# THE PROCEEDINGS OF INTERNATIONAL CONFERENCE EXPEDITE ASIA TO BE FREE FROM ASBESTOS HAZARD: GLOBAL SCIENTIFIC AND SOCIAL EVIDENCE

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**The Proceeding of International Conference Expedite Asia to be Free from Asbestos Hazard: Global Scientific and Social Evidence 2014**

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## Introduction and objectives of the meeting

**Associate Professor Dr. Vithaya Kulsomboon**

**Director of Social Research Institute, Chulalongkorn University**

Assistant Professor Dr Kalaya Tingsapat, Vice President of Chulalongkorn University,
Prof. Ken Takahashi, and distinguished speakers and guests.

At the global level, with serious concerns about the human health risks of asbestos, most developed countries have successfully prohibited the production, import and export of asbestos and products containing asbestos. In the countries which have banned asbestos, a raft of additional preventative measures has also been implemented. However, risk-based regulatory measures on the asbestos hazard vary among the countries in Asia.

In this conference, a comparative analysis of approaches assessing the health risk in asbestos ban and non-ban countries will provide an understanding of the interaction between global scientific and social evidence, and the effect this interaction has on decisions taken regarding the asbestos threat. The interplay on this issue between stakeholders in government, industry and civil society will also be discussed in this conference especially the situation in Asia.

In Thailand, although Government Cabinet agreed to ban asbestos in 2011, this decision, unfortunately, has not been implemented. The dynamics preventing this vital measure to protect human life in Thailand and in Asian countries will be considered at this forum not only to address the asbestos issue but also to identify and develop best practice methods to deal with hazardous products.

Our International Conference "Expedite Asia to be Free from Asbestos Hazard: Global Scientific and Social Evidence" aims to meet three objectives which are:

1) To update global scientific and social evidence on the asbestos hazard and regulatory initiatives in Asia
2) To share public knowledge on governmental decisions and social collective action on the asbestos issue, and
3) To explore key findings pertaining to the achievement of and barriers to an asbestos-free society

The conference is organized by Chulalongkorn University Social Research Institute, Health Consumer Protection Program and Department of Preventive and Social Medicine, Faculty of Medicine, and Co-organized by:

- Department of Community Medicine, Faculty of Medicine, Thammasat University
- Department of Occupational Health and Safety, Faculty of Public Health, Mahidol University
- The Association of Occupational and Environmental Diseases of Thailand
- Confederation of Occupational Health and Safety at Work
- The Council of Work and Environment Related Patient's Network (WEPT)
- The Foundation for Consumers (FFC)

- Thailand Ban Asbestos Network (T-BAN)
- Asian Ban Asbestos Network (A-BAN)

The conference is supported by CU Global Network and Thailand Health Promotion Foundation.

Today, there are 17 international experts from 11 countries, and 90 Thai participants joining this conference. Therefore, we highly expect that the deliberations of this international conference will provide scientific and social evidence sourced from Asian experts and policy makers to supplement the current understanding and advice documented in international academic literature.

Now, I would like to invite Assistant Professor Dr Kalaya Tingsapat, Vice President of Chulalongkorn University to give Opening Remarks.

## Opening Remarks

**Assistant Professor M. R. Kalaya Tingsabadh**

**Vice President for Academic Affairs, Chulalongkorn University**

Prof. Ken Takahashi, University of Occupational and Environmental Health, Japan,

Distinguished speakers, participants, ladies and gentlemen:

It is a great pleasure and honor for me to welcome you to this highly important international conference on the "asbestos issue".

We live in a globalizing world, and its complexity increases exponentially. To understand the problems related with science and technology in our society, multidisciplinary approaches among researchers from health science, science and technology, and social science are necessary. Researchers have the responsibility to demystify the complexity of the "asbestos issue" and generate public knowledge to enable people to understand. Researchers among various disciplines should have platforms like this to share knowledge internationally.

It is very interesting that this conference attempts to link global scientific evidence with societal problems, public knowledge generation, and social collective action to explore key findings and generate policy options for Asia and ASEAN Community on the asbestos issue that threatens lives and livelihoods in our countries.

At present, universities are increasingly requested to be effective partners for global development. Global concern on environmental issues such as climate change, toxic waste, hazardous products and disasters has led academic community to pay attention on and work together to share knowledge at the international level.

In this regard, within Chulalongkorn University, we have encouraged researchers to work together in terms of "Research Cluster". Chulalongkorn University Social Research Institute and the Department of Preventive and Social Medicine, Faculty of Medicine have been diligently working together on "asbestos issue" to understand its complexity and propose effective public policy options under the "Social and Development Research Cluster".

On the asbestos issue, I am aware that our academics have been cooperating with those from various Universities in Thailand and abroad, academic associations, and civil society groups in form of an academic network to generate public knowledge, public awareness, and public policy for our society.

Chulalongkorn University has a funding platform namely CU Global Network (CGN) which is meticulously designed to deliver an effective collaboration over the multidisciplinary research project among diverse faculties. These research projects ultimately aim to generate public

knowledge at international level and, CGN is one of the active partners and supporters at this conference.

We are fully aware that next year, ten countries in ASEAN will join together to form the ASEAN Community. One of the three pillars of ASEAN Community is its Socio-Cultural Community. People in ASEAN Community should share the common social and health protection at fairly standard level. Knowing that global concern has been increased on this issue as witnessed by your expertise, the public knowledge generated from this important conference should be effectively disseminated internationally and to be made easily accessible to the public in general.

Finally, I wish you successful deliberations and finding effective policy options to tackle the "asbestos issue".

## Keynote Speech

### *Global Scientific and Social Evidence on Asbestos Hazard*

**Dr. Ken Takahashi**

**University of Occupational and Environmental Health, Japan**

The title of my presentation is "Global scientific and social evidence on asbestos hazard". When I first heard of the title of this conference, I thought it was such a grand scale topic to be conference but I would try to do my best to fit into the conference.

For today's conference, I would like to particularly refer to two points; in the line with the discussion of scientific evidence on the left, and also on the right to take a global perspective. I would like to say regarding the global scientific evidence, landmark epidemiological study on asbestos related issues and my topic today is also about the epidemiological study because I am an epidemiologist by training. And we have already seen the publications by around the 1960s, and it became unequivocal that asbestos (ASB) caused lung cancer, mesothelioma and possibly other cancers. It is also important to know that the first IARC monograph incorporating available evidence of the time was published in 1972, but had already reached the same conclusion maintained as of today.

But the astonishing REALITY is that ASB production & consumption continued to grow, and 80% of total world production happened after the 1960s. As you all know the recent consumption is dominated by the countries such as from developing states and Chrysotile asbestos. If we deliberately compare EPIDEMIOLOGY (EPI) vs. ECONOMY, then it seems to me, that EPI seems powerless.

Now I will delve into "global perspective." By that I mean very much about my concern for developing countries is to continue to use asbestos. The situation becomes clear when we contrast the situation between developed countries and developing countries.

As you know, asbestos use can be roughly categorized into two categories; construction material, and anti-friction/heat material, which is not significant in terms of proportion. Now contrast is the situation for each usage. For developed countries where officially-banned asbestos in construction materials, the production of materials is already prohibited. But there is no way to prohibit the existing asbestos in use. So they keep remaining and keep causing the issues, deteriorating the health conditions of asbestos affected people. Whereas in developing countries' construction materials, the industry is thriving. For the anti-friction/heat materials in developed countries, they are mostly phasing-out but historically it has been dependent on this usage. But for developing countries, the situation is variable. Sometimes we continue to use while the others do not, mostly because they have concentrated in construction industry. So obviously the situation between them is different regarding the diversity of industry and occupation. For the developed countries, we need to understand this diversity based on the epidemiological study and it needs the "just" compensation to make sure all industry and occupation are covered in the rest of compensable diseases. But the situation in developing countries is slightly different because we need to understand how to construct the roadmap to ban the asbestos, as long as the control measures are taken place during the transition towards the total ban of asbestos.

To further dig into this "diversity issue" Mr. Sugio and my team compared Japanese and Korean situations as examples.

We assume that the asbestos related industry as well as occupation, in terms of Job Exposure Matrices, which is usually used to identify the historical exposure, would be very similar between two countries. Because to a certain extent, it was, and this part was expected as many ASB-related industries *migrated to* Korea once social pressure increased in Japan. What surprised us in fact was high percentage of inconsistencies in two countries. This suggested that even with neighboring countries having similar industrial profiles, such as Japan and Korea, asbestos use patterns can be uniquely different. This *attests to* the complexity of identifying exposure situations and the difficulties the scientific studies are faced with, when we have to consider this historical context.

A long-standing challenge that epidemiology as well as scientific study in general have been faced with is the issue on "Relative Potency" by fibre type, a highly controversial issue. Actually I am inclined to take a simple, straightforward position on this. So there is no argument regarding the fact that chrysotile is carcinogen, but slight different perspective is that it is more bio-persistent in amphiboles rather than chrysotile in lungs. It is also the fact that many chrysotile fibres are contaminated by amphiboles. So this is the place where the controversy kicks in when we have mixture of chrysotile and amphiboles. And epidemiology are faced with the need to disentangle according to the health effect by type of fibre. This is where a lot of researchers would think this evidence is inconclusive and controversial. But as I highlighted yellow, there are limits with epidemiological studies which is inherent problem; when workers or people are exposed in the combination of exposure sources and later being diagnosed. It is very difficult to overcome or differentiate by single type of fibre.

The issue on Relative Potency by Fibre Type is misinterpreted by some researchers. They underestimate or even dismiss the potency of chrysotile to cause mesothelioma. But clearly this is wrong and it has been substantiated by, many researchers, including Dr. Lehmen in a very orthodox and convincing manner. The reason why I say orthodox is that in this paper, he applied the Hill's Criteria for causation. This is a very well-established line of reasoning applied in epidemiology. By applying this criteria or series of evidence, he concluded that chrysotile per se can induce mesothelioma when tremolite or other amphiboles are not detected, and as there is no 100% pure chrysotile, mesothelioma carcinogenicity of chrysotile is academic at best. This I consider to be good logic. As many researchers argue, the ensuing Scientific Consensus is that chrysotile is a definite cause of not only lung cancer but also mesothelioma.

The Relative Potency Issue between chrysotile and other amosites. This is a long-standing one, and the figures give you an idea of what the ratio researcher consider to be for chrysotile vs. amosite vs. crocidolite. It was said, based on meta-analysis, that the ratio might be as high as 1:100:500 in causing mesothelioma. But in 10 years, they published with the different result; 1:10:50. Now of course other researchers take different ratio and arguments. But my point is that there are "limits with epidemiological studies". There is inherent problem which is difficult to overcome. This kind of argument may go on for many more years, unfortunately. There is even the danger of entering a circular argument. So I searched for an argument, or line of reasoning, that is compelling, but which takes a different angle or coming from different set of values.

Then I found it from EPA in 1989, what is said is that "it is prudent and in the public interest to consider all fibre types as having comparable carcinogenic potency in its qualitative assessment of mesothelioma risk" and what is really important is "engagement in argument has prevented timely and appropriate health protective actions."

What I would like to use this phrase for my own purpose; it is prudent and in the interest of developing countries. And this kind of argument will only prevent timely and appropriate protective actions. So this is my steps.

One of my team's activities is to do just that "*To do the OBVIOUS."* What do I mean by that? My team has been publishing papers to support the OBVIOUS. The "obvious statement" is here; "the most efficient way to eliminate asbestos related diseases (ARDs) is to stop using all types of asbestos (WHO, 2006). We researchers accept this by common sense, and there is *no shortage* of papers showing causal relationship at the individual level. But what WHO is saying here is, "*For the world and countries* to eliminate ARDs". In other words, "country-level" is the problem. To my knowledge, there were not enough data and evidence to support WHO's claim at country-level. So we embarked on country-level analysis, it may be the obvious, but we thought it was needed, and some journals liked them. And we are glad to say that our papers were acknowledged by WHO, and in fact they are saying "evidence continues to show that national burdens of ARDs are directly proportional to national consumption of asbestos", which directly supports the statement.

Now, I would like to quickly show some updates. The numbers are highly skewed and what I show here is annual number of deaths from mesothelioma. As you can see, the number is highly skewed, like number 1 is US, other European countries. They are concentrated. But we have in total 61 countries, and we have found that this trend very closely parallels the historical ASB use situation and I would say this is the social evidence, in relation with historical use of asbestos.

We should adjust for size of the denominator population and age-composition; hence we have here age-adjusted mortality rates. Similar to the prior table, Europe, America and Oceania, as dominate the top-rankers, but we notice that countries with small populations emerged. These countries are known to have historical exposure or dependence on asbestos.

Just to give you an idea of the data distribution, and the number is highly skewed and they look like this. Of course the data is highly skewed and the analyzed data were national-level data reported to and compiled by the WHO, but if I look at the distribution, there is some rationality. I do not totally dismiss the trend of this.

So my preliminary observations are: descriptive statistics depicted both accumulation and spread of ARD burden, present dependence on asbestos use likely to correlate with future ARD burden, and plausible data emerging from a wide range of countries including developing ones.

At its core, in public health, ARD in particular is very important to combine the research and practice, so we embark on international collaborative initiatives, called asbestos initiatives, which is essentially to eliminate and prevent the asbestos usage, with UNEP, ILO and WHO.

After organizing, and co-organizing the events, we also exchange the personnel, we have come to the realization that prevention is needed at all level, most importantly to stop using asbestos, but we also cannot ignore the role of secondary protection through the just compensation.

In relation to the conference theme, scientific and social evidence are abundant, but global ARD trends warrant attention. As epidemiologist, I believe there is still room for epidemiology to prompt at all levels of prevention. Particularly, experience of banned countries should be better studied and utilized to expedite Asia to become asbestos-free.

### *Update Global Situation on Asbestos Ban*

**Mr. Sugio Furuya**

**Asian Ban Asbestos Network (A-BAN), Japan**

I would like to start with brief introduction of asbestos. Firstly, asbestos can be briefly summarized as;

(a) is a proven carcinogen;

(b) is called "Killer Dust" or "Silent Time Bomb";

(c) can cause serious/deadly diseases, such as mesothelioma, lung cancer and asbestosis which have long latency periods;

(d) Diffuse pleural thickening and benign asbestos pleural effusion are compensable diseases too in Japan, or other countries;

(e) is killing more than 100,000 people every year all over the world (ILO/WHO); and finally,

(f) IARC: Sufficient evidence is now available to show that asbestos also causes cancer of larynx and of ovary. - Helsinki Criteria 2014 reconfirmed with "Limited" evidence for cancer of colorectum, pharynx and stomach

About the key knowledge on Asbestos-related diseases;

(a) The great majority of mesothelioma is due to asbestos exposure;

(b) Mesothelioma can occur in cases with low asbestos exposure. However, very low background environmental exposures carry only an extremely low risk;

(c) About 80% of mesothelioma patients have had some occupational exposure to asbestos, and therefore a careful occupational and environmental history should be taken (Helsinki Criteria, 1997/2014); and

(d) The ratio of excess lung cancers to mesotheliomas across cohorts of asbestos workers have been variously estimated at about 0.5:1 to 30:1, and a ratio of 2:1 is widely cited (Henderson et al, After Helsinki, 2004).

This graph shows the trend of estimated asbestos consumption by country, which includes European countries, Japan, Australia, Korea and the US. Those countries have consumed asbestos long years in the past but they already stopped using it at the moment. Japan is one of the latest example countries, who stopped using asbestos. It was a quarter century behind of other industrialized countries who earlier banned it. So it is no wonder that there is certain time-lag between western countries and Japan.

The next graph shows the mesothelioma mortality by country with same composition of countries. Important is there is no country who has the mesothelioma mortality rate is already on decline or reaching at the peak.

This figure shows the trend of asbestos consumption by continent between 1950 and 2012. It shows that the consumption rapidly decreases since 1990s until 2000s, and then it remains at plateau at the 2 million tons. The rapid decline was regarded due to the stop usage in Europe and North America.

This figure shows the proportional trend of asbestos consumption, compared to global consumption and it shows that Asia and the Middle Eastern countries account for more than 70% of global asbestos consumption. In other words, Asia is becoming main battle field for global asbestos trade as well as campaign for the ban.

This shows the top 12 asbestos consuming countries between 2000 and 2012 in the world. During this period, China (1), Russia (2), India (3), Brazil (4), Thailand (6), Indonesia (8), Vietnam (9) and Sri Lanka (12). In 2012, six countries out of 12 top consuming countries were from Asia.

When looking at the global asbestos exporter countries, historically Canada and Russia are the two top countries who have produced and exported asbestos. But Canada finally has stopped producing and exporting asbestos recently. But export from Russia is constantly increasing. Although China is the second largest producer of asbestos, they consume almost all the produced asbestos in domestic industry and on the top of that they additionally import the extra asbestos from Russia. But China's asbestos export is slowly decreasing recently. This is about the asbestos situation in Russia. While consumption is decreasing, the production and export are increasing.

This is the comparison of asbestos consumption and national bans in 2000 and 2013 by International Ban Asbestos Secretariat, and you can see that 13 years ago there were only 20 countries which restricted the asbestos usage, but at this moment there are more than 50 countries who introduced the measure to ban the asbestos.

This chronological figure shows when the countries started banning the asbestos, and for instance, Japan banned in 2004, and Korea in 2007. Unfortunately there was no country to ban in 2012 and 2013. But finally recently this year, Hong Kong introduced the ban.

Singapore banned the use of asbestos under the Building Control Division (now Building and Construction Authority (BCA)), Ministry of National Development in 1988. Import of raw asbestos was prohibited under the Poisons Act (now Environment Protection and Management Act (EPMA) administered by National Environment Agency (EPA) in 1989. But import/use of asbestos containing materials except for chrysotile containing materials is controlled as a hazardous substance under the EPMA and its subsidiary legislations. Import/use of asbestos containing textile,

gasket and so on are still legal. But there is no asbestos product manufacturing plant in Singapore. WSH (Asbestos) Regulations came into force on May 30, 2014. In the figure, you can see mesothelioma cases are increasing year by year in Singapore, including 39 cases of asbestosis and 63 cases of mesothelioma were found up till 2013.

One more country, Taiwan, has progressed for the asbestos ban step by step. In 2010, EPA announced its phase-out plan (in July 26) for total ban in 2020, and they already revised their plan twice in 2011 and 2012. Then now Taiwan is planning a total ban in 2018, two years earlier than the initial plan. Taiwan adopted Taipei Declaration for a Global Asbestos Ban in 2009 and 2010. Again, mesothelioma mortality case is also increasing in Taiwan too, according to the study by Dr. Lukas Lee.

In Hong Kong, EPA proposed the asbestos ban in 2011, and finally introduced the operation in effect on April 4th this year 2014. Pneumoconiosis Compensation Fund Board, relevant government departments and social partners signed Asbestos Risk Abatement Charter at Conference on Joining Hands to Eliminate Asbestos Hazards on Nov 7, 2013, and Hong Kong government said "Banning asbestos to reduce the risk of exposure to asbestos has become an international trend. The Amendment Ordinance will further reduce the risk of public exposure to environmental asbestos by imposing a total ban on asbestos. Except for goods in transit and registered proprietary Chinese medicine, the import, transshipment, supply and use of all forms of asbestos will be banned to prevent asbestos from entering Hong Kong. It also makes related amendments to the Factories and Industrial Undertakings (Asbestos) Regulation to ban works with all types of asbestos in industrial undertakings". Moreover, in Asbestos Risk Abatement Charter, it says "to abate the hazards of asbestos, we are committed to, discontinuing completely the use of asbestos containing construction materials and supporting a total ban on asbestos in Hong Kong". The mesothelioma mortality in Hong Kong is also increasing, according to the paper of Dr. Yu. About the compensation cases in Hong Kong for asbestosis and mesothelioma, in Hong Kong mesothelioma became confirmed as a compensable disease in 2008.

