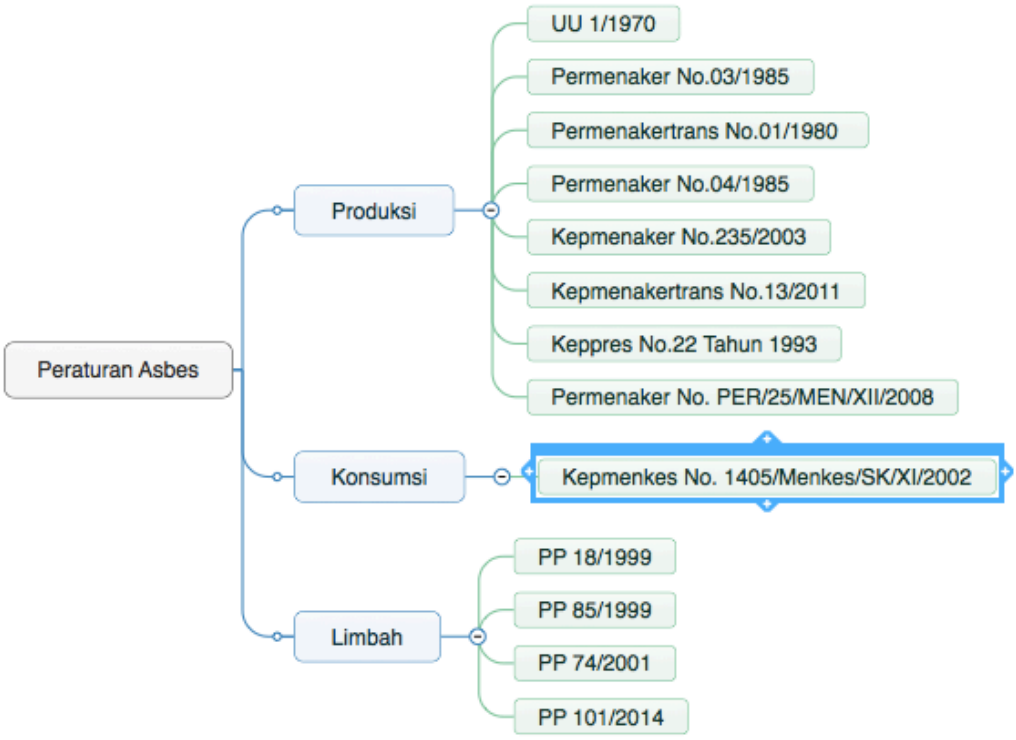
In accordance with the above mentioned law, the Ministry of Manpower regulation No.04/1985 also emphasizes that each asbestos manufacturing industry must provide vaccum machines for safety during the production process.

In 1993, with the Regulation No.22/1993, the government published a list of asbestos related diseases such as chronic lung cancer, asbestosis, and meshothelioma. This regulation concerns on compensation and health insurance regarding asbestos-related diseases. In relation to child labor, Ministry of Manpower had stipulated regulation No.235/2003 to strictly prevent child labors to work in any production process with high asbestos exposure.

In 2008, the Minister of Manpower again stipulated a special regulation regarding disease diagnoses caused by asbestos exposure at the workplace. The law No.PER/MEN/XII/2008 strictly asked each asbestos manufacturing company to make annual investigations and reports concerning on any types of occupational accidents which might occur to employees at the workplace and give them compensation.

In 2011 Ministry of Manpower stipulated a regulation No. 13/2011 about the standard the Treshold Limit Value (TLV) of asbestos which is 0.1 F/CC. This regulation is referring to the Ministry of Health regulation No.1405/Menkes/SK/XI/2002 on Environmental Health Requirements in Office and Industry. The law regulates requirements to determine maximum threshold limit of asbestos grit that is 5 F/CC with 5 micron in length.

The government has stipulated and revised several regulations concerning on asbestos waste disposal management, such as the government regulation No.18/ 1999, then No.85/1999, and No.101/2014. These regulations mainly discuss about waste disposal management systems, hazardous materials storage.



3. Importation and Consumption

Importation

Until now, it can be surely said that there is no valid information which can asbestos has been mined and produced in Indonesia. Despite the fact that based on Central Bureau Statistics (BPS) 2015 there were two different categories of asbestos mining industry, but it can not be concluded that asbestos is mined and produced here. The asbestos mining industries mentioned above are located in South Sulawesi

In 2003, almost 50% of asbestos consumption occurred in Asia. Based on the data collected, Indonesia is one of the Asian countries with the highest asbestos consumption after China, India, Thailand, and Vietnam[1]. Meanwhile, WHO (World Health Organization) reported that in 2012 at least 2 Mt (metric ton) of asbestos were mined in Rusia (Federation), China, Brazil, and Kazakthan. Canada was also one of asbestos supplier countries, but then stopped producing it after 2011[2].

Before 2011, the world's asbestos supplier countries like Rusia, China, Brazil, Kazakhstan and Canada had established business partneships in asbestos management in Indonesia. Central Bureau Statistics recorded the asbestos import trends had increased steadily by 2009, as shown in the following table:

Country (import)/Year	Usage (Metric Tons) by year										
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Canada	21,394	18,614	11,018	15,422	17,735	15,115	15,115	29,241	-	-	-
Africa	7,478	8,750	6,876	9,843	3,394	1,299	8,946	4,512	-	-	-
Brazil	4,980	4,460	8,546	20,340	26,200	21,999	27,724	39,650	-	-	-
Russian	8,363	8,188	12,234	15,172	19,282	13,300	18,845	23,139	-	-	-
China	-	-	-	-	-	-	-	6,903	-	-	-
Others	2,838	3,072	1,235	2,072	474	112	32	-	-	-	-
Total	45,053	43,084	39,849	62,849	67,085	51,825	71,271	103,445	80,987	111,798	121,548

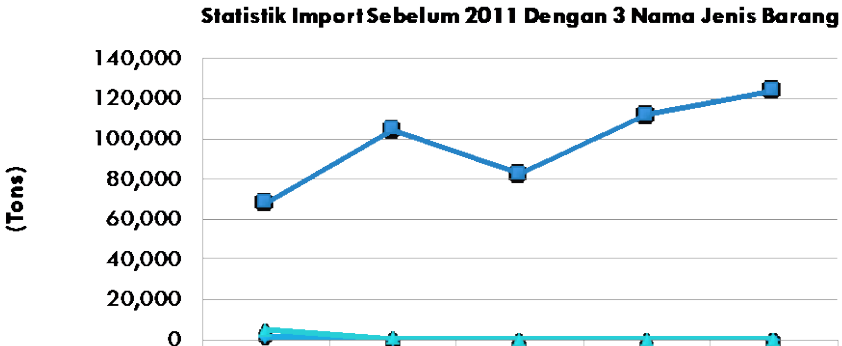
(Source: Rahayu, Dewi, National Asbestos Profile Indonesia, the 5th Asian Asbestos Initiative 2012, Busan-Korea).

Based on the collected data on asbestos import trend, before 2011 it was reported that at least Indonesia had imported three types of asbestos: crocidolite, chrysotile, and other type labeled "other asbestos" (Central Bureau Statistics: 2007, 2008). This naming-label refers to *Harmonized System*, an internationally valid Code in international trade with the import duty burdened to consumers.

