

**Review and Development of relevant legislations, regulations, and guidelines
pertaining to Asbestos**

Table to Contents

	Page
Title	
Glossary	
I. Findings	4
A. Asbestos Profile	4
1. Distribution of Asbestos-related health problems	4
2. Population at risk	5
3. Moral Issue	7
B. Existing Policies	7
1. Before 2000	7
2. 2000 and After	8
II. Policy Turning point: Chrysotile	10
A. Policy options	10
1. Do nothing/ Status quo	10
2. Adjust the TLVs/PELs	11
3. Total Ban	11
B. Cross cutting issues	11
III. CONCLUSION	12
References	13
Tables	
Table 1: Reported cases of Asbestos-related diseases (ARD) per agency	4
Table 2: Importation of Asbestos Containing Materials (ACM) (including chrysotile) into the Philippines, according to use	6
Table 3: Asbestors Alternatives according to Health and Environmental Risk	9
Table 4: World Bank recommended alternatives to Asbestos Containing Materials (ACM), according to type of ACM	9

Glossary

ACIP	- Association of Chrysotile Industries in the Philippine
ACM	- Asbestos Containing Material
AEDR	- Annual Exposure Data Reports
AMR	- Annual Medical Report
ARD	- Asbestos-related diseases
Asbestos	- The commercial name given to a variety of six naturally occurring fibrous minerals. These minerals possess high tensile strength, flexibility, resistance to chemical and thermal degradation, and electrical resistance.
Asbestosis	- A chronic inflammatory and fibrotic medical condition affecting the parenchymal tissue of the lungs caused by the inhalation and retention of asbestos fibers.
BWC	- Bureau of Working Conditions
Chrysotile	- A more dense form of Asbestos
DAO	- DENR Administrative Order
DENR	- Department of Environment and Natural Resources
DOH	- Department of Health
DOLE	- Department of Labor and Employment
ECC	- Employee's Compensation Commission
IARC	- International Agency for Research on Cancer
ILO	- International Labor Organization
Mesothelioma	- A form of cancer that develops from cells of the mesothelium, the protective lining that covers many of the internal organs of the body. Mesothelioma is most commonly caused by exposure to asbestos
Metric ton	- A metric system unit of mass equal to 1,000 kilograms (2,204.6 pounds) or 1 megagram (1 Mg)
NHA	- National Housing Authority
OSHC	- Occupational Safety and Health
PEL	- Permissible Exposure Limits
PHHC	- Philippine Homesite and Housing Corporation
Pleural effusion	- An abnormal collection of fluid in the pleural space resulting from excess fluid production or decreased absorption.
Pleural plaques	- Discrete fibrous or partially calcified thickened area which can be seen on X-rays of individuals exposed to asbestos
Pleural thickening-	A condition in which the lining of the lungs thickens, often caused by mesothelioma
SSS	- Social Security System
TLV	-Threshold Value Limits
TUCP	- Trade Union Congress of the Philippines
WEM	- Work Environment Measurement
WHO	- World Health Organization

Review and Development of relevant legislations, regulations, and guidelines pertaining to Asbestos

I. FINDINGS

A. Asbestos Profile

1. Distribution of Asbestos-related health problems

Asbestos is a naturally occurring substance that is the only cause of asbestos related health lung cancer, mesothelioma, asbestosis, and pleural plaques, thickening, and effusions, which are usually incurable and fatal. Asbestos is slow acting in the human body, in that it takes 10-40 years of inhalation before such catastrophic health conditions manifest.

As early as 2000, the Philippines has banned specific uses of asbestos, primarily amphibole asbestos, through the issuance of DENR Administrative Order for the Chemical Control Order of Asbestos. However, chrysotile asbestos is still allowed for use.

Between 1997 to 2012, a total of 482 asbestos-related diseases (ARD) were reported or filed with specific agencies.

Table 1: Reported cases of Asbestos-related diseases (ARD) per agency

Agency (year)	ARDs	Number
Lung Center of the Philippines-DOH (2000-2012)	Mesothelioma	11
Philippine Cancer Society (2000-2012)	Mesothelioma	33
Social Security System (SSS) 2012	Mesothelioma	1
Lung Center of the Philippines - DOH (2000-2012)	Asbestosis	387
Subic Naval Facilities (Lung Center of the Philippines - DOH, 2000-2012)	Asbestosis	12
Trade Union Congress of the Philippines (TUCP, 1997-2003)	Asbestosis	19
Social Security System (SSS), 2012	Asbestosis and Asbestos Related Diseases	19
	TOTAL	482

Once the symptoms manifest, the median overall survival does not go beyond three (3) years. While one can argue that the victim would die at around their expected lifespans, we still have to take into account that medical costs in the treatment and palliative care for asbestos related health conditions can run between 1 Million pesos to 5 Million pesos per year per victim (Lam, Mendoza and Mendoza, 2010 unpublished data). As such, asbestos related health problems may impoverish the families of these victims.