In the Asian region, there are various efforts by various parties, such as Global Asbestos Conference in Brazil, Japan, or Bangkok. As a research initiative, AAI also has been launched in 2008. At the grass root level, Asian Ban asbestos Network was established in 2009 in Hong Kong. Immediate priority of us is to ban the asbestos as soon as possible in Asia. Next year, 2010, A-BAN network meeting was held in Bangung, Indonesia, and established the Ina-Ban.

In Thailand, after the Bangkok Declaration adopted as first AAC in 2006, in 2010 the Voluntary Asbestos Phase-out Program by 2012 was noted with comprehensive measures. Next year of 2011, NHC and Thai Cabinet approved NHA Resolution.

On the other hand in Malaysia, because of the long-year campaign by consumer association Penang, and Malaysian Trade Union Federation, supported by Malaysian Medical Association and academics, the manufacturers agreed with total banning on asbestos by 2015, and in 2011 Department of Occupational Safety and Health uploaded its "asbestos Banning proposal" on its website. In addition to Malaysia NPEAD Conference in 2011, National Policy on the Development and Implementation of Regulation was established last year and it includes the Risk Impact Assessment Process with cost benefit analysis, and potential risk calculation. Furthermore, the Public Consultation Procedures was also just published last month.

DOSH presented the three option scenarios based on the cost benefit analysis and will be completed within this year. Then Official Public Consultation Procedures will be started very soon in Malaysia. I believe that Malaysia will achieve the total ban in next year.

Inspired by discussion of possibility to launch the Malaysia-A-Ban, Dr. Vithaya from Thailand became very enthusiastic and after only two months later, he organized the similar asbestos meeting in 2012 in Bangkok, where T-Ban was established with wide range of Thai networks. In 2012, Ministry of Industry proposed the phase-out plan in five years and in a response A-Ban and T-ban held one more meeting in Bangkok in November 2012.

In recent years, Australian Trade Union and International Corporation Association, APHEADA, set the programmes in Viet Nam and Laos, and they are now considering expanding their activities to ASEAN countries.

In Viet Nam, since the end of last year, there was a remarkable development in Viet Nam, and one of the significant events was Deputy Prime Ministry sent a letter to relevant ministries in Sep 19 to ask the respective ministry to develop a plan of No-Objection to include asbestos into Annex 3 of Rotterdam Convention before the end of this month (November 2014) and to develop the detailed roadmap to stop using chrysotile in roof sheet production by 2020. Also, at Ministry of Health, they are to develop National Action Plan for Elimination of Asbestos Related Diseases, and at the meeting participants agreed on establishing VN-Ban, which will be on November 27$^{th}$, just right after this conference.

In Philippines, initial agreement in 2008 set on total ban of chrysotile by 2018. ALU and Trade Union in Philippines have been very active on Ban Asbestos Campaign. In last November at 6$^{th}$ International Seminar on the Asian Asbestos Initiative in Manila, the impressive keynote speech was given by Secretary of Ministry of Health, saying "We are in a truly unique and distinctive position where the government share the same views with the labour union, particularly the Trade Union Congress of the Philippines (TUCP) which called on the government to ban the use of a carcinogenic material in the manufacturing industry, notwithstanding the fact that this is a source of livelihood for their members". He also introduced the National Asbestos Profile Philippines there.

In Bangladesh, there was A-Ban meeting where Bangladesh Ban Asbestos Network (B-Ban) was established, whereas in Pakistan in this February, Ban Asbestos Pakistan Campaign was held in Karachi and Trade Union additionally organized the meeting in Lahore. So now they are expanding their network with various stakeholders.

Of course, the immediate total ban is our first step but it is not enough to eliminate the asbestos related diseases. Here, now we have a good model to achieve this; European Parliament Resolution on asbestos related occupational health threats and prospects for abolishing all existing asbestos in March last year. This is to urge EU to establish the action plan to achieve asbestos-free society by 2030. Australia also established the National Strategic Plan for Asbestos Awareness and Management. This plan sets the goal to be asbestos-free society by 2030. In addition, they also established the new agency, Asbestos Safety and Eradication Agency, for implementing this resolution.

As a last remark to summarize the current situation;

(a) Japan and Korea had been only two countries introduced ban on asbestos in Asia;

(b) Singapore has stopped almost all asbestos and Taiwan has a phase-out program to stop at latest by 2018;

(c) Hong Kong has finally introduced a ban on asbestos in 2014;

(d) What country is the next? I guess that Thailand, Malaysia and the Philippines are close to ban;

(e) New developments in Laos, Indonesia, and so on;

(f) Coalition building among various social parties;

(g) Continuing regional/international efforts;

(h) Asia is moving towards ban on asbestos; and finally

(i) Australia and EU have shown the next stage for achieving the elimination of asbestos-related diseases.

Having analyzed the asbestos experiences of developed countries, it is clear that waiting for the emergence of an asbestos epidemic before taking action is not an option. In line with the precautionary principle, asbestos should be banned immediately. A ban on asbestos is the first step and making our society/ environment (with target time and roadmap) will be the second step, for achieving the elimination of asbestos-related diseases. To obtain justice for the asbestos-injured and deal with contaminated infrastructures, a concerted effort by civil society is essential; asbestos victims and their families have a crucial role to play in achieving these goals.

## Perspectives of ILO, WHO and Ministry of Public Health Thailand

**Moderator by Dr. Somkiat Siriruttanapruk**
**Department of Disease Control**
**Ministry of Public Health, Thailand**

### *ILO's Position on Asbestos and Actions*

**Dr. Ingrid Christensen, ILO Bangkok Office**

The issues that ILO has been working is all related to the work through the overarching themes of Decent Work for All. Decent Work that we are promoting is about advancing opportunities for women and men to obtain decent and productive work in the conditions of freedom, equity, security, and human dignity. That was implemented as our strategic objectives, and they are also related to the health issues. One thing is that people's employment and income opportunities are not only for but also the skill development. It is required the measure to protect the employed people so that people can stay healthy and productive at work place. Without social protection, people cannot work.

One very important for whole setting of the Decent Work agenda and the final pillar of Decent Work agenda is about the tripartism and social dialogue which is between employers and workers at the national level between government employers and workers at respective organizations. There are also a number of cross-cutting issues; poverty eradication, or issues on labour marketing information issues and so on.

More specifically on asbestos, one may say these works must be safe. We cannot imagine having Decent Work without safety and healthy work places. Asbestos is of course issues about the enterprise development because enterprises have to seek out the place where they can develop asbestos-free products. But ILO instruments are particularly concerned with asbestos are: Asbestos Convention in 1986, and a recommendation for it.

Equally importantly, there is Occupational Cancer Prevention in 1974, with the company recommendation. Then in 2006, International Labour Conference, which also adopted the recommendation and resolution concerning asbestos and that, contains some instruction to the ILO on what we should do. Finally I would like to mention the code of practice of owner safety of use of asbestos, which is from 1984 and it has more practical nature as guidelines for the countries on how to reduce and eliminate the hazards of the asbestos.

If you look at the asbestos convection, it has not only all kind of scope and definitions, general information, or laws, but also mechanism for adaptation, and enforcement. The convention also talks about the responsibility or duties of different partners, from workers to employers, which is general principles; national laws and regulation, implementation, enforcement and review, employer responsibility, workers required, within the limits of responsibility, to comply, and bipartite cooperation, which are limited in issues of asbestos, but also in health and safety in general.

It also adopted the precautionary and preventative measures and provided the measures if the exposure to asbestos could not be avoided in hierarchical controls so that authorities or companies can have better planning in advance when the incidence happens. When necessary, taking it practical, the prevention can be caused for the replacement and prohibition of blue asbestos or spraying.

The convention also talks about information and education including; (1) dissemination of information and education of concerned should be promoted, (2) employers to have written policies and procedures, and (3) information of workers. This also provides the surveillance of the working environment and the workers' health through monitoring and recording, medical examinations, and system of notification of occupational diseases caused by asbestos. So they are quite general convention but geared towards the asbestos issues. At this moment, 35 countries have ratified including this region such as Australia, Japan and Republic of Korea.

There are dimensions particularly relevant to asbestos. First one is about "occupational cancer" and its Article 2 says; each member which ratified this convention shall make every effort to have carcinogenic substances and agents to which workers may be exposed in the course of their work replaced by non-carcinogenic substances or agents or by less harmful substances or agents – in the choice of substitute substances or agents account shall be taken of their carcinogenic, toxic and other properties. So these two conventions together with Asbestos Convention are very important, as I said in policy direction at international level for safety for usage of asbestos and potential elimination. This is ratified by 39 countries including Afghanistan, Japan and Republic of Korea.

There are also other agendas or conventions relevant to the use of or exposure to asbestos. For instance, Occupational Safety and Health Convention in 1981 and its Protocol of 2002 are the key convention that was decided by our government bodies. There is also the new one in 2006; Promotional Framework for Occupational Safety and Health Convention, which is, together with this protocol, called OSH Conventions. But I would like to touch upon on Labour Inspection Convention in 1947 which is old but still applicable. For other conventions, there are Chemicals Convention, Working Environment Convention, Occupational Health Service Convention and Employment Injury Benefit Convention, which are all applicable when talking about asbestos issues.

In 2006 at the International Labour Conference, there is a need to reinforce the awareness of asbestos related issues, and the resolution was established; (1) the elimination of the future use of asbestos and the identification and proper management of asbestos currently in place are the most effective means to protect workers from asbestos exposure and to prevent future asbestos-related diseases and deaths. In other words, it is necessary to recognize the asbestos use already in place in the past and how to deal with existing asbestos? Sometimes workers might not know that there was asbestos in their work place, so how can we know and keep tracking of the existence of asbestos? So this is equally important for us when seeing the countries which already prohibited the asbestos usage. Moreover, it also said the Asbestos Convention should not be used to provide a justification for, or endorsement of, the continued use of asbestos.

What is framing ILO's work is also under this resolution, by saying;

Continue to encourage member States to ratify and give effect to the provisions of the Asbestos Convention (1986) and the Occupational Cancer Convention (1974)

Promote the elimination of future use of all forms of asbestos and asbestos containing materials in all member states

Promote the identification and proper management of all forms of asbestos currently in place

Encourage and assist member states to include measures in their national programmes on occupational safety and health protect workers from exposure to asbestos; and

Transmit this resolution to all member states.

These issues are very sensitive, so there is also the ILO's position paper which is available on website, and you can see our publications relevant asbestos issues. Our positions are at the international standards which are ratified by government bodies.

Finally about the current initiatives, we do quite bit of promotion of ratification and effective implementations through the means of advocacy (two conventions), information, gaps analysis, between the Conventions and the national legislation, capacity building to implement. We also try to enhance the awareness among social partners, as ILO often works closely with social partners or workers organization. Furthermore, we also bring the possibility to prohibition to the national OSH agenda from our conventions that can sometimes as part of OSH and chemicals. Others are detection and diagnosis of asbestos related diseases through training of medical staff, strengthening of national system for reporting of occupational diseases. We focus much more on the prohibition but at the same time the identification and proper management of all forms of asbestos currently in is equally important in an international cooperative manner.

Of course, we are here to encourage national preventative safety and health culture, which can be explained by;

The right to a safe and healthy working environment is respected at all levels;

Where governments, employers and workers actively participate in securing a safe and healthy working environment through a system of defined rights, responsibilities and duties; and

Where the highest priority is accorded to the principle of prevention.

### *WHO's Position on Asbestos and Actions*

**Dr. Yonas Tegegn, WHO Thailand**

I will try to address a few issues from the perspective of WHO. WHO has a long-standing commitment for the support for the countries to eliminate the asbestos and its related diseases. This efforts are supported by a number of resolutions by the World Health Assembly for cancer prevention and control. WHO's policy position is supported by in-depth technical evaluation of past 20 years, particularly by the International Agencies for Research on Cancer, WHO, ILO, UNEP, or

International Programme on Chemical Safety. To restate our strong standing and effort and share them with you, I believe, will contribute to Asia to be free from asbestos hazard.

WHO's position can be summarized by these four points;

(a) Exposure to asbestos and its impact on public health are substantial;
(b) All types of asbestos cause cancer in humans;
(c) Chrysotile is still widely used; and
(d) Stopping the use of all forms of asbestos is the most effective measure of prevention.

Why does it say that? Asbestos is one of the most important occupational health hazards that we know and we also know this cause about half number of diseases from occupational health field. One of the most important things to emphasize is that all types of asbestos – it is not only about the blue or brown asbestos, it is also about white asbestos. But as you can see, there are some countries which promote chrysotile not to be banned and Thailand is a victim of commercial pressure, and we would like to restate again; approximately 90% of chrysotile is used in asbestos cement materials, particularly in roofing materials. There is no evidence that they are safe and the fact is that if we want to continue using it and institutionalize the protective measures, this would be far more expensive for low and middle income countries. So best thing is to stop using all forms of asbestos and that would be the most effective measure of prevention.

According to UN agencies' category of region, when looking into Western Pacific and Southeast Asia, we are talking about major two regions which account for close to 75 million people exposed to asbestos. This is the largest producers as well as consumers.

We made a short clip video which reflects the victims' voice from India. This initiative at WHO SEARO was inspired by the commission at meeting on 6$^{th}$ ASEAN asbestos initiative. At the conference there was a realization that confusion still exists that chrysotile has a different risk than other forms of asbestos. Many of those with vested interest in using asbestos had misunderstandings and confusion on the number of technical issues on risk of chrysotile asbestos. The situation is very similar to the many aspects of argument in tobacco industry, trying to distort the evidence and also trying to lobby the countries to receive the trade deals of asbestos.

Other issues that worry us are that white asbestos is increasingly used in some part of the world whereas decreasing in the other part of world. In Southeast Asia, it is about 40% of global total consumption of 2 million tons with increasing trend and this trend is widespread and increasing in construction and friction products. Our challenge is to put the evidence and let the evidence speak for itself and this case has enough evidence, I believe. Other purpose of having this is to increase the awareness that asbestos does not only affect as primary exposure in mining industry, but also as secondary for workers' family and as tertiary (environmental) exposures. So environmental exposure is evidenced as significant amount as public health concern.

Other we would like to share with you is that new information for decision makers on elimination of asbestos related diseases. It includes the Q&A forms which are also translated into Thai, and new technical summary on the health effects of chrysotile. This material was updated on this March and WHO has recommended on prevention of asbestos-related diseases for 4 strategic areas. By recognizing the most effective way to eliminate the asbestos-related diseases is; stop using all

types of asbestos. The second part is that, by providing the information about solutions for replacing asbestos with safer substance, to develop the economical and technological measures to stimulate the replacement. The third strategy is that country should adopt to prevent exposure to all forms of asbestos. That is to strengthen the early diagnosis, treatment and rehabilitation for the victims.

The second part of publication is Q&A style, which is translated into Thai. Here we are trying to fix some of the misconceptions, especially about white asbestos. For instance, there was a question asking whether the white asbestos is less harmful or acceptable, or what is WHO's position. Further, why it is important to tackle asbestos when there are so many other carcinogens to be found in the environment, or could ongoing or future research into the toxicity of chrysotile change the current view of WHO and IARC regarding the occurrence of cancer.

The other publication is about New Technical Summary on Chrysotile. This publication pulls together technical information published about chrysotile over the past 20 years. It includes WHO/IPCS Environmental Health Criteria 230 (1993) and IARC Monograph 100C (2012). Basically, this publication summarizes all the evidence that we have got. We also bring into the other new publication on WHO global campaign on the elimination of asbestos related diseases in 2015, especially focusing on cancer but also other asbestos related diseases.

Same as seen in tobacco industry, there are so many challenges from economical, political and evidence point of views, and we all know it is very difficult to make it forward over night; however, all of your support in putting evidence, public pressure, economical pressure to industry, are essential to make it possible. This is "our duty" and about us as leaders, and academia, to present the evidence to support our view. Even after National Health Assembly met years ago, there remain the blocks everywhere. But in principle, we are seeing the way ahead as Ministry Public Health is pushing it forward to ban all forms of asbestos.

### *Ministry of Public Health's Position on Asbestos and Actions*

**Dr. Nopporn Cheunklin**

**Ministry of Public Health Thailand**

I would like to make several key points which explain the position of Ministry of Public Health of Thailand on asbestos problem. As everyone knows this problem has arisen more than 10 years not only in global level but also in Thailand, all kinds of asbestos are dangerous to human health. So this is obviously clear that our ultimate goal is to eventually ban usage, and consumption of them. But there are two kinds of problems; political factors centered around the international commerce issues same as tobacco industry. This involves the negotiation of Free Trade Agreement issues. In Thailand, there are still two ministries which support the consumption of asbestos; Ministry of Commerce and Ministry of Industry primarily because it is cheaper to keep using asbestos for construction.

First thing I would like to emphasize, in accordance with presentation of Dr. Yonus from WHO, is a certain materials of asbestos can be replaced with safe material which has no danger to human health. On behalf of Ministry of Public Health, we declared, under the policy umbrella, to prevent the disease rather than provide the treatment and everyone is aware that the substitutive materials are worth using. But people from factories often come to us asking for the extension of using because it can be more expensive than using the cheap asbestos currently used in factories.

Next problem is the long incubation period with lack of appropriate legislation or follow-up system in Thailand. So there is no clear domestic evidence that we can say there are people affected from asbestos and considered as victims. In contrast, there is a number of evidence from foreign and neighboring countries which can be effectively utilized for the reasoning to ban the asbestos. We do not have to build own tragedies to attribute the reason why we should not use the asbestos. Lessons learnt and existing cases in foreign countries are already abundant and enough to argue that asbestos should be banned. But there should be concrete plan and strategy to stop using asbestos and the process should be clearly formulated.

There will be also a big problem on the materials that we currently use when the time to stop using them. We are trying to talk to Department of Health, Department of Hazard Control, Ministry of Industry on how we can deal with the asbestos materials when it is actually banned. Ministry of Public Health has to wait another 5,000 and 10,000 to diagnose and treat them. We have already sent out the document signed by Permanent Secretary and suggested that all kinds of asbestos should be banned immediately but the decision is depending on Cabinet and Ministry of Industry. So what we can do in the mean time is also important. According to the figure, more than 200 factories are still using the asbestos materials but major users are 20-30 factories with larger amount of asbestos. So these major factories would be our target to negotiate with and try to find the way to get out of asbestos use in this year. In practice, we already planned to set up the regional office to work together with different agencies.

Second thing that we are tackling and advancing is that we have got the protocol in order to empower the local doctors working on asbestos issues particularly in regional hospitals. This is to help them improve their knowledge and skills to diagnose and monitor the people exposed in asbestos. Through this process, we are hoping that we can collect enough data in next three years, while collecting the experts from universities and civil society for protocol for both prevention and treatment. We have to also revise the process of disposing, or monitoring of public status, and victims.

Good thing in Thailand is now changing the raw materials from asbestos to others, meaning that some part of our public is aware of the danger of asbestos. With regard to the perspective, if the public society is more aware of this seriousness, the cabinet might change their mind in next 5 years – I cannot guarantee it would come within 5 years, but I sincerely believe this kind of conference will help stop asbestos soon.

## Thailand's Experience on Asbestos and Lessons Learnt

**Moderated by Dr. Phusit Prakongsai**
**Director of International Health Policy Program, Thailand**

### *Thailand Resolution on Asbestos Free Society*

**Mrs. Orapan Srisookwatana**

**National Health Commission Office, Thailand**

I would like to talk about "Health Assembly", "National Health Assembly", "Downstream actions" and consequences of National Health Assembly, and its remaining challenges.