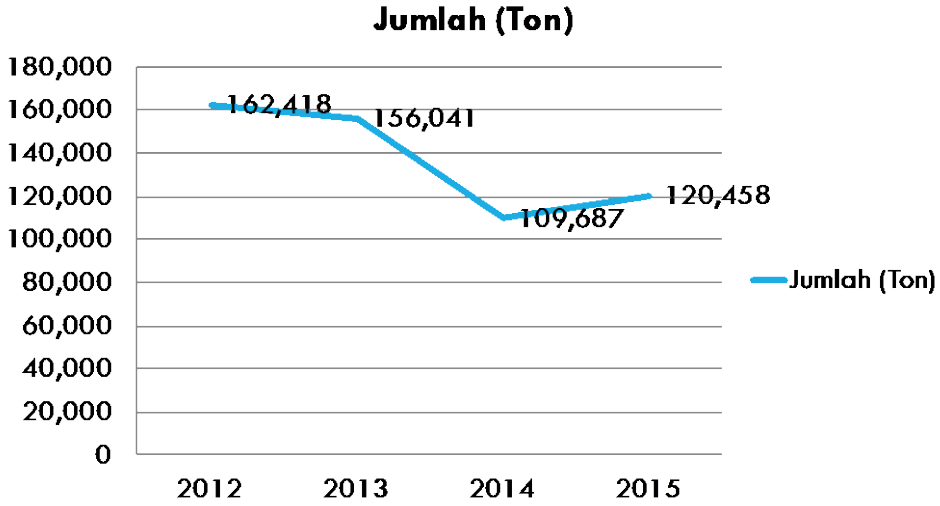
[1] Kazan, Laurie-Allen, 2007: Killing The Future, Asbestos Use in Asia, London.IBAS

[2] Chrysotile Asbestos, WHO: 2014

Since the government regulations have been applied to ban crocidolite, asbestos trade was only limited to crisotile type and *other asbestos*. After 2012, Data extracted from Central Bureau Indonesia informed that the government had strictly labeled this imported asbestos, chrysotile type, with "*other asbestos*" due to the growing asbestos related diseases such as chronic lung cancer.



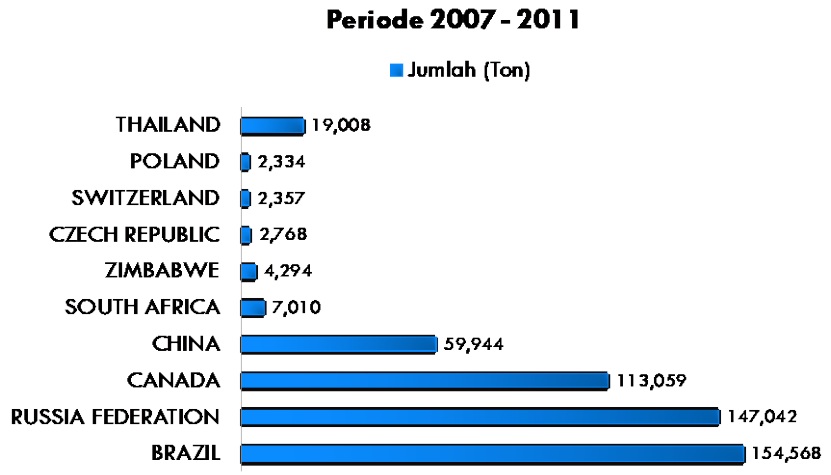
(Source: Central Bureau Statistics - International Import Trade Statistics, 2007-2011)



(Source: Central Bureau Statistics - International Import Trade Statistics, 2012-2015)

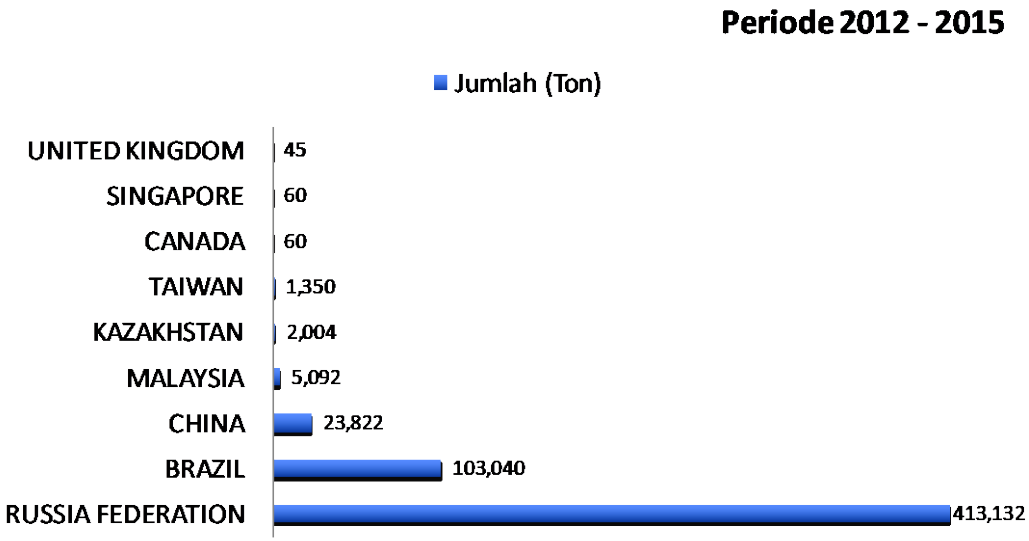
Within two years, Indonesia had experienced severe financial crisis and changed government since 1996 through1998 and this situation resulted in an increase in asbestos consumption trend. A number of constructions once halted in the previous government were rebuilt. Investments on state developments began to emerge with the assistance of International Monetary Fund (IMF), Indonesia received bailout and signed a list of agreements as an effort to build the world trust in economic sectors. After the fall of President Soeharto's regime, Indonesia has had three presidents, B.J. Habibie, Abdurrahman Wahid, and Megawati Soekarno Putri - all of whom led the country only for a short period of time. In this development era, the country was under unstable condition due to the political situations which were still in the process of consolidation. Several development programs in the New Order regime were still to be completed before elections in 2004.

As illustrated in the 2001-2003 statistics, the government still imported asbestos and this was considered as efforts to continue some physical developments in the country. When Soesilo Bambang Yudhoyono became president in 2004, he focused again on physical development programmes. It can be seen in the increase statistics on asbestos imports until the end of his regime. In Yudhoyono era, there was a very significant increase in asbestos imports every year. In the end of his era, asbestos imports decreased slowly and again increased steadily in the first year of President Jokowidodo's regime. The following are ten asbestos supplier countries for Indonesia before 2011:



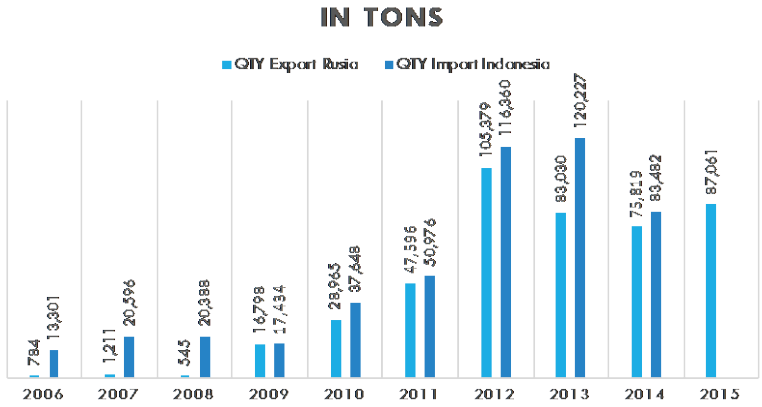
(Source: Central Bureau Statistics - International Import Trade Statistics 2007-2011)

Asbestos containing materials imported form Canada had dramatically decreased after its government banned chrysolite asbestos trade in 2012, as seen in the following statistics:

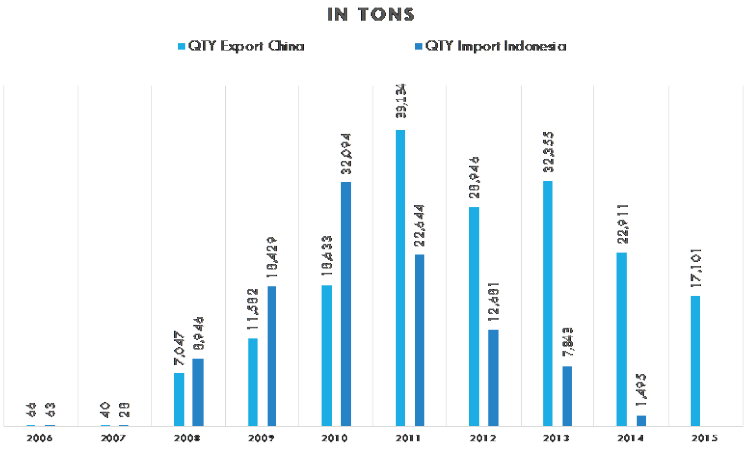


(Source: Central Bureau Statistics - International Import Trade Statistics 2012-2015)

