Pathology of Malignant Mesothelioma, Tallinn , Estonia,14-16.11.2007

Global incidence of malignant mesothelioma

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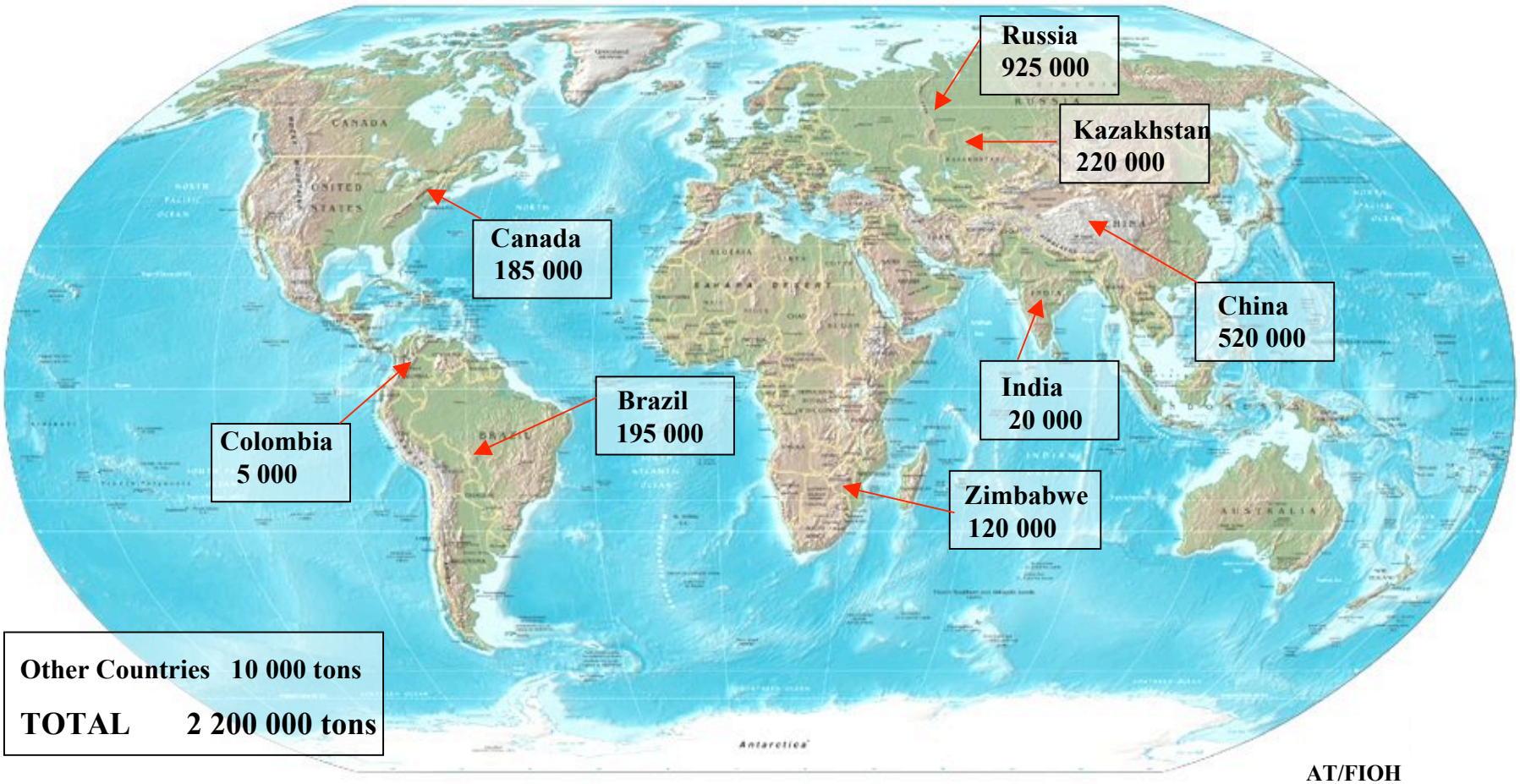
Worldwide Production of Asbestos in 2005