For Health Assembly this was held before the National Assembly in 2007, and aims at "a process in which all stakeholders exchange their knowledge and cordially learn from each other through a participatory and systematically organized forum, leading to recommendations on Healthy Public Policies or Public Healthiness." In this context, the all stakeholders include government, academia, people and private sectors. So this is the tool in their act in Thailand in health topic.

National Health Assembly (NHA) is organized annually composing of participants from all NHA constituencies over the countries which represent the government, academia and people/private sectors, using a participatory principle: 'A Triangle that Moves the Mountain'. If you look at this picture, this clarifies how the NHA works among three powers; knowledge power, social power, and political power, so "people from every sector in the society are all considered an essential element for building healthy public policies and wellbeing of the country."

The NHA resolution first goes to Cabinet including parliament, political sector, state agencies, local administrative organization, local communities, academic and professional organization, and finally private and business organizations. This process is called up-stream, and when they put them into practice, we call this down-stream.

For the linkage of asbestos and NHA, the agenda 'Measure to Make Thai Society Free from Asbestos' was proposed by Health Consumer Protection Program (HCP) and its network to be considered in the NHA 2010. Even before this year, we had many movements in Thai society such as Asian Asbestos Conference and Bangkok declaration of "Elimination of asbestos and asbestos-related diseases" and evolved into the National Asbestos Workshop "Movement towards ban on chrysotile asbestos in 2012". We also had Campaign for ban on chrysotile: MoPH, Association of Occupational and Environmental Diseases, Occupational Health and Safety at Work Association, Occupational Health Nursing Association. This was very interesting and first point that governmental board declared the hazardous materials when office of the Consumer Protection Board announced "*Asbestos-Containing Products are Labeling Controlled Products"* - cover only tiles, water pipes, brake and clutch. In 2010, there was National Health Assembly Resolution "*Measure to*

*Make Thai Society Free from Asbestos"*. It states "Thailand aims to stop importation, production and distribution of asbestos and asbestos-containing products in 2012." Then two years ago in 2012, they declared the four strategies here;

(1) To abolish the use of asbestos and prevent its dangers through legal measures
(2) To encourage the use of substitute substances that are safe for health, and to control, lessen, and abolish its use;
(3) To impart knowledge and engage in public relations/ public education, and to develop a related data system; and
(4) To develop surveillance and monitoring system of at risk groups in terms of their health and environment, and to develop disease diagnosis capability.

When this resolution has come to the Cabinet and The Cabinet has approved the NHA resolution and strategies that on certain cases, especially any products able to be produced from Chrysotile substitutes, Chrysotile and Chrysotile containing products shall not be allowed using related laws and regulations for the control (In April 2011).

This resolution assigned three ministries on what they are responsible for: Ministry of Industry was assigned to provide a plan to stop importation, production, and distribution of asbestos and asbestos-containing products with a defined timeframe before submission to the Cabinet for the plan approval later. Ministry of Public Health was assigned to study health impacts among workers and consumers who exposed to either asbestos or asbestos-containing products in order to propose an effective standard measure on health protection in the future. Ministry of Finance was assigned to check whether importation tax of asbestos substitutes was a cause of higher price in products containing asbestos substitutes and they concluded "No" and said it is probably attributed to the technology.

According to the resolution, what have been done? Under the Ministry of Industry 5 products (roof tiles, rubber floor tiles, cement water pipes, flat sheet tiles, brake and clutch linings) were focused in its study. And they proposed a ban in 2 years for flat sheet and rubber floor tiles/ a ban in 5 yrs for brake and clutch linings, cement water pipes, and roof tiles, which has not been resubmitted to the Cabinet. In Ministry of Public Health, they established the committee for studies on health impacts from Asbestos. And they also proposed a ban on asbestos use in all products to the Cabinet.

NHCO's action is multi-fold. Firstly, we facilitate and organize meetings among all related stakeholders to follow up on any further movements according to the Cabinet's approved resolution and strategies. We also monitor roles of related agencies and report actions and movements to National Health Commission, NHA in 2012 and National Commission on International Health Studies. Organizing press conferences or attending related meetings organized by other agencies are also our duties. Lastly, we submit a letter to the Cabinet, supporting the conclusion of Ministry of Public Health that asbestos should be banned, in order to accelerate Thailand to be free from asbestos.

As the final point of my presentation, what are the challenges? I think the biggest challenge is "how to get start the banning process as soon as possible?" It seems to me there are a number of studies that were acknowledged but how we can start the process in practice to ban is different story. But we must get started now but how?

In Health in All Policies, it is known that "Health issues are not only related to the Ministry of Public Health". All policies need to have concerns on health: 'Health in All Policies' approach. "Precautionary principle" can be applied in this issue. "It is a time that all sectors in society need to realize and get involved to make the goal of 'Asbestos Free Society' become real."

## *Thailand Efforts toward Asbestos Free Society: Scientific Evidence and Action*

**Professor Pornchai Sithisarankul**

**Faculty of Medicine, Chulalongkorn University**

I would like to elabourate this issue from the academic perspective, specifically what kind of activities was conducted in asbestos issues. We have annual conference at Siriraj Hospital which is the largest hospital in Thailand. The latest one was held on 22nd of July this year and we had panels on asbestos related diseases, from general picture of asbestos to technical aspects of asbestos.

At that conference, I presented the approach to the asbestos issues which is called IARC approach which works on categorizing the carcinogens. In the conference, the speakers reiterated that "we shouldn't wait to have more Thai people diagnosed as ARDs to consider that as 'evidence'" because evidence is abundant out there. If you look at my section on the documented publication or website, there is Table 4 for the detailed information which summarizes the carcinogens by organs, and sufficiency of evidence and limited evidence. It highlights asbestos in all forms are stated as sufficient evidence to cause cancer in larynx, lung, mesothelium, ovary, while asbestos in all forms shows limited evidence to cause cancer in pharynx, stomach, colon, and rectum.

As I said, we urge to ban all forms of asbestos and also safe removal/demolition of old building by certified personnel. In order to reduce the asbestos exposure, we should also educate people nation-wide while strengthen surveillance system for those exposed. Moreover, it is also necessary to strengthen medical management system for diagnosis and treatment of asbestos-related diseases as soon as possible.

Regarding the other activities, at Ministry of Public Health, we are setting up the surveillance programme, incorporating with multi-layers of experts, in order to strengthen the skills to diagnose. One of our colleagues already submitted for grant scheme to National Research Council to further work on this and we are expecting this scheme to come soon. We also joined T-Ban network as academia and we have been working together with Consumer Protection Group headed by Dr. Vithaya, and Labour Protection Group for a few years.

## *Thailand Efforts towards Asbestos Free Society: Scientific and Social Movement*

**Professor Surasak Buranatrevedh**

**Faculty of Medicine, Thammasat University**

I am from Association of Occupational and Environmental Diseases of Thailand, so called AOED and would like to introduce our activities and progress towards asbestos-free society.

After the Cabinet Resolution in April 12th in 2011, AOED involved three major activities; Ministry of Public Health Committee on health effects of asbestos, meeting on diagnosis of asbestos related cancers among 4 medical organizations, and finally activities together with T-BAN.

For the first activity, Ministry of Public Health Committee on health effects of asbestos, there were 5 committee meetings from December 2012 to January 2014, and we have reached the conclusion based on World Health Assembly Resolution 60.26, as Dr. Yonas mentioned, Ministry of Public Health recommended;

(a) Stopping the use of all types of asbestos;
(b) Providing information about solutions for replacing asbestos with safer substitutes;
(c) Taking measures to prevent exposure to asbestos in place and during asbestos removal;
(d) Improving early diagnosis, treatment and rehabilitation services for asbestos-related diseases; and finally,
(e) Establishing registries of people with past and/or current exposures to asbestos and developing funds for helping people with asbestos-related diseases.

In the second activity of meeting on diagnosis of asbestos related cancers among 4 medical organizations, we have met 4 medical organizations because it is said that in Thailand there is only small number of patients affected by asbestos, especially with mesothelioma, and some say "why do we need to ban?" That is why we set up the meeting on October 2013 with the other medical organizations including Thoracic Society of Thailand, Royal College of Radiologists of Thailand, Royal College of Pathologists of Thailand, and Association of Occupational and Environmental Diseases of Thailand.

At the meeting, we have identified the reasons of only small numbers of asbestos related cancer diagnosed. They are mainly;

(a) Lack of using diagnosis guideline for mesothelioma;
(b) Lack of systematic collaboration among chest physicians, radiologists, pathologists, and occupational physician for diagnosis and management of asbestos related cancer;
(c) Difficult to diagnose asbestos related lung cancer in Thailand;
(d) Immunohistochemistry for diagnosis of mesothelioma is not used in general and not financially supported under Universal Health Scheme; and
(e) Missing occupational history of asbestos exposure among patients.

We have come up with suggestion for further development at the meetings;

(a) Dissemination criteria for diagnosis of mesothelioma based on Helsinki's criteria;

(b) Set up collaboration system among chest physicians, radiologists, pathologists, and occupational physicians;
(c) Organize regular scientific meeting between 4 medical organizations;
(d) Train general practitioners for history taking, diagnosis, and refer asbestos related cancer patients; and
(e) Coordinate with Ministry of Public Health to set up surveillance system for all levels of medical care.

As the last activity of ours, activities with T-Ban, we have joined T-Ban to urge Ministry of Industry to ban import of chrysotile, and also joined seminars with T-Ban to urge government to ban chrysotile based on Cabinet Resolution in 2011. We also trained workers of Council of Work and Environment Related Patient's Network of Thailand about health hazards of chrysotile. In addition, we also joined T-Ban to disseminate knowledge about chrysotile health hazard to general public through media like TV programme. AOED together with Federation of Occupational Health, Safety and Environment at Work and Association of Occupational nurses of Thailand "Federation of Occupational Safety and Health Association of Thailand" signed asbestos ban statement based on WHA resolution 60.26. Also, Federation of Occupational Health, Safety and Environment at Work plans to train trainers for appropriate asbestos removal method in the near future.

### *Mesothelioma in Khon Kaen University Hospital, Thailand*

**Assoc. Prof. Kittisak Sawanyawisuth**

**Department of Medicine, Faculty of Medicine, and Research Center in Back, Neck, Other Joint Pain and Human Performance (BNOJPH), Khon Kaen University, Thailand**

I would like to present the real asbestos situation and this is the presentation I actually presented in Jakarta at the 7th AAAI conference in November earlier this year. Thailand is one of the major importers in the world more than 30 years, as well as larger consumers. According to Dr. Takahashi's paper, we are quite a bit high exposure limit while very few cases of asbestosis or asbestos related diseases found in Thailand.

So I had a great opportunity to attend the AAI-5 meeting in Busan, Korea, and I reported the two cases at our hospital; first one was from road construction and the second is car wheel production, which was also published in academic journals last year. The aim of our paper was to increase physician's awareness of asbestosis because we do not have a number of cases in Thailand, and there is a possibility that cases of mesothelioma may be under reported. So we searched the mesothelioma at Khon Kaen University through its database, ICD-10 code of C45 between the years of 1993-2012. We also reviewed the data charts on clinical and exposure to asbestos.

As a result, what we found was that there were 60 cases of C45. By reviewing these cases one by one, 12 cases were confirmed as mesothelioma. 1 was excluded because of the nationality but among the rest of 11 cases, we found only 2 patients were recorded with their exposure history by physicians whereas the other 9 cases are not confirmed/noted as asbestos exposure.

The median age was 48 years old, ranging between age of 24 and 71, and 9 were male and 2 were female. Sites of mesothelioma were found in, for instance, pleural (5), lung and chest wall (2), pericardial (2), peritoneal (1) and pelvic (1).

We looked at PubMed and we found only three articles about mesothelioma in Thailand, including one by our institute. So we believe that the cases of asbestosis in Thailand may be under reported. In addition, the medical recording system is not quite valid despite using ICD. Regarding medical education, we need to emphasize more in history of occupational asbestos exposure.

Our study is relatively small scale, as it was conducted at the regional hospital which is not nearest location for asbestos-used factories. Most asbestos-used factories are usually located in central or urban areas of Thailand. There also might be other source of asbestos used in building renovations, apart from road constructions and car production.

Furthermore, 80% of mesothelioma caused by asbestos was young patients; we believe this can be caused by massive exposure in early life, so it might be necessary to have confirmation of pathological diagnosis at international validation level.

So as a conclusion, asbestos and asbestos-related diseases in Thailand may be under reported. Patient identification and report need more surveillance, and medical education on occupational health is needed to be emphasized. And these revised factors might increase the number of patients diagnosed with asbestos related diseases.

## Transferring Knowledge from Asian Ban Asbestos Countries: Session 1

**Moderated by Dr. Thaksaphon Thamarangsi**
**International Health Policy Program, Thailand**

### *The Long Journey to a Total Ban on Asbestos in Hong Kong*

**Dr. Ignatius Yu**

**Hong Kong Occupational and Environmental Health Academy**

I would like to share our 30 years of journey with you. We have just achieved the total ban of asbestos "hot from the oven" in this year April. But of course it took us so long to finish this process. So in my presentation I would like to start with the historical background, and then move onto the remaining issues to be tackled, and other relevant issues.

Once upon a Time, Hong Kong used to be a seaport, and the seaport used asbestos in ship building and its maintenance. But later on, the massive public housing development projects in the 1950s sparked off the explosive increase use of asbestos in building materials and somewhat laid the time bomb. The peak of local asbestos consumption was in the early 1960s, with an average annual amount of over 30 million kg or around 10kg per capita. So you can see here the large amount of consumption in the 1960s and then lowers eventually.

The first report of asbestos related disease in Hong Kong was in 1983 in the academic journal, with the reference of patient case with asbestosis due to the occupational exposure. During 1984 to 1989 which was a very initial period of asbestos history in Hong Kong, Association for the Promotion of Occupational Health was established in 1984 as well as Hong Kong Workers' Health Center. Regarding the advocacies and action, it published a special issue of "Occupation and Health" focusing on asbestos being a hidden killer (1984), and jointly organized a public forum "Asbestos and You" in collaboration with HKWHC. Furthermore, KHWHC published an editorial commenting on the implementation of the new asbestos control legislation in December 1986.

After the first legislation related to asbestos in 1986 which defines asbestos work and stipulated the related actions to be taken, including workplace assessment, personal protection and medical examinations, the 'Action Level' was also defined by cumulative exposures to asbestos over a continuous 12-week period and set differently for chrysotile and other forms of asbestos, with the former being double that of the latter (96 fibre-hours vs. 48 fibre-hours per millilitre of air). Unfortunately, the legislation enacted in 1986 did not protect workers dealing with asbestos, as a result of the cumbersome definitions adopted. An employer could simply defend by saying s/he had no knowledge of the presence of asbestos in the workplace and took no actions at all. It was also extremely difficult, if not impossible, for the law enforcers to prove that the regulatory exposures levels were exceeded due to the long cumulative exposure period defined in the law.

During this period, the medical doctors from United Christian Hospital published "asbestos confirmed on transbronchial biopsy". Similarly, Construction Industry Employees General Union jointly organized with HKWHC for a public forum on Asbestos Hazards, using the Government to amend the asbestos control legislation in 1989.

During the 1990s, the NGOs and unions continued their advocacies for better legislation and law enforcement. By mid 1990s, the harmful effects of exposures to asbestos were already quite widely known in Hong Kong and overall consumption had decreased substantially, thanks to the unceasing efforts of NGOs and unions. From the perspective of legislative and administrative change, the second piece of legislation related to asbestos was introduced in 1996 under the Air Pollution Control Ordinance (Control of Environmental Asbestos). The ban on import and sale of amosite and crocidolite was also introduced but chrysotile could continue to be imported and used. In 1997, Factories and Industrial Undertakings (asbestos) regulation was in effect.

In 2000s, understanding that all forms of asbestos were harmful and carcinogenic, NGOs and unions continued to advocate for a total ban of all forms of asbestos in the late 1990s and 2000s. More and more cases of mesothelioma were reported in the late 1990s and 2000s as well. So **HKWHC** partnered with Pneumoconiosis Mutual Aid Association (**PMAA**) in pressuring the Government to provide compensation for workers with mesothelioma. HKWHC published an Editorial in **Occupational and Health** advocating a total ban on asbestos, including import, transshipment, use and sale of all forms of asbestos and asbestos containing materials (12-2007). Similarly, they held a press conference on asbestos hazards associated with maintenance of old buildings – requesting the Government to do proper assessments before maintenance work, and prepare a list of all old buildings containing asbestos in Hong Kong for the Urban Renewal Plan (03-2009). Couple years later, the second Asian Asbestos Conference was held in Hong Kong and provided additional pressure on the Government to act towards a total ban (04-2009). There also was Hong Kong Declaration towards a Complete Ban on All forms of Asbestos as well as The Asian Ban Asbestos Network (A-BAN) which was formed during this period. These are taken by the several entities, including Asia Monitor Research Center (**AMRC),** HKCTU, ARIAV and IBAS.

In 2010 to 2014 up to now, Academics in the Chinese University of Hong Kong have been doing research and publishing high quality papers that documented the important impact of the use of asbestos on mesothelioma in the population, as well as confirmed the carcinogenic property of chrysotile. So there are two researches by EHP in 2010 about the mesothelioma, and by myself for the mortality of chrysotile asbestos in China. Pneumoconiosis Compensation Fund Board, public body, was founded during this period and together with HKWHC published a series of educational kits on asbestos hazards in different industries in 2010. And HKWHC again held press conference about asbestos hazards associated with maintenance and demolition of old buildings in Hong Kong in 2010 and 2011. No-more-Asbestos in Hong Kong Alliance and ARIAV also conducted the demonstration requesting the Government to have a total ban of asbestos in May 2011. HKCIEGU also held a press conference in order to advocate the set-up of a special funding to support asbestos removal and demolition works in 2012. HKWHC also provided the comments to legislators on the proposed legislation on banning asbestos and brought into attention the dumping of asbestos wastes in the rural areas twice in July in 2012, and February 2013. In August 2013, No-More-

Asbestos in Hong Kong Alliance, and ARIAV also organized a protest in a village advocating earlier implementation of total asbestos ban and compilation of list of buildings containing asbestos. Throughout 2013 and 2014, HKWHC raised concern over the proposed exemption of registered proprietary Chinese Medicine from asbestos ban and PCFB organized conference on Joining Hands to Eliminate Asbestos Hazards, by inviting relevant government bureaus, employers, unions, NGOs and professional organizations to sign the Asbestos Risk Abatement Charter in November 2013.

In this April 2014, finally Amendment of the Air Pollution Control Ordinance was in effect for banning all forms of asbestos and asbestos containing materials. Corresponding changes was to be made in the Factories and Industrial Undertakings (asbestos) Regulations.

However, there still remain several issues. The huge amounts of asbestos used (and locked) in the older buildings have laid time bombs for the present and future. Furthermore, buildings in Hong Kong have relatively short life spans and the Government have a very aggressive urban renewal plan in order to provide more housing units to the residents by pulling down old buildings and replacing them by taller ones. According to the Hong Kong Urban Renewal Authority, most buildings aged 30 years or more were in unsatisfactory conditions, with 8,500 buildings aged 30 years or above in the Metro Area in 1998.

So many buildings will require substantial maintenance and renovation works, some will be demolished. According to the Environmental Protection Department, there are 15,600 buildings over 20 years old in Hong Kong and 60% of such buildings likely contain asbestos. So remaining issue is "how can the workers and public be properly protected? "

Talking about the other issues, the current asbestos ban provides two exemptions: 1) goods in transit; 2) the use of actinolite in registered proprietary Chinese Medicine. So there are still some people taking the asbestos-containing Chinese medicine without knowing.

