

A Technical Project on

**OCCUPATIONAL EXPOSURES AMONG MECHANICS WORKING WITH FRICTION
PRODUCTS AND AWARENESS RAISING On ASBESTOS RELATED DISEASES
(ARD) IN NEPAL**

Supported By

**Developing World Outreach Initiative (DWOI)
USA**



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May 25, 2021

OCCUPATIONAL EXPOSURES AMONG MECHANICS WORKING WITH FRICTION PRODUCTS AND AWARENESS RAISING On ASBESTOS RELATED DISEASES (ARD) IN NEPAL

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1. Introduction:

The burden of Non Communicable Disease (NCD) is increasing globally. Currently, Nepal is also facing an increasing burden of Non communicable disease like other developing countries. The major NCDs like cardiovascular disease, cancer, diabetes and chronic respiratory diseases are increasing in recent years. Cancer has become the fifth most common cause of death in Nepal which demands an investment for prevention and treatment. In this case, prevention should start with the ban of all asbestos-containing products including brake and friction products and also include provisions for training mechanics on how to reduce exposures in vehicle maintenance activities.

Furthermore the use of asbestos had gone up in previous decade (2005 to 2015) before the Government of Nepal legally banned all forms of asbestos being imported, sold, and distributed and used (**except** asbestos lining over brake shoe and clutch plates) 2014 publishing a gazette (see fig alongside) notice in 2014 as a result of our research based campaign in Nepal. Nepal is the first country in the South Asia that has banned the use of Asbestos and is also party to all major Conventions on chemicals, e.g. BRS (Basel, Rotterdam and Stockholm) Convention.

Since the effective dates of the Asbestos ban (20th June 2015), CEPHED has been heavily engaged in both compliance monitoring of the ban as well as preparing, producing, and disseminating IEC materials (e.g. guidelines, fact sheet, brochure and posters, radio programs) among policy makers, regulators, custom officials, other stakeholders. We have also tried to reach out to the people and owners who have used the asbestos materials for roofing and make them aware about how they can better handle the asbestos and asbestos containing waste so as to prevent exposure to asbestos and asbestos containing waste in order to protect themselves.

खण्ड ६४ संख्या ३० नेपाल राजपत्र भाग ५ मिति २०७१/१७

सूचना ४

नेपाल सरकारले वातावरण संरक्षण ऐन, २०५३ को दफा ७ को उपदफा (३) ले दिएको अधिकार प्रयोग गरी यो सूचना प्रकाशन भएको मितिले १८१ औं दिनदेखि लागू हुने गरी सवारी साधनमा प्रयोग हुने Brake Shoe र Clutch Plate को Asbestos Lining बाहेक Asbestos Corrugated/ Non-Corrugated Sheet, Tiles, Insulators आदि सबै Asbestos र Asbestos युक्त वस्तुको आयात, विक्री वितरण र प्रयोग गर्न प्रतिबन्ध लगाएको छ।

आज्ञाले,
महेन्द्र मान गुरुङ्ग
नेपाल सरकारको नि.सचिव

(२३)

Nepal Gazette
Published by Government of Nepal
Part 5,
Government of Nepal
Ministry of Science, Technology and Environment
Notice No. 4

(Khand 64, Number 30. Nepal Gazette, Part 5, Date: 22 December 2014)

In exercise of the power conferred by Environment Protection Act 1997 (Section 7 and Sub-section 3), shall come into effects from 181 days from the date of publication of this notice by the Government of Nepal has banned the Import, Sale, Distribution and Use of all Asbestos and Asbestos containing products including Corrugated, Non Corrugated Sheet, Tiles, Insulators etc. except the asbestos lining of automobile's brake shoe and clutch plate.

With permission
Mahendra Man Gurung
Acting Secretary, Government of Nepal

1. Gazette Notification of Asbestos Ban in Nepal and its English translation (below)

Given the exemption in the current ban as noted, some asbestos containing friction materials are being imported and used mostly in vehicles despite the increasingly availability of asbestos free break shoes and clutch plates as well as the automobile sectors moving to hydraulic brakes. This gives hope for all of us in Nepal to now advocate for a total asbestos ban like the one implemented in Japan. For this more evidences needs to be collected and established. The proposed study of occupational exposure among mechanics working with automobile workshops where brake shoe and clutch plates repairs and maintenance to generate evidence of exposure and associated health implication faced by the mechanics working. Additionally, we have some evidences from our previous attempts to investigate level of asbestos in few of those automobile workshops` dust samples were found to be highly contaminated. This study aims to improve understanding of the knowledge of the ban, health implication of asbestos, the operations of repair and maintenance workshops, and associated asbestos waste management practices.

Thus there has been an urgent need to examine possible occupational exposure among the workers in those workshops. Based on we intend to further advocate for the total ban of asbestos in Nepal so as to protect the workers at brake shoe workshops in Nepal.

Finally a stakeholder workshop will be organized through ZOOM virtually to release the reports and finding of the research will be duly communicated to the government authorizes and to promote our campaign for the total ban of asbestos in Nepal.

Asbestos, its uses and exposure potential

Asbestos is comprised of a group of naturally occurring minerals. Asbestos fibers are tiny in nature, they are extremely durable, resist to heat, fire, chemical reactions, electricity and breakdown, have been extensively used in wide different types of products including automobile parts, brake, roofing shingles, floor tiles, ceiling and transmission products etc. Asbestos is classified into two main groups: amphiboles and serpentines. Chrysotile is the only type of asbestos of the serpentine group, also known as white asbestos and is currently the type of asbestos with the most extended use worldwide (ATSDR, 2001).

