

Impact of asbestos containing debris in the earthquake and tsunami struck regions of Northeast Japan

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Trend of imported asbestos of Japan



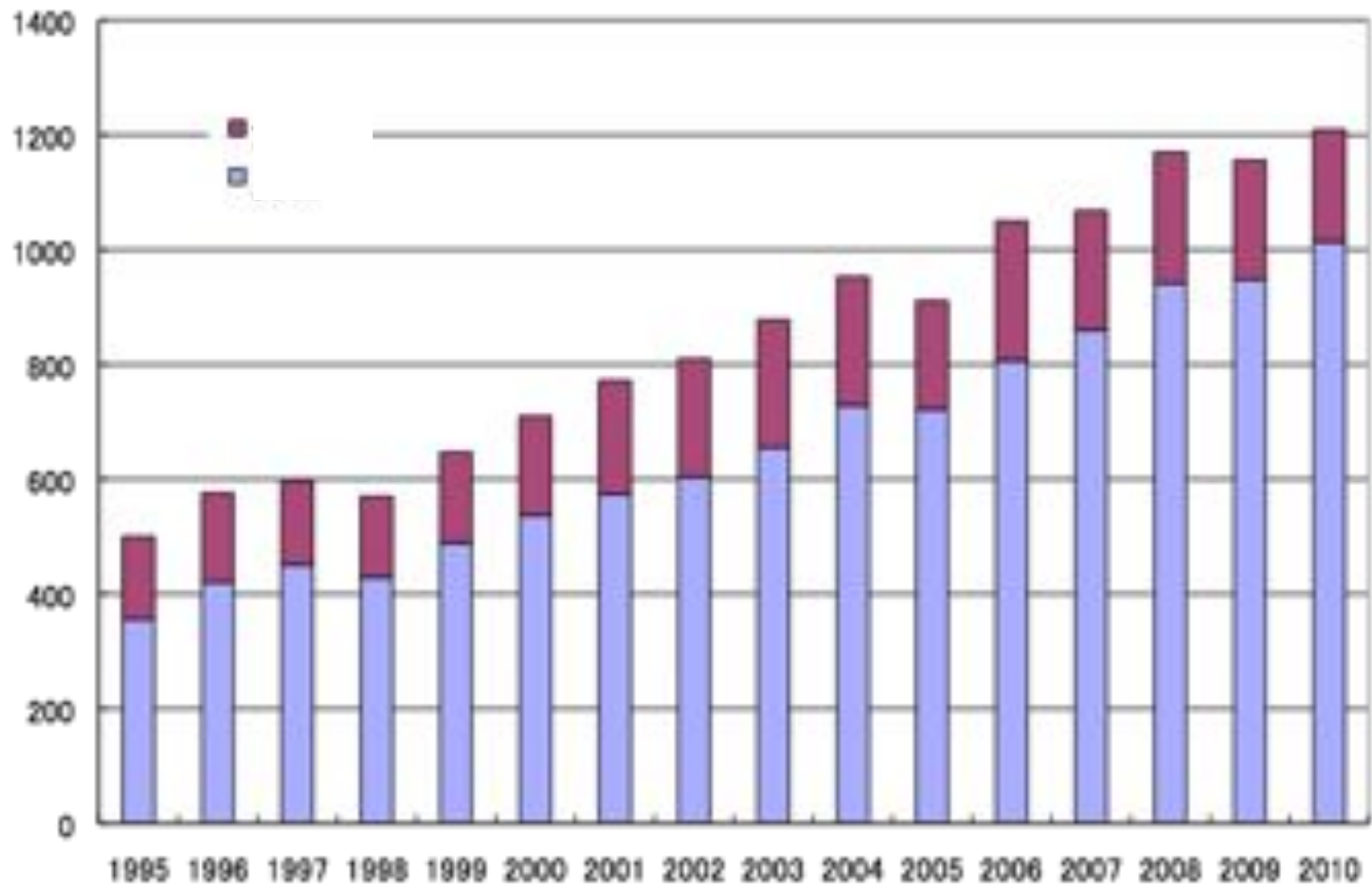
Status of asbestos use

- Total amount of imported asbestos:
10,000,000 tons
- Used into construction materials:
93% of imported asbestos (1995)
- Used into slate boards: 63%

Status of asbestos use

- 1995: ban on use of amphibole asbestos.
- 2004: ban on use of chrysotile into major materials.
- 2006: general ban asbestos.