As a last reflection to conclude, Unions, NGOs and academics all contributed to the successful total legislative ban of asbestos in Hong Kong. Future problems associated with the secondary release of asbestos during building maintenance and demolition, and the exemptions provided by the current legislative will required further collaborations among all stakeholders.

## *Disease Burden of Malignant Pleural Mesothelioma: Taiwan Experiences*

**Dr. Lukas Lee**

**National Health Research Institutes, Taiwan**

I would like to share the Taiwan's experience today. Here you can see the malignant mesothelioma highlighted as red color, and I would like to show the solution through quantifying the asbestos related diseases. My topic today will be divided into three parts; how to recognize the malignant mesothelioma (MM) as occupational cancer, sharing the facts of emerging asbestos related diseases and MM in Taiwan including pleural plaque, lung cancer, and MM, and finally the estimate

of impact of pleural MM in Taiwan. In quantifying MM in your country, I have attached my four papers in the distributed publication, so if you are interested, please refer to them.

This is my first experience of MM from the occupational asbestos exposure. As we know, this MM is closely associated with asbestos exposure. Based on the study in UK, more than 90% can be attributed to occupational and environmental exposures. This has been published by Chinese local journal. This gentle man was 66 years old man and he got pleural effusion on his left lung, having diffuse MM.

In the different case, the worker working on pipe factory, where asbestos used flange and gasket in the fibre. And we reached the conclusion to recognize it as occupational cancer based on the 5 criteria;

(a) Evidence of disease – diffuse MM of left pleural, pericardium and peritoneum, pathological confirmation;
(b) Evidence of exposure – shipyard pipefitter for 28 years (1967-1995), and asbestos exposure from pipe fitting (1967-1989);
(c) Temporality – consistency with minimal duration of exposure/latency period;
(d) Consistency – IARC Group 1 human carcinogen: asbestos; and
(e) Differential etiological diagnosis, other causes excluded – smoking has no influence on the risk of mesothelioma, and diffuse MM of the peritoneum and pleura are considered "signal tumor" or pathognomonic of exposure to asbestos.

Malignant mesothelioma (MM) is the primary neoplasm arising from the serosal membranes (mesothelium), and the pleura is the most frequent site. MM can be considered as a Marker Malignancy closely related to previous asbestos exposure. Malignant pleural mesothelioma (MPM) has become a public health problem worldwide. In many developed countries, the expected number of MPM-related deaths is projected to increase up to a peak in the next several decades.

The study in UK published on Occupational and Environmental Medicine in 2008, it describes while 80% of men had diagnoses attributable to asbestos, and only 20-30% for women had. But considering the occupational exposure, it will hike up to nearly 100% of attribution of asbestos to male. For female, it would be 80-90% so it can be considered as secondary or environmental exposure from their husband.

This is the current situation of compensated occupational cancers in Taiwan, and it shows only few cases, less than 10 cases a year, and this would tell us the common condition of under-reporting. In a response, there was demonstration in front of Council of Labour Affairs in 2009. This gentleman was the family of victim from the shipyard factory and the reason he knew that the asbestos affected his father was that he read the newspaper about the reported case of MM in southern Taiwan which was compensated later. The media was influenced by Government and in 2009 we have established "Taipei Declaration for a Global Asbestos Ban".

You can see in the figure many asbestos cement and textile factories, shown as black dot. There are only two factories which are from Japan. The lady in the photo only wears the cotton mask but the fibre is small enough to get through the mask and her hot working environment, as it is in southern Taiwan, is filled with asbestos fibre. There is no adequate protection at that time. At this moment, we still have asbestos brake lining factories using white asbestos. Because government relatively takes care of these factories, they would like to postpone the total ban of asbestos until 2018. So when I try to make a map

of geographic map of asbestos distribution, I can see the factories are widely sprawled all over Taiwan. Unfortunately, the government regulation is set the relatively higher level of asbestos regulation level, these textile factories are already higher than ordinary factories but they are still under the regulated level.

In 2010, Dr. Yang published the paper about pleural plaque related to asbestos mining in Taiwan and showed the case of lung cancer mortality elevated in Fungtian, a small town in Taiwan. It was only about the mortality rate so there might be mis-diagnosed cases as lung cancer.

As Mr. Sugio showed earlier, this is the trend of MM situation in Taiwan and can be summarized that an increasing trend of MM has been observed according to the Taiwan Cancer Registry. In relative scale, there is a large quantity of imported asbestos even though we have relatively low asbestos importation from other countries. But we still import certain products from China and used for construction.

Finally, I would like to share how to quantify the impact of occupational cancer. My question is (1) how many life years may be gained through successful prevention of a case of malignant pleural mesothelioma (MPM)? And (2) How much money (healthcare cost) may be saved in National Health Insurance (NHI) through prevention of asbestos-related MPM in Taiwan?

In Taiwan, we have good "Taiwan Cancer Registry" which is linked with National Death Registry by Ministry of Health and Welfare, so we can know the survival situation. In addition, we also have National Health Insurance Reimbursement Database.

Here you can see the different classification based on ICD classification and from this we can get the survival function. We can use the semi quantifying method to estimate the survival. We first gather the healthcare costs of each case of MM. The expected years of life lost (EYLL) is defined as the lifetime survival difference between the cancer cohort and reference population, and then we combine it with survival function to quantify the life-time health care costs. Then we developed the free software which we can efficiently estimate the age, and gender matched reference population, just based on the life table. Every country has vital statistics, so we can induce the country specific analysis.

As an example of result, a total of 300 cases of pleural MM and 106 cases of peritoneal MM were identified in the TCR for the period between 1998 and 2009. The average EYLL for pleural and peritoneal MM was calculated as 18.2 and 19.1 years, respectively. The estimated LTHE with a 3% annual discount was almost 30,000 USD for pleural MM and 27,199 USD for peritoneal MM.

Despite of the relatively low incidence of MM in Taiwan, there must be the under-diagnosis or under-reporting. The total ban of asbestos use in our environment can save 18.2 life years and USD 29,375 per case of pleural MM and the government should take account of the significant disease burden from asbestos exposure and increase the awareness of the general public in order to reduce this preventable loss of life years by appropriate regulatory action.

## *Asbestos - Trends and Action in Singapore and Internationally*

**Dr. Jukka Takala**

**Workplace Safety and Health Institute**

I come from Finland, working in Singapore, and international organizations for long time, so I will more concentrate on the issues of use, elimination and trend of asbestos. Starting with regional difference, clearly the biggest complexity in industrialized countries is occupational cancer, including lung cancer and mesothelioma. WHO estimates sometimes ago that there are 107,000 deaths every year and ILO estimates 112,000 fatalities every year, reported at the conference in Brazil. Even recently, we have receiving the updates every day. This ship braking operation in Southeast Asia and every ship contains 6 tons of asbestos but what is worse is that these asbestos are recycled. So this is the worst kind of recycling. This is the situation in countries like Bangladesh or other parts of world where the ship building operation is done. So the asbestos use is the biggest in these countries.

Now we are looking at the problems what are the causes since the 1960s which has impacted on today, but at the same time what is more important to think the current situation for long term which will impact on sometime later on like the 2050 or 2060.

It is also significant to see the labeling issue from the efforts of ILO's harmonization; any asbestos products have labels and I believe even the building which uses the asbestos have labels too.

Singapore and Finland made a study for the International Labour Organisation, ILO, on global estimates of illness and injury at work, see http://goo.gl/aaJY9r . In developed economies, such as Singapore and the European Union, EU, about one half of all work-related deaths are caused by occupational cancer. In the EU occupational cancer is expected to kill annually about 102,500 workers. Of all occupational cancer cases again some 25-50% - depending on country - are caused by asbestos.

One study about occupational disease from UK also shows that asbestos is one of the big components in cancer and lung cancer in the world. In 2003, there was one article published in British Medical Journal and it estimated more than 1,600 to 1,700 asbestos and mesothelioma deaths in the UK. This was expected to be a peak but today we are at even higher level of this peak – more than 2,000. The more you look, the more you find and this situation continues in many places in the world at this moment.

Looking at the historical consumption of asbestos in Singapore, the total estimated consumption between 1960 to 2012 was 136,209 metric tons whereas 311,904 in Finland. What is important is that this is the best way to identify the exposure. Of course, it is useful to know the profile of the asbestos usage, but when we want to see where we are now in terms both of lung cancer, or mesothelioma, consumption is the best indicator of the potential negative outcomes.

For example, looking at Singapore, Taiwan, and Malaysia, one estimate by my colleague says every 170 tons causes 1 mesothelioma case and 2 – 10 lung cancers roughly. So these numbers are the

quickest way to identify how much consumption the country has. From the consumption pattern, the UK, comparing to Singapore, is expected to peak the mesothelioma deaths in 2015 to 2020 but again we are already beyond the estimated peak.

This is the figure by Dr. Paek and Dr. Takahashi. If you look at the asbestos consumption, it is still much smaller mesothelioma and lung cancer as well. In the US, this figure can be much larger than how it is estimated here due to their large amount of consumption – could be double.

In Thailand, it has just peaked a few years ago but this figure is only about the mesothelioma. So if you multiply six times of this number, then we will get the total number of death behind. Not only the lung cancer or mesothelioma, but also colon cancer and so on.

Latency of mesothelioma is really long; 47.9 years (men) and 53.3 years (women). But today you will see the reflection of 15 years later. Looking at the asbestos mortality estimates based on consumed asbestos, there are two well-researched cases; Finland and UK. In Finland, we already found 59 mesothelioma cases during 1950 to 70, and 170 tons of asbestos use causes 1 mesothelioma death, based on the data calculated also for global estimates. But in Finland it was also found that 48 tons of asbestos consumption caused 1 asbestos related lung cancer, totaling 250 deaths in 1996 and 339 deaths at peak level in the year around 2020 of which 68 mesothelioma deaths. On top of it, we can count other 4% of other forms of cancer. But year 2013, the average 85 mesothelioma cases were recorded annually in Finland already.

Same goes to UK. In 2005, 8010 occupational cancer deaths and among them 1937 mesothelioma deaths at work and 2,223 asbestos related lung cancer deaths were recorded. In estimate, it resulted to 33.7 tons of asbestos causing 1 death either by mesothelioma or lung cancer. Furthermore, in 2013, there found the identified 2,535 mesothelioma deaths with corresponding rate estimated to have 2,909 lung cancer deaths - totaling 5,444 deaths.

Looking at the global level, the world consumption was 3.5 million tons in 1970 and peak consumption was 4.7 million tons in 1980. Corresponding ARLC in around 2015-20 will be: 73,200 deaths, and peak mortality in 2025-30: 97,800 deaths. Mesothelioma deaths, peak 27,600 in 2025-2030.

If you look at the UK study, it is more than that. Based on U.K. Data (Rushton) in 2005 there were 8,010 occupational cancer deaths of which 1,937 mesothelioma deaths and 2,223 ALRC deaths. In 2013 the number of mesothelioma cases was 2,535 and corresponding ARLC deaths 2,909, totalling 5,444 deaths. U.K. Peak consumption was 163,019 tons of asbestos in 1960. Average annual consumption in 1950-70 was 140,173 tons. The average consumption between 1950-70 would be equal to 1 death for every 33.7 tons covering both ARLC *and* mesothelioma. For peak consumption and present 2013 deaths, 1 death would be caused by 29.9 tons. Global peak consumption 4.7 million tons in 1980, outcome in 2025-2030. Corresponding global ARLC and mesothelioma deaths would be 139,500 based on average consumption 1950-70, and 157,000 based on latest 2013 death numbers and peak consumption in the UK. Other asbestos caused cancers and asbestosis deaths need to be added.

How about Thailand? Based on lower estimate on exposure-outcome relation (RR=2.0), and the Thai consumption of asbestos in 1970, which was 21,272 metric tons, Thai ARLC number would be

441 deaths and mesothelioma 125 deaths totalling 566 and adding other asbestos caused deaths 599 in 2015- 20. Average annual consumption around 2006 was 135,000 tons which would produce 3, 800 (3,802) peak annual deaths of all asbestos related causes around the year 2050. Peak consumption of 190,205 tons of asbestos in 1996 in Thailand would produce a figure of 5,400 (5,357) in around the year 2040-50 (less reliable).

In Singapore, based on lower estimate on exposure-outcome relation (RR=2), and the Singapore peak consumption of asbestos in 1975 which was 8,671 metric tons the number of total peak annual asbestos related number would be 244 deaths in 2025-30. Mesothelioma may be around 10-25 % of this number depending on the type of asbestos used. Total consumption until 2006 was 136,209 tons which would produce an asbestos epidemic of 3,800 (3,836) deaths of all asbestos related causes during some 50 years. Peak of deaths is expected at 2025-30.

Why mesotehlioma mortality is low in Asia as compared to Europe, USA, Australia/New Zealand or Japan? Asbestos use was started slower in Asian countries and generally later than in industrialised countries. The peak for Singapore is expected to be 10 years later than in the U.K. at 2025-30. In Thailand the peak is expected to be 30-35 later in 2040-50. Latency time from the high country consumption is also longer than earlier thought: not all imported/produced asbestos is used immediately on the year imported rather with some delays, also disease latency period is very long - up to 50 years. Secondly, diagnosing, recording, reporting and compensating mesothelioma is considerably low and lower in Asian and other developing countries than in best reporting developed countries. Finally, the type of asbestos used e.g., in the U.K. has earlier contained a significant amount of crocidolite and other amphibole fibres that are causing more mesothelioma and proportionally less ARLC (McCormack et al.).

Why asbestos related lung cancer is poorly identified? Lung cancer is caused by many factors and smoking may cover up to 85% of all lung cancers. The outcome is not readily identified as been caused by asbestos and easily dismissed as many workers exposed to asbestos are also smokers, and most lung cancer victims are exposed to asbestos and actively smoking. The attributable fraction or the number of "*lung cancers eliminated by reducing just asbestos*" is high but, in particular, caused by the multiplicative or super-additive synergistic effects of both asbestos exposure and smoking. Diagnosing, recording, reporting and compensating asbestos related lung cancer is weak everywhere due to difficulty of individualising the asbestos exposure effect. This effect is seen in a population but evidence individually is challenging to proof. Many jurisdiction expect asbestos being as the main cause i.e., the magnitude of causal effect is more than 50% to record them as compensable. Life expectancy is relatively low in many Asian countries. Lung cancer and mesothelioma appear late in life.

About background or non-exposed reference mortality, relative risk and attributable fractions are calculated against the background mortality for "non-exposed" population. Exposure limit today for airborne asbestos vary from 0.1 fibre/ml to 0.01 f/ml (or 100,000 to 10,000 fibres/$m^3$). In countryside Europe background is about 100-500 fibres/$m^3$. In cities – e.g. in Geneva in between the ILO and WHO buildings: 900 fibres/$m^3$ and inside the office buildings 600 fibres/$m^3$.

In conclusion, 80-90% of male mesothelioma cases are because of occupational asbestos exposure, among men, 17-29% of all lung cancer are due to occupational exposure, 54-75% of occupational cancer are lung cancer. And finally asbestos accounts for almost 50% of occupational lung cancer.

## *Singapore's Experience in Asbestos Management and Control*

**Ms. Lynnette GOH**

**Ministry of Manpower, OSH Division, Singapore**

I would like to share with you about Singapore's experience in management and control of asbestos. Looking at the history of asbestos control in Singapore, from 1950s to 1980s, asbestos cement products or gaskets were manufactured in Singapore. Asbestos was used for insulation, fireproofing and construction. During that period, there were high exposures to asbestos from manufacturing, installation of such ACM and insulation work. Therefore, during the 1980s, Ministry Of Manpower started the Asbestos regulations to protect workers who are exposed to asbestos. In 1988 -9, the use of asbestos in building materials is banned by BCA and National Environmental Agency, Singapore, also prohibited the import and use of all raw asbestos and ACM, except for chrysotile containing materials. There was also banning of asbestos brake pads and clutch lining in 1995. In 2008, it became in effect of inclusion of chrysotile containing materials (non-construction) for licensing control by NEA. Since 1990, there has been a great drop in the use of ACM. Today, the main exposures to asbestos come from asbestos removal work from the construction, marine and petrochemical industries. MOM receives about 200 notifications per year for work involving asbestos the Factories (Asbestos) Regulations. And Gazette of WSH (asbestos) regulations has just been established in May 2014.

Our National Asbestos Control Programme consists of multi-lateral approach;

(a) Targeted intervention;
(b) Standard setting;
(c) Compliance assistance;
(d) Capability building; and
(e) Engagement.

Some of the changes came into the new regulations in 2014;

(a) **Asbestos Survey** to be carried out by a competent person to ascertain the presence of asbestos;
(b) **Licensing of contractors** carrying out asbestos removal work;
(c) Written **plan of work** to ensure asbestos removal work is carried out safely;
(d) Removal of ACMs before demolition of building;
(e) Technical requirements on asbestos work; and,
(f) Training for persons carrying out work involving asbestos.

There are several regulations over the illegal removal of asbestos containing materials. It says, taking one example, "any person who contravenes the **WSH (Asbestos) Regulations** shall be liable on conviction to a fine not exceeding $20,000 or to imprisonment for a term not exceeding 2 years or to both".

The other relevant regulations would be WSH (medical examinations) regulations in 2014, and Work Injury Compensation Act. WSH (Medical Examinations) Regulation is noted as persons who carry out work involving asbestos to undergo pre-employment and periodic medical examinations to screen for symptoms of asbestos-related diseases. Similarly in Work Injury Compensation Act, it is said that asbestosis and mesothelioma are reportable occupational diseases and workers who have contracted these diseases arising out of their work can claim compensation.

In Singapore, ACMs are commonly found in roof, wall cladding, ceiling, wall panels or vinyl sheet. Some other ACMs are also found in plants or vessels including pipe lagging, gasket, pipe insulation, or cable penetration.

Some of the technical requirements on asbestos work consist of designated work area, negative pressure units, proper decontamination facilities, or industrial vacuum cleaners. All these measures are to minimise the release or spread of asbestos during work.

There is also the scheme for compliance assistance through, such as, WSH Guidelines. This includes the contents of plan of work, site preparation, decontamination facilities, PPE, or air monitoring, in order to enhance the good practices in managing exposure to ACM, and removal of ACM. We also have the videos how to remove the asbestos, as well as WSHC Website.

As a conclusion;

(a) Asbestos-related diseases have killed a large number of people worldwide;

(b) Most effective way to prevent asbestos-related diseases is to eliminate or prohibit the use of asbestos;

(c) A multi-pronged approach involving legislation, enforcement and engagement is necessary; and,

(d) Joint effort by regulators and stakeholders is needed to prevent exposure to asbestos and manage asbestos at workplaces.

## Transferring Knowledge from Asian Ban Asbestos Countries: Session 2

**Moderated by Assoc. Prof. Dr. Jiraporn Limpananont**
**Southeast Asian Consumer Council**

### *Why Asbestos Disaster Spread in Japan*

**Dr. Takehiko Murayama**

**Tokyo Institute of Technology, Japan**

Today, I would like to talk about the socio-historical review of the Japan's journey to ban the asbestos and current situation in Japan. This is the annual mesothelioma in Japan whose number is unfortunately still increasing. Some research also shows that the number may continue to increase until 2030 to 2035. So it is necessary to have a long-term monitoring and measures for increasing victims.

In 2005, there was very tremendous event and this is the very famous findings about the environmental exposure. This research shows the red and black dots in the figure which indicates the exposed victims in female and male. Ever since, this gave more public attention and over 600 articles were published in news papers about asbestos.

Regarding the inspection on regulations, national government limited the target period of their review to 1972 and after. So there was a need that history before 1970s should be reviewed to understand development of the industries, medical knowledge and measures. Since May of 2006, members including Asbestos Center has begun to discussed, and published a book. This work would be similar to "Late lessons from early warnings: the precautionary principle" (European Environment Agency, 2002, 2013).