Asbestos is widely used throughout the world, particularly in building and insulating materials. Typical uses includes: boilers and heating vessels; cement pipes, clutch, brake, and transmission components etc.

Asbestos is one of the most important occupational carcinogenic, causing about half of the death from Occupational cancer. All types of asbestos are classified as carcinogenic to humans (IARC, 1998, 2012), and asbestos is one of the most important occupational carcinogens (OMS, 2006). Asbestos is related with both malignant and non-malignant diseases (ACCP, 2012; IARC, 2012).

The most important asbestos exposures occur in occupational environments (ACSH, 2007; Wagner and Lemen, 2008) where the manipulation of asbestos containing products may result in excessive asbestos exposures (OIT, 1986).

Objective:

General Objective: Characterizing occupational exposures to asbestos among automobile workshops mechanics conducting repair and maintenance of asbestos containing brake shoes, pads and clutch plates and increasing public awareness of these hazards in Nepal

Specific Objectives:

- (a) Collecting import data of friction materials containing or without containing asbestos.
- (b) Mapping distribution/ sales networks throughout the country
- (c) Interviews with mechanics to assess work practices, health implication and potential for take home exposures.
- (d) Release of study report through a stakeholder's workshop to maximize outreach to brake mechanics and others to do the suitable awareness.
- (e) Report to summarize findings and advocate for further ban on the ongoing use of asbestos in brake/clutches so as to achieve total asbestos ban in Nepal

Methodology:

Following methodology has been adopted to fulfill the objectives of the project.

- (a) Collected and reviewed the import data of frictional materials from the import and exports data for five year from department of custom.
- (b) Map distribution/ sales networks throughout the country.
- (c) Developed questionnaire and carryout survey with mechanics about potential exposures and associated health impacts.
- (d) Release of report through stakeholder workshop including mechanics and issue a press release to maximize media outreaches to increase mass awareness.
- (e) Sent the report with recommended action needs to be taken by the concerned government authorities and advocate for complete asbestos etc.

2. Results and Discussion:

Asbestos and non-asbestos containing brake products are currently used in low-and middle-income countries like Nepal. During brake replacement, dust is generated from the older brake products and new products often require manipulation before installation, which results in the release of asbestos fibers. Asbestos also get airborne during the maintenance of brake shoes through intentional grinding to make smooth surfaces rough. Studies have documented exposures in excess of the U.S. regulatory exposure value for an 8-hour time weighted average (TWA) 0.1 f/cm³ asbestos occupational limit.

The aim of this study is to learn more about local practices for the replacement, repair and maintenance of the asbestos based friction materials by mechanics and the associated health and environmental implications. This will help inform future decisions on banning these existing uses as well as health implications related to asbestos exposure among the mechanics.

Import data of friction materials containing or without containing asbestos.

Different types of frictional materials as well as brake shoe lining and pads containing or without containing asbestos has been imported, distributed, sold and used in various parts of the countries including large cities like Kathmandu, Lalitpur , Bhaktpur, Pokhara, Bhairahwa, Dang, Tulsipur, Nepalgunj, Surkhet, Dhagadhi, Butwal, Janakpur, Siraha, Biratnagar, Ithary, Dharan, Dhankutta, Illam. These frictional products both with and without asbestos are being imported, into Nepal from countries including: China, India, Germany, Indonesia, Japan, Korea, Thailand, Italy, France, and Turkey.

The following table summarizes three consecutive years [2076 BS (mid July 2018 to mid-July 2019), 2077 BS (mid July 2019 to mid-July 2020) and 2078 BS (mid July 2020 to mid of April 2021)] of import of frictional materials containing and without containing asbestos in Nepal as per the data maintained by the Government of Nepal, Ministry of Finance, and Department of Custom for the different physical years.

Import of Friction Material containing Asbestos (15 July of Year to 15 July of the Next consecutive Year)

HS Code	Description	Partner Countries	Unit	Quantity	Imports Value in 1000	Total Import Value in NRP
2020/21*						
68132000	Frictional material & articles there of containing asbestos	China	PCS	17000	40	31000000
68132000	Frictional material & articles there of containing asbestos	India	Kg	6300	1569	
68132000	Frictional material & articles there of containing asbestos	India	PCS	342201	29391	
2019/20						
68132000	Frictional material & articles there of containing asbestos	China	Kg	23	3	30157000
68132000	Frictional material & articles there of containing asbestos	India	Kg	86674	30154	
2018/19						
68132000	Frictional material & articles there of containing asbestos		KG	151865.83	55265.74	55265740

*Data of 2020/21 is from Mid July 2020 to Mid April 2021 (Available from Department of Custom, Nepal)

Import of Friction materials not containing asbestos

2020/21*

HS Code	Description	Partner Countries	Unit	Quantity	Imports Value in 1000	Imports Value in NRP
68138100	Brake linings and pads, not containing asbestos	China	PCS	227253	14674	339788910.5
68138100	Brake linings and pads, not containing asbestos	Germany	Kg	1	4	
68138100	Brake linings and pads, not containing asbestos	Germany	PCS	24	72	
68138100	Brake linings and pads, not containing asbestos	India	Kg	86716	25344	
68138100	Brake linings and pads, not containing asbestos	India	PCS	1322692	289435	
68138100	Brake linings and pads, not containing asbestos	Indonesia	PCS	20	280	
68138100	Brake linings and pads, not containing asbestos	Italy	PCS	2	30	
68138100	Brake linings and pads, not containing asbestos	Japan	PCS	577	5486	
68138100	Brake linings and pads, not containing asbestos	Republic of Korea,	PCS	62	355	
68138100	Brake linings and pads, not containing asbestos	Thailand	PCS	3660	1192	
68138900	Other friction material & article, not containing asbestos	China	Kg	9	10	
68138900	Other friction material & article, not containing asbestos	China	PCS	1248	190	
68138900	Other friction material & article, not containing asbestos	France	PCS	3	36	
68138900	Other friction material & article, not containing asbestos	India	Kg	0	0	
68138900	Other friction material & article, not containing asbestos	India	PCS	12137	2661	
68138900	Other friction material & article, not containing asbestos	Korea, Republic of	PCS	8	19	