2. Population at risk

According to the DENR, local production of asbestos, after having reached 5,816,000 metric tons from 1960 to 1980, ceased production in the country, mainly due to cheaper international sources. As such, the only sources of asbestos in the Philippines are from importation. While amphibole asbestos is banned, generally, due to health and environmental concerns, however, on the other hand, perhaps due to international pressure (Attaran, Boyd, and Stanbrook, 2008; Collier, 2008; Mittlestead, 2008) the Philippines still allows the importation and use of chrysotile, a more dense form of asbestos. According to the DENR AO 02, series 2000, chrysotile has been strictly limited to the following high density products:

1. Fire proof clothing
2. Roofing felts or related products
3. Asbestos cement roofing
4. Asbestos cement flat sheet
5. Friction materials
6. High temperature textile products
7. Gaskets Mechanical packing materials
8. High grade electrical paper
9. Battery separators
10. Other high density products

Moreover, the same document specifically prohibits the use of asbestos in the following products:

1. Toys manufacturing
2. Pipes and boiler lagging manufacturing
3. Low density jointing compounds
4. Corrugated and commercial paper
5. Untreated Textiles
6. Flooring felts and covering
7. Rollboard
8. Specialty paper
9. other low density products

In general, past asbestos consumption in the Philippines, according to the US Geological Survey, was 2,500 metric tons in 2003, peaking at 3,500 metric tons in 2004, and eventually plateauing at 2,000 metric tons in 2000.

More recently, according to the Bureau of Customs, MISTG, the importation of chrysotile in 2010 was 3,680 metric tons. In 2011, this went down to 3,578 metric tons, and in 2012, it was 1,864 metric tons. In addition, importation of asbestos (including chrysotile) containing materials (ACM) are also being imported into the Philippines. According to the NSO, in 2010, approximately 1,792 metric tons of such ACMs were imported into the Country.

Table 2: Importation of Asbestos Containing Materials (ACM) (including chrysotile) into the Philippines, according to use

Imported ACM, 2010	Gross Weight (Kg)
Break lining and pads	1,157,661
Clothing, clothing accessories and headgear	16,596
Clothing, clothing accessories and footwear	13,669
Compressed asbestos fiber jointing	320 sheets/rolls
Cords, strings	7,891
Fabricated asbestos fiber	125,916
Woven or knitted fabric	961
Yarn and thread	74,455
Gaskets	6,620
Shingles and roofing	11,288
Others	377,319
TOTAL	1,792,376

If we assume that importation of ACM has been steady since 2010, then the aggregated amount of imported chrysotile into the Philippines in 2012 was approximately $1,864 + 1,792 = 3,656$ metric tons. The processing and trade of these 3,656 metric tons of chrysotile is concentrated within 143 companies nationwide. If we take into consideration the current international standard of 0.1 fibers/cc) (ACGIH), then, the population at risk would be approximately 17,000 workers spread out among the importing companies (5,289 workers according the Association of Chrysotile Industries in the Philippine (ACIP, 2012) and Occupational Safety and Health Center (OSHC) (2008) and downstream companies that distribute and use such products, such as office workers, seafarers, car maintenance workers and others (12,000 workers, according to the DOH). On the average, these 17,000 Filipino workers contribute an estimated 446 Million pesos to the National economy, annually. Assuming a 20 year productive life, we can estimate that they would contribute 8.925 Billion pesos to the national economy.

On the other hand, because of the lack of records, it is difficult to estimate the total number of Filipinos who live in houses that have asbestos roofs. Scant historical records of the Philippine Homesite and Housing Corporation (PHHC) showed that in 1940, such asbestos roofed houses were allowed to be built in Quezon City, Caloocan City, Tagaytay City, Tacloban City, Iloilo City, Bacolod City, and Roxas City. In 1975, the PHHC was taken over by the National Housing Authority (NHA), at which time, asbestos roofing were not allowed. Unfortunately, specific records as to which particular 1940s houses with asbestos roofs cannot be traced as of the writing of this report (NHA personal communiqué, 2013).