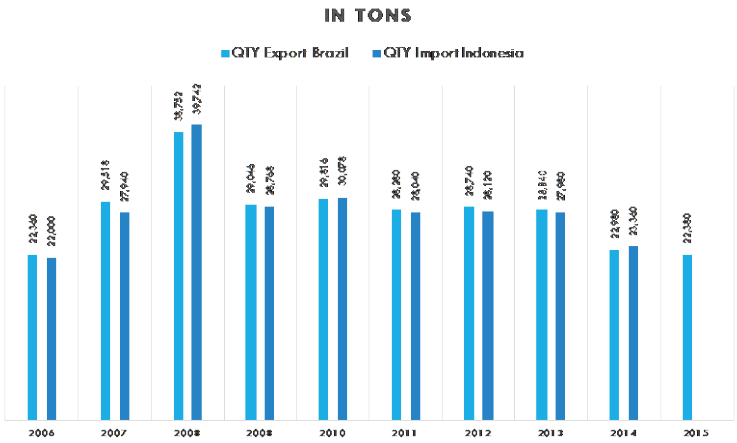
The statistics explained that Rusia, Brazil, and China depended on asbestos export market to sustain their business and have made huge profits from it. These asbestos containing materials have become main source for asbestos manufacturing industries and were finally processed into products like roofs, wallboards, and building materials for other large constructions projects. According to UNCOMTRADE report, the data between exporting and importing countries showed significant differences. This difference can vary in quanitity (in terms of tons) as found in data from Russia, China, and Brazil.



(Import & Export Data of Asbestos between Indonesia and Rusia, UnComtrade, 2016)



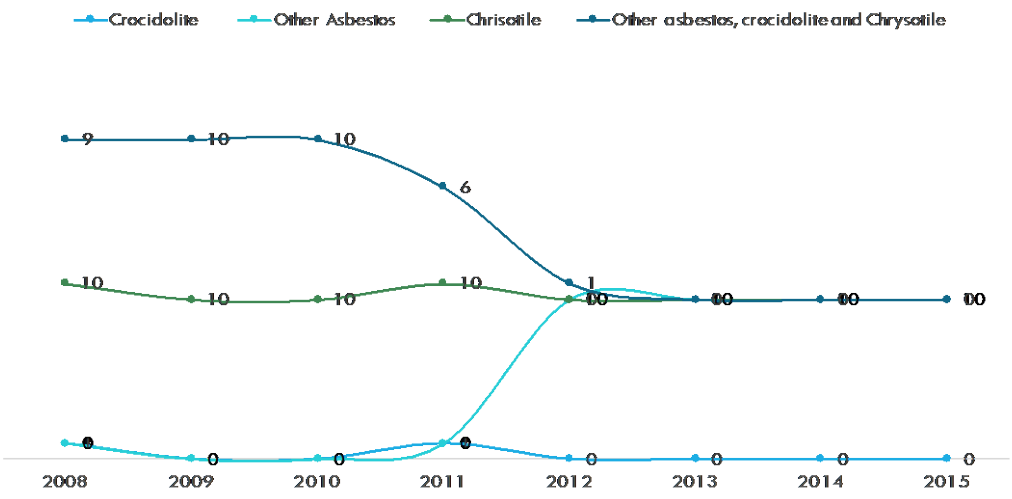
(Import & Export Data of Asbestos between Indonesia and China, UnComtrade, 2016)



(Import & Export Asbestos between Indonesia and Brazil, UnComtrade, 2016)

As seen in the figures above, there were distinctly significant differences between Indonesia-China-Rusia-Brazil. This explained that terribly unethical business practices with no data transparency have frequently occurred. The data not reported by the exporting countries explained that they considered that asbestos is hazardous and must be sent to other countries.

Almost all asbestos supplier countries changed their products' name into 'other asbestos' as a result of agreements with national companies. The government who fully notices the hazard of asbestos seems to let this unethical business practices occur and doesn't take its further negative consequences as serious issues. Since those asbestos cannot be defined as products, none of the asbestos manufacturing companies will legally be responsible for asbestos related diseases, such as asbestosis, mesothelioma, or lung cancer which possibly might occur in the future.
The asbestos trade name has changed several times since 2012 since most countries officially determined that it contains hazardous substances. It can be seen the following figures based on products' name and the number of importers:



(Source: Indonesian Trade Directory of Imports, 2008-2015, Central Bureau Statistics)

As illustrated in the figures that most of importing countries use the name 'other asbestos' instead of chryisolite for their products.

Central Bureau Statistics released a list of companies which has frequently imported chrysotile disguished in 'other asbestos' label (original name for asbestos) since 2007-2015;

No	Name of Company	Products
1	Djabesmen Ltd (Group)	Corrugated asbestos cement roof tiles, asbestos cement sheets, http://www.djabesmen.co.id/ www.dbo.co.id
2	PT Bakrie Building Industries (formely, PT James Hardie Indonesia)	Roof tiles, asbestos cement wallboard, asbestos pipe, : Harflex - http://bakrie-building.com/
3	PT Tripilar Beton Mas	Tile sheets http://www.tripilar-betonmas.co.id/
4	PT Nusantara Building Industries	Asbestos cement sheets http://www.nusaboard.co.id/products/nusa
5	Siam-Indo Concrete Products	Gypsum Asbes/Concrete, http://www.siam-indo.com/product.php
6	PT Putra Prima Sentosa	Adimas-Shica Board, http://shica.co.id/
7	Atrisco Mutiara Asbestos	Corrugated asbestos cement roof tiles sand sheets
8	Shica Jaya Sentosa, PT	Asbestos cement sheets, http://shica.co.id/
9	PT. Bangun Pratama Adhitama Sentra	Asbestos cement sheets, Grc Board, http://www.grcboard.com/index.php/
10	CV Harta Gemilang	General Trading - CV. Gemilang Indoraya Abadi)

Consumption

Asbestos containing materials has been extensively used worlwide in thousands types of products ranging from property business such as roof tiles, pipes, thermal protective clothing, insulations shields to auto spare parts industries such as automobile brake lining, clutch pads and gasket shields[3]. Due to many health problems emerged as a result of negative impacts of asbestos use, World Health Organisation (WHO) has ratified a convention No. 162/1986 which bans the worldwide use of asbestos. This regulation also strictly bans the use of amphibole minerals such as amosite, tremolite, anthopyllite, and actinolite. As a result, of all serpentin types, chrysotile has been widely used since 1986, including Indonesia.

WHO recorded that less than 90% of chrysolite are used in construction industries, 7% used in friction material industries, and the rest used in textile industry. Collegium Ramazini openly stated that 95% asbestos products widely used all over the world in the 21st century are Chrysolite[4].
The research conducted by Minister of Health and World Health Organization[5] reported that the use of asbestos is particularly prevalent to construction industries in Indonesia. In Indonesia, at least there are three group classifications of asbestos manufacturing industries.

a) Asbestos used for construction material production.
b) Asbestos used for other industries (such as, automotive, textile and so forth).
c) Asbestos used for other industries.

[3] World Health Organiztion, Chrysotile Asbestos, 2014

[4] Collegium Ramazzini, 2015. Asbestos Is Still with Us: Repeat Call for A Universal Ban.

[5] Ministry of Health Republic of Indonesia, World Health Organization, 2011: Developing a National Profile of Industrial Carcinogen and Estimating its Disease Burdens in Indonesia

In 2008 Central Bureau Statistics reported that at least 15 medium-large manufacturing industries produced asbestos containing material products (generally for building material purposes).