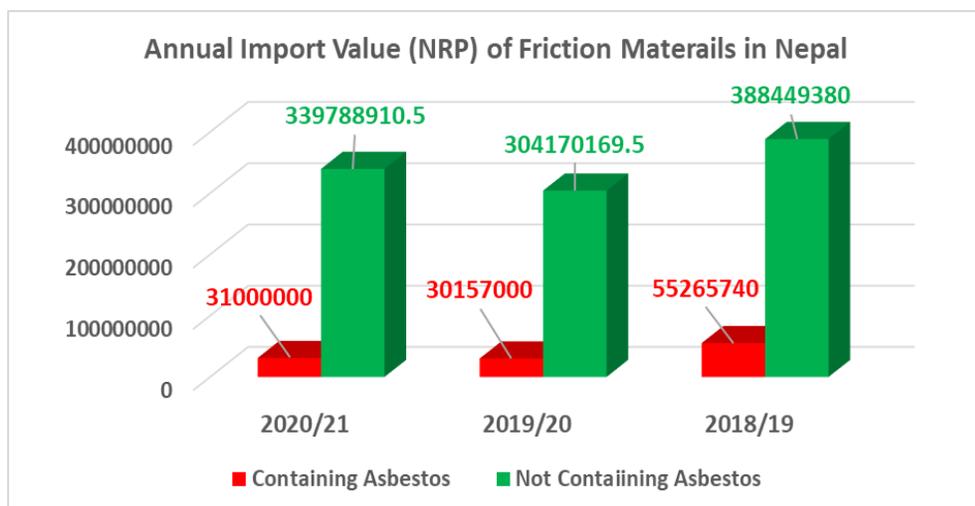
2019/20

HS Code	Description	Partner Countries	Unit	Quantity	Imports Value in 1000	Imports Value in NRP
68138100	Brake linings and pads, not containing asbestos	China	Kg	104203	18488	304170169.5
68138100	Brake linings and pads, not containing asbestos	Germany	Kg	75	1280	
68138100	Brake linings and pads, not containing asbestos	India	Kg	935010	276194	
68138100	Brake linings and pads, not containing asbestos	Japan	Kg	626	3998	
68138100	Brake linings and pads, not containing asbestos	Thailand	Kg	49	259	
68138100	Brake linings and pads, not containing asbestos	Turkey	Kg	4	63	
68138900	Other friction material & article, not containing asbestos	China	Kg	211	79	
68138900	Other friction material & article, not containing asbestos	Germany	Kg	1	70	
68138900	Other friction material & article, not containing asbestos	India	Kg	11751	3739	

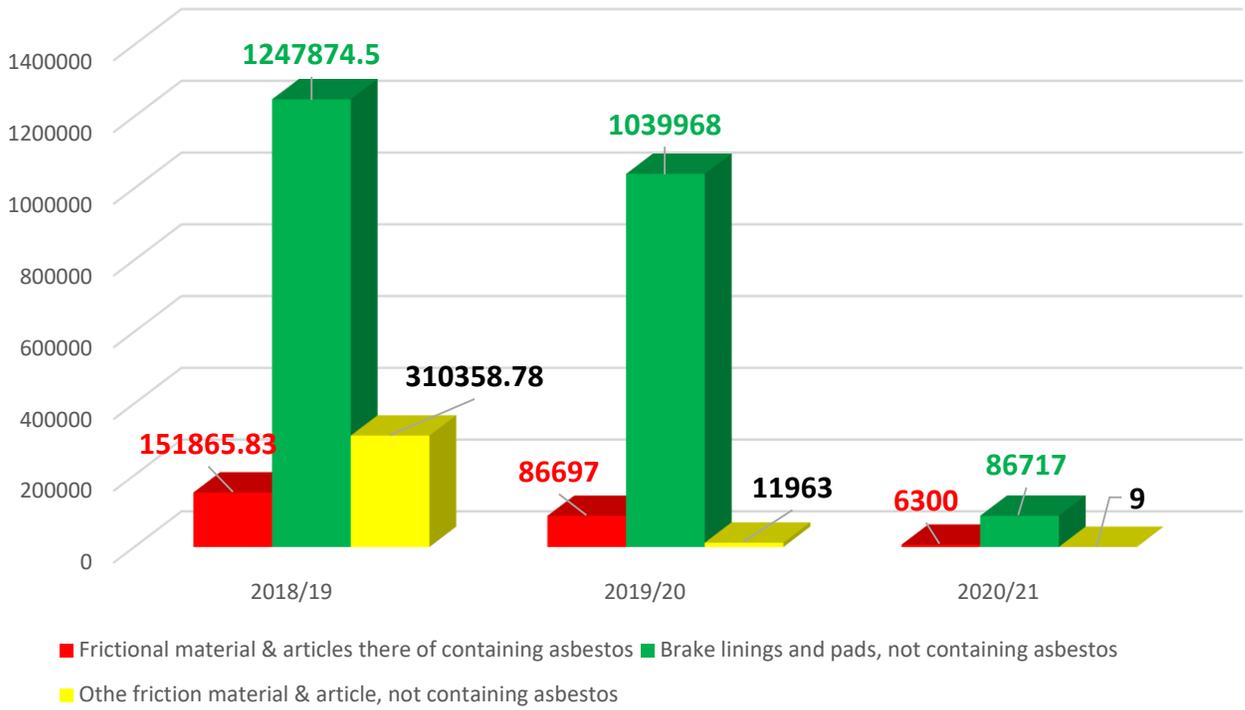
2018/19

HS Code	Description	Partner Countries	Unit	Quantity	Imports Value in 1000	Imports Value in NRP
68138100	Brake linings and pads, not containing asbestos		KG	1247874.5	371336.46	388449380
68138900	Other friction material & article, not containing asbestos		KG	310358.78	17112.92	