Fig.2: Trend of mesothelioma death in Japan







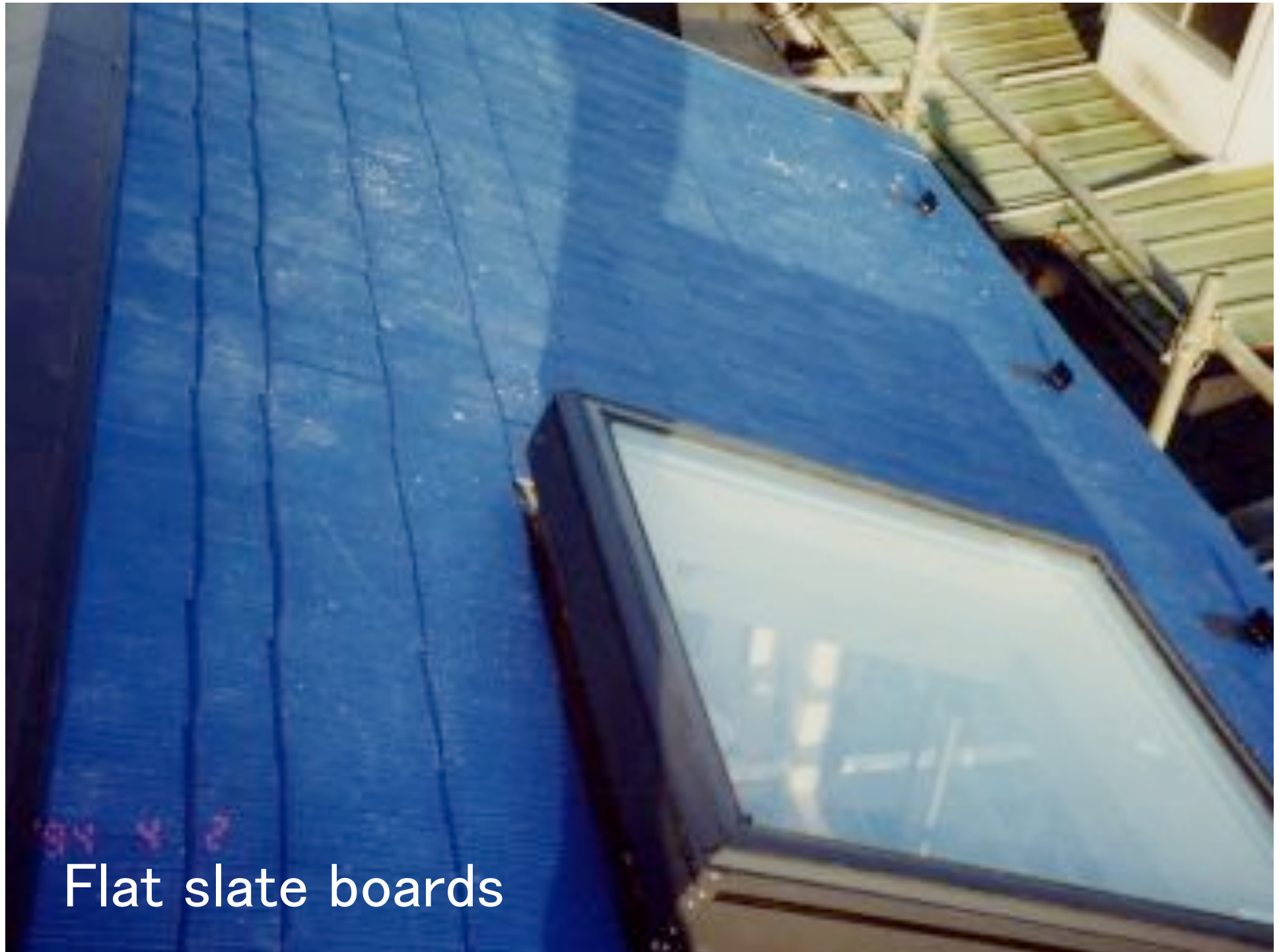
Fire protection boards



Insulator



Corrugated slate boards



Flat slate boards

Purpose

Comprehend condition of asbestos containing materials in the disaster struck regions, measure airborne asbestos concentration and estimate the results.

Discuss and propose countermeasures for preventing asbestos exposure of workers, volunteers and residents.

→Risk assessment and risk management

Methods of research

1. Identify asbestos containing materials from debris by observation and test method.
2. Measure airborne asbestos concentration.
3. Interview workers, residents and public service officers on this topic.

Methods of Activity

4. Organize training courses to learn proper use of respirators for workers, volunteers and residents.
5. Feed back the result of research to people for stimulating to take countermeasures.