KBLI*	Description	2006	2007	2008	2009**	2010**
26601	Asbestos product industries for building material purposes	20	13	15	18	20
26602	Asbestos product industries for industrial purposes	-	1	-	3	4
26609	Other asbestos product industries	2	3	2	3	3

* KBLI = Klasifikasi Baku Lapangan Usaha Indonesia
** Temporary data
Source: MOI (2011)

In 2015, Indonesian Standard of Industrial Classification (KBLI) mentioned several asbestos manufacturing industries classification as follows:

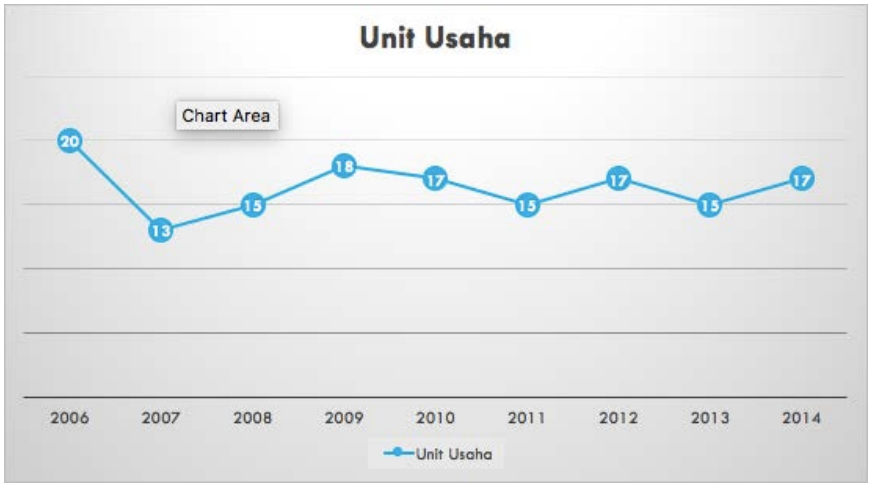
Table of Industrial Classifications

Category	Code	Sub-Code	Type
B	0899	08994	Asbestos mining
C	2395	23955	Asbestos product industries for building material purposes
		23956	Asbestos product industries for industrial purposes
		23959	Other asbestos product industries.

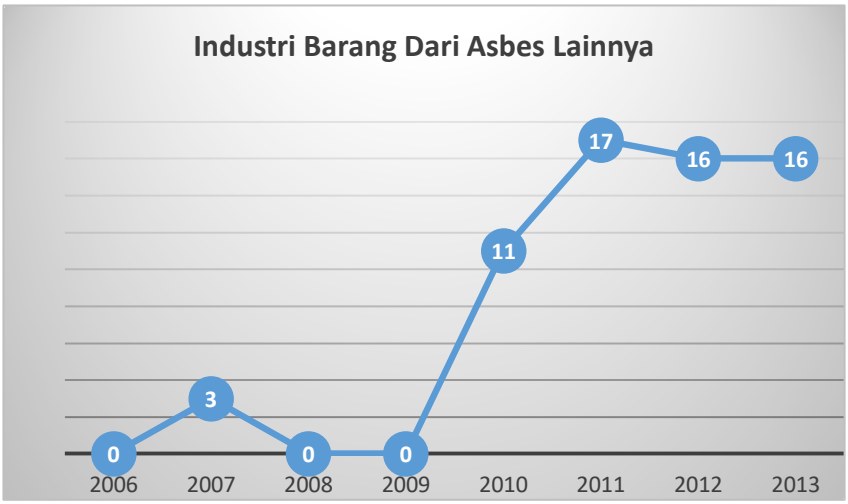
(Source: KBLI 2015)

Category B: mining and digging Purposes (Category B), code 0899: mining and digging for similar purposes (indirectly).
Category C: manufacturing industries, code 2395 manufacturing industries for cement, gypsum and asbestos products.

The data published by Ministry of Industry 2006-2013 showed a number of asbestos manufacturing units which annually produced asbestos containing products for building material purposes (KBLI code: 23955). As illustrated in the following figure.



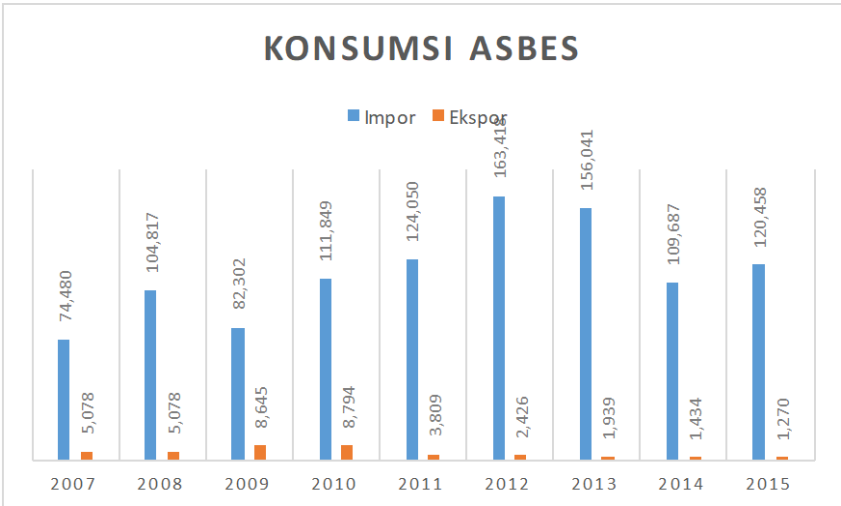
Meanwhile, the description of asbestos manufacturing industries producing asbestos containing products for other purposes (KLBI code 23959) can be seen in the following figure:



Central Bureau of Statisctics (BPS)

In a disclaimer publication data, the Ministry of Industry explained that the empty data means that the company did not respond when data retrieval was taken [6]. Thus, the data absence reported by state instituions didn't mean the absence of manufacturing industries, but this could mean the absence of reported valid data.
Comparing to the number of asbestos imports and exports at the same year, asbestos consumption trends in Indonesia still remains high. This explained that imported asbestos containing materials were massively produced here instead of selling the in international trade market.
(Asbestos consumption trends from 2006 through 2015)

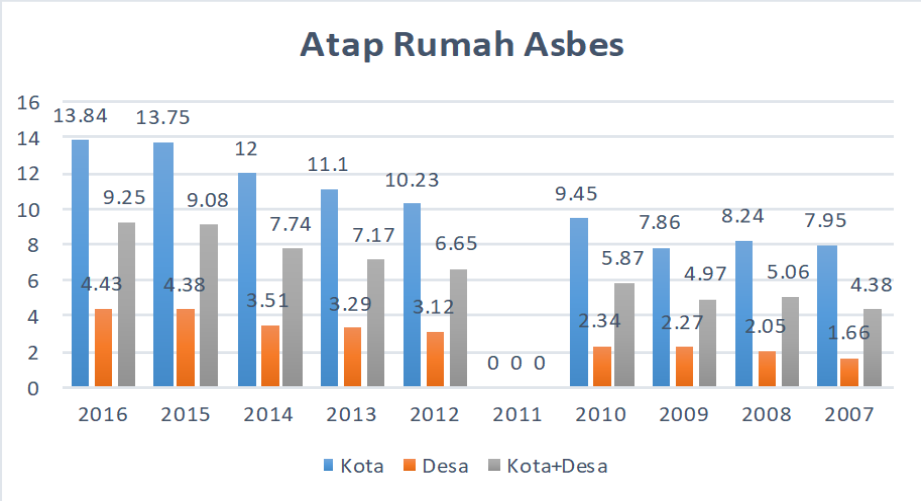
(In tons)



(Central Bureau Statistics - exports and imports statistics, 2006 through 2015)

[6] Central Bureau of Statisctics (BPS) informed that the individual data of few types of industries (KLBI 5 digits) which have less than three companies can not be published. As a result, the KLBI data cannot be published either, but the company data are still included in KLBI of two and three digits.