After that, we have published a book entitled the same as my topic today "Why asbestos disaster spread in Japan?" The book covers comprehensive topics ranging from overview of products or domestic industries, to the historical development in asbestos industry or the reason why the asbestos hazards spread.

As a first reason out of four total reasons pointed out in the book, the insufficient medical knowledge in Japan should be highlighted. Despite of warning on lung cancer by asbestos as a carcinogen, the national government did not apply to the national policy. After the World War II, the national government kept unaware of the significance of asbestos hazards and its relevant measures.

Second factor is the promotions of asbestos uses by governments and industries. Before and during WWII, Japanese government initiated the asbestos industry in military sector. They even order on production and standardization. This standardization was expanded to the East Asian Colonies during that time. After the WWII, the government started encouraging the industry in the decontrol

process, and protection of domestic industries and control on invasion of overseas capitals, as well as standardization for various types of asbestos products.

We have another side of this kind of promotion by government. Looking at the progress of regulations and acts, in general, you can see Japanese government had dilemma of duel-power in promotion and regulation of asbestos. But we made the total ban of all forms of asbestos, with exemption.

In comparison of prohibition measures among countries, in UK in 1985 crocidolite and amosite were banned and then in 1999 chrysotile was additionally banned through the prohibition after decrease of consumption by administrative guidance. So Japanese took the similar strategy to UK, which happened both in 1995 and 2004, for crocidolite/amosite and chrysotile, respectively, through the administrative guidance. However, Germany and France took the different approach which combines both partial and total ban. I believe this approach reflects the social or national characteristics on the way how they introduced the ban.

Thirdly – the cost of products. Back in time, the asbestos products were cheaper than non-asbestos products. Similarly looking at the cost of ceiling or roofing materials in early 1970s, they are both cheaper too. Yet, since the total ban of asbestos in 2004, the price gap between them was getting smaller.

Finally as 4$^{th}$ factor, information gap and manipulation should be also pointed out. Knowledge of Company executives and government know a lot of information whereas onsite workers do not. We can say there is 50 years gap between them, and this kind of knowledge gap continues to expand and happen in different parts of world from Western countries to Japan during the 1950s to 1960s, Japan to East Asia (70-80s), then finally East Asia to South and South-east Asia (90s-). So this is the typical negative knowledge chain form Japan, Korea, and South-east Asia, following the asbestos factory's relocation.

I think we have common process to ban the asbestos – increase of use, development of medical knowledge, increasing victims and public awareness, substitution, reduction of usage, and finally ban. But what we can do here is to make this process shortened by learning and sharing the lessons from the other countries based on the precautionary approach. At the same time, the appropriate selection of "how" to make it happen according to the national characteristics should also be taken into account when moving forward to the ban.

## *Society Collective Action on Asbestos Ban in Korea*

**Dr. Paek Domyung**

**Seoul National University, Korea**

My topic here today is "asbestos ban, how can I explain?" as a process. I would like to try to make sense of the historical events in last ten years or so, specifically on how we can understand your

decision and how we can explain for both for those countries that have banned and for those countries that haven't banned asbestos.

Today, we heard that asbestos ban is a process of transfer of knowledge. But is it true? I don't think so. I rather think it is their own learning experience, than just being passively listening to others' experience. Sometimes, asbestos ban is understood as legislation, but we heard, depending on their countries' situation, that might not work even if the legislation was established. Furthermore, some say the asbestos ban is all about the political decision. But I don't think it is purely political decision, because most of the political decisions are usually entangled with cultural, social and economic factors.

The way I explain about asbestos ban today is propped by three pillars;

(a) Disease burden as pressure – asbestos consumption and latency;
(b) Problem appraisal and solving system represented here as data-information-knowledge-wisdom cycle based on the human rights system (health, social security, and political freedom as human rights); and
(c) Alternatives but feasible solutions from neighboring countries.

Edgar Schein from MIT explained the brain wash among war prisoners, which tries to explain the cultural change and organizational learning. In his explanation, he proposed three stages. As stage 1, unfreezing to create the motivation to change probably through disconfirmation, creation of survival anxiety or guilt, or creation of psychological safety to overcome learning anxiety. In next stage 2, the learning new concept, new meanings or new standards come in by learning the limitation of and identification with role models, and scanning for solutions and trial-and-error learning. Finally at the stage 3, refreezing (internalizing new concepts, meanings and standards) is established. In this process, the person tries to incorporate into self-concept and indent it, or ongoing relationships and groups.

I would like to interpret the proposed three factors by applying this concept. Firstly, in disease burden, disease burden can be interpreted as social pressure, but what is missing is the life expectancy and it can be under-competing risks. But looking at the life-expectancy, the figure varies among countries. So in evidence of disease burden, we have to be more specific and targeted, depending on the local situation because the situation differs from country to country, for instance, industry size, exposure level, class or sex, or time after retirement.

Even with an increasing disease burden, if the problem is not appraised enough and appropriately, the solutions can never be sought. To get to the appropriate solution, the problems need to be appraised and then fed back to potential answers repeatedly.

I also briefly talk about the Data, information, knowledge and wisdom cycle axis. Data is there as we collect them based on what we know. Data becomes information only when we assess them purposely for the search of what we don't know but should have known based on known yardsticks or values. Information becomes knowledge only when we test and validate the supporting mechanism to the available information, usually by comparing through spatial association or temporal trends. Then the knowledge becomes wisdom only when the knowledge is embodied and proved to be useful even for those unexpected and unknown areas.

So if I quickly summarize this, the **Data collection** based on known knowns (we know what we know). **Information assessment** for the search of unknown knowns (we don't know what we should have known). **Knowledge generation** for the known unknowns (we know what we don't know).

**Wisdom embodiment** including the areas of unknown unknowns (we should have known what we don't know). But these can be expanded and deepened one by one.

In this sense, this information assessment system should have specific feed-back function from your system or society; otherwise, data collection cannot be transformed into information assessment automatically.
In some country, the data collection is monitored by some programme such as Radon Clearance Programme to measure radon and asbestos by every homeowner. Similarly the knowledge generation function is also has feed-back system by institutes, and president's cancer panel for wisdom embodiment function.

When searching Pubmed of asbestos and country and looking into the academic journal history, interesting for instance, in Japan more number of academic journals were published and peaked after the banning of asbestos in 2004, and same goes to Korea. So the social discussion made the academic journal published, and I believe that Thailand needs the similar process to generate the knowledge within the society.

For me, banning asbestos was a very useful lesson for other health and safety problems of Korea. If I can understand the asbestos problems, I can deal with the other problems in general. To do that, I thought of my country's system. System is story for me. System is a story of networking parts, dynamics, and equilibrium. Story of why, who, what, where, when and how of roles (and risks).

Data is not information, information is not knowledge either, or knowledge is not the same as wisdom. But there should be a kind of system between them to make it work. It includes the system for data generation, information dissemination, knowledge translation, and action and learning (wisdom) separately.

Then alternatives are sought in sequence. First it starts with the less difficult at the early stage in order to solve the technical problems. Technology does not solve everything, neither managerial solution does. So in later stage, cultural or post cultural alternatives will be sought too. This process can be summarized below.

| **Stage**<br><br>**Dimension** | | **Chaotic** | **Technical** | **Managerial** | **Cultural** | **Post-Cultural** |
|---|---|---|---|---|---|---|
| Why (Objective) | | Self-Interest Based | Politics Based | Economy Based | Health Based | Human Right Based |
| Who (Key Role Players) | | No (Every) Body | Government Employers | Professionals Unions | Victims NGOs | Every Body |
| What | Content | Self-care | Input Dominant | Process Dominant | Output Dominant | Input to Output |
| | Risk Handling | Innate Heuristics | Assessment | Management | Communicate | Continuous Cycle |
| How | Politics | None | National Legislation | Corporate Guideline | Court Cases | Open Mass Media |
| | Enforcement | Self-Discipline | Code Based | Labour Based | System Based | Precautionary Way |

| Problem Construct Level | None | Data | Information | Knowledge | Wisdom |
|---|---|---|---|---|---|

Lastly, alternatives – I think having alternatives in a proven and feasible format is sometimes the key to the solution. In this sense, asbestos ban in neighboring countries can be a good alternative to those countries searching for the control and solution of the asbestos problem or asbestos Industry in the neighborhood.

You can see which country peaked when and which year in this figure. When I plotted this data set, I collected the data from those countries which have banned asbestos and adjusted the year of ban as land-mark year and try to see the evolution of consumption of asbestos or when the consumption decreases. What I observed is that for those developed countries it took 30 years on average to see the beginning of decrease in consumption. But then it took 10 years to bring down this consumption to the ban. However, I found that the developing countries are taking much longer period to see this ban more than 20 years.

I plotted the data for Thailand, what I can see is Thailand is actually exporting a lot of asbestos cement rather than importing. So Thailand is importing the asbestos for exporting the asbestos not to consuming it themselves. So the issue is how Thailand can control these exports of asbestos to other countries in this region, together with banning the asbestos consuming for themselves.

To me rather than adopting the global view point, it is more significant to adopt the viewpoint of (potential) victims (and/or consumers). Not to be unspecific, but to be specific to the local (and/or regional) problems and feasible to the current system.

## Summary of Day 1

**Associate Professor Dr. Vithaya Kulsomboon**

**Director of CUSRI**

Good morning and welcome back to the second day of our conference, Expedite Asia to be Free from Asbestos Hazard: Global Scientific and Social Evidence.

Yesterday, we learned the scientific facts of asbestos hazard and lessons of asbestos learnt from international organizations, and the experience of various countries in Asia on what kind of journey they have successfully taken for a total ban or partial ban the use of asbestos, from various layers of perspective, international organizations, academia, grass-roots organizations, and governmental organizations.

**Dr. Ken Takahashi**, University of Occupational and Environmental Health (UOEH) in Japan, set the stage to explore the discussion, by summarizing that the scientific and social evidence are abundant, but experience of banned countries should be better studied and utilized to expedite Asia to become asbestos-free.

**Mr. Sugio Furuya**, Asian Ban Asbestos Network (A-BAN) from Japan updated the progress, especially focusing on the situation on Asbestos Ban in Asian countries, and emphasized that national asbestos ban among developed Asian countries has been recently implemented whereas developing Asia is now the most vulnerable target of asbestos producers, which should be banned immediately in line with the precautionary principles.

From the international organizations, **Dr. Ingrid Christensen**, ILO, and **Dr. Yonas Tegegn**, WHO, highlighted the global figures, facts, and their roles in formulating the direction towards asbestos-free world through technical assistance and recommendations, from the perspective of labour protection and public health.

As first successful lessons from Hong Kong, **Dr. Ignatius Yu** at Hong Kong Occupational and Environmental Health Academy shared 30 years of journey to achieve asbestos ban in Hong Kong this year in 2014, specifically on how the legislation has evolved since was first introduced in 1986, by the collective and synergized effort at different layers of sectors, which include Unions, NGOs, and academia.

**Dr. Lukas Lee**, National Health Research Institutes presented his research result from Taiwan's experience, which provides the scientific evidence of quantified impact of Malignant Mesothelioma (MM), by quantifying the life-years-lost and lifetime healthcare expenditure in Taiwan.

Similarly from Singapore, **Dr. Jukka Takala** from Workplace Safety and Health Institute identified the interrelation between asbestos and smoking for the lung cancer, and its weak reporting system,

generally in Asian countries. Moreover, **Ms. Lynnette Goh**, Ministry of Manpower taught us its chronological development and key change of regulatory control of asbestos and asbestos related materials since the 1980s through the multi-line strategies under the National Asbestos Control Programme.

In the second session, **Dr. Takehiko Murayama** from Tokyo Institute of Technology in Japan shared the socio-historical path of the asbestos issues in Japan, specifically on why the asbestos disaster was spread out in the past. He emphasized four factors; (1) insufficient application of medical knowledge on the toxicity of asbestos public policies, (2) promotions of asbestos uses by governments and industries, (3) relatively low cost of asbestos products, and lastly (4) information manipulation and abuse of the knowledge gap among stakeholders.

**Dr. Paek Domyung** from Seoul National University in Korea further explained how the process of decision making in country can be made to ban the asbestos, referring to the three key and necessary elements; disease burden as social pressure, Data-information-Knowledge-Wisdom cycle axis, and Human Rights based system, and alternatives but feasible solution referring to experiences in neighboring countries.

Despite of a number of success story in Asia, here in Thailand we are still struggling to eliminate the asbestos. In fact Thailand is the 8$^{th}$ largest asbestos consuming country in the world as of 2012 and there are 1,300 people suffering from mesothelioma each year due to the continuous import, and usage of asbestos for construction in order to prop our rapid economic growth.

**Mrs. Orapan Srisookwatana** from National Health Commission Office Thailand introduced National Health Assembly which coordinate all kind of relevant stakeholders and implemented 4 strategies, but in spite of policy platform, adequate social evidence she highlighted the importance of “how to get started the banning process” as an official political decision.

Moreover, **Professor Surasak** from Association of Occupational and Environmental Diseases of Thailand shared the policy implementation since the cabinet enacted the resolution in April 2011, which includes 5 committee meetings, World Health Assembly Resolution, collaborating with 4 medical organizations in order to tackle a lack of diagnosis guideline or systematic cooperation among physicians, radiologists, pathologists, and occupational physicians.

From academia perspective, **Professor Pornchai Sithisarankul** from Department of Preventive and Social Medicine, Faculty of Medicine, Chulalongkorn University, raised controversial “evidence-based” notion that asbestos is regarded as carcinogenic substance with sufficient evidence for several organs while Thailand is trying to ban all forms of asbestos.

**Associate Professor Kittisak Sawanyawisuth** from Khon Kaen University also shared his hospital-base research on asbestos, which recognizes the possibility of under-reporting and invalid recording system of history of asbestos exposure at national level, and the necessity of medical education on occupational health.

Regarding the core political issues behind the asbestos issues in Thailand, **Dr. Nopporn Cheunklin** from Ministry of Public Health, Thailand provided remarks on (1) political interest of particular Ministry in FTA deals for asbestos, and (2) long incubation period until the implementation due to a lack of adequate amount of domestic evidence and experience, despite there are more than 200 factories using asbestos.

Furthermore, we have heard other opinions in order to ban the asbestos in Thailand, the experts agreed on several significant points, for example;

(a) No need to wait to have domestic cases of asbestos;
(b) Train general practitioners;
(c) Raise the awareness through media exposure or collaboration with other occupational safety and health agencies;
(d) Value social-based policy making system, rather than economic based policy making system; and finally,
(e) Prevent diseases rather than provide medical care

On the top of conference discussion, we have also agreed on establishing two official conference documents; (1) Asia/ASEAN Declaration, and (2) letter to Thai Prime Minister with petition to ask immediate ban of import and usage of Asbestos Containing Materials. In particular, Dr. Lukas Lee from Taiwan has worked hard on quantifying the data of life-lost-cost of Thailand due to the asbestos related hazards and Dr. Barry drafted the letter to Prime Minister over the dinner last night, and all the experts were happy to help us crafting both documents. Furthermore, it was great to have the consent from you to have your signature for the petition which will be attached to the letter to Thai Prime Minister.

Today, we will explore further practices and the way forward to effectively ban the asbestos usage and eliminate the asbestos-related diseases in ASEAN countries; Indonesia, Malaysia, Lao PDR, Philippines, Vietnam and more in Thailand on how we could fight the asbestos hazard. And I hope everyone will have fruitful time in the rest of conference today – in order to achieve “One Ban, All Ban”.

## Keynote speech of Day 2

### *Criminality and the Asbestos Industry*

**Dr. Barry Castleman**

**Environmental Consultant, USA**

I would like to talk about the many different aspects of asbestos today. First, what you can see in the graph of annual world asbestos use is a dramatic decline during the 1990s then stays flat level with 2 million tons per year since then where some countries banned asbestos while others use more asbestos as time goes on. This is our challenge that you can see all over the world.

Asbestos companies also created the abandoned field for the used asbestos that they cannot use anymore, so they just toss them out. The picture was taken in India and it was around 30 years ago. At the time, the asbestos industry was dominated by the big multi-national asbestos corporations; however, currently the phenomenon is totally different – the actors are mainly small-medium size enterprises who do not care about the humanity or public health issues about employees, but only their profitability.

Ten years ago, I found the newspaper in India saying "asbestos cement products are absolutely safe" argued by scientist from Canadian institute. This trend still continues such as in Colombia, and this one also says asbestos are safe.

The epidemic curve is similar in Mexico. The recorded annual mesothelioma death rates in Mexico started to rise dramatically in late 1990s. One scientist estimated that death toll from asbestos takes enormous costs, which government of Mexico will suffer from the increasing social security services. Similarly, school teachers in Puerto Rico found the cement made by asbestos and made warning advertisement against the industry.

Asbestos products are currently causing a significant issue in India. School children in Bihar found the danger of asbestos at their classroom in 2011, and they said we are demonstrating against the construction of asbestos factory in their town. The demonstration lasted for long time and they also have broken up with police.

I have 5-part formula for prevention of occupational disease;

(a) Information (medical level to pamphlet);
(b) Regulation;
(c) Compensation;
(d) Humiliation (to the experts); and
(e) Incarceration.

The fifth point, incarceration – putting the corporate criminal to the jail, is what I am going to talk about.

Profitability of current asbestos industry is based on minimizing costs of prevention and compensation through - such as dust management on the workers or workers' cloths. Asbestos

Industry propaganda contradicts international consensus that all forms of asbestos cause cancer and should be banned, and that no level of airborne asbestos exposure is safe as recommended by WHO, ILO, and asbestos was banned in 55 countries. Asbestos market depends on public ignorance of the dangers to workers, consumers, and the general public. Asbestos Industry cover-ups of the deadliness of asbestos stretch back to the 1930s and were thoroughly documented for decades. Once asbestos Industry expanded in developed countries such as in the US then it went to spread in developing world after 1970, which is what we are dealing with.

He is Stephan Schmidheiny and he inherited the asbestos company with global asbestos cement sheets/pipes all over the world. He took his executive position when he was 29. Starting in 2009, the trial has begun in Turin in Italy for causing deaths of 3,000 Italians due to the asbestos environmental exposure. The town is quite small with 35,000 people and in the year there were 52 deaths from mesothelioma, which means literally every week they had one person died from mesothelioma.

What turned out was Mr. Schmidheiny was engaged to cover up the fact of asbestos and not to have his employees shocked when they get to know the danger of asbestos years before the court case in Italy. The judge said if it is the case that Mr. Schmidheiny's case is similar case to the Nazi's operation in 1942, projecting Hitler.

He then closed the factory and reinvented himself as "Green Business Professional" starting the sustainability study, or writing books about conservation of energy or running the activities in this field. By 1996, he was awarded honorary degree in his environmental contributions at Yale University. What happened was that in 2012 he was sentenced to 16 years in jail and 100 million Euros for interim compensation for thousands of victims. But the money was never paid and the case went appeal and the court added other numbers of deaths in Italy, and increased the jail sentence to 18 years. So after June 2003, the victims and families from the town asked me to persuade Yale University to take away his honorary degrees to Mr. Schmidheiny. We proceeded to write to Yale but Yale University does not even consider taking the honorary degree back from him. The point here is that if you have money you can recreate your image, profile, and even get the government to compensate him to do the job.

Unfortunately, the trial went to the court of cassation on November 19$^{th}$ but you have to understand the prosecution won this case at the trial court and at the court of appeal but at different level of prosecution, higher rank of government officials came into the room and announced to dismiss the case and dropped the case due to the statute of limitation which only lasts 10 years (since 1996). So they couldn't be prosecuted.