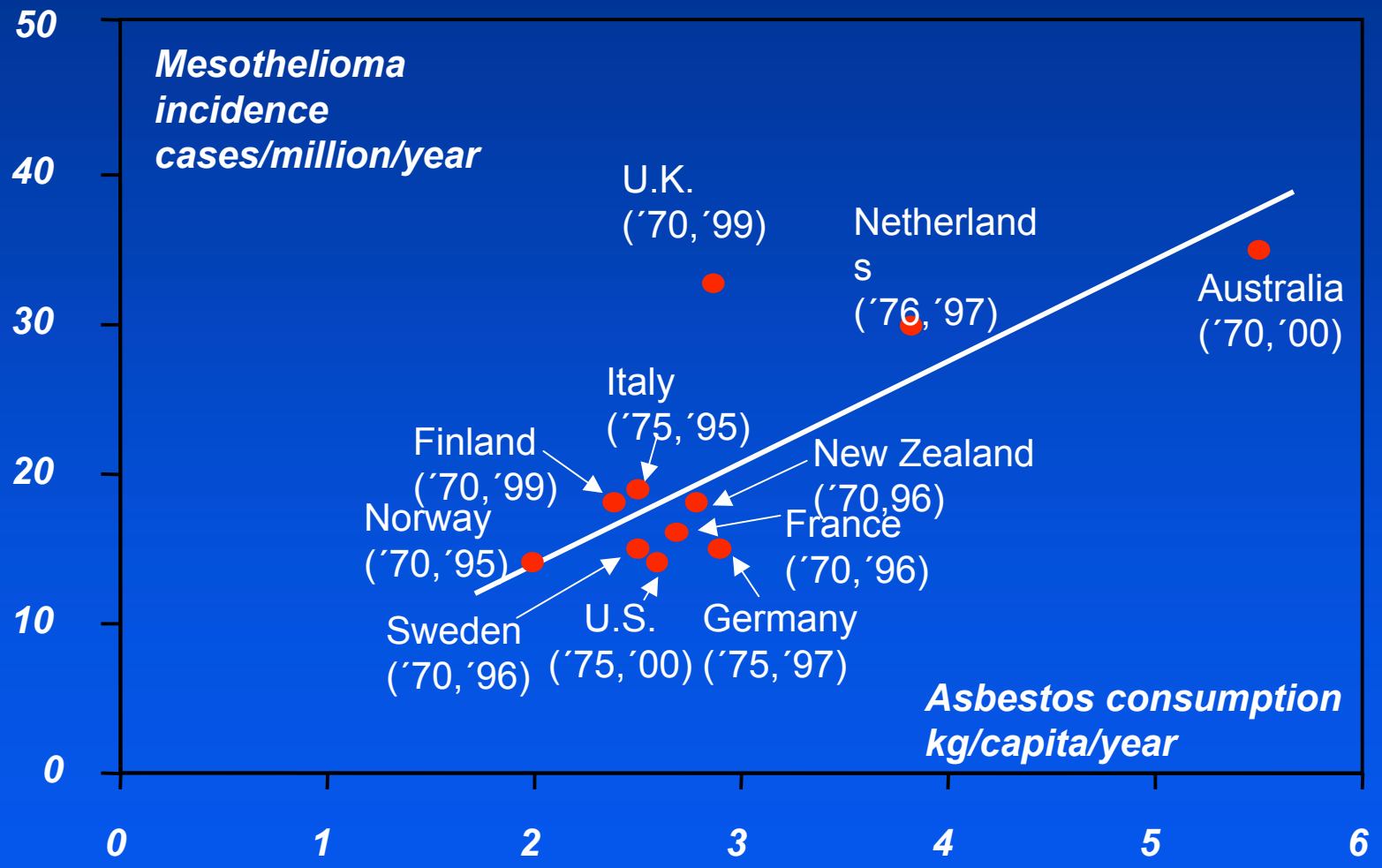
Asbestos consumption in 2003

	tons	kg/capita/ year		tons	kg/capita/ year
China	492 000	0.4	Japan	23 000	0.2
Russia	429 000	3.0	Belorussia	22 000	2.2
India	192 000	0.2	Mexico	20 000	0.2
Ukraine	156 000	3.3	Turkey	14 000	0.2
Thailand	133 000	2.0	Malaysia	13 000	0.6
Brazil	78 000	0.4	Colombia	13 000	0.3
Iran	76 000	1.1	Romania	11 000	0.5
Uzbekistan	42 000	1.5	Algeria	11 000	0.3
Vietnam	39 000	0.5	Azerbaijan	10 000	1.3
Indonesia	32 000	0.1	Cuba	10 000	0.9
Kazakhstan	32 000	2.1	Zimbabwe	5 000	0.8
South Korea	24 000	0.5	Canada	5 000	0.1
Kyrgyzstan	24 000	4.3	Other countries	200 000	0.1
WORLD	2 106 000	0.3			

Mesothelioma incidence and use of asbestos.

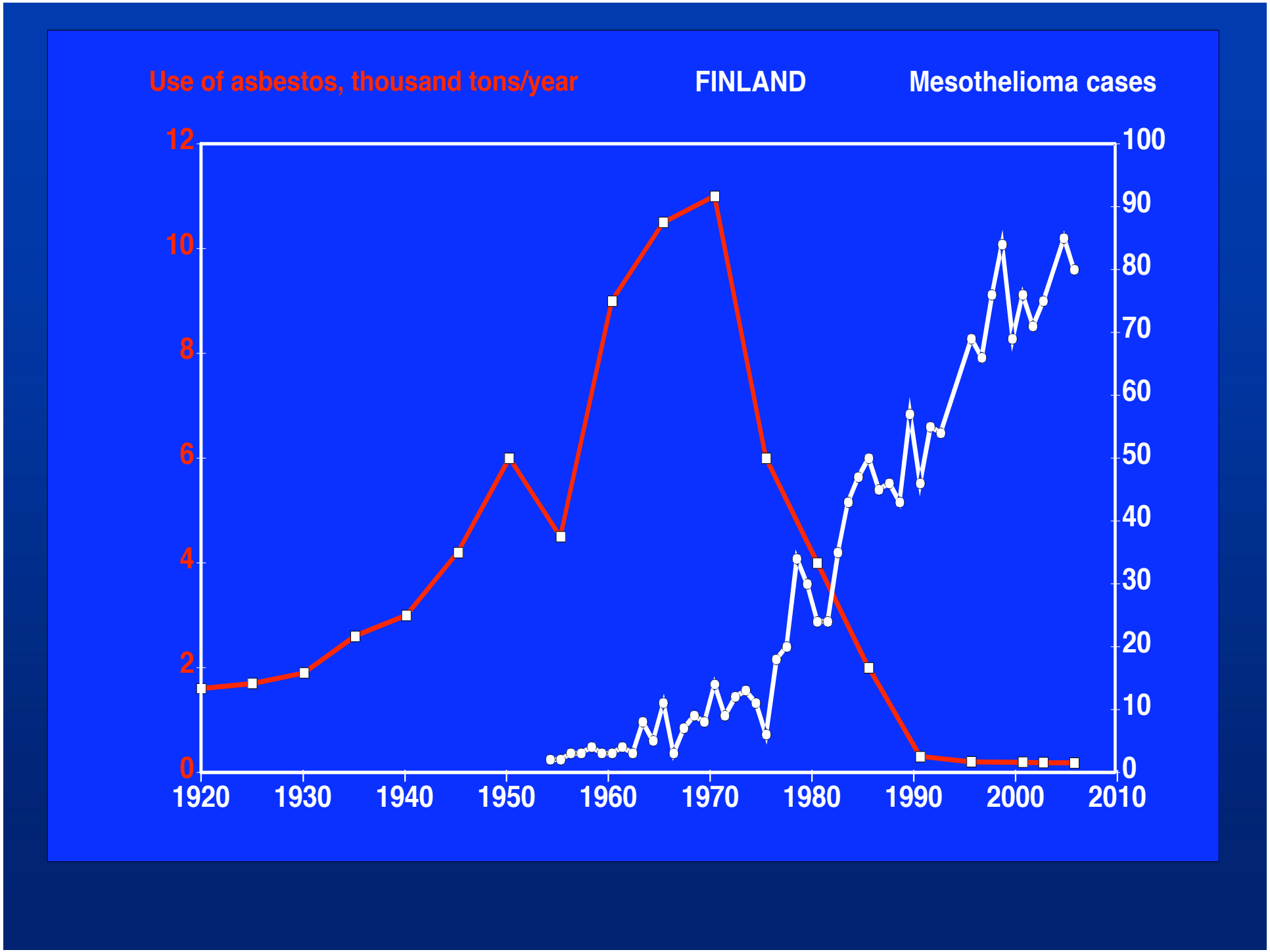
Country	Mesothelioma incidence			Use of asbestos			
	Cases/year		Cases/ million/year	Tons/year		Kg/capita/ year	Tons/ mesothelioma
Australia	678	(2001)	45	70 000	(1970)	5.5	100
Finland	75	(2002)	18	11 000	(1970)	2.4	150
France	870	(2000)	18	143 000	(1970)	2.7	170
Germany	1094	(2001)	16	230 000	(1975)	2.9	210
Great Britain	1862	(2002)	39	170 000	(1970)	3.1	90
Italy	1050	(2000)	21	140 000	(1975)	2.5	130
Netherlands	389	(2000)	30	49 000	(1976)	3.6	130
New Zealand	60	(2000)	21	8 000	(1970)	2.8	130
Norway	57	(2000)	16	8 000	(1970)	2.0	140
Sweden	149	(2003)	20	20 000	(1970)	2.5	130
United States	2800	(2000)	14	552 000	(1975)	2.6	200
TOTAL	9084		22	1401 000		2.8	130