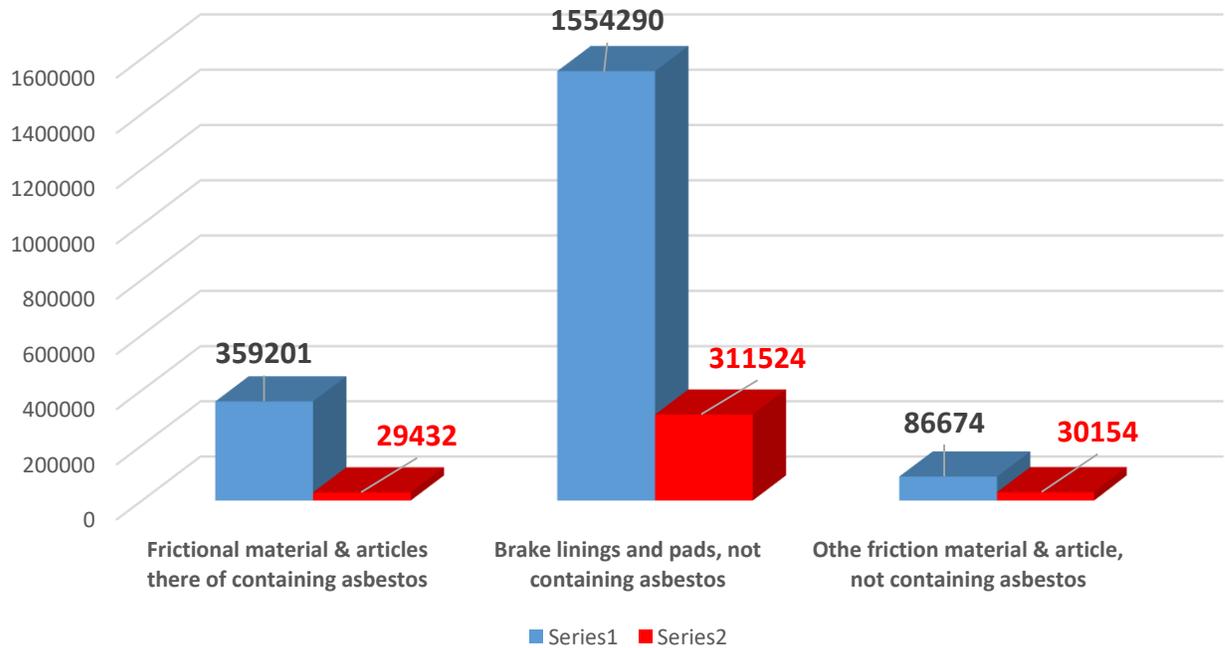
These tables of time series of import data of friction materials, brake lining and pads, other frictional materials and article containing and not containing asbestos clearly indicates that there are already alternative asbestos free friction materials including brake linings and pads that are available in the market comparatively of very high almost 10th fold value.



Import trend of Frictional Materials with/out Asbestos (KG)



Import of Friction Materials with/out Asbestos (pieces) and Value (in 1000) in the year 2020/21