But the reality is people are still suffering, and dying from asbestos. Court of cassation says if it is a murder case, there is no limitation in prosecution and chief prosecutor filed a murder case against Mr. Schmidheiny in June this year, naming him as having caused deaths of more than 250 people in post date of 1976 when he became the chief executive officer. So it is not over yet.

There is another possibility too. The court of cassation in Italy can be challenged by European Court for Human Rights. European Court for Human Rights just made a judge this year where the Swiss victims from asbestos trying to get compensated, then Swiss Court refused the compensation due to the statute of limitation which already ran out of time limit – because the asbestos factories

closed in 1990. But European Court for Human Rights said this is a denial of people's right to access to get justice and then Swiss Court revised their decision – the statute of limitation should not be a bar. So the Italy case could be one of the other cases which claim to European Court for Human Rights.

The reason I presented is to learn something important from asbestos. For instance, asbestos is like tobacco and tobacco, according to WHO, has a fundamental and irreconcilable conflict between tobacco interests and public health policy interests. As a result, WHO said governments should interact with the tobacco industry only when and to the extent strictly necessary to effectively regulate the tobacco industry and tobacco products. In case of asbestos, there is the same conflict existing between marketing the product and killing people; this is a criminal industry. So the governments should ban asbestos now and regulate exposure to in-place asbestos products – no one is addicted to asbestos.

## Measures and Practices regarding Asbestos

## Session 1 Four ASEAN countries (Indonesia, Malaysia, Lao PDR, and Philippines)

**Moderated by Prof. Pornchai Sithisarankul, Chulalongkorn University**

### Mr. Dhitia Moelya Pratama

### Indonesia Ban Asbestos Network (Ina-BAN), Indonesia

Representing INA-BAN, I would like to share the story of Indonesia's experience in sustainable efforts to ban asbestos. Firstly, INA-BAN was established in 2010 as part of initiation from several organizations which had concern in asbestos consumption and industry in Indonesia. Since then, we have conducted various activities including environmental campaign in order to inform the danger of asbestos to public. We are not coming from the experts or doctors but it consists of safety activists, environmental campaigner, trade unionists, OSH network or NGOs such as in disaster management.

This is the trend of the asbestos consumption in Indonesia and the growth has kept growing since 2000. In 2012, it reached 162,000 tons already. The number still continues until now. In Indonesia, you can find a number of asbestos factories with more than 7,000 workers working for manufacture companies of asbestos containing products. The materials which used to be produced in Indonesia, such as asbestos roof, insulin pipe, brake and clutch, and heater and air conditioners still contain the asbestos, as well as the buildings which can be demolished and could release the asbestos.

In terms of regulations, while use of the crocidolite asbestos form and the spraying of other forms are banned in Indonesia, the use of chrysotile asbestos is still allowed. After 4 years of effort we concluded the 5 points as evaluation;

(a) Consolidating network – resource limitation and then become constraints to work together;
(b) Research – lack of local medical expert, and legalizing the finding victim to advocate the compensation;
(c) Media – minim of audio visual production, and production of visual publication;
(d) Unionizing – the union awareness of these issue still need to be pushed; and
(e) Victim organizing – obstacle to push to legal right based on the law.

The critical point that I would like to share is the diagnosing problem. Asbestos related disease is hard to diagnose with experts without experience on face the asbestos disease. These conditions are quite tightly related with the weakness of Indonesian government o monitor and supervise the lung disease in public society, especially in workers community. INA-BAN thus started organizing the medical experts and academia to have knowledge of asbestos related disease and have experience to interact with the victims or workers who have had the long and high exposure in asbestos. Involving the experts on these issues is becoming a new strategy of public awareness campaign because the experts had connection and opportunity to push the issues to the next level, including at Ministry of Health and Ministry of Environment. In this kind of activity, in the photo, you can see the doctors working with the patients at the workers' base in Jakarta and we have worked on this for more than 2 years. Additionally, the blood sample was taken by Ministry of Health for the purpose of research to see what happened to their health condition when they are in long-term exposure.

In compensation system, Indonesian also didn't have legal experience yet on ARD and we need to learn from the other Asia country, so that we can find the ARD victims with right diagnose techniques from medical experts. Moreover, it is also necessary to fight in law court with government and responsible company to demand compensation. Thus, we also need to organize the learning stage from the law experts in order to take a side with the victims and fight together to demand the compensation for their deteriorated health condition.

In government data, there is no ARD data exists in Indonesia because there are no reports of ARD cases yet and no evidence found in all the government audit and surveillance system in asbestos industry. Even in some air sampling and monitoring in asbestos factory results, they state ND (not detected) asbestos material in the air. The reality is that the government is too soft and too compromised in favour of industry. Even at the audit, the company can prepare themselves by cleaning at the factory which is usually full of asbestos dust. So we need to find the comparison data.

We also conduct the exposure assessment for comparison data. To face the conditions and to find the comparison data, INA-BAN performs the personal air sampling, environmental air sampling, bulk sampling, and medical examinations for the workers, and training workers about asbestos hazards with supervision by Certified Industrial Hygiene (CIH) from American Industrial Hygiene Association, Ministry of Health and Universitas Indonesia. Afterwards, we will use the comparison data to campaign the asbestos issues and advocate workers' right. This includes the personal air sampling, medical examinations for asbestos workers, or health consultation with occupational health doctors.

Important is that although it is said "asbestos are not harmful if controlled with proper OSH management system", most of asbestos industries in Indonesia does not apply the OSH management system and, furthermore, the government failed to enforce it. So this idea can be broken down easily.

In terms of our activity plan, we are willing to actively contribute to multi-lateral approaches;

(a) Pushing the government body to recognize the victims;
(b) Public awareness campaign;
(c) To continue to organize medical and public health experts;
(d) To continue to organize the workers and unions; and
(e) Building the networks of asbestos workers factory in Indonesia.

In order to strengthen the cooperation, we need to work together and need your cooperation from international medical expert community to influence the local partner to doing the asbestos research in Indonesia.

**Mr. Thongphim Vongraph**

**Head of Occupational Safety and Health Division of Labour Protection Department, Lao Federation of Trade Unions**

I would like to share Laos' experience in asbestos. Currently Lao PDR annually imports asbestos over 9,000 tons in 2013 with 14 roof sheet companies using asbestos in Laos. Looking at the geography, it is very easy for Lao PDR to import asbestos from China and Russia. Lao PDR, since 1990 has had a policy to open up to global economy and promote Foreign Direct Investment :FDI to help develop country quickly. Recently, the economy has been growing rapidly especially in mining and construction of dams. Laos is under the transform to a market economy and aims to reach industrialized status by 2020. At this moment there is no OHS laws specifically but covered broadly in the New Labour Law part 8.

About the brief information about asbestos in Lao PDR, The LFTU is aware of ten asbestos roof sheet companies established in 8 different provinces. They locate near local communities with no specific regulations on asbestos usage, but have National Profile-Technical Working Group (7 Ministries). For instance, each roof sheet factory has 20-60 workers (women 20%), who have low awareness of the danger of asbestos, often have no PPE and besides LFTU only provided a limited information and training. So most of workers do not know how to protect themselves, for instance, they often wear the short pants or even eat lunch at asbestos warehouse.

Regarding the asbestos issues in Laos, firstly, the inspection department (government) has limited knowledge and information on asbestos. The concerned Departments have not been active in fulfilling their inspection role, no testing equipment. Furthermore, there are no specialist doctors or departments to prove, diagnose and treat occupational disease.

There are significant issues and challenges in Lao PDR. For example, low consumer and worker awareness, no specific regulations on use, direct exposure of workers and communities, low use of **any** PPE. Lao in 2012 has passed Hazardous Substances Regulation. Blue and brown asbestos are banned whereas import of white asbestos is restricted.

What are LFTU and APHEDA doing with Asbestos Disease Prevention Program? In our programme established in 2012, we started with educating the directors, managers, and workers on the impacts of asbestos and find way to protect workers from asbestos hazard by providing appropriate PPE for workers. Now we are advocating for phase out the asbestos and immediate reduction in exposure for workers and communities. We also try to collect the data through mapping, survey and interview to the workers at ten roof sheet factories. We also conduct to provide information and training for the workers but now especially focusing on raising issue strongly to the government, employers and in National assembly. We also link LFTU with ban asbestos groups and OHS institutes in the region. APHEDA is also partnering with Ministry of Industry to promote the awareness of dangers of asbestos, and regulation and urgent phase out. There is also funding from some Australian Unions, APHEDA (in total $ 17,750 in 2012) but further LFTU seeking funds to expand program.

In national campaign, we organized the mobile training for workers and employers in roof sheet factories for improving the working condition in the workplaces. We also cooperated with concerned Ministries such as Ministry of Industry and Commerce, Ministry of Health and Ministry of Labour, Social and Welfare, as well as sharing information with concerning Ministries and sectors. As part of First National Asbestos Profile, we established the National Asbestos Technical Working Group, and crafted the asbestos posters and brochures for 10 factories and villages nearby the factories. On the top of it, we also advertised the danger of asbestos on the LFTU TV program and radio programs.

In regional and global campaign, we exchanged experience with Thailand, Vietnam and other neighboring countries who already banned asbestos such as Australia, Korea, Japan and others in order to attempt the harmonized banning process with other ASEAN countries. So we are also cooperating and sharing information with ASEAN countries and other countries in the region.

**Dr. Irina Safitri Zen**

**University Technology Malaysia (UTM), Malaysia**

I would like to share with you about asbestos measures and practices in Malaysia towards the total ban of asbestos in 2015 from the academic neutral point of view as a researcher.

Same as other ASEAN countries, asbestos building material is still saleable in the market but there is a restriction by the government as voluntary banning in government building project in 2005. Crocidolite was banned in manufacturing sector in 1986 but not chrysotile. The plan for total ban asbestos since 1980s was actively promoted by the Malaysian Trade Union Congress (MTUC), and

consumer associations in the 1990s. Although there are 55 countries already implemented the total ban of asbestos, Malaysia is not there yet, or even has not ratified the ILO's convention (No. 162).

The earliest asbestos factory in Malaysia started its operations in 1963. It was a joint venture with Japanese and Australian companies. The main asbestos industry : asbestos cement products such as roofing sheets, asbestos cement (AC) pipe, friction materials and gaskets involved **2000 number** of workers (SPAA 1986). The recent data recorded **2136 numbers** of workers exposed to chrysotile in a factory that produced brake lining pad and roof (Rampal 2011). But we also predict the long latency period of asbestos related disease (ARD) is 30 years - for asbestosis (Peto et al.1999). Finally, the first case of asbestos victims in Malaysia was estimated to emerge in 1990s.

21 cases of mesothelioma were reported in the type of occupational cancer report during the period of 1999 - 2003 (Admission Report of Occupational Health 1999 – 2003). 5 mesothelioma cases have been reported in the National (Cancer Registry Report (2007). The highest percentage of occupational cancer type reported is malignant neoplasm of bronchus and lungs (8,353 cases or 42.8 %).

We found the lack of medical record data for asbestos victim that correlates with lack of medical doctor expertise of occupational safety and health (OSH) system. Similarly there is a lack in epidemiological data of asbestos victim which only provides weak information on the effects of the chemicals to the workers health.

The primary challenges for total ban of asbestos, we can say the establishment of supported medical cases for asbestosis or mesothelioma cases that prove the effect of asbestos fibres to the workers in Malaysia (Sirajuddin 1999 & Laurie Kazan Allen 2002). In addition, we need to overcome a lack of OSH system that is commonly found in developing countries and makes difficulties to track the asbestos victim workers (Joshi & Gupta 2004).

We have also conducted the supply chain framework analysis in order to identify the regulatory gaps in asbestos industry in Malaysia since 2010.

At the import stage, there is declining trend from 7,795 tons in 2007 to 4,496 tons in 2013. There are four major industries; construction, automobile, trading and insulation. We are still using the chrysotile in brake lining, friction pad, disc pad, gasket & seal, small corrugates sheet, roofing (Ardex), truck lining, piping (water supply) insulation material and automotive paint. And there are 17 companies/ factories user or importer of asbestos (3 trading in ACMs and 14 producers).

At the production stage, under the Factory and Machinery Regulations 1986, asbestos is currently used under the Control Use Concept with the Permissible Exposure Level (PEL) for chrysotile was 1 fibre/ml 8 hours Time-Weighted-Average (TWA). Asbestos chrysotile was prohibited for all purposes except for research or analysis under the Occupational Safety and Health (Prohibition of Use Substance) Order 1999 [P.U(A) 303]) (Table 1).

At the consumption stage, there are several measures and restrictions from development and consumption stage, which includes the environmental regulation. Similarly at the demolition stage, there are a few acts such as Occupational Safety and Health Act in 1994 or Environmental Quality Act in 1974. But what is remarkable is that we established the Code of Practice for Building Operators when they demolish the building which uses the asbestos.

Regulatory Impact Analysis on asbestos use also conducted by using the Cost-Benefit Analysis to estimate the impact of the existing environmental and health project to the society in terms of the health impact and reduce the mortality rate. We also crafted the possible scenarios on various policy options from advantages, disadvantage and impacts in Business as Usual, reviewed existing regulation, and prohibition of asbestos.

We are still waiting for the result even though we already submitted the proposal to the Malaysian Productivity Council. And the official website was already set up on the Department of Occupational Safety and Health, so we are hoping that it will be a reality in 2015.

There is social media and internet which plays an important role in reaching out the danger of asbestos to the public, but it surely varies among the different income level. We also try to raise the awareness of asbestos through the survey on 100 maintenance and construction workers, as well as on 100 factory workers on manufacturing of asbestos containing materials (cement), or asbestos sheet, to capture if they are aware of the asbestos danger. The profile of this surveyed workers were 65% Malaysian, 48% married, 86% Malay, 68% are 25-34 years old, and 73% are high school graduate. The result shows that the factory workers are more aware of asbestos, compared to the construction workers and the majority (70%) of factory worker was involved in processing section of asbestos roof factory.

As a conclusion, managing the risks associated with hazards in the workplace should be introduced the 3E's: Enforcement, Engineering and Education. The principle of hierarchy of control measures (elimination, substitution, engineering controls, administrative controls, and personal protection) are also adopted for managing health risks in the workplace.

**Mr. Alan Tanjusay**

**Associated Labour Unions (ALU), the Philippines**

I would like to present the presentation entitled "Sharing Philippines Ban Asbestos Campaign" under the slogan of "our family is not safe from asbestos – ban asbestos now!" The Associated Labour Union (ALU) was organized by 42 union workers in Cebu City port in April 1954 with current union members in 17 industries (land-based, seafarers). We are the biggest labour union federation in Philippines, more than 200 staffs, which is organizationally structured by administration, finance, audit, legal, medical, dental services, and union organizers. Most importantly we were consulted by government in crafting, re-crafting national laws, regulations, and policies.

The ALU is critical but constructive in promoting workers' rights and well being ranging from wages, precarious work, workers health and safety, child labour, women, or informal sector, in unilateral, bilateral, tri-partite mechanism. We are partner with TUCP, Nagkaisa (United), BWI, UNI, ITF, JSU, IndustriALL. Of course we collaborate with Government, ILO, WHO & NGOs, CSOs in forging solutions.

Blue and brown asbestos are banned in 1980s but chrysotile is regulated. The first asbestos manufacturing company was set up in 1954 and 8 government housing projects with asbestos roofs

onward. We had water pipelines with asbestos in use until 1980s, and there was huge propaganda activity on media so the government stopped using asbestos on pipelines. But 1,441 former US Navy port workers were tested from 1993-1996 by Lung Center of Phils. class suit, and settlement and 502 were found to have contracted asbestos diseases in 1996.

Government created Chemical Control Order for asbestos, Code of Practice, ban bills, compensation for asbestos related diseases at the Employment Compensation Commission, Social Security System because of the incident and Health Department paid specific attention to the disease, as NPEAD process. So the government currently estimates 1.3 million construction workers are significantly exposed every day and, moreover, asbestos industry employs 10,000 to 15,000 employees (manufacture of asbestos roof shingles, panel boards, brake and clutch pads and so on).

ALU and BWI ban asbestos campaign formally started the campaign in 2007 and we had a major break in August 2009 by sending a letter to former President Arroyo about adoption of ILO & WHO National Programmes for the Elimination of Asbestos-Related Diseases (NPEAD).

1st National Programme for Elimination of Asbestos-related Diseases (NPEAD) meeting took place on Sept. 16, 2009 with ALU, BWI affiliates, Department of Labour, Department of Environment, Department of Health, Department of Science and Technology, Department of Trade and Industry, Customs, SSS, Employment Compensation Community, Cancer Society, Association of Chrysotile Industry of the Philippines (ACIP).

We also filed ban asbestos bill in July 2010, but the congress adjourned so we had to re-crafted, re-filed in 2013 and continuously pressure to improve Philippine government position in Rotterdam Convention. In addition, we pressured the Department of Education, Commission on Higher Education to stop using asbestos wire gauze in schools upon ALU/BWI discovery in August 2012 through sending a letter to Ministry.

We also catalyze government action in addressing improper asbestos abatement in Manila Thermal Power Plant, Central bank renovation. We also deepen, expand network with local labour groups (NAGKAISA), environmental advocates (Greenpeace, Eco-Waste), Global Union Federations. We also partner and contribute with ABAN, IBAS, TBAN and other ban asbestos network advocates. We are using conventional tri-media and new media in educating general public, civil societies, non-government organizations on asbestos and catalyze their support.

We also share the burden on chrysotile information center (CIC) influence in Southeast Asia. Recently we have discovered active presence of lobby group Chrysotile Information Center (CIC) in the Philippines with the all-expense paid trip of 4 government officials (legislator with his wife, and 1 each from OSHC, ECC, Department of Environment and Natural Resources). They were accompanied by 2 Filipino CIC staffs and 1 from CIC Thailand. From August 1-10, 2014, they were brought to Eternit factory– the Chrysotile Asbestos Manufacturing Plant and to the Open-pit chrysotile mine to show that chrysotile is not harmful. The Philippine CIC is now actively seeking out politician legislators, government executives, and other platforms to lobby against ban asbestos bill and against our ban asbestos movement campaign---that Chrysotile is safe.

About the campaign experience and tactics, we suggest robust advocacy organization: goal, objective, and work-plan while optimizing government capacity and political will. We also

recommend partnering with civil society organizations or NGOs to pressure the governments. Use information, network and partnership very well, be creative, simple and consistent in utilizing opportunities and media, be constructively militant and assertive, make calibrated risk and finally remember that you have an adversary: the asbestos lobby group, asbestos related diseases.

In conclusion, our target for 2015 is;

(a) Pressure government to come out with Asbestos Code of Practice within next year;

(b) Pressure government to approval raising government standard on Threshold Limit Value of asbestos workplace from 2 to 0.1 fibre per cubic centimetre;

(c) Try to organize an asbestos victims' group to humanize campaign;

(d) Develop NPEAD matrix; and

(e) Asbestos in Haiyan-hit areas - developing the communication plan there.

## Measures and Practices regarding Asbestos: Session 2: Viet Nam and Thailand

**Moderated by Prof. Surasak Buranatrevedh, Thammasat University**

### *Viet Nam case study on building up a free-asbestos environment*

**Dr. Pham Nguyen Ha**

**The Global Fund Supported Project on HIV/AIDS**

**Vietnam Union of Science and Technology Associations Project Management Unit**

I will present "Vietnam's case study on building up a free-asbestos environment". Briefly about Vietnam, the population is about 90 million people and asbestos use is 60,000 tons/year (2000-2011), and 78,000 tons (2012). The first 9 mesothelioma cases were verified by Hiroshima University (2011), and 39 lung cancer samples. So far there were reports of more than 100 cases (2009-2014). But in terms of usage of asbestos, Vietnam is one of the biggest consumers of asbestos in the world. Asbestos cement factory and the roof are the typical products of asbestos in Vietnam.