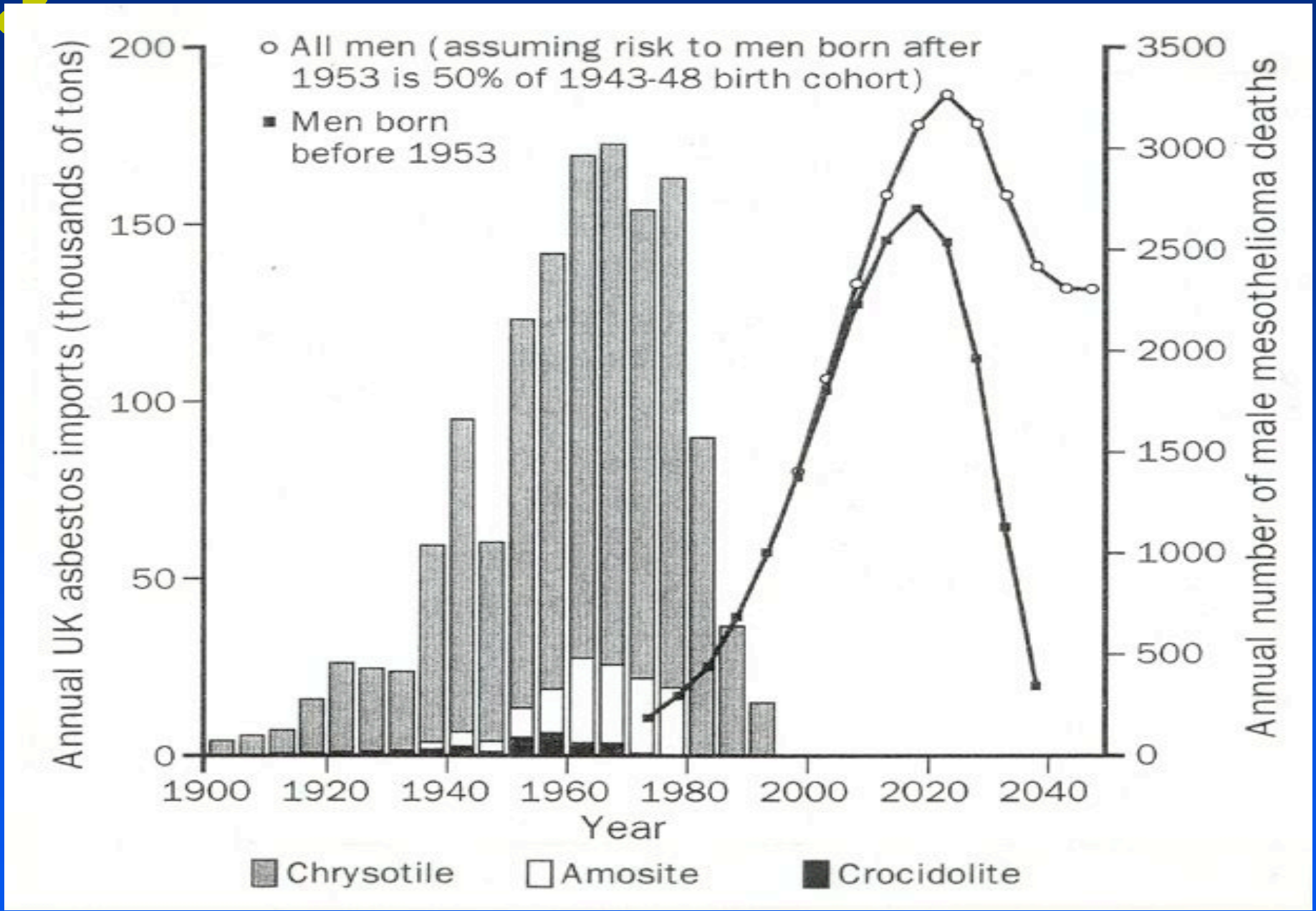
ASBESTOS CONSUMPTION AND MESOTHELIOMA INCIDENCE IN INDUSTRIALIZED COUNTRIES



MESOTHELIOMA INCIDENCE IN CENTRAL AND EASTERN EUROPE (Bianchi et al. 2000)

Country	Cases/year	Cases/million/year
Croatia	46	10
Hungary	78	8
Romania	133	6
Slovakia	20	4
Estonia	5	3
Lithuania	12	3
Latvia	8	3
Poland	120	3
Slovenia	5	3


Use of asbestos, thousand tons/year
FINLAND
Mesothelioma cases
12
10
8
6
4
2
0
100
90
80
70
60
50
40
30
20
10
0
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010