3. Moral Issue

The use and importation of chrysotile asbestos represent a moral issue to the Philippines. How can the Country allow 17,000 workers, who are expected to contribute a total of 8.925 Billion pesos to the national economy, be exposed to such working conditions that would eventually be fatal and financially catastrophic to their families?

B. Existing Policies

1. Before 2000

In 1972, Republic Act 6541, An Act to Ordain and Institute a National Building Code of the Philippines (National Building Code of the Philippines), specifies that building materials must have a "one hour fire-resistive time period rating". As such, because of this particular property of asbestos, and its low cost comparative to other materials with such a property, asbestos became widely used in the Country.

In 1978, the Department of Labor and Employment, in its Occupational Safety and Health Standards, specifies that all work-related health issues must be reported. Which therefore, included asbestos-related health issues (OSHC Rule 1050). However, in Rule 1070, it specifies that the standard for asbestos exposure in all forms shall be 2 fibers/cc, 5 micrometers in length.

In 1988, the "Report of an IPCS Working Group Meeting on the Reduction of Asbestos in the Environment, Internal Technical Report, (Rome, Italy, 12-16 December 1988)" encouraged "Countries that do not have established policies for the control of hazards related to the presence of asbestos in the environment should develop guidelines for this purpose". The International Labor Organization (ILO) also echoes this (2010).

With mounting evidence of asbestos related occupational health reports in the Philippines, in 1990, Republic Act No. of 6969 otherwise known as "Toxic Substances and Hazardous Wastes and Nuclear Wastes Control Act of 1990" mandated the Department of Environment and Natural Resources to formulate and maintain such a list.

In 1996, the Employee's Compensation Commission (ECC) approved asbestosis as a compensable work related disease under ECC Resolution 96-08-0372.

In 1998, the World Health Organization's International Agency for Research on Cancer (IARC) reported that chrysotile fibers are associated with high incidence of lung cancers, and that cigarette smoking increases lung cancer incidence among people exposed to asbestos in their occupation. Thus, call for the banning of chrysotile together with all asbestos.

2. 2000 and After

In 2000, asbestos was included in the DENR Administrative Order 02, series 2000. This therefore effectively banned importation of asbestos into, and controlled its used and disposal within the Country. Asbestos continues to be listed (DAO 2005-27). Moreover, the DENR has also issued DAO 2004-36 detailing the proper handling and disposal of asbestos and asbestos containing wastes.

Also in 2000, the International Ban Asbestos Secretariat (IBAS), an international association of scientists concerned with the carcinogenicity of all forms of asbestos, including chrysotile, especially among developing countries, was established.

In 2005, the World Health Organization, continuing their call for the banning of all asbestos, including chrysotile, "WHO Workshop on Mechanisms of Fibre Carcinogenesis and Assessment of Chrysotile Asbestos Substitutes , 8-12 November 2005, Lyon, France" lists less hazardous alternatives.

Table 3: Asbestos Alternatives according to Health and Environmental Risk

Health and Environmental Risk	Asbestos Alternatives
High	Attapulgit, potassium octaitanate
Medium	Para-aramid
Low	Carbon, wollastonite, xonotilite
Indeterminate	Cellulose, Graphite, Magnesium Sulphate, Polyethylene polyvinyl chloride, polypropulene, synthetic vitreous fibers (glass, wool/fibrous glass, mineral wool, special purpose vitreous silicates, and refractory ceramic fibers)

Recently, the World Bank's Operations Policy and Country Services published their recommended alternatives for ACMs:

Table 4: World Bank recommended alternatives to Asbestos Containing Materials (ACM), according to type of ACM

ACM	Alternatives
Asbestos cement corrugated roofing	Fiber cement roofing using synthetic fibers Galvanized metal sheets Coated metal tiles Aluminum roof tiles
Asbestos cement flat sheet	Fiber cement using vegetable/cellulose fibers Gypsum ceiling boards Softwood frame with plasterboard or calcium silicate board facing
Asbestos Cement Pipe	Cast iron and ductile iron pipe High density polyethylene pipe Cellulose cement pipe Clay pipe

Almost simultaneously, the World Health Assembly, in its Resolution 58.22 (2005) urged Member States to pay "special attention to cancers from which avoidable exposure is a factor... asbestos is one of the most important occupational carcinogens".