The government took several actions to move forward to the asbestos ban. In 2001, Prime Minister (PM) Decision was taken that asbestos be banned by 2004; however, in 2004, Prime Minister's amendment to ban blue and brown asbestos and allow chrysotile was also kicked in. And then 2008, the government approved master plan for construction materials till 2020 and this year 2014 they further considers the master plan till 2020 with a revision to 2030.

One of the main actors in this movement is Ministry of Construction. They in 2008 developed the master plan for development of construction materials till 2020 but in 2014 the master plan for development of construction materials was revised to extend till 2020 with a revision to 2030.

There are also several actors in asbestos industry which include two asbestos import private companies, Vietnam roof sheet association, 41 roof sheet factories, which produces 90M m2 asbestos cement roof sheet/year, and the hired 5000 workers.

In contrast, Ministry of Health is responsible for protecting the workers' health, by working on detection and diagnosis of asbestos related diseases including mesothelioma, training of health workers, and occupational health for workers.

During the year of 2009-2014, we had a project with WHO, funded by Japanese Government, which attempted to produce the scientific evidence for the purpose of capacity building of experts in public health sector. As part of programme, there was also National Assembly established in 2013 for the stronger advocacy. Important role of this entity, in the end of 2013, Vietnam Union of Science and Technology Association sent letter to National Assembly (NA) for asbestos ban, in addition to the request to the relevant ministries for report. On February 25 and 26, Ministry of Health and WHO jointly organized the workshop and another one happened with Ministry of Industry and Trade on April 1st. There also was comprehensive sequence of workshops happening later;

(a) June: Ministry of Construction (MOC);

(b) Jul. 17: MOH-WHO-Ministry of Science and Technology;

(c) Aug. 5: Joint WHO/ILO letter to Prime Minister (PM);

(d) Aug. 22: PM approved Master Plan; and

(e) Aug. 28: Ministry of Health proposal to PM.

Ministry of Industry and Trade is responsible for Rotterdam Convention and objected to chrysotile to Annex 3, 2013 and said to carefully study on impacts on people's health. Similarly, Ministry of Construction acknowledged that the importance that benefits of workers and community should come first, but there remains the difficulty to make conclusion due to the different opinions. So under the Prime Minister's decision, the work should continue- that was the conclusion.

On September 19th, the letter by Deputy Prime Minister was sent to 6 concerned ministries and then MOIT agreed on developing a plan of "No Objection" to policy implementations including chrysotile in Annex 3 of Rotterdam Convention before 30/11/2014. At MOC, they will have to craft detail a roadmap to stop using chrysotile in roof sheet production by 2020 while MOH is responsible for developing national action plan for elimination of ARD. Finally after this conference on November 27th, VN-BAN will be established and there will be a follow-up ministries' implementation of DPM's instructions. We are trying to encourage the customers and factories to say NO to asbestos; however, thing cannot be changed overnight.

As a conclusion, I would like to emphasize the important roles of National Assembly, society organization, mass media and customers.

## *A Synergistic Effect of Asbestos and Smoking in Lung Cancer*

**Asst. Prof. Manupat Lohitnavy**

**Ms. Yuwadee Ngamwong**

**Naresuan University**

I would like to introduce our research on the synergistic relationship between asbestos exposures with cigarette smoke in developing lung cancer. As you know, there are two types of asbestos; serpentine and amphibole. There are various industries where asbestos are used and this includes ship, textile, brake/linings or buildings industries. The asbestos is categorized as group1 carcinogen by IARC.

There are many compounds in smoking and it can cause diseases such as heart disease, cancers, emphysema while secondary smoke can also cause lung cancer in non-smokers. This smoking is categorized as carcinogen group1 by IARC.

The study shows that smoking is not the cause of mesothelioma whereas most lung cancer cases are exposed to asbestos and also smoking. Thus, I would like to know the synergism between asbestos and smoking in lung cancer risk through a systematic review and meta-analysis. The hypothesis of this study is that co-exposure to asbestos and smoking will increase the risk of lung cancer in a synergistic interaction. And objective of this study is to reconcile and combine these results; we conducted a systematic review and meta-analysis to provide a quantitative estimate of the increased risk of lung cancer associated with asbestos exposure and cigarette smoking and to classify the interaction.

What we mean by "synergistic effect or synergism or synergy" is an effect arising between two or more agents, factors, or substances that produce an effect greater than the sum of their individual effects. The research methodology in this study can be divided into 5 parts; define question, searching, inclusion, quality assessment and extraction and then finally meta-analysis.

For the searching and selection method, initially we used 5 data bases including Pubmed or Scopus and 2,433 were searched and some of them were excluded (1,651). Finally in the final review there were 25 bibliographies; 19 from screening of articles from initial search, and 6 from hand searching of reference lists of retrieved articles. The number of study which includes the meta-analysis was 17.

We searched for the comprehensive review using 5 databases. Observational studies on asbestos exposure and cigarette smoking developing lung cancer were included and I found 10 case-control studies and 7 cohort studies met the criteria.

Subjects were characterized into four groups; non-exposure to asbestos and non-smoking (A-S-), asbestos-exposed and non-smoking (A+S-), non-exposed asbestos and smoking (A-S+), and asbestos-exposed and smoking (A+S+).

This is the meta-analysis and figures from case control studies, and cohort studies. The results show a synergism between asbestos exposure and cigarette smoking in workers developing lung cancer. Employees exposed to asbestos and had a history of smoking have a higher risk of developing lung cancer than those only exposed to one risk (either smoking or asbestos alone).

As limitations of study, some observational studies did not report the types of asbestos. And the methods used to quantitate exposures to asbestos and cigarette smoke were varied across studies.

### *Fibre Counting and Asbestos Fibre in Bulk Sample Analysis in Thailand*

**Associate Prof. Wantanee Phanprasit**

**Mahidol University**

My presentation today is a bit different from many people because our argument is that any form of asbestos can cause cancer and we have to make sure that we are controlling the asbestos use in Thailand, whether they are banned or not. So here I would like to talk about the capacity building on evaluation and control of asbestos exposure in Thailand.

In Thailand, there are lots of industries which use the asbestos and asbestos containing materials such as in raw material, parts and insulation for asbestos cement products, which most of the import of asbestos are used in. At the same time, they can be a serious issue when they are demolishing the building, or using the household equipment which contains asbestos. Therefore, we need to know how to handle and control the asbestos.

In industries, asbestos cement (roof tile, cement pipe, or sidings), friction materials or insulation are the main players in asbestos usage. Although big cement companies already stopped using the asbestos in Thailand, there is one small-medium size company still remained as largest market shareholder (70%) in asbestos consumption. In this sense, this is really difficult to control over these SMEs, rather than the big companies. Similarly, it is also hard to distinguish what materials are asbestos-containing or not, by looking at "fibre".

In the near future when demolishing the buildings, it would be a serious concern of public whether the demolished building are asbestos-containing, or the new building's roof, sidings, floor tile, ceiling tile, are made of asbestos. In this case, anyone who entered the building can get exposed to asbestos without knowing the danger.

We also encourage and train the workers on how to replace the ACMs roof with non-ACMs safely. From the perspective of household equipment, there are hair dryers or insulation electrical hair perm which should be examined if they are also the ACMs or not.

Based on the current information, it is said asbestos is mostly used in industrial purposes, and nearly all ACMs in Thailand is non-friable.

Regarding the industrial hygiene asbestos in prevention and control, I would like to emphasize the significance of evaluation and prevention/control, which include engineering control by substitution, and management control through work procedure.

Management; in Thailand we haven't banned the asbestos yet, but even if so it is not enough, I would argue. It is because the asbestos usage chain can reach out to deeper not only at the factory level but also to the individual, or public level. So we need laws to protect all of the consumers or public citizens. About education, there is some course at the university which teaches dangerous fibre but I don't think it is enough.

In Capacity building, there remain a few challenges to tackle; limited knowledge on asbestos on health hazard, usage, prevention and control, and how to sample and analyze them. In all aspects, we need the experts to overcome the challenges.

We have conducted a study to obtained work procedure exactly how to remove the asbestos-containing roof and replace with alternative (safer) roof in various places. When removing the roof, we teach the workers not to break the roof at all, because if you break it the asbestos dust can be out in the air.

In Thailand at this moment, there are a few methods to air-sample and analyze asbestos; PCM, SEM, and TEM. The first one is for air borne concentration of fibre - air sampling using membrane filter and analysis using phase contrast microscope, PCM. The second one is to distinguish asbestos from non-asbestos fibres: scanning Electron Microscopy (SEM) and transmission Electron Microscopy (TEM).

In Thailand we use NIOSH method #7400 for air sampling and analysis; the fibres were counted by rule A. There are about 15 sets of the phase contrast microscope equipped with graticule and less than 100 people who can prepare the sample and count the fibre. It is really limited and worrisome to protect and evaluate the health of all the workers who may exposed to asbestos fibre. Furthermore, the equipment to identify asbestos fiber such as polarized light microscope or TEM and expert are even more insufficient than those of the airborne fibre sampling and analysis, since there are a few of them.

So we need the people who acquired the relevant knowledge and skills on ACMs demolition and disposition procedure, to verify ACMs, and fibre counting (air sample analysis).

Other issues can also be pointed out as; no ACMs disposal regulation and no designated landfill site for ACMs. There should be the activities working on management issues, parallel to the process for a total ban.

### *Thai Standards on Asbestos in Land Vehicle Brake Linings and Roofing Tiles*

**Geoffrey Wheeler, CVBT**

I would like to share some research on standards in Thailand from my engineering point of view. Industrial standards of course impact on standards. So well-written *mandatory* industrial standards

can eliminate the use of asbestos in specific products on a country-by-country basis. Similarly, entities specifiying non-asbestos products by *voluntary* industrial standard can prevent the use of asbestos on a project by project or purchase by purchase basis.

Products for export don't need to meet the standards of the country they're made in but rather they need to meet the standards of the country they will be sold in, except, perhaps, for less developed countries (like Haiti) which don't have their own standards – yet.

In Thailand, Industrial Standards are documents that specify characteristics of products and how they are to be tested to see if they meet the characteristics. Characteristics can be size (dimensions), strength(s), absorptivity, luminosity, endurance, etc. In Thailand, Industrial Standards are issued by the Thai Industrial Standards Institute (TISI) which is under the Ministry of Industry.

Some industrial safety standards are *mandatory*. For example, all automotive windshield glass in Thailand must meet a safety standard. Most of standards are *voluntary*. Asbestos or non-asbestos building material products can meet voluntary standards. They have no mandatory standards. It is allowable to make and sell products that don't meet any standard.

Organizations (government and non-government) can specify non-asbestos or asbestos products through the use of standards. Some organizations don't want to use asbestos because it would look bad to their stake holders and because they genuinely care about the welfare of people.

The drawings for a government health center can specify materials (e.g., dual wave asbestos cement roof panels – TIS79-2529). The TIS stands for Thai Industrial Standards. TIS1407-2540 is the standard for non-asbestos dual-wave roof panels. The plans could specify non-asbestos just as easily.

In order for an organization to specify that a material must meet a non-asbestos standard, the standard has to exist. NICs (Newly Industrialized Countries like Thailand) are happy to write standards if they are requested to. LDCs (Less Developed Countries like Haiti) don't have their own standards; donor organizations usually specify standards from their own countries.

About the local construction standards, in Thailand, there are no national construction standards. These are covered by the civil works department of each local government unit (Municipalities and Local Tambon Authorities). These local construction laws cover such things as the minimum strength of piles used for foundations. They do not cover materials. The laws are very similar from place to place.

Another government entity that has some affect on construction is the City and Regional Planning Department. But their regulations don't affect building materials. The National Housing Authority has no regulations that affect the use of building materials. The NHA does affect specifications for government housing projects. Currently, standards for building materials are contained in industrial standards.

In motor vehicles, many government agencies have standards (or regulations). Besides the Ministry of Industry, the Department of Land Transportation also has standards that affect the use of asbestos. In fact, there are both Thai Industrial Standards (TIS) and Department of Land Transportation (DLT) Vehicle Specifications that affect the same product – brake shoes.

Clutch discs are regulated by TIS 97-2536 which is being revised. The new standard will not allow asbestos. Neither clutch nor brake lining industrial standards are mandatory. Manufacturers are free to make and sell clutch discs which contain asbestos but do not meet these standards.

The DLT regulation issued in 2011 on brake performance says that *new* car and truck brake linings must be non-asbestos. This is a mandatory regulation for vehicle manufacturers and importers. However, this does not apply to used cars either to motorcycles. Replacement brake linings are regulated by TIS 97-2536 which has just been revised and allows for asbestos.

So standards can be part of strategy to eliminate the asbestos from our environment. We can write letters requesting standards (or revisions to standards) for products which require (or have) *mandatory* safety standards; or require no asbestos. Similarly we can write letters requesting standards (or revisions to standards) for products which require (or have) *voluntary* standards; require no asbestos. We can also help less developed countries (LDCs) to write standards. Make model standards (like Singapore's stellar examples) available to LDCs. Furthermore, we can petition the Thai government for a National Building Code that prohibits asbestos in new construction or renovations.

### T-BAN from Ms. Somboon Srikamdokcare

(She provided her presentation in Thai)

In summary, in her long fight against asbestos, she recently requested to see the focal members of Ministry of Public Health in next week. In the photo, you can see all the members from National Reform Council in social issues. So we are going to fight together with the National Reform Council members regarding the issues of asbestos in Thailand.

## Open Discussion

### Declaration of Asia/ASEAN to be Free from Asbestos Hazards for Expedite Asia to be Free from Asbestos Hazard: What to do in ASEAN

During the session, participants joined the discussion to craft the Conference Declaration and the Official Recommendation Letter to Prime Minister. They are attached in Appendix.

### Opportunity and Barriers on Scientific Evidence, Social Movement, Regulatory Measure, and Trade Negotiation

The open discussion primarily focused on the topic on what ASEAN can do in order to ban the asbestos usage. Looking into the ASEAN Economic Community in 2015 ahead, participants agreed on the importance of developing the harmonized blueprint as ASEAN entity, which contains the

lessons learnt from EU's past experience. In a line of discussion, one participant suggested that ASEAN should create the position of "project coordinator" who can principally focus on developing and accelerating the initiative. Furthermore, it was said that the initiative, or at national level, should also foresee the potential substitutions of asbestos materials, alternatively.

Finally, several experts provided remarks as a conclusion of whole two-day international conference. Starting with Dr. Ken who happily encourages to this movement continuously, Dr. Paek also touched upon on the significance of embracing the concept of "United ASEAN Community". That is, while economic community is usually to promote the economic activities such as Free Trade Agreement, what should also be noted is rather to consider what is "FAIR", before pursuing FREE, which should be one of the important pillars of regional cooperation. With regard to this point, Dr. Jukka and Mr. Dimu also reiterated the necessity in AEC to include victims from hazards, and expert knowledge and experience on existing hazard cases, not only in medical and public health sector, but also in law-involved cases, from other countries. Lastly, Mr. Sugio expressed his optimistic hope for Malaysia or Thailand to be the next country to ban asbestos in near future.

# Appendix

## Appendix 1: Concept Note and Conference Programme

**International Conference**

**Expedite Asia to be Free from Asbestos Hazard:**

**Global Scientific and Social Evidence**

**Date: November 24-25, 2014**

**Venue: Asia Hotel, Bangkok, Thailand**

**Organized by: Social Research Institute, Health Consumer Protection Program**

**Supported by: CU Global Network and Thai Health Promotion Foundation**

Risk-based regulatory measures on the asbestos hazard vary among the countries in Asia. On the whole most developed countries, with serious concerns about the human health risks of asbestos, have prohibited the production, importation, and export of asbestos and products containing asbestos. In the countries which have banned asbestos, a raft of additional preventative measures has also been implemented.

A comparative analysis of approaches assessing the health risk in ban and non-ban countries will inform the Asian asbestos debate. An understanding of the interaction between global scientific and social evidence and the effect this interaction has on decisions taken regarding the asbestos threat are crucial to understanding the interplay between stakeholders in government, industry and civil society.

Although Thailand's Cabinet agreed to ban asbestos in 2011, this decision has not been implemented. The dynamics preventing this vital measure to protect human life will be considered at this forum not only to address the asbestos issue but also to develop a best practice method for dealing with hazardous products in the region.

The deliberations of this international conference will provide scientific and social evidence sourced from Asian experts and policy makers to supplement the current understanding and advice documented in international academic journals.

**Objectives**

1. Update global scientific and social evidence on the asbestos hazard and regulatory initiatives in Asia
2. Share public knowledge on governmental decisions and social collective action on the asbestos issue
3. Explore key findings pertaining to the achievement of and barriers to an asbestos-free society

**Co-organizations**

1. Department of Preventive and Social Medicine, Faculty of Medicine, Chulalongkorn University
2. Department of Community Medicine, Faculty of Medicine, Thammasat University
3. Department of Community Medicine, Faculty of Medicine, Prince of Songkhla University
4. Department of Occupational Health and Safety, Faculty of Public Health, Mahidol University
5. The Association of Occupational and Environmental Diseases of Thailand
6. Confederation of Occupational Health and Safety at Work
7. The Council of Work and Environment Related Patient's Network (WEPT)
8. The Foundation for Consumers (FFC)
9. The Federation of Consumer Organizations
10. Thailand Ban Asbestos Network (T-BAN)
11. Asian Ban Asbestos Network (A-BAN)

| DAY 1 – November 24, Monday | |
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| 09.00-09.30 | **Introduction and Objectives of the meeting**<br>Associate Prof. Dr. Vithaya Kulsomboon, Director of CUSRI, Chulalongkorn University<br><br>**Opening Remarks**<br>Assist.Prof.M.R.Kalaya Tingsabadh, Vice President for Academic Affairs |
| 09:30-10:30 | **Keynote speech**<br><br>**"Global Scientific and Social Evidence on Asbestos Hazard"**<br>Dr. Ken Takahashi, University of Occupational and Environmental Health (UOEH), Japan<br><br>**Update Global Situation on Asbestos Ban**<br>Mr. Sugio Furuya, Asian Ban Asbestos Network (A-BAN), Japan<br><br>**[Photo Session]** |
| 10.30-10.45 | **Coffee Break** |
| 10.45-11.30 | **Perspectives of ILO ,WHO and Ministry of Public Health, Thailand**<br><br>**ILO's Position on Asbestos and Actions**<br>Dr. Ingrid Christensen, ILO Bangkok Office<br><br>**WHO's Position on Asbestos and Actions**<br>Dr. Yonas Tegegn, WHO, Thailand<br><br>**Ministry of Public Health's Position on Asbestos and Actions**<br>Dr. Nopporn Cheunklin, Deputy Director-General of the Department of Disease Control, Ministry of Public Health, Thailand<br><br>**Moderator:** Dr. Somkiat Siriruttanapruk, Department of Disease Control, Ministry of Public Health, Thailand |