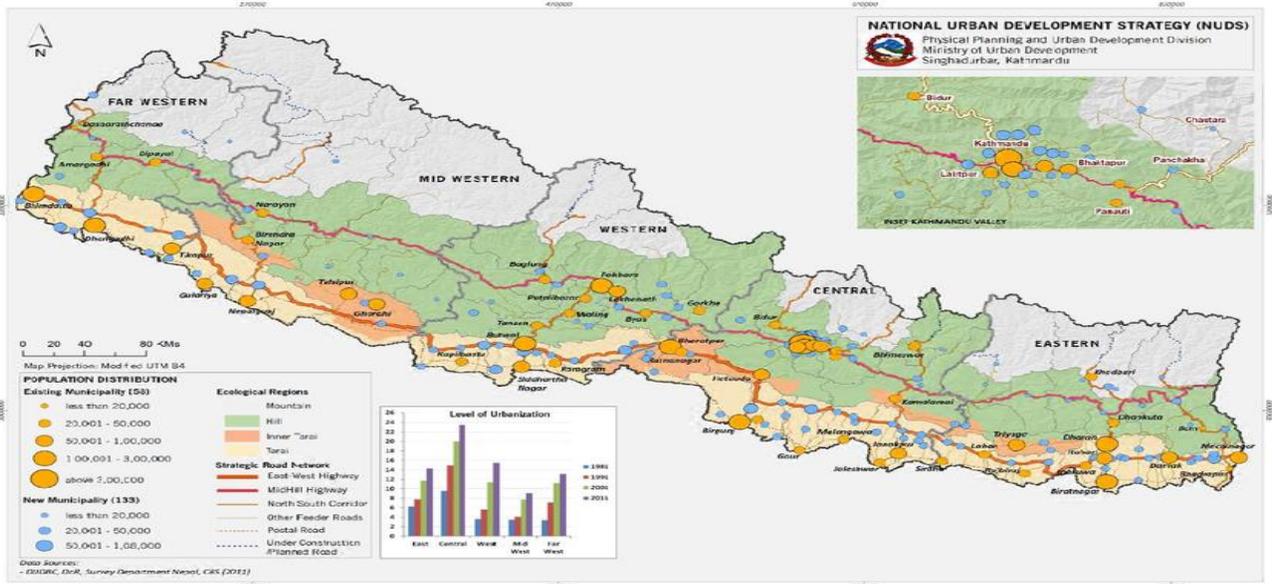
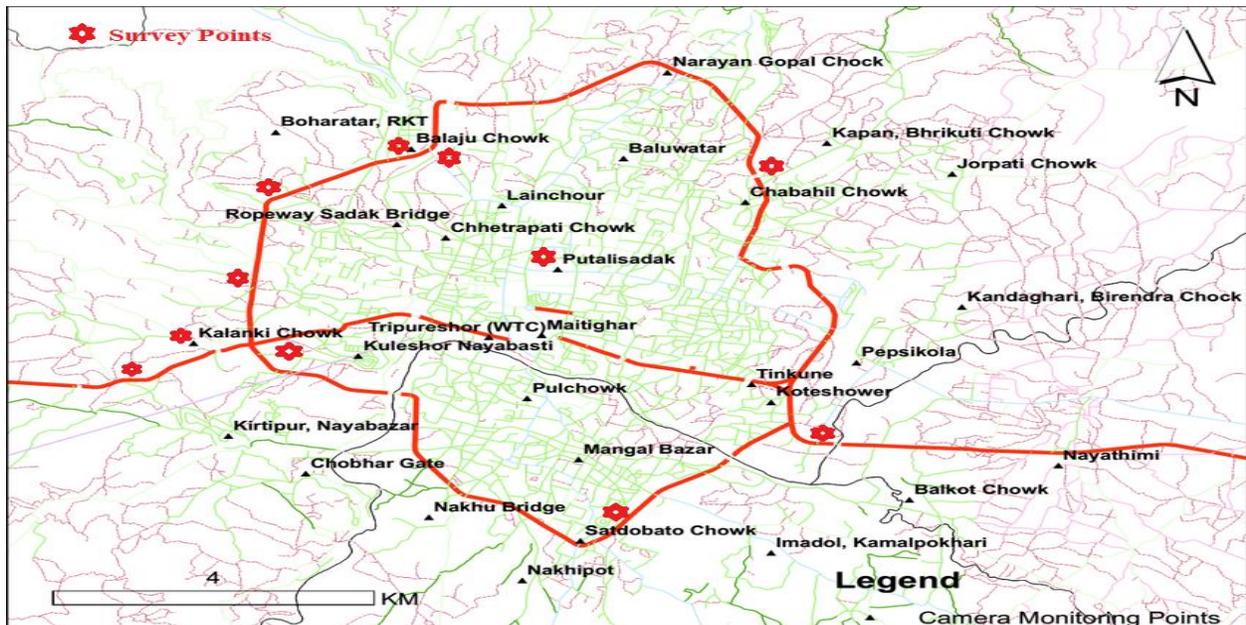


Figure. The possible places cities with increased automobiles users with possibility of having Brake Shoe and Clutch plates repair and maintenance workshops thus depicting the distribution of friction materials with/without containing asbestos.

Questionnaire Survey

Ten brake repair shops (BRS) located in Kathmandu Valley (Annex 1) were surveyed to better understand potential exposures and associated health and environmental implications of these products with the help of the attached structured questionnaire (Annex 2). Below is a map of the locations of the workshops included throughout the Kathmandu Valley.



Source of asbestos exposure and variables such as type of tasks performed by workers, workload (number of products manipulated daily and hours of work), years of experience as riveters, and shop characteristics.

All of the mechanics included in the survey are male with ages from 25 to 53 years. 70% of them have worked in their own workshop whereas 30% have worked for others. Their education ranges from no schooling to bachelors level including 10% has complete bachelor degree, 50% SLC pass (8-10 classes), 20% of has passed certificate level (12 class), 10 % elementary school (< 7 classes), 10 % of each having no schooling and no training taken at all.

In total 70% of the mechanics were aware of the health impacts of Asbestos.

Only 10 % mechanics know about the Government of Nepal asbestos ban decision. 80% did not know about this whereas other 10 % did not respond this question.

Mechanics were engaged in the repair and maintenance of brake shoe and clutch plates (BSCP) from 2 years to 30 years or so. They reported working from 6 to 7 days a week with hours ranging from 1.5 hours to 12 hours daily.

40% Mechanics has smoking habits with some of them having more than 10 years of smoking practices and few of them (30%) are still smoking. 50% did not smoke.

No specific trend of working with a particular product type (e.g. with engine, brakes, clutches) was found.

All of the brake shoe and clutch plates repair and maintenance workshops have drinking water, hand washing, facilities. Only one workshop had enclosures over grinders but none had vacuum exhaust enclosures. 50% of workshop has provision of shower at the workplace for mechanics, 50% workshop have also a change area. 70% of the workshop has separate lunch area from the work area. 60% of the workshops workers changed their clothes before going home.

None of the participants reported using a vacuum to remove dust. Alarmingly 30 % workshops were found to be used compressed air to remove dust and 60% reported were using cloth rags for this purpose. Whereas 50% reported using manual sanding of brake drums and 30% reported grinding of brake drums and 30% use machining /beveling with a lathe.