Research and activity accomplished

0. Mar. 11 The Northeast earthquake occurred and tsunami struck the coastline

1. Apr. 10 Research in Minami Sanriku, Miyagi Pref

2. Apr. 23-25 Research in Sendai, Shiogama and Ishinomaki, Miyagi Pref

3. Apr. 29-30 Research in Yamada and Ichinoseki, Iwate Pref

4. May. 3-4 Research in Ofunato, Kamaishi and Otsuchi, Iwate Pref

5. May. 8-9 Research in Ofunato and Rikuzentakada, Iwate Pref

6. May. 14 Training course for use of respirators in Ishinomaki, Miyagi Pref

7. Jun. 13-17 Research in Sendai, Ishinomaki and Onagawa, Miyagi Pref

8. Jun. 18 Training course for use of respirators in Ishinomaki, Miyagi Pref

9. Aug. 5-7 Event and training course in Sendai, Miyagi Pref

10. Aug. 31 Research in Sendai, Natori and Ishinomaki, Miyagi Pref



Minamisanriku, April, 10



Onagawa, April, 24









4.Results

4-1. Real condition of ACM's



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4.Results

4-2. Measurement of airborne asbestos concentration



> Table.1

4.Results

4-2. Measurement of airborne asbestos concentration

No	Date	time	Sampling point	Fiber Conc. : PCM (f / ℓ)	Asbestos Conc. : PLM (f / ℓ)
7	2011.4.11	11:50-13:57	Tsunami struck area	0.68	0.42
13	2011.4.24	12:50-14:14	Tsunami struck area	0.26	0.13
14	2011.4.29	13:35-14:34	Tsunami struck area, near a place to put debris	1.33	0.19
15	2011.4.29	13:44-14:34	Tsunami struck area, near a place to put debris	0.86	0.22
16	2011.4.29	16:40-17:25	Tsunami struck area, near spray-on materials	0.96	0.24
21	2011.5.7	15:04-16:19	Place near a demolition site	2.57	0.86
27	2011.6.13	14:46-13:21	Tsunami struck area, near spray-on materials	1.88	0.63
28	2011.6.13	14:48-13:28	Tsunami struck area, near spray-on materials	1.09	0.27
30	2011.6.13	13:05-13:50	Tsunami struck area, near spray-on materials	0.71	0.24
39	2011.6.16	11:20-12:00	Place to put debris, moving asbestos slate boards	1.47	0.59
45	2011.6.17	14:30-15:30	Tsunami struck area	0.72	0.18
46	2011.6.16	11:20-12:00	Place to put debris, moving asbestos slate boards	53.3	39.9

Table.1 Concentration of airborne asbestos in tsunami struck region measured by PCM: Phase contrast microscopy and PLM: Polarized light microscopy (Extracted)

4.Results

4-2. Measurement of airborne asbestos concentration



No.46 Total fibers 53.3f/L、Asbestos fibers (PLM) 33.9f/L

4.Results

4-3. Interview workers, residents and public service officers

(1) Workers who were collecting waste materials have't any information about asbestos and asbestos containing materials, and they did not use respirators or use respirators by incorrect way.

4.Results

4-3. Interview workers, residents and public service officers

(2) Some officers of local administrative agencies have a good knowledge of asbestos and collect waste separately ACM's and others. But majority of officers have insufficient information and some of them don't know that slate boards contain asbestos.











4.Results

4-3. Interview workers, residents and public service officers

(3) Demolition site breaking asbestos slate boards without counter measures of dust protection.



4.Results

4-3. Interview workers, residents and public service officers

(3) The local government provided a sprinkler truck and the company supply respirators.



4.Results

4-3. Interview workers, residents and public service officers

(4) Comments from the participants of the training course for proper use of respirators,

“It is important to select proper kind of respirators and to use properly them.”

“Training is essential for proper use of respirators.”



4.Results

4-4. Asbestos risk in the disaster region.

- A huge amount of ACMs' has been existing and has not be managed properly.
- Asbestos fiber concentration has not increase, but the measurement method has limitations.
- People have an great possibility of an exposure to asbestos dust.

All of proper and rational improvements to prevent peoples' asbestos exposure should be anticipated.

5.Proposals

5-1. Identify, distinguish and treat friable asbestos containing materials.

(1) Collect information of friable ACM' s from residents and contractors, and distinguish them

(2) Strengthen the surveillance of proper removal and demolition of ACM' s.

5.Proposals

5-2. Anticipate countermeasures against dust generation from asbestos slate boards and other popular ACM's.

(1) Stimulate residents, volunteers and contractors to pay attention on asbestos slate boards.

(2) Make sure to take countermeasures such as sprinkle water or safety removal without crushing into pieces.

(3) Prevent generating dust during carrying and treatment in a place to put debris.

5. Proposals

5-3. Anticipate countermeasures to prevent exposure of dust among residents and volunteers.

(1) Organize training courses of proper use of respirators and supply enough number of respirators.