In 2012, the IARC, in its Monograph, "Arsenic, Metals, Fibres, and Dusts, Volume 100C, A review of human carcinogens. 2012" unequivocally states there is sufficient evidence in humans for the carcinogenicity of chrysotiles.

In 2011, two separate House of Representative Bills were filed: House Bill 479 was filed by Representative Kaka Bag-Ao; and House Bill 896 was filed by Representative Raymond Democrito Mendoza, which allows a three year grace period for total ban of all asbestos and asbestos containing products. In 2013, a combined version, now known as House Bill 2638 has been refilled by Representative Raymond Democrito Mendoza.

II. POLICY TURNING POINT: CHRYSOTILE

With the mounting international evidence on the carcinogenicity of chrysotile, there exists a window of opportunity for the Philippines to include the banning of all chrysotile in the Country. The Philippines has three options with regards to this window of opportunity.

a. Policy options

1. Do nothing/ Status quo

Ethically, with mounting international scientific evidence, and movement by developed countries to ban all asbestos including chrysotile, the Philippines cannot risk maintaining its status quo, and allow an estimated 17,000 employees annually to die from preventable occupational hazards and leaving their families to suffer impoverishment. With the current focus on Kalusugang Pangkalahatan of the Aquino Administration, the country cannot ignore allow these 17,000 Filipinos who contribute 8.9 Billion to the national economy to suffer incurable and fatal ill-health.

2. Adjust the TLVs/PELs

The option to adjust the Threshold Value Limits (TVLs) or the Permissible Exposure Limits (PELs), while scientifically sound, however, because of the incurability and fatalness of inappropriate levels of chrysotile exposure may violate the reversibility principle of ethics. Further, research on new TVLs and PELs on already low levels may be very costly in relation to the expected outcomes. As such, the cost-effectiveness of researches identifying safer TLVs/PELs may be too expensive. Moreover, if the TLVs and PELs are indeed lowered eventually,

new investments in more sophisticated testing machines and also their attending new training needs to be undertaken by technicians would be consequently needed, adding more cost to the this option.

3. Total Ban

In this instance, because of the small effect it would have on the 143 manufacturers and processing companies of asbestos and chrysotile in the Philippines, the expected economic loss of these companies would be small in relation to the prevented societal cost to the national economy. Further, the presence of viable alternatives, would lessen the financial loss of current chrysotile manufacturers and processors to even lower levels, as these companies can be given incentives to switch to safer alternatives or raw materials. A total ban on all asbestos including chrysotile may be even more prudent as a national policy, because it would enhance public health and public trust in that the main beneficiaries of this total ban would fall on the elderlies, and the productive age working class.

b. Cross cutting issues

Whatever the policy option, the ECC, OHSC, the Lung Program of the DOH, and the DENR need to update its definition of asbestosis related illness to include chrysotile based effects. Further, the general public and the workers need to be made aware of their possible exposure to asbestos, including chrysotile not only in their workplaces, but also in the public places where they play and find recreation with their families, as well as in the homes that they live in. These can be in the form of a national eco-labeling program (Seal of Green Choice): for green building, and green procurement.

The experience of this research yielded shown that the following challenges: unavailability and inaccessibility of data; limited number of epidemiological studies on ARDs; low population risk due to existing high standards; poor health surveillance; lack of capability to conduct exposure assessment in informal sectors (unregistered car repair shops, etc); and lack of education and awareness of public and workers on the hazards of asbestos and chrysotile. These issues are expected to continue to plague asbestos control in the country no matter what policy option

is undertaken, if no improvement in monitoring and evaluation is implemented.

As such, it is recommended that:

- 1) There should be a mechanism for regular monitoring and surveillance by the BWC-DOLE Regional office labor inspectors at least once a year, and work environment measurement (WEM) testing by OSHC inspectors.
- 2) Increased data banking to improve information access of Annual Exposure Data Reports (AEDR) and Annual Medical Report (AMR), and
- 3) More government funding for research on ARD, review of current standards, and public education and awareness.

III. CONCLUSION

Despite the paucity of data on health statistics and economic burden, this paper presents compelling argument that a total ban on all asbestos, including chrysotile, is a logical and cost-effective national policy for the Philippines. This is due to the fact that the health consequences of asbestos exposure is fatal, irreversible, and financially catastrophic, while the number of affected manufacturers/processors are only 143, and the impact on these companies can be lowered because of the presence of safer alternatives or raw materials.

It is also recommended that that a regular monitoring and evaluation program with databanking be instituted and appropriately funded for BWC-DOLE Regional Offices, and research institutions.

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