On average rate, the Indonesian asbestos containing products exported to international trade market are not more than 4%. This condition implies that Indonesia has become the country with the highest asbestos consumption trend (both in industries and household).
With the population of 255,4 million people and 65.588.400 households, Indonesia is the potential country which can give great profits in asbestos business. The percentage of households using asbestos ceiling roofs has been increasing as well.



(Central Bureau Statictis- Social Welfare Statistics 2007-2016)

As illustrated in the diagram above, urban households are reported to use more asbestos ceiling roofs that those in the village. This distinctly shows the welfare and income level differences amongst them. 20-30% of rural households still use zinc roofs as alternative cheap options, while 5% of them are still using rumbia roofs in their house. On the contrary, the use of zinc roofs in the city as an alternative is often correlated to their income level.

Urban households living in three biggest cities like Bangka Belitung Islands, Riau Islands, and DKI Jakarta are identified to have the highest trends of asbestos ceiling roofs consumption households while rural households living in Bangka Belitung Islands, Riau Islands, Central Kalimantan, West Kalimantan, and South Kalimantan are reported to have the highest asbestos consumptions trends.[7]

Asbestos containing products are not only used for ceiling roofs, but also used in automotive industry. As formerly mentioned, Indonesia has imported both raw asbestos containing materials and friction products which are extensively used national wide in automotive industry. Gasket shields, brake system and clutch pads, fire blankets, and insulations contain asbestos. Referring to the increase of motorcycle productions per year in Indonesia, it implies that this can be fairly compared to high asbestos consumption trend in the country.

[7] Central Bureau Statistics report on Social Welfare Statistics 2007-2016

Type of Vehicle	2007	2008	2009	2010	2011	2012	2013
Sedan	1 570	5 923	2 367	4 081	3 231	4 869	58 047
Jeep 4x2	302 334	415 997	346 245	477 252	530 762	693 421	842 234
Jeep 4x4	5 304	9 503	3 560	15 191	27 870	45 211	24 830
Bus	1 676	2 956	2 328	4 106	4 142	5 299	4 713
Pick Up Truck	100 754	166 249	110 316	201 878	271 943	316 757	278 387
Motorcycle	4 722 421	6 264 265	5 884 021	7 366 646	8 006 293	7 079 721	7 780 295
Indonesia	5 134 059	6 864 893	6 348 837	8 069 154	8 844 241	8 145 278	8 988 506

(Source: The association of Indonesian Automotive Manufacturers (GAIKINDO) and Indonesian Motorcycle Industry Assiciation (AISI) released by Central Bureau Statistics (BPS), 2016).

The lack of government law whichs strictly restricts the maximum age of vehicles in Indonesia resulted the inevitably rapid growth in motorcycle demand in Indonesia. Indonesian State Police stated that the growth of vehicle use in Indonesia has ranked the highest and rapidly increased by 9.13% every year.

Jenis Kendaraan/ Type of Vehicles	**2011**	**2012**	**2013**	**2014**	**2015**	**Pertumbuhan per Tahun/ *Annually Increase* (%)**
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Mobil Penumpang / *Passenger Car*	9 548 866	10 432 259	11 484 514	12 599 038	13 480 973	9.00
Bis/ *Bus*	2 254 406	2 273 821	2 286 309	2 398 846	2 420 917	1.80
Mobil Barang/ Truck	4 958 738	5 286 061	5 615 494	6 235 136	6 611 028	7.45
Sepeda Motor/ *Motorcycles*	68 839 341	76 381 183	84 732 652	92 976 240	98 881 267	9.48
Jumlah /Total	**85 601 351**	**94 373 324**	**104 118 969**	**114 209 260**	**121 394 185**	**9.13**

Sumber/ *Source*: Kepolisian Republik Indonesia/ *Indonesia State Police*

www.bps.go.id

(Central Bureau Statistics 2016 – Land Transportation)

In the category of consumers, automotive industries produce and sell asbestos containing products not only for automotive products, but also for automotive spare parts. Plenty of automotive spare parts industries for two and four-wheel vehicles in Indonesia are spread out nationwide.

KBLI	DESCRIPTION	Number of Company/ Unit				
		2010	2011	2012	2013	2014
29100	AUTOMOTIVE MANUFACTURING INDUSTRY	13	16	16	22	23
29300	AUTOMOTIVE SPARE PARTS	185	201	204	254	270
30911	MOTORCYLE INDUSTRY	16	17	14	17	17
30912	SPARE PARTS & COMPONENTS OF MOTORCYLE INDUSTRIES	146	145	151	170	183

(Industry synergies report from 2010 through 2014. Trade Ministry, 2016)

Number of workers involed in this industry:

KBLI	DESCRIPTION	Number of worker (per person)				
		2010	2011	2012	2013	2014
29100	FOUR-WHEELED VEHICHLE INDUSTRIES	30,308	42,329	39,555	41,776	42,123
29300	INDUSTRI SUKU CADANG DAN AKSESORI KENDARAAN BERMOTOR RODA EMPAT ATAU LEBIH AUTOMOTIVE SPARE PARTS INDUSTRIES FOR FOUR-WHEELED VEHICLES	52,495	57,625	68,733	80,632	83,606
30911	MOTORCYLE INDUSTRY	20,970	20,844	19,562	18,580	18,154
30912	SPARE PARTS & COMPONENTS OF MOTORCYLE INDUSTRIES	29,930	33,812	36,164	38,322	41,181

(Industry synergies report from 2010 through 2014. Kemenperin, 2016)

Asbestos materials are massively manufactured nationwide not only in automotive spare parts industries, but also in many auto-parts shops and service centers.
In the manual book of motorcycle owners, the biggest auto manufacturers like Honda (2011) and Yamaha (2012) were reported to have 3830 (Honda) and 1442 auto service centers which were connected to the genuine brand throughout Indonesia. Honda has AHASS as authorized service stations for motorcycles, while Yamaha uses “Yamaha” for its service centers[8]

[8] In 2006, Honda held a contest for 22.245 mechanics throughout Indonesia.
http://otomotif.kompas.com/read/2016/08/28/141129115/ini.dia.teknisi.terbaik.bengkel.ahass.se-indonesia

Other manufacturers using asbestos in the production process are construction and cement indrustries.

KBLI	DESCRIPTION	Number of Company/ unit				
		2010	2011	2012	2013	2014
23953	CEMENT AND GYPSUM INDUSTRIES FOR BUILDING PURPOSES	171	163	190	173	188
23959	OTHER INDUSTRIES FOR CERMENT, GYPSUM, AND OTHER ASBESTOS	11	17	16	16	11

(Industry synergies report from 2010 through 2014. Kemenperin, 2016)

KBLI	DESCRIPTION	Number of workers/ person				
		2010	2011	2012	2013	2014
23953	CEMENT AND GYPSUM INDUSTRIES FOR BUILDING PURPOSES	16,224	15,792	17,129	19,651	18,940
23959	OTHER INDUSTRIES FOR CERMENT, GYPSUM, AND OTHER ASBESTOS	839	1,117	1,730	2,430	2,062

(Industry synergies report from 2010 through 2014. Kemenperin, 2016)

The unavailability of specific data regarding asbestos cement industries urges the thorough and deep research to control the asbestos use in this group of industries. Several big asbestos manufacturing industries such as PT Siam Indo Concrete Production (which produces asbestos wallboards and beton) and Bakrie Building Industries (which produces asbestos pipes, roofs, and sheets) have already given clear instructions about the use of asbestos in the construction industries.

4. Imports of Asbesos Containing Material

In addition to importing asbestos containing materials, a number of companies in Indonesia also import asbestos containing products. This is done either by other supporting industries or trade industries which make huge profits from asbestos business.
This kind of imports can vary in terms of product types, such as asbestos cement products, asbestos fiber products, and asbestos friction products which are extensively produced in automotive industries nationalwide. The number of companies involved in this asbestos business may vary every year, but shows increasing progress.