All men (assuming risk to men born after 1953 is 50% of 1943-48 birth cohort)
Men born before 1953
Annual UK asbestos imports (thousands of tons)
Annual number of male mesothelioma deaths
200
150
100
50
0
3500
3000
2500
2000
1500
1000
500
0
1900
1920
1940
1960
1980
2000
2020
2040
Year
Chrysotile
Amosite
Crocidolite

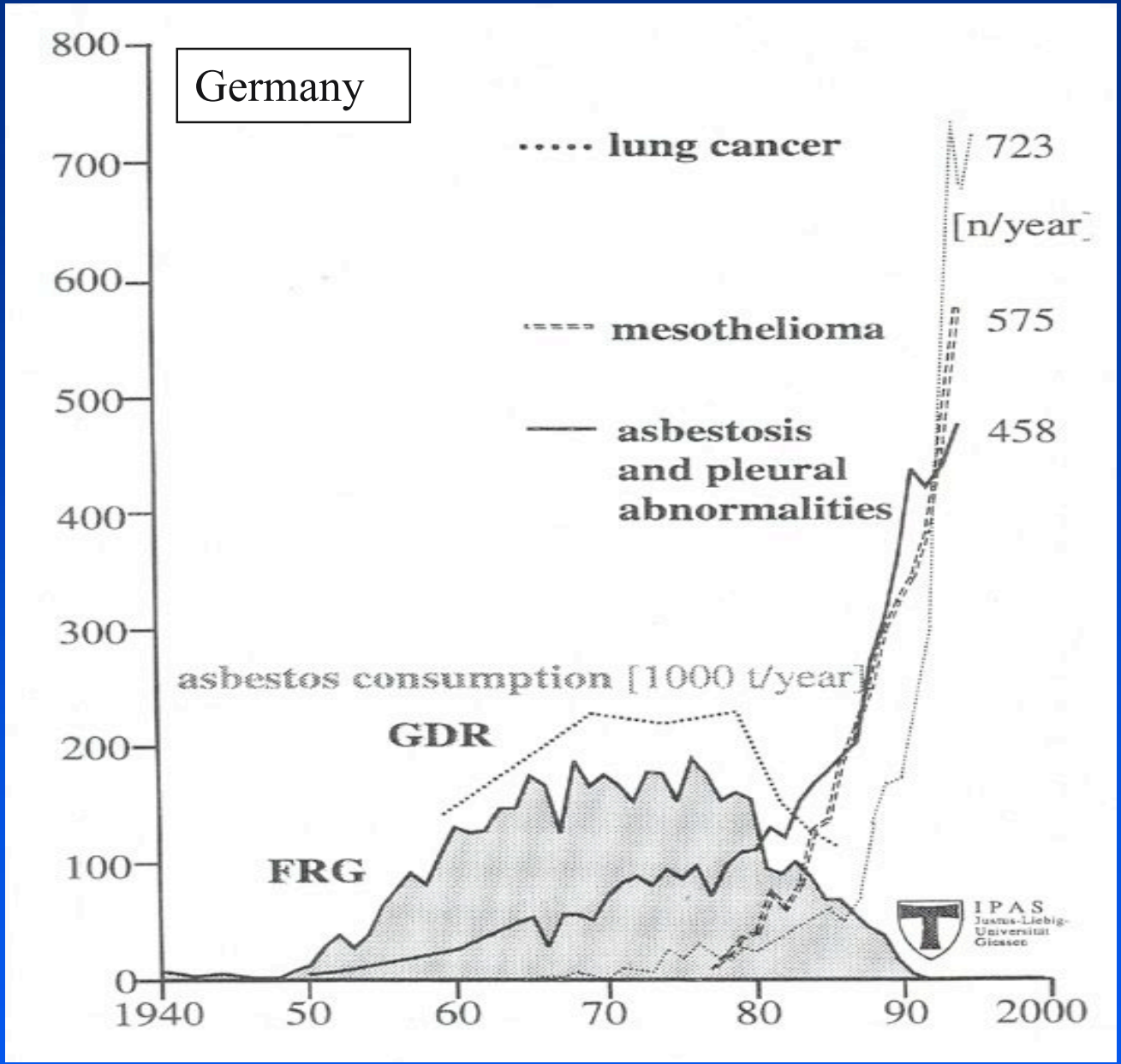
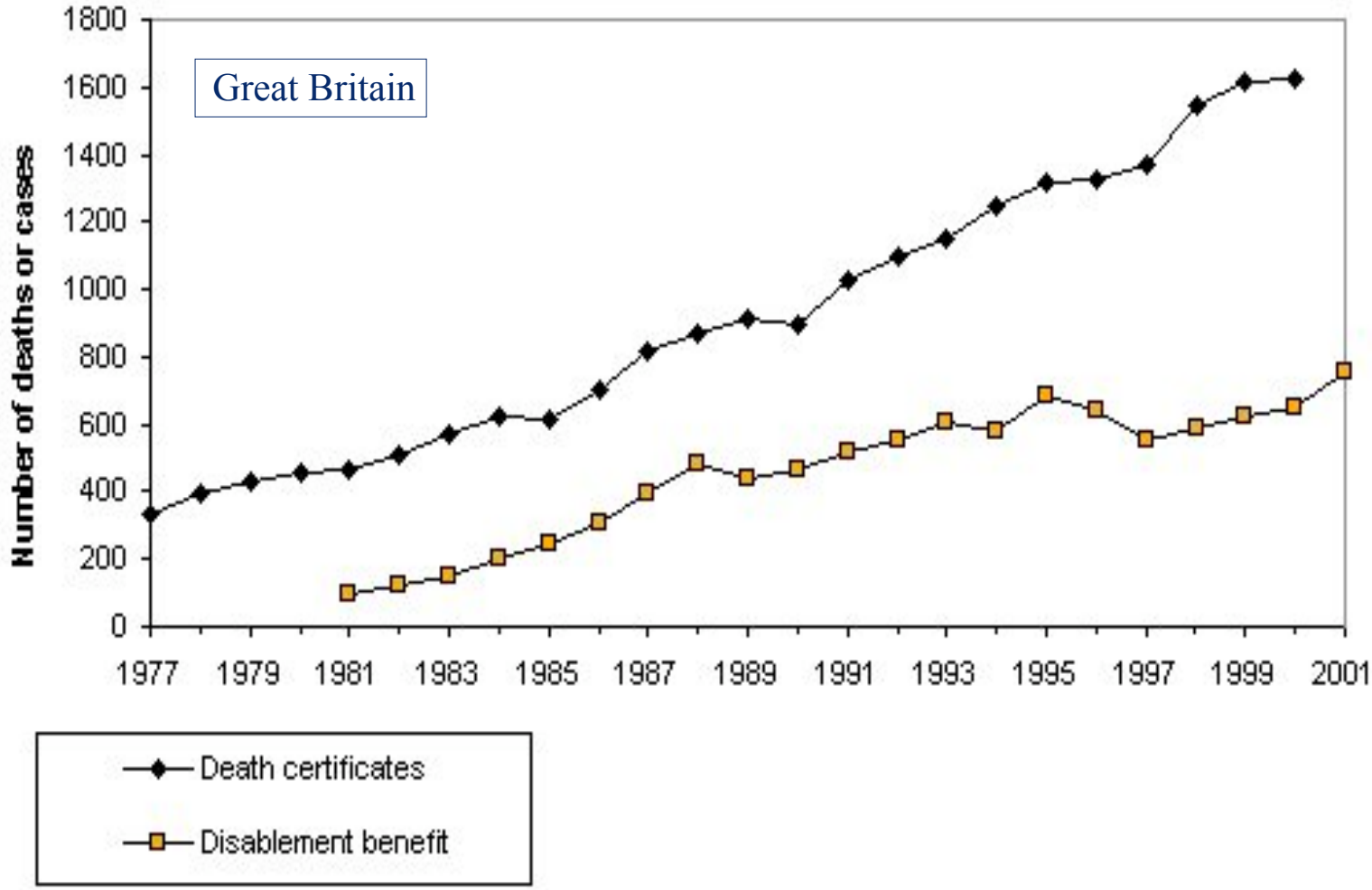
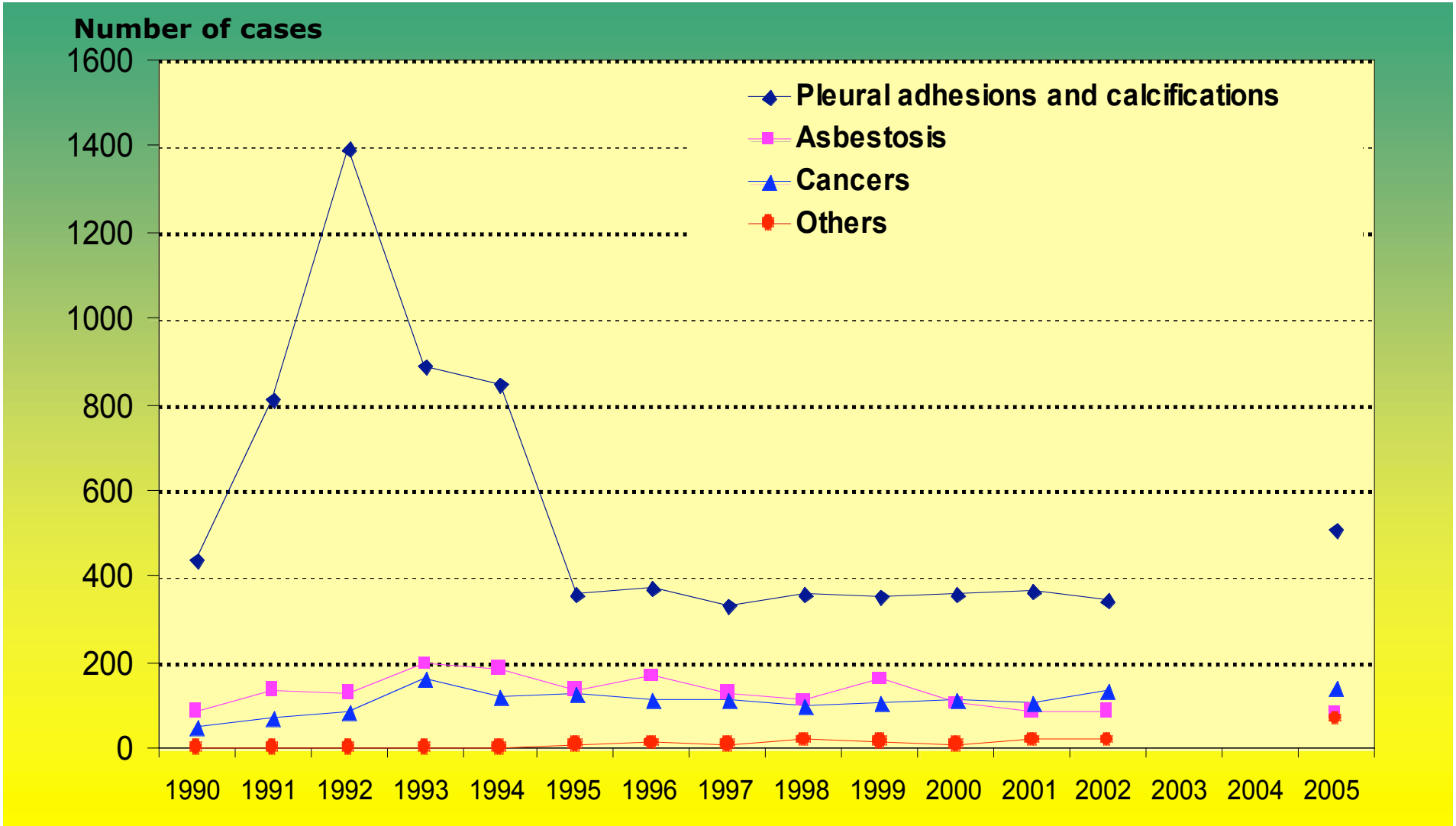