50% of workshops sent out their waste into the regular waste stream without knowing the hazardous nature of the asbestos containing waste. Whereas 30% of them sold their waste to the scrape waste collector for recycling. None of them managed their waste as per the hazardous waste management guideline in Nepal.

None of the mechanics had taken any training about asbestos and its associated hazards. However, 20% mechanics had shared their health concerns they believed were related to asbestos exposures whereas the majority of the mechanics did not have any health issues and they did not know about asbestos related health impacts.

3. Conclusion:

Despite of ongoing surge of COVID 19 pandemic, we utilized the lag period between 1st and 2nd wave of infection to complete the questionnaire survey. With the analysis of the questionnaires, and the review of the import data of friction products, we came to following conclusions.

Friction materials importation, sold, distribution and used containing asbestos has been found to be decreased in Nepal. Whereas same with not containing asbestos has been also imported and used in Nepal. This clearly shows the improvements and possibilities to move towards total asbestos ban in Nepal. However, given the large quantities of these asbestos-containing products used in vehicles in the past, mechanics will experience ongoing exposures from replacing these materials.

As most mechanics did not known about Government ban and the majority had no awareness of the hazards of asbestos and took few precautions, it is important that outreach and training programs be conducted to reach these workers.

As the asbestos ban with exemption of clutch plates and brake shoe of the getting increasingly effective in Nepal, these two exempted items containing with asbestos will remains in the vehicles for next 10-15 years coupled with the situation of none of the workshops were taking precautions to reduce asbestos exposure. So workers especially mechanics handling of repair and maintenance of the clutch plates and brake shoe needs to be protected from getting continued asbestos exposure from these old vehicles. Our survey with the mechanics and analysis of the import data of frictional materials revealed the availability of friction materials not containing asbestos. This gives a very good opportunity to Government of Nepal to opt for considering of banning the two exempted items too. Time has come to take this progressive decision soon.

The most important asbestos exposures occur in occupational environments where the manipulation of asbestos containing products may result in excessive asbestos exposures. Most of the legislation and control activities regarding asbestos exposures of brake mechanics and other occupational groups started in the 1970s and in 1994 the US Occupational Safety and Health Administration (OSHA). Government of Nepal has not adopted any such exposure limit yet.

Recent studies performed by our research group have shown that brake mechanics are exposed to high asbestos concentrations in developed countries. One of the most important reasons for this high exposure is that in Nepal asbestos containing brake products like frictional materials are distributed by the importers detached from their support, requiring manipulation in the shops before installation in the vehicles. Thus, brake products are drilled, counters inked, riveted, beveled, and grinded, and a specific group of mechanics, known as riveters, conducts these tasks and most likely to get high level of exposure. Other manipulation task observed include bonding the brake linings or brake pads to the support in passenger vehicles. In this case, riveters have to grind and bevel the brake products in order to remove excess glue and get high level occupational exposure too needed to be avoided immediately.

Poor hygiene and lack of maintenance could result in the accumulation of asbestos fibers on different surfaces, and the subsequent suspension of the fibers during other activities (*Occup. Hyg.*, 2016, Vol. 60, No. 8, 1020–1035). The analysis of asbestos content of brake shoe asbestos lining sample and the waste pieces sample of brake shoe from the repair workshop confirmed the presence of chrysotile asbestos in a range between 5–50% (National Asbestos Profile, CEPHEP 2016, p51).

4. Recommendations:

Following recommendations have been drawn on the basis of the study carried out involving import analysis and the survey with the mechanics engaged in brake repair and maintenance.

- a) Total ban of asbestos can be achieved based on the availability of replacement friction materials without asbestos and Nepal should move to adopt a total asbestos ban.
- b) The mechanics who are most vulnerable from ongoing occupational exposures to asbestos need to become aware of these hazards and procedures for reducing exposures through training. This is even more important as even if it will get banned soon, the asbestos containing brake shoe and clutch plates is going to remain with existing transportation vehicle.
- c) Sound management of asbestos containing hazardous waste generated from the repair and maintenance workshops needed to be adopted.
- d) Effective implementation of Asbestos ban decision needs through periodical market monitoring and strictly regulating at entry custom points by all concerned authorities.
- e) Exposure limits for airborne asbestos [at least as stringent as 0.1 f/cm³] for asbestos in the workplace needs to be formulated and adopted by the concerned government authorities.
- f) Mechanics workers at brake shoe and clutch plates repair and maintenance workshop experience high asbestos occupational personal exposures, and because of this, they are at excessive risk of developing asbestos related diseases needs to be exclusively studied.

5. Report Release through organizing an Interaction Program

On the Occasion of World Environment Day 2021, June 5th the study report has been released through successfully organizing an Interaction Program entitled "**Chemical Safety, Environment and Ecosystem Restoration**" well participated by over 60 participants from different sectors of peoples including representatives of Government, Non-Governmental Organizations, Researchers, OSH Professionals, Doctors, Youth, Teachers, Professors, Scientist, Environmentalists, Metal plating workshops as well as Brake shoe and Clutch plate repairing workshops owners and workers and Media personnel's etc. Wide media coverage (<https://healthnewsnepal.com/news/environment-day-2021>) on the issues were aired through different radio stations and newspapers. The last year technical project findings on Mercury release to the environment and associated exposure among the metal plating workers were also presented and shared among the participants. Please find **Interaction Program Schedule** (Annex 3).