Name of Products	2008	2009	2010	2011	2012	2013	2014	2015
Asbestos material sheets, asbestos corrugated sheets, panel, tiles, and others	0	0	6	0	7	4	3	4
asbestos sheets, roof tiles and wallboard containing plastics	0	0	0	0	0	5	3	2
Others	0	0	1	0	8	10	11	10
Asbestos cement pipes and tubes	0	0	0	0	7	9	10	4
Asbestos cement tube equippments or pipes	0	0	0	0	2	9	8	8

Others	0	0	1	0	4	11	10	11

(Source: Indonesian Imports Directory from 2008 through 2015 released by Central Bureau Statistics)

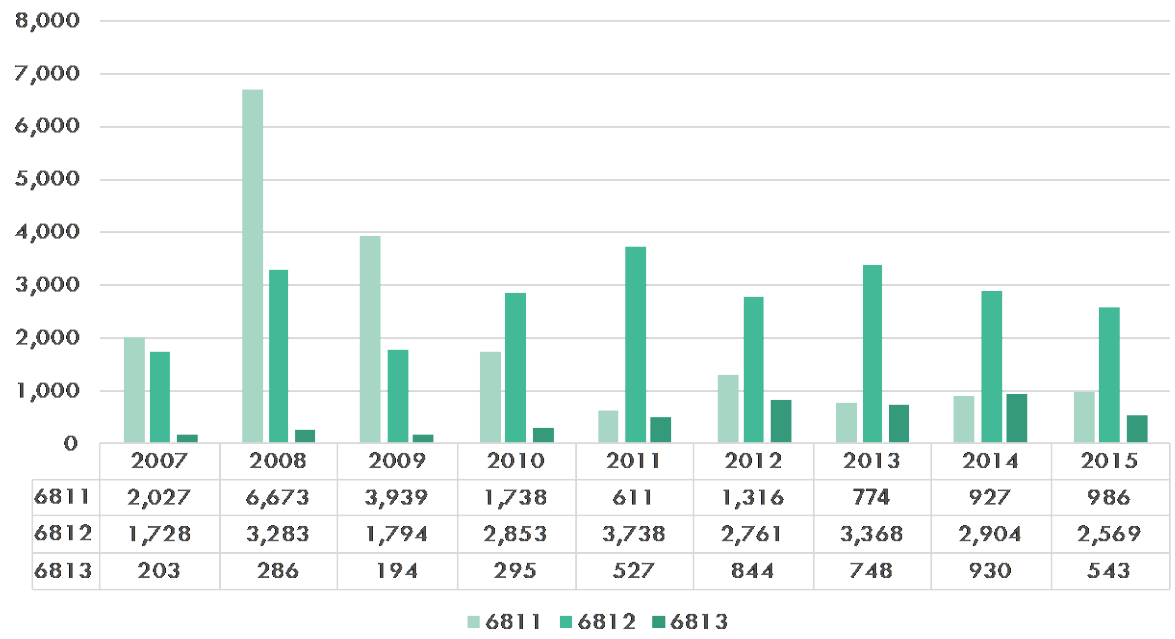
Name of Products	2008	2009	2010	2011	2012	2013	2014	2015
Fabrics made of crocidolite fibers	0	0	0	0	0	8	6	0
Papers, Millboard, fabrics made of crocidolite fibers.	0	0	0	0	0	6	5	2
Tiles or wallboard made of crocidolite fiber fabrics.	0	0	0	0	0	2	1	0
Cloth accessories, soles, caps, mixed crocidolite fibers material.	0	0	0	0	9	4	10	11
Other crocidolite fiber fabrics.	7	0	9	9	10	9	10	3
Clothes made of other asbestos fiber fabrics	0	0	0	0	5	3	0	4
Other asbestos fibers.	0	0	0	0	3	5	10	9
Papers, Millboard, fabrics made of crocidolite fibers.	9	2	13	12	4	4	8	19
Other insulating products in sheets and rolls.	9	9	8	8	10	10	10	12
Other mixed materials composed of asbestos and magnesium carbonate for products and other asbetos friction products.	0	0	1	0	4	8	10	7
Other mixed asbestos materials	0	0	0	0	10	9	10	9
Tiles and wallboard	0	0	0	0	1	1	1	0
Others	0	0	3	3	9	10	10	12

(Source: Indonesian Imports Directory from 2008 through 2015 released by Central Bureau Statistics)

Name of Products	2008	2009	2010	2011	2012	2013	2014	2015
Brake system, friction materials	0	0	0	0	10	10	10	10
Other frictions products	0	0	0	0	9	10	10	9

(Source: Indonesian Imports Directory from 2008 through 2015 released by Central Bureau Statistics)

As previously stated, the number of private asbestos manufacturing industries which have made huge profits from asbestos business varies from the companies which sell raw asbestos containing materials until various asbestos containing products.
The following figure showed the number of imported asbestos containing products based on classification types (HS Code); asbestos cement products (6811), asbestos fibers fabrications (6812), and asbestos friction products (6813). All these imported products were only burdened 5% of tax and 10% of value-added tax (PPn).



	2007	2008	2009	2010	2011	2012	2013	2014	2015
6811	2,027	6,673	3,939	1,738	611	1,316	774	927	986
6812	1,728	3,283	1,794	2,853	3,738	2,761	3,368	2,904	2,569
6813	203	286	194	295	527	844	748	930	543

(Source: released by International Trade Market Import Statistics – Central Bureau Statistics, 2007: Central Bureau Statistics)

In this category, China, Japan, Thailand, India, The Republic of Korea, and Singapore become the biggest asbestos supplier countries. China specially exported asbestos cement products while friction products were imported from Japan, Thailand, and Korea. Then, India exported asbestos containing textiles and clothing. And many other countries are reported to be asbestos suppliers though in smaller quantites.

From 2007 to 2015 it was reported that there had been at least 411 companies which supplied asbestos containing products. The most interesting point is that the companies formerly known to have imported raw asbestos containing materials are now importing asbestos containing products. Just to name a few, PT Jeil Fajar Indonesia, PT Trigraha Sealsindo, and Nichias had been formely known as asbestos processing industries before importing products in around 2010.

Beside that, there were several big automotive industries like Toyota Astra Motor and Astra Daihatsu, Arezda Purnama Loka, and others which imported asbestos brake pads. Ching Luh, textile manufacturer, produces apparels, and other asbestos mining companies imported asbestos pipe sealants. Inevitably, a number of companies involved in this business have made huge profits from the asbestos containing products trade.

5. Domestic Production of Asbestos

Supporting facts which inform that asbestos containing materials are manufactured in Indonesia are unavailable. The availabe geological references only inform that Indonesia has a potential source of asbestos, but it hasn’t been reported that asbestos are domestically manufactured and mined here.

6. Domestic Production of Asbestos Containing Materials

Based on the data of asbestos containing materials imports, it clearly informs about the domestic production of asbestos containing materials in Indonesia for building and construction purposes and automotive spare parts.

From ten big industrises, most of which produce asbestos corrugated roof tiles and wallboard sheets. The rest make asbestos cement products for construction purposes such as corrugated pipes and other kinds. Others produce friction asbestos containing products, but Central Bureau Statistics categorized them as asbestos importing companies. Based on field observation, PT Arezda Purnama Loka, PT Jeil fajar, are PT Trigraha Sealsindo are classified as importing companies after 2011, but as a matter of fact they are still actively producing asbestos containing products.

The report of Ministry of Health in collaboration with WHO (World Health Organization) on *Developing A National Profile of Industrial Carcinogens and Estimating Its Disease Burdens in Indonesia* recorded that there were seven asbestos containing products in Indonesia in 2008, where flat and corrugated asbestos sheets are extensively produced.