Germany
lung cancer
723
[n/year]
mesothelioma
575
asbestosis
and pleural
abnormalities
458
asbestos consumption [1000 t/year]
GDR
FRG
IPAS
Justus-Liebig-Universität Giessen
800
700
600
500
400
300
200
100
0
1940
50
60
70
80
90
2000

Figure 1: Mesothelioma deaths and disablement benefit cases 1977-2001



Asbestos-induced diseases in 1990-2005 (cases of years 2003-2004 are not available)



FINNISH INSTITUTE OF OCCUPATIONAL HEALTH/Finnish Register of Occupational Diseases/Lea Palo

inen/Twinning/atoka44.ppt

WORK HISTORY

Definite exposure:	**Manufacture of asbestos products, asbestos spraying, insulation, demolition of old buildings**
Probable exposure:	**Construction, shipbuilding, heating trades, pipefitting, sheet metal work**
Possible exposure:	**Transport, railways, ship engine crew, firefighting, mining and quarrying, oil refining, chemical, paper and metal industries, car repair, general maintenance jobs**
Unlikely exposure:	**Office work, agriculture and forestry, health care and education, telecommunication, textile industry**

HELSINKI CRITERIA (1)

Radiological findings of small opacities (ILO grade 1/0) are regarded as early stage of asbestosis. Asbestosis is generally associated with high exposure levels at workplace.

Low exposures from work-related, household and natural sources (below 0.01 f/cm^3) may induce pleural changes (up to 2 % in the adult population) and mesothelioma (up to 1-2 cases/million people/year). Smoking has no influence on the risk of mesothelioma. About 80 % of all mesothelioma cases are caused by asbestos exposure.

HELSINKI CRITERIA (2)

All major histological types of lung cancer can be related to asbestos. Clinical signs and symptoms are of no significant value in deciding whether or not an individual case is attributable to asbestos.

One year of heavy exposure (manufacture as asbestos products, asbestos spraying, insulation work, demolition of old buildings) or 5-10 years of moderate exposure (construction, shipbuilding) may increase the lung cancer risk two-fold or more.

HELSINKI CRITERIA (3)

A cumulative exposure of 25 fibre-years can be applied to attribute a two-fold risk of lung cancer to asbestos exposure. A two-fold risk is related to the retained fibre level of 5 million asbestos fibres (>1μm)/gram dry lung tissue.

Asbestosis is not prerequisite of lung cancer. Asbestos exposure multiplies the risk of lung cancer similarly in smokers, ex-smokers and nonsmokers. Accordingly, smoking habits have no influence on the attribution of an individual case to asbestos exposure.

In industrialized countries, about 5 % of all lung cancer cases are caused by asbestos exposure equalling about two-fold the number of mesotheliomas.

HELSINKI CRITERIA (4)

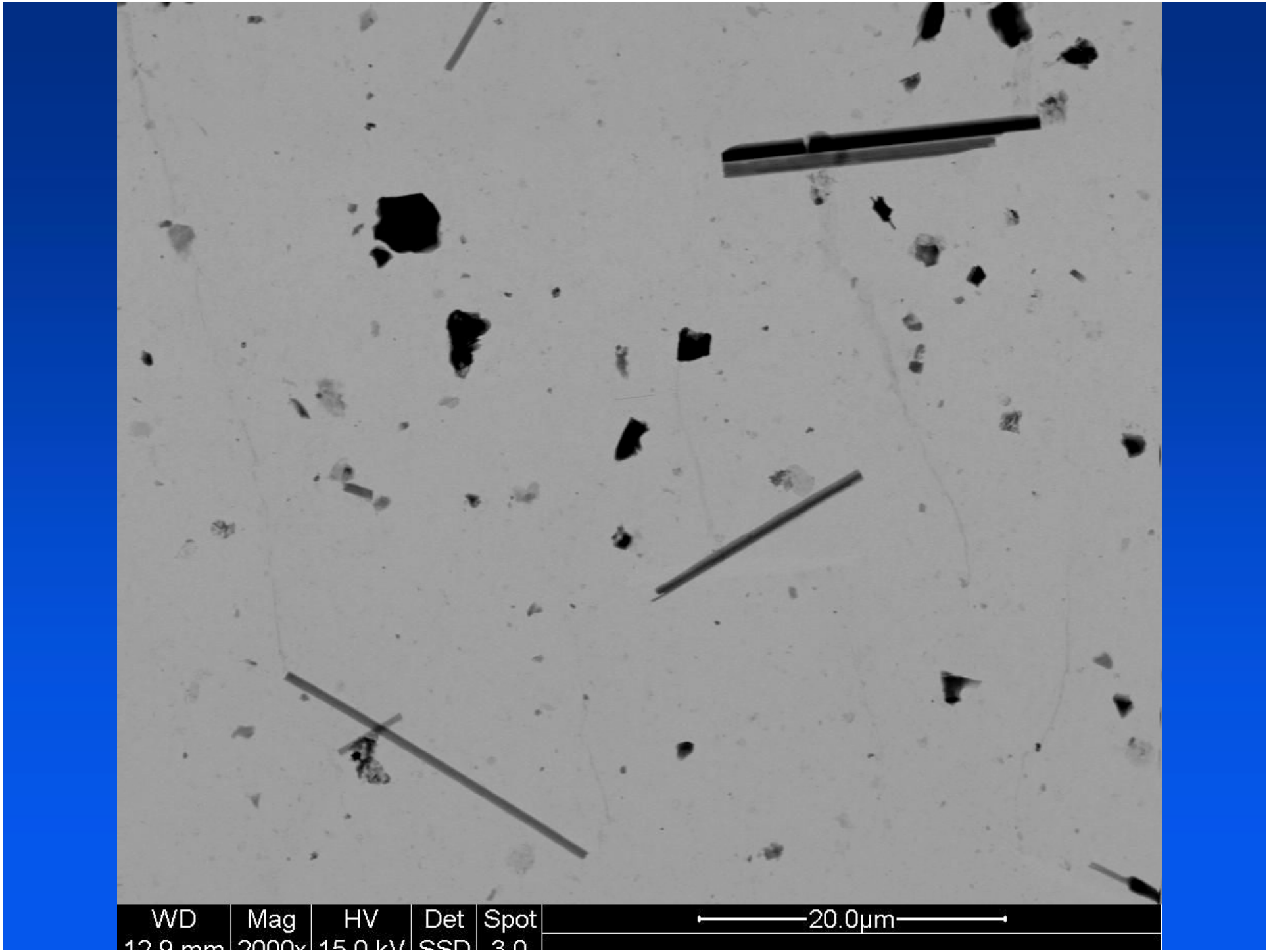
For clinical purposes, the following levels identify those persons who highly probably have been exposed to asbestos at work:

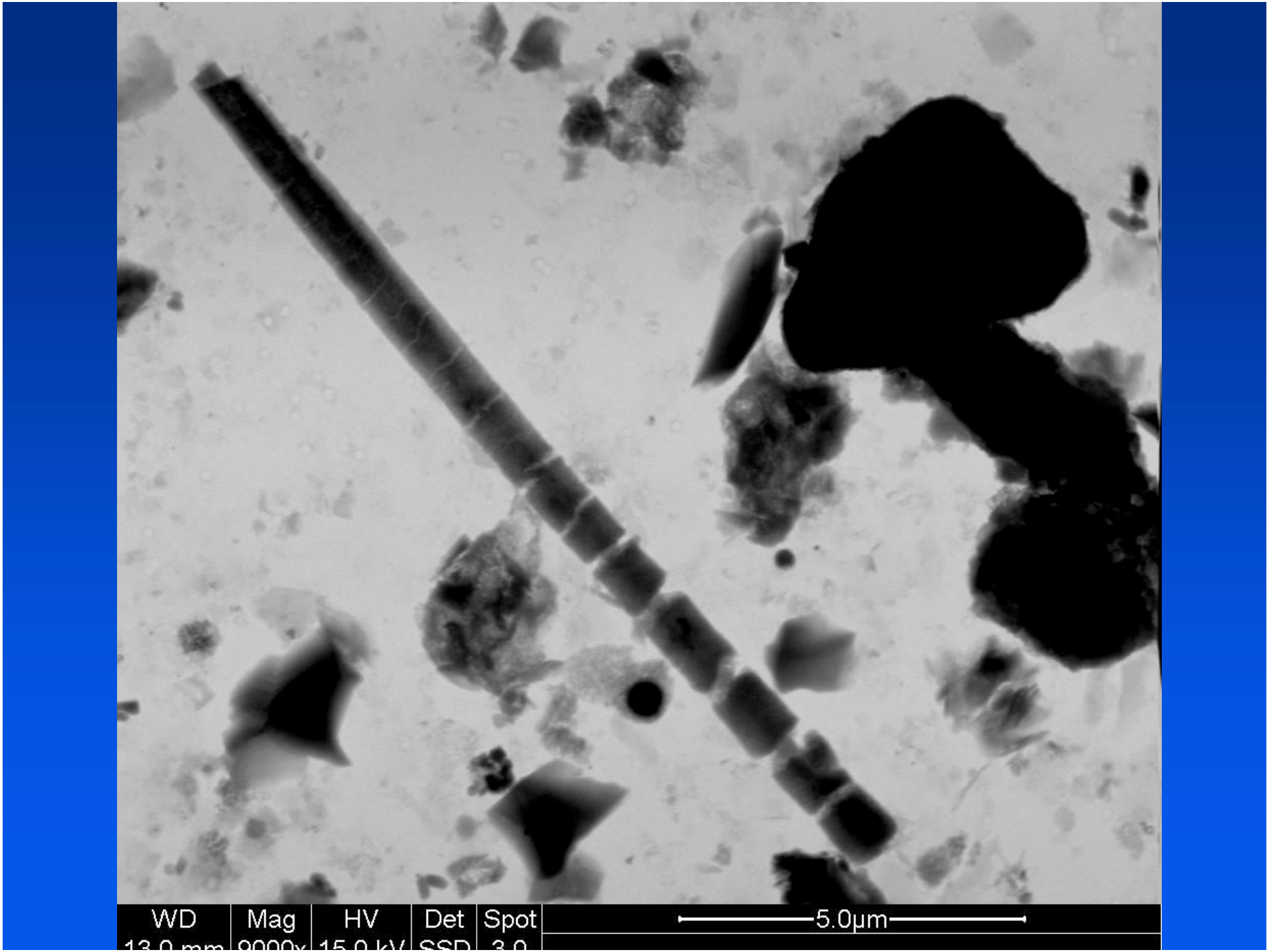
over 1 million amphibole fibres/g dry tissue
or **over 1000 asbestos bodies/g dry tissue (100 asbestos bodies/g wet tissue)**
or **over 1 asbestos body/ml in brochoalveolar lavage fluid**