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| 11:30-12:30 | **Thailand's Experience on Asbestos and Lessons Learnt**<br><br>**Thailand Resolution on Asbestos Free Society**<br>Mrs.Orapan Srisookwatana, Deputy Secretary-general of the National Health Commission<br><br>**Thailand Efforts toward Asbestos Free Society: Scientific Evidence and Action**<br>Prof. Pornchai Sithisarankul, Department of Preventive and Social Medicine, Faculty of Medicine, Chulalongkorn University<br>Prof. Surasak Buranatrevedh, Department of Community Medicine, Faculty of Medicine, Thammasat University<br><br>**Mesothelioma in Khon Kaen University Hospital, Thailand**<br>Assoc.Prof. Kittisak Sawanyawisuth, Department of Medicine, Faculty of Medicine, and Research Center in Back, Neck, Other Joint Pain and Human Performance (BNOJPH), Khon Kaen University, Khon Kaen, Thailand<br><br>**Moderator:** Dr. Phusit Prakongsai, Director of International Health Policy Program, Thailand |
| 12:30-13:30 | **Lunch** |
| 13:30-15:00 | **Transferring Knowledge from Asian Ban Asbestos Countries: Session 1**<br><br>**The Long Journey to a Total Ban on asbestos in Hong Kong**<br>Dr. Ignatius Yu, Hong Kong Occupational and Environmental Health Academy<br><br>**Estimating impact of asbestos-related malignant mesothelioma in Taiwan using life years lost and lifetime healthcare expenditures** Dr. Lukas Lee, National Health Research Institutes, Taiwan<br><br>**Asbestos - Trends and Action in Singapore and Internationally**<br>Dr. Jukka Takala, Workplace Safety and Health Institute, Singapore<br>Ms. Lynnette GOH, Ministry of Manpower OSH Division, Singapore<br><br>**Moderator:** Dr. Thaksaphon Thamarangsi, Deputy Director of International Health Policy Program, Thailand |

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| 15.00-15.15 | **Coffee Break** |
| 15.15-16:00 | **Transferring Knowledge from Asian Ban Asbestos Countries: Session 2**<br>**Government Responsibility on Asbestos Regulation in Japan**<br>Dr. Takehiko Murayama, Tokyo Institute of Technology, Japan<br><br>**Society Collective Action on Asbestos Ban in Korea**<br>Dr. Paek Domyung, Seoul National University, Korea<br><br>**Moderator:** Assoc. Prof. Dr. Jiraporn Limpananont, Southeast Asian Consumer Council |
| 16.00-16.30 | **Open Discussion** |

| DAY 2 – November 25, Tuesday | |
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| 09.00-09.15 | **Summary of the first day** |
| 09.15-9.45 | **Keynote speech**<br><br>**Criminality and the Asbestos Industry**<br>Dr. Barry Castleman, Environmental Consultant, USA |
| 09.45-10.30 | **Measures and Practices regarding Asbestos**<br>**Session 1: Four ASEAN countries (Indonesia, Malaysia, Lao PDR, and the Philippines)**<br><br>- Mr. Dhitia Moelya Pratama, Indonesia Ban Asbestos Network (Ina-BAN), Indonesia<br>- Mr.Thongphim Vongrapha, Head of Occupational Safety and Health Division of Labour Protection Department, Lao Federation of Trade Unions<br>- Dr. Irina Safitri Zen, University Technology Malaysia (UTM), Malaysia<br>- Mr. Alan Tanjusay, Associated Labour Unions (ALU), the Philippines<br><br>**Moderator:** Prof. Pornchai Sithisarankul, Department of Preventive and Social Medicine, Faculty of Medicine, Chulalongkorn University |
| 10.30-10.45 | **Coffee break** |
| 10.45-12.00 | **Measures and Practices regarding Asbestos**<br>**Session 2: Vietnam and Thailand**<br>**Vietnam case study on building up a free-asbestos environment**<br>Dr. Pham Nguyen Ha, The Global Fund Supported Project on HIV/AIDS Vietnam Union of Science and Technology Associations Project Management Unit<br><br>**A Synergistic Effect of Asbestos and Smoking in Lung Cancer**<br>Asst. Prof. Manupat Lohitnavy, Faculty of Pharmaceutical Sciences, Naresuan University<br><br>**Measures for the existing asbestos in buildings/environment in Thailand**<br>Associate Prof. Wantanee Phanprasit, Department of Occupational Health and Safety, Faculty of Public Health, Mahidol University |

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| | **Moderator**: Prof. Surasak Buranatrevedh, Department of Community Medicine, Faculty of Medicine, Thammasat University |
| 12:00-13:00 | **Lunch** |
| 13:00-14:30 | ***Declaration of Asia/ASEAN to be Free from Asbestos Hazards***<br>**Open Discussion**<br>**Expedite Asia to be Free from Asbestos Hazard: What to do in ASEAN**<br>- Mr. Dhitia Moelya Pratama, Indonesia Ban Asbestos Network (Ina-BAN), Indonesia<br>- Mr. Thongphim Vongrapha, Head of Occupational Safety and Health Division of Labour Protection Department, Lao Federation of Trade Unions<br>- Dr. Irina Safitri Zen, University Technology Malaysia (UTM), Malaysia<br>- Mr. Alan Tanjusay, Associated Labour Unions (ALU), the Philippines<br>- Dr. Jukka Takala, Workplace Safety and Health Institute, Singapore<br>- Ms. Weawdaw Kurekasam**,** Foundation for Consumers, Thailand<br>- Dr. Pham Nguyen Ha, The Global Fund Supported Project on HIV/AIDS Vietnam Union of Science and Technology Associations Project Management Unit, Vietnam |
| 14.30-14.45 | **Coffee break** |
| 14.45-16.00 | **Opportunity and Barriers on Scientific Evidence, Social Movement, Regulatory Measure and Trade Negotiation**<br>**Recommendation from Asbestos Banned Countries**<br>**Wrap-up & Summary:**<br>Dr. Ken Takahashi, University of Occupational and Environmental Health (UOEH), Japan<br>Mr. Sugio Furuya, Asian Ban Asbestos Network (A-BAN), Japan<br>Dr. Barry Castleman, Environmental Consultant, USA |
| 16.00-16.30 | **Closing** |

## Appendix 2: Biography of Panels

**VITHAYA KULSOMBOON, Ph.D**

Dr. Vithaya Kulsomboon is the Director of Social Research Institute, Chulalongkorn University and the Chair of Social Development and Human Security Research Cluster focusing on Urbanization, Socio-economic Transformation, Green Society, and Social Progress Indicator. He graduated Ph.D. in Pharmacy Administration from University of Maryland at Baltimore, the U.S.A. and earned Bachelor Degree in Pharmacy and Master Degree in Primary Health Care Management from Asian Institute for Health Development, Mahidol University. He was the member of the National Economic and Social Advisory Committee (NESAC) and was the Honorable Advisory Member in the Senator Committee on Human Right, Freedom and Consumer Protection.

**Dr. Ken Takahashi**

Dr. Ken Takahashi is Professor of Environmental Epidemiology and Director of WHO Collaborating Centre for Occupational Health at the University of Occupational and Environmental Health (UOEH), Japan. Graduated School of Medicine, Keio University in 1983, received Ph.D. from UOEH and M.P.H. from University of Pittsburgh. Engaging in epidemiologic research of occupational diseases, with special interest on occupational lung diseases, and asbestos diseases in particular. Served as consultant/advisor to the WHO and ILO, and examiner/advisor to several Asian academic institutes. Twice on the Board of the International Commission of Occupational Health (ICOH) and President of the Asian Association for Occupational Health (2011-2014). Appointed by the Assistant Director-General of the WHO as member of the International Health Regulations (2005) Roster of Experts, as Expert in Chemical Safety (Environmental Epidemiology) [2012-2016]. International Advisory Panel (IAP) Member for Workplace Safety and Health (WSH), the Ministry of Manpower, Singapore [2013-2015]. Recipient of the Jorma Rantanen Award, 2011, from the Finnish Institute of Occupational Health.

**Sugio FURUYA**

Mr. Sugio Furuya is Secretary General of the Japan Occupational Safety and Resource Center (JOSHRC), a NPO supporting occupational victims and workers initiatives for better working and living conditions for all, since its establishment in 1990. He is also working for the Ban Asbestos Network (BANJAN) established in 1987 as a coalition of citizens, workers, specialists etc.

He also joined creation of the Asian Ban Asbestos Network (A-BAN) in 2009 and has been supporting grass-roots initiatives in many countries for achieving asbestos free world.

He is a member of the Japan Society for Occupational Health (JSOH) and the Japan Society for Labour Law (JSLL).

**Ms. Ingrid Christensen** is currently Sr. Specialist on Occupational Safety and Health at the ILO Decent Work Technical Support Team (DWT) for the East and South-East Asia and the Pacific, Bangkok. Prior to this, she held a similar position in the ILO-DWT for South Asia, New Delhi. She has also worked for the Danish Working Environment Authority, Ministry for Employment, and for the Technical Advisory Service, Danish Ministry of Foreign Affairs. She holds a Master Degree in Pharmacy. E-mail: christensen@ilo.org

**Ignatius TS YU, MBBS, MPH**

Ignatius Tak Sun YU is a medical doctor by training, and a former Clinical Professor and Head of the Division of Occupational and Environmental Health of the School of Public Health and Primary Care of the Chinese University of Hong Kong. His is now Chairman and Honorary President of the newly established Hong Kong Occupational and Environmental Health Academy.

He is also Visiting Professor of the School of Public Health, Sun Yat-sen (Zhong Shan) University and Fudan University School of Public Health, China, Chief Expert in Work Injury Prevention, Guangdong Provincial Work Injury Rehabilitation Center, Senior Consultant of Shenzhen Prevention and Treatment Center for Occupational Diseases.

He is a fellow of many local and international professional colleges and institutions in occupational medicine, occupational hygiene, public health and ergonomics. He has around 400 academic publications, including over 210 papers in refereed journals and 20 books or book chapters.

**Dr. Lukas Jyuhn-Hsiarn Lee** is a Research Physician at the Division of Environmental Health and Occupational Medicine, National Health Research Institutes (NHRI), and adjunct assistant professor at the Institute of Occupational Medicine and Industrial Hygiene (IOMIH), and adjunct Investigator Physician at the Departments of Neurology, and Environmental and Occupational Medicine, National Taiwan University (NTU) Hospital. His research is focusing on impact assessment of occupational and environmental cancers (OECs), neurological disorders and quality of life, and prevention of overwork related health issues in Taiwan. He graduated M.D. from NTU, and got a Master of Science Degree in Preventive Medicine, and earned a Ph.D. Degree at College of Public Health, NTU. He is a board-certified occupational physician and neurologist in active research-based clinic studies. He is also the member of Taiwan Environmental and Occupational Medicine Association, and Taiwan Public Health Association, and Taiwan Neurological Society, and Taiwan Movement Disorder Society.

**Dr Jukka TAKALA**

Dr Takala has more than 40 years of experience in WSH. Prior to his appointment as the first Executive Director of the WSH Institute in Singapore 2011-2013, he served the European Union for five years until September 2011 as the Director of the European Agency for Safety and Health at Work. From 2010 to 2011, he was Head of Coordination of all 32 EU Regulatory Agencies.

Dr Takala held various positions in the ILO, including Chief of ILO's International Occupational Safety and Health Information Centre (CIS) from 1986; Chief of the Safety and Health Information Services Programme from 1994 and Chief of the OSH Branch from 1996. From 1999 to 2006, he was Director of the InFocus Programme on Safety and Health at Work and the Environment (SafeWork) of the International Labour Office.
Prior to joining the ILO, Dr. Takala served the Government of Finland first as an Inspector, followed by posts of Safety Engineer, Chief Engineer and Chief of Machine Safety Bureau in the Occupational Safety and Health Administration of the Ministry of Social Affairs and Health and the Ministry of Labour in Finland.

Dr. Takala has been in charge of preparation, follow-up, enforcement and implementation of many international legal instruments including ILO Conventions, Recommendations, Resolutions, Codes of practice and Guidelines, such as the ILO Convention No. 187, ILO-OSH Management Systems, ILO List of Occupational Diseases, and the Globally Harmonised System of Classification and Labelling of Chemical Substances (GHS).

He has worked extensive periods in six countries and had global responsibility on safety and health at work under the ILO and regional responsibility under the EU.

**TAKEHIKO MURAYAMA, PhD**

Dr. Murayama is Professor of environmental policy and planning and the chair of Department of Environmental Science and Technology, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology (Tokyo Tech). He graduated PhD in Social Engineering from Tokyo Tech. After working at Fukushima University and Waseda University, he is on the current position. His research topics include risk assessment, management, communication as well as environmental impact assessment and social decision-making for sustainable society. He is a member of Policy Dialogue for Management of Chemical Substances organized by the Japan Ministry of the Environment, and a chair of Asian Ban Asbestos Network.

**Barry Castleman** is an environmental consultant in toxic substances control. He is educated in chemical and environmental engineering and has a doctorate from the Johns Hopkins School of Public Health. Since 1970, he has done research and been active in the regulation of asbestos and toxic chemicals. He has worked for numerous non-governmental organizations, US government agencies, and international bodies including the World Bank, World Health Organization, International Labour Organization, and the European Commission. He has testified as an expert witness in civil and criminal courts on the public

health and corporate history of asbestos, the subject of his doctoral thesis, in the US, Australia, and Italy. He has written extensively about the export of hazardous industries to developing countries.

As well known as Dimu is Program Manager OSH of Local Initiative OSH Network (LION) Indonesia and also a Program Coordinator of Indonesia Ban Asbestos Network (INA Ban). Graduated Bachelor Degree from Communications Faculty, Universitas Padjajaran, Bandung, Indonesia. Major in Public Relations. Had high interest and focus on Social Development, and Community Empowerment. Enjoyed life as organizers and survived as Social workers. Engaged with Social movement since his college time. He was the Student President in his faculty back day. His first Mayday was in 2005, and never miss it every years till now. Joint the OSH global activism at 25 years old, and still courage to learn many things until the end of time. Became part time artist and communications planner in his spare time.

**Mr. Thongphim VONGRAPHA,**

Head of Occupational Safety and Health Division of Labour Protection Department at

Lao Federation of Trade Unions (LFTU), former Deputy Head of International Relations Division of LFTU and also former coordinator and trainer of occupational Safety and health project of LFTU, former Head of Planning and Cooperation Division of Lao Trade Union Development Institute. He graduated Bachelor Degree in English Pedagogy at National University of Laos and Master Degree in International Relations in Beijing University.

***Irina Safitri Zen, PhD*** is the Director of Office of Campus Sustainability (OCS), under the Office of Deputy

Vice Chancellor Development, a research fellow member of Centre for Innovative Planning and Development (CIPD), Sustainability Research Alliance (SRA) and a senior lecturer at Urban and Regional Planning Department, Faculty of Built Environment in Universiti Teknologi Malaysia. She received her Bachelor's honour degree (Life Science), Master of Environmental Management and PhD (Environmental Management and Policy) from National Universiti of Malaysia. ***Dr Irina*** has recognized as an ***Environmental Management & Sustainability*** expert with 14 years (2000 – now) of experience in various consultant research projects related to that before turn to be an academia in 2010. ***Dr Irina*** has been involves and invited in many conferences, workshop, working and taskforce at university, national and international level and actively writing an article and scientific published article at international journal, books and public media. She is a member of the Executive Working Group of Sustainable Development Solution Network (SDSN) Malaysia Chapter, Working Group of Malaysia Sustainable Consumption and Production (SCP), a resource person for Master Class Sustainable Development eLearning Course under CONNECT-Asia, UNESCO (United Nation Education, Science and Culture Organization) Currently, she is a member of Environmental Management and Research Association of Malaysia (ENSEARCH), the Malaysia Solid Waste Management Association, International

Waste Working Group (IWWG), Association of Malaysian Environment-Behaviour Researchers (AMEER), Association of Behavioural Researchers on Asians (ABRA) and Federation of Malaysia Consumers Association. She can contacted at irinasafitri@utm.my and irinasafitri@gmail.com. More details : www.researchgate.net/profile/Irina_Zen & scival-expert.utm.my/expert.asp?u_id=1802.

**Alan A. Tanjusay**

Spokesperson & OIC, Media and Public Information Department, Trade Union Congress of the Philippines (TUCP), the largest non-stock, non-profit labour center in the Philippines with office located at National Labour Center, TUCP-PGEA compound, Elliptical Road, Diliman, Quezon City. Employed on April 2011 to present

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**PHAM NGUYEN HA, PhD**

Since July 2014, Dr. Pham Nguyen Ha is the Standing Deputy Director of the Global Fund Supported Project on HIV/AIDS in Vietnam. During August 2010-June 2014, he used to work as a National Professional Officer at WHO Vietnam responsible for occupational health project including the component of prevention and control of asbestos-related diseases. He worked for 15 years (1995-2010) at the Embassy of Sweden in Hanoi as a National Programme Officer for health and research cooperation between Sweden and Vietnam. In 2013, he graduated PhD in public health sciences from Karolinska Institutet, Stockholm, Sweden. He got the Master in Public Management and Economics from Solvay Business School, Universite Libre de Bruxelles, Belgium in 2003 and graduated as medical doctor at Hanoi Medical University in 1989.

## Appendix 3: Drafted Declaration

**Declaration of International Conference**

**"Expedite Asia to be Free from Asbestos Hazard: Global Scientific and Social Evidence"**

Global Scientific and Social Evidence derived from our international conference "Expedite Asia to be Free from Asbestos Hazard" during November 24-25, 2014 at Asia Hotel, Bangkok, Thailand indicate the serious situation concerning death and suffering caused by asbestos including chrysotile.

Asian countries that ban asbestos have learned this experience through deaths and suffering of people affected and therefore provided measures and legislation to prevent more death from the asbestos hazard.

All countries that ban asbestos in conjunction with international organizations, such as World Health Organization (WHO) and the International Labour Organization (ILO), recommend that asbestos must be banned immediately.

Asian community, and the governments should realize that it is necessary to apply the "precautionary principle" to establish policy the at national level to stop importation and production of all kinds of asbestos and asbestos containing material. Regulation must be established and enforced immediately to protect health and life of workers, consumers and people in general from asbestos exposure originating from construction, repair, removal, demolition and waste disposal.

A possible direction is to start a discussion on the establishment of ASEAN agency on OSH modeled after EU-OSHA and expanding from the existing ASEAN OSHNET.

Additional measures that must be implemented are; raising public awareness of health risk caused by asbestos, preventing secondary exposure to asbestos such as workers bringing asbestos dust to their homes via their clothes, controlling environmental exposure during renovation or demolition of old buildings, preparing secured landfill areas for asbestos-containing waste, and managing the risk from existing asbestos properly. It is also necessary to helping asbestos victims obtain compensation, empowering customers to refuse asbestos products based on their consumer rights, and most importantly, pressuring to stop asbestos mining and use.

Tuesday, November 25, 2014

## Appendix 4: Drafted Letter to Prime Minister

Asia Hotel, Bangkok, Thailand

November 25, 2014

Dear Prime Minister, General Prayut Chan-o-cha

We are writing to urge you to ban use of asbestos and asbestos containing materials in Thailand. This would be consistent with bans in over 50 countries and with the recommendations of the World Health Organization (WHO) and the International Labour Organization (ILO).

Asbestos is used predominately in fibre-cement roofing and vehicle brake and clutch linings. The danger arises from breathing the dust from asbestos product manufacture and use. The WHO, ILO and the international scientific consensus is that all types of asbestos including chrysotile or white asbestos causes cancer and a lung scarring disease (asbestosis) that can be totally disabling or fatal. There is no level of exposure to asbestos that is safe, even family members of asbestos workers and neighbors of asbestos air pollution sources get cancer from their environmental exposure.

Safer fibre-cement construction materials cost 6-15% more to produce. The World Bank notes that these products have superior impact resistance. The use of asbestos in construction materials assures that people's lives will be needlessly endangered throughout the life cycle of the building: construction, renovation, repair and demolition. The resulting costs in national health care and the resulting contamination of the living environment are enormous.

We therefore urge that you institute immediate measures to end the use of asbestos products in Thailand.

Sincerely yours,

On behalf of all participants of conference:

Dr. Ken Takahashi

University of Occupational and Environmental Health, Japan

Dr. Barry Castleman

Environmental Consultant, USA

Dr. Paek Domyung

Seoul National University, Korea

Mr. Sugio Furuya,

Asian Ban Asbestos Network (A-BAN), Japan