Chemical Name	Unit	Quantity
Asbestos-cement in sheet	sheets	72,000
Asbestos-cement in sheet, roof-tile	sheets	75,155
Asbestos-cement in sheet, corrugated	pieces	193,738
	sheets	29,849,268
Other asbestos-cement in sheet	sheets	17,548,927
Asbestos-cement in sheet, flat	sheets	5,183,912
Other articles of asbestos for other purposes	pieces	7,630
Gasket of asbestos	Kg	75,112
	m^2	16200

Source: BPS, 2008a

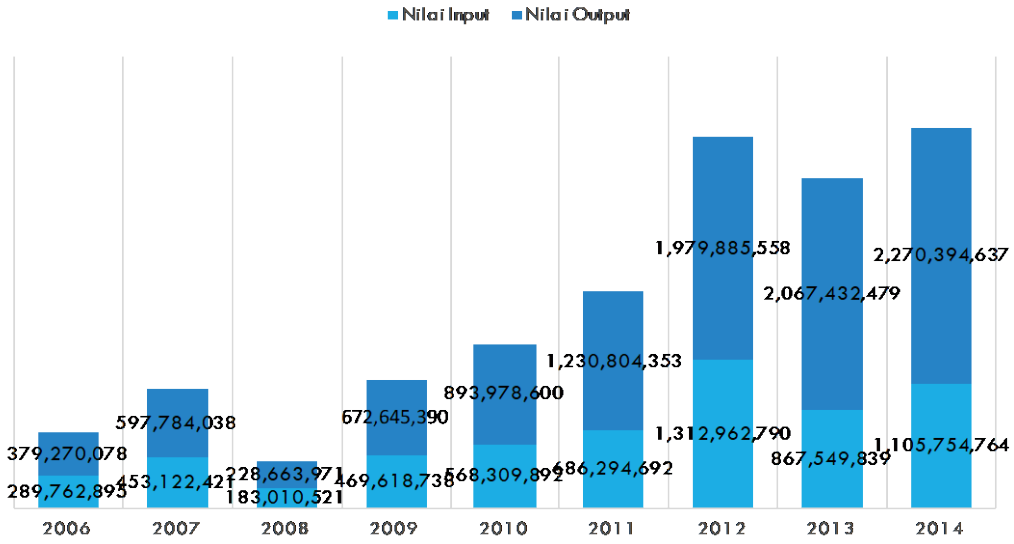
In 2003, Central Bureau Statistics (BPS) recorded that there was a rapid increase with the following product variants;

Type of products	Quantity	Unit
Gasket of asbestos	8,266,075	Kg
Asbestos cement in sheet, roof-tile	3,666,926	Pieces
Other articles of asbestos for other purposes.	1,462,315	Set
Asbestos packing	444,899	M2
Other asbestos-cement in sheet	94,498,631	Sheet
Other asbestos cement in sheet	79,816,362	Sheet
Other asbestos cement in sheet	28,909,470	Sheet
Asbestos roof- tile	7,170,498	Sheet

(Manufacturing Industry Statistics-Production, Central Bureau Statistics: 2013)

From years to years, asbestos manufacturing industries have been earning multiple huge profits. This explains that Indonesia is a country which potentially can bring great profits in asbestos sales. They can react aggresively to any barriers and interventions which can harm their lucrative business.

Based on the report released by The Ministry of Industry, there was a significant difference between expenditure and income production in asbestos sales. For instance, the net profits earned from less than 10 asbestos processing industries can reach billions rupiah.



(Source: www.kemenperin.go.id)

With the average price of USD 0.5[9] per kilogram (equal to (CIF[10]) (Rp. 6.000) (exchange rate 2014, 1 USD = Rp.12.000)) for chrysolite asbestos materials imported from Russian Federation, the companies can sell small sized asbestos cement roof-tiles (180x105) in the average price of Rp.45.000 (USD. 3.75). In terms of *inconterm* CIF, the product cost is basically lower in price. Due to the price of asbestos imported from Russia remains at USD 0.5 (CIF), asbestos roof-tiles cost Rp. 63.000 (USD 4.80) in 2016.

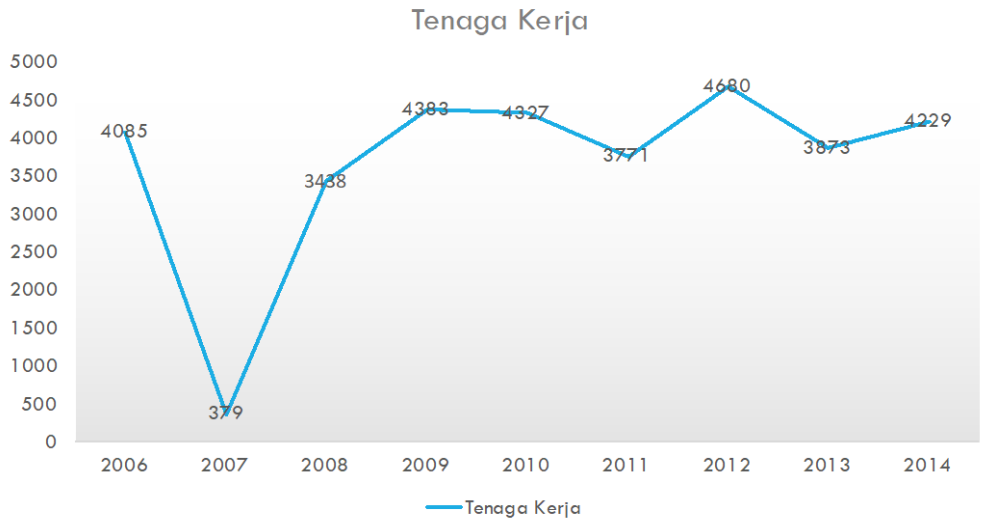
It is clear that asbestos is a lucrative business. The lack of law which strictly regulates the ban use of asbestos can facilitate companies to invest and sustain this lucrative business in Indonesia. It is prevalent to find asbestos roof-tiles in traditional and modern construction materials stores. Advertisements along with the famous slogan 'Cheap, long-lasting, fire-resist, and quality' are commonly found in the country.

[9] Data from Importgenius.com, 2011-2016. Asbestos price imported from Russia was approximately USD 0.5 CIF. There was an increase from USD 0.40 (lowest price) to USD 0.80 (the highest) in 2011.

[10] CIF, Incoterm. Cost Insurance Freight. Harga meliputi harga pokok ditambah asuransi dan biaya shipping/pengiriman. Dengan incoterm ini, harga per satuan unit barang bisa jadi lebih rendah dari harga tertera. The price involves average cost added with insurance and delivery cost. In this incoterm, the unit cost can be lower in price.

7. Estimated Total Number of Workers

In terms of the number of workers involved in asbestos production process since 2006-2015, Ministry of Industry showed the estimated total number of workers in the following figure;



As illustrated in the figure above, less than 4000 people were reported to have involved in the asbestos processing industries which produce asbestos for construction and other similar purposes. Data released by Ministry of Industry showed the number of workers directly recruited by the companies and involved in the area of production. This doesn't yet include other workers rectruited by outsourching companies, contract employess who actually didn't work there anymore, and freelancers. Nevertheless, data collected either by Ministry of Industry of Central Bureau Statistics (BPS) are still lack of accuracy. It is because the companies did not always share data transparency regarding the actual number of workers.

Data collected in 2007 clearly explained that most of data were not reported and questionnaires weren't returned when surveillance was conducted. Thus, the collected data only depend on the returned questionnaires.

Various data of workers occurs since the companies are generally not willing to share the actual total number of workers to the government. But the number will be exceeded when it has to deal with the income tax. The number of industries less than 20 units is slightly different with the report released by FICMA (Fiber Cement Manufacture Association). FICMA reported that asbestos are still extensively produced for construction material purposes, insulations, brake systems and less than 60.000 tons of asbestos are massively used every year[11].

In 2014, as reported by FICMA there were at least 26 units of asbestos manufacturing industries as illustrated in the following table:

[11] Rahayu, Dewi, 2012. National Asbestos Profile, presented in the 5th Asian Asbestos Initiative 2012, Busan-South Korea.

Type of Industries	Number of Company	Chrysotile Usage (MT)	Number of Workers
Ceiling and Roof	9	41800	2555
Importir	3	-	324
Gasket, Finned	1	130	200
Brake system	8	1200	5702
Gasket Shield	5	1630	1792
Others (insulation)	2	130	399
		44890	10972

The data released by FICMA are totally different with officially published by Central Bureau Statics (BPS). It is because FICMA combined manufacturing industry and importing company into the same category. On the other hand, Central Bureau Statistics and KLBI specially classified cluth pads and and brake system industrial distributors into basic chemical industries. The next sub-chapter will specifically discuss about asbestos importing companies.