Occupational Exposure Among Mechanics Working with Asbestos containing Frictional Materials in KTM



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5th June 2021, World Environment Day



Figure 1. Asbestos fibers

Mercury Discharge to Environment from Metal Plating Workshops, KTM Valley



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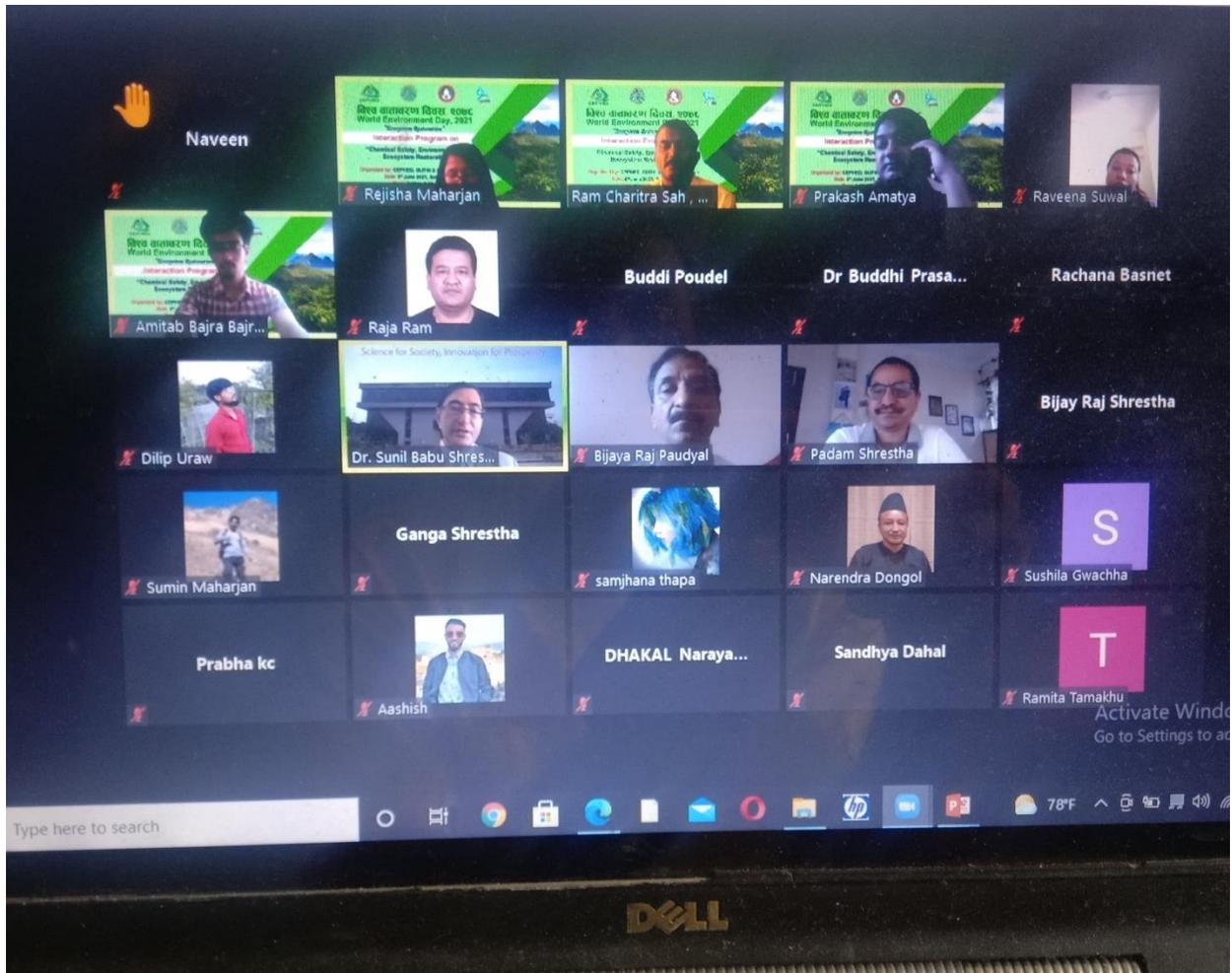
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5th June 2021, World Environment Day





6. Acknowledgements:

CEPHED highly acknowledge Developing World Outreach Initiative (DWOI) for its financial and technical support to implement the project related to asbestos hazards for mechanics handling friction products in Nepal. We would also highly acknowledge Perry Gottesfeld, Executive Director Occupational Knowledge International, USA for his regular guidance and technical inputs towards completion of the project. CEPHED also highly acknowledge all the research participants (mechanics) for taking their time and kindly answered the questions and extend the cooperation with our program assistant carrying out the survey. We also highly appreciate our Program Assistant Mr. Jiwan Kumar Sah for successfully carried out the questionnaire survey even during ongoing COVID pandemic time.

7. Some Pictures of Workshops and Questionnaire survey















8. Annex:

Annex 1: Details of Surveyed workshops and mechanics.

No.	Name	Place	Contact	Age	Gender	Education	Ownership
1	Om Br. Khatri	Kalanki	9869226254	30 yr	Male	10 class	own
2	Ramji Thapa	Suchatar, Kalanki	9841412702	47 yr	Male	<7 class	own
3	Hem Katuwal	Jadibuti	9841279934	43 yr	Male	No edu	own
4	Rabin Nakarmi	Bhimsen Sthan, Soltimod	9841357674	53yr	Male	10 class	own
5	Laxman Dangol	Putlisadak	01-4000049	52yr	Male	Bachelor	own
6	Gyanendra Shanke	Mitrapark, Chabhil	9841289685	45yr	Male	12 class	own
7	Naveen Mahato	Chamati, Balaju	9813150906	29 yr	Male	12 class	Others
8	MD Shadik	Sano Bharyang	9881386632	30 yr	Male	10 class	others
9	Monu Sah	Balaju	9803650149	25yr	Male	10 class	own
10	Mr. Sanjay Maharjan	Gowarko, near B&B		30 yr	Male	SLC pass	Others