Inevitably, asbestos manufacturing industries are potentially lucrative, especially in the golden era of massive national developments. This frequently occured in line with government development programmes.

8. Full List of Industries explaining the prevalence of asbestos exposure in the country and list of industries with largest numbers of workers potentially exposed to asbestos

As early informed, asbestos containing materials has been used for various purposes starting from construction materials, automotive spare parts, brake systems, gasket shields, and many others. This can be seen in the list of companies which imported asbestos containing materials. Nevertheless, the government hasn't officially released the list of companies which imported asbestos. The asbestos importing companies as listed in the report showed a number of various industries using asbestos containing materials.

9. Industries with high risk of exposure (where overexposure is documented as exceeding occupational exposure limits) and estimated total number of workers at high risk

Until now, the government hasn't yet conducted an official study corcerning on asbestos occupational exposure. But, PT SiamIndo Concrete Production independently has done a non-government research regarding asbestos occupational exposure.

In the sample of asbestos containing materials, 95% chrysolite has been detected. 2 to 5% asbestos cement residues in the production floor and 7% chrysotile residues ashes of used shredded asbestos wallboards have also been detected. A great amount of metal contents have been detected mostly in the production floors where Chromium (160 mg/kg), lead (450 mg/kg), and nickel (67 mg/kg) probably derived from fly ashes.

0.010 fibers/cc to 0.025 fibers/cc of asbestos (10% to 25% from PEL) are detected in each individual sample, and 0.048 fibers/cc (48% from PEL) in asbestos fibers strorage. In the environmental sample collected at around factories (50 to 500m) in cloudy weather, asbestos (<0.001 fibers/cc to <0.002 fibers/cc) wasn't detected.

A further research needs to be taken to find out the amount of asbestos occupational exposure in each industry including the total number of workers exposed to asbestos and at particularly high risk for developing asbestos diseases.

10. Estimate of the burden of diseases related to asbestos: disability adjusted life years (DALYs) and deaths attributable to asbestos exposure.

There is no valid data explaining asbestos related diseases. The data released by Institute of Health Metrics and Evaluation (IHME) in 2015 (source: http://vizhub.healthdata.org/gbd-compare/) reported that DALY's rate in Indonesia for asbestos case is 0.35 per 100.000 people or 0.0096 death per 100 people. This report still needs further observation.

11. Prevalence of asbestosis (total number of workers with diagnosed asbestosis, asbestos-related lung cancer and mesothelioma to-date) – national data, a breakdown by industries if available

Until now, either government or health association hasn't yet issued the data explaning the number of workers with asbestos disease diagnoses, such as chronic lung cancer and meshotelioma. Activists, government and non-government institutions must work together to do some studies regarding this issue.
LionIndonesia, as one of the independent organizations which campaign the ban use of asbestos in Indonesia, has already made two health research investigations on workers exposed to asbestos. PT Trigraha Sealsindo and PT Siam Indo Concrete were taken as samples of industries which provide CT Scan Throax for medical surveillance. The first medical suveillance involved 11 people who have worked for 4 to 15 years, and the second medical surveillance involved 20 workers of PT Triagraha Cibinong Bogor, and 14 workers of PT Siam Indo Karawang.

In the first medical suveillance, workers of PT SICP aged 29 to 40 who have spent 4 to 15 years in the company are not detected to perform any asbestos diseases, but three of them are diagnosed to have lung problems, one person suffers from obesity, two are diagnosed to have Tuberculosis sympthoms. The medical surveillance was all taken in Cipto Mangunkusumo Hospital, Jakarta.
The next medical surveillance involved DWOI volunteers reported that 4 people were diagnosed to have suffered from dermatitis in their hands presumably derived from cement vapour in the factory.
In the second medical survaillance, 20 people were medically examined through CT Scan Throax in Pertamina Hospital. From ten people who have worked for 10 years, nine of them were diagnosed to have been infected with *asbestos related disease (ARD)*. The medical surveillance results still need to be consulted to international scentists.
It is not easy to find people who perform asbestos diseases. Beside the lack of data transparency from the company, some other major problems are limited medical equipments, hospitals and asbestos diseases specialists. A full-length report is included in this investigation.

12. Incidence of Lung Cancer Among Workers Esposed to Asbestos

The government is still reluctant to carry out investigation and research concerning cancer diseases caused by asbestos exposure. Nevertheless, based on independent investigation report facilitated by LionIndonesia in 2015, it was said that 9 out of 20 workers were detected to carry asbestos related disease. The investigations which involed either government or non-government organizations reported the hazard of asbestos and finally urged the government to make regulations concerning on the ban use of asbestos in Indonesia.

13. Incidence of mesothelioma

None of specific mesothelioma cases can be accurately proven by any Health Organization in Indonesia. Some related data are still inadequate and need to involve health researchers to intensively examine the problems.

14. Estimates on the percentage of house stock and vehicle fleet containing asbestos

In the previous chapters, it was reported that asbestos use in the society had frequently increased in quantity. The use of asbestos in households is not only found in the form of ceiling roofs or wallboards, but also in Air Conditioner and other things including in vehicles. There are no research reports which thoroughly calculate the percentage of asbestos use in households and vehicles.

15. Total number of workers eligible for compensation for asbestos-related pleural diseases, such as asbestosis, lung cancer and mesothelioma (per year) and the numbers of individuals compensated yearly.

Legally, asbestos related pleural diseases are not included in Health Insurance in Indonesia since it is classified as occupational health problems. This condition will cause difficulties for workers to get compensations from the company.
Data of workers with particularly high risk to asbestos exposure have not yet been admitted by the government. This condition can cause difficulties for them to get appropriate compensations from the company. The accurate data correction and government admission

are truly needed to help them get appropriate compensations. LoinIndonesia and INA-BAN network are now endeavouring to claim healthcare compensation for 9 workers who are detected to have carried asbestos related pleural diseases.

16. The System of Inspection and enforcement of the exposure limits

Indonesia has stipulated laws regulating Permissible Exposure Limit of air for asbestos during manufacturing of asbestos containing products. Both strict supervision and adequate health specialists on work-related illness are urgently needed.
Legal supervisory control systems haven't yet been applied to asbestos manufacturing industries. In fact, the government only depends on the company data acquisition and neglect the importance of supervisory control systems. Moreover, the laws consequences imposed to the companies which commit violations are incomparable to workers health risks.

The imbalance between supervisory control system and permissive exposure limit of asbestos clearly shows the lack of scientists in the supervisory agency and law consequences is incomparable to the price of 2 or 4 asbestos sheets.

17. National enforceable occupational exposure limits for chrysotile asbestos

In connection with Chrysolite containing materials, the Permissive Exposure Limit regulated in government laws is 0.1 fibers per cubic centimeter of air; and the law consequences are not fair enough. Until now, none of asbestos manufacturing companies commited violationss is reported to have been imposed appropriate law consequences. This condition is caused by the lack of adequate supervisory control system and scientists. That's why the government regulations which control the use of Chrysotile are unavailable in Indonesia.

18. Estimated economic losses due to asbestos-related diseases.

Research and studies on estimated economic losses due to asbestos-related diseases are urgently needed in Indonesia since any data of similar issues haven't yet been reported so far.

19. Major studies on epidemiology of asbestos-related diseases

The lack of major studies on epidemiology of asbestos-related pleural diseases, especially lung cancers in Indonesia can be one of the major reasons for any researchers who have interests in health problem issues. In 2012 to 2014, studies on epidemiology of asbestos-related pleural diseases had once been initiated by Ministry of Heath and Ministry of Environment and Forestry, but until now none of studies regarding this issue have been conducted. The study builds on the relatively small literature on on epidemiology of asbestos-related pleural diseases in Indonesia.