Annex 2: Survey Questionnaire

Questionnaire for Brake & Clutch Mechanics

Interview of worker conducted by: _____ Date _____

1. Full Name:

2. Contact phone:

3. Date of Birth: _____

4. Gender:

_____ Male _____ Female

5. Employer:

_____ Self-employed _____ Shop _____ Fleet maintenance

6. Education and gender distribution status (Mark \checkmark)

Education	Mark	Remark
12 th Grade Plus		
11-12 th Grade		
8-10 th Grade		
Elementary (< 7 grade)		
No School		

7. What materials clutch plates and brake shoe are made off?

- a. Iron
- b. Frictional materials asbestos
- c. Any others

8. Have you heard about the Asbestos and its health impacts

YES /NO

If yes, what are health impacts of asbestos can causes?

9. Have you heard of banning all form of asbestos by the Government of Nepal ? Yes / NO

10. Exposure Duration

_____ Years of Experience as brake/clutch mechanic
 _____ Days per week
 _____ Hours per day

11. Percentage breakdown of typical work week? (total 100%)

Work Activity	Auto	Two-wheeler	Truck/Bus	Total %
General/ Engines				
Brakes				
Clutches				
Other				

12. Smoking history (Yes or No)

If yes

_____ Years of Smoking
 _____ Current Smoker

Types of Smoking (Please √): ___ Tobacco ___ Cigarette ___ Bidi ___ Pan
Parag

Frequency of Smoking /day (Please √): ___ 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6

13. Facilities available at workplace (Mark √)

Do you have:	Yes	No
Drinking water		
Respirator		
Enclosure over brake drum or over grinder?		
Hand washing station		
Shower at the workplace		
Cloths Change area at the workplace?		
Separate lunch area from work area?		

14. Work practices during brake or clutch repair activities

Typical Work Practice:	Mark (Y/N)	Notes:
Regular Vacuum to remove dust		
HEPA Vacuum to remove dust		
Compressed air to remove dust		
Use rag to remove dust		
Sanding (manual) brake drums		
Grinding brake drums		
Machining or beveling brakes with lathe		
Sweeping floor dust		
Drinking or eating in work area		
Change clothing before going home		

15. What happens to the waste from brake and clutch repair and replacement?

_____ Regular waste _____ Sold for reuse _____ Hazardous waste

16. Have you had any training on asbestos hazards?

_____ Yes _____ No

If yes: _____ by employer _____ other (Name?)

17. Do you have any Health related problem?

_____ Yes _____ No

If yes: _____ Respiratory Related _____ Tuberculosis _____ Cancer

18. Do any of your family members have any health related problem?
_____ Yes _____ No if yes what type of problem they have?

19. Do you feel changes in the practices of repairing the Clutch and Break shoe?

_____increased _____Decreased _____No any changes

20. Do you feel any changes in Break system in transportation sector?

_____ Yes _____ No

If yes: _____ required frictional material _____ Changed to hydraulics break

21. Do you wish to share any additional information?

Annex 3: Program Schedule of Interaction Program






Interaction Program on

Chemical Safety, Environment and Ecosystem Restoration

WORLD ENVIRONMENT DAY 2021, Kathmandu, Nepal

Date: 5th June 2021, Saturday, 8 to 9:30 AM

Jointly Organized by CEPHED, GUTHI, and Dept. of Environment Science, Khwopa College, TU

Join Zoom Meeting: <https://us02web.zoom.us/j/84139900255>
 Meeting ID: 841 3990 0255 (Pls Join 5 Minute Earlier)

Program Schedule

Time	Topics	Resource Person and Facilitator
8:00 to 8:05	Joining & Registration	Ms Rabina Suwal, CEPHED
8:05 to 8:10	Welcome and Program Highlight	Mr. Ram Charitra Sah, CEPHED
8:10 to 8:15	Inauguration with Chief Guest Remarks	Dr. Buddhi Sagar Poudel, Joint Secretary, Ministry of Forest and Environment (MOFE), GON
8:15 to 8:20	Remarks by Special Guest, Importance of Chemical Safety in Ecosystem Restoration	Mr. Raja Ram Pote Shrestha, NPO, WHO Country Office for Nepal
8:20 to 8:35	Mercury Discharge to Environment from Metal Plating Workshops, KTM Valley	Mr. Ram Charitra Sah Executive Director & Environment Scientist, CEPHED
	Occupational Exposure Among Mechanics Working with Asbestos containing Frictional Materials	
8:35 to 8:50	Ecosystem Restoration through SMART Public Toilet and Terrace Farming	Mr. Prakash Amatya, Technical Advisor, GUTHI
8:50 to 9:00	Pesticide in Vegetable produced and consumed in and around KTM Valley	Mr. Sumin Maharjan, CEPHED & Khwopa College
9:00 to 9:10	Lead in Noodles, the most popular food among Nepalese children	Ms Rabina Suwal, CEPHED & Khwopa College
9:10 to 9:25	Interaction and Q & A	Ms. Archana Shrestha, Ms. Rejisha Maharjan & Mr. Amitab Bajracharya, GUTHI
9:25 to 9:30	Closing Remarks by Special Guest	Dr. Sunil Babu Shrestha, Vice Chancellor, Nepal Academy of Science and Technology (NAST)
9:30	Vote of Thanks with Closing Remarks	Ms. Meera Prajapati, Coordinator, Dept. of Environment, Khwopa College, TU

Press Release