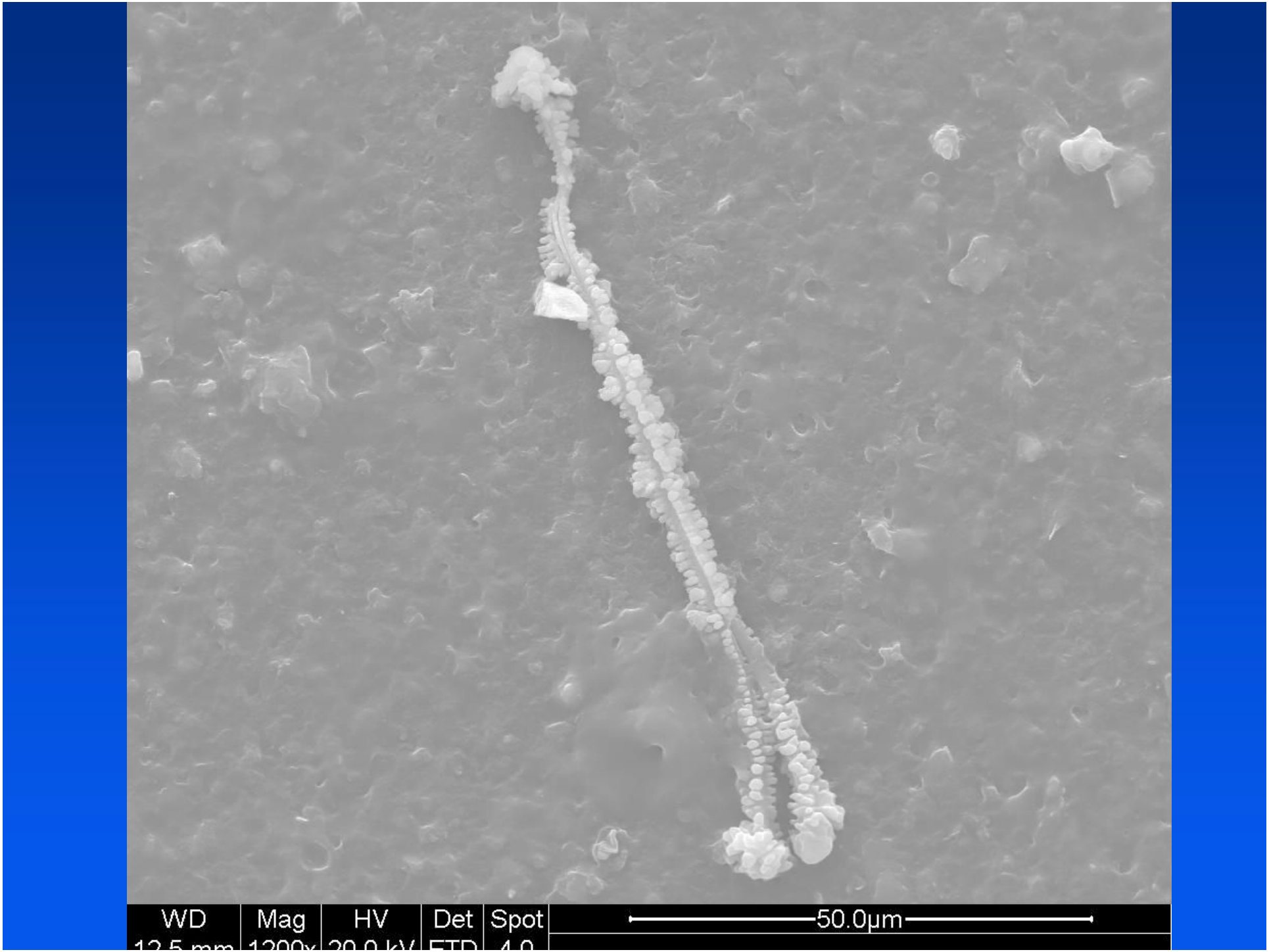
An increased risk of mesothelioma and pleural plaques may occur below or at these concentrations.
A two-fold risk of lung cancer is related to the retained fibre level of 5 million asbestos fibres/g dry tissue.

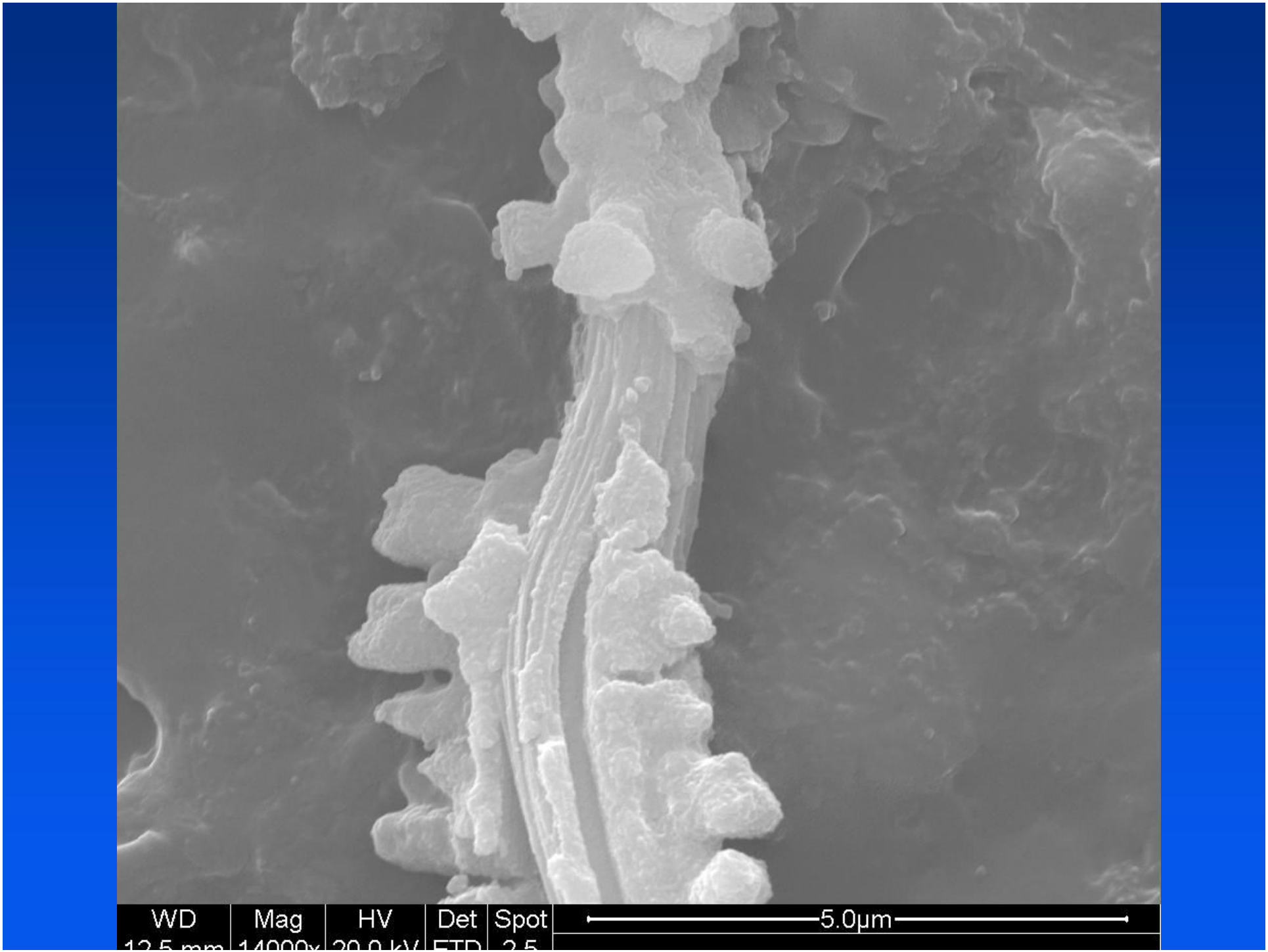
Asbestos in lung tissue samples from autopsies or surgical operations, million fibres/g dry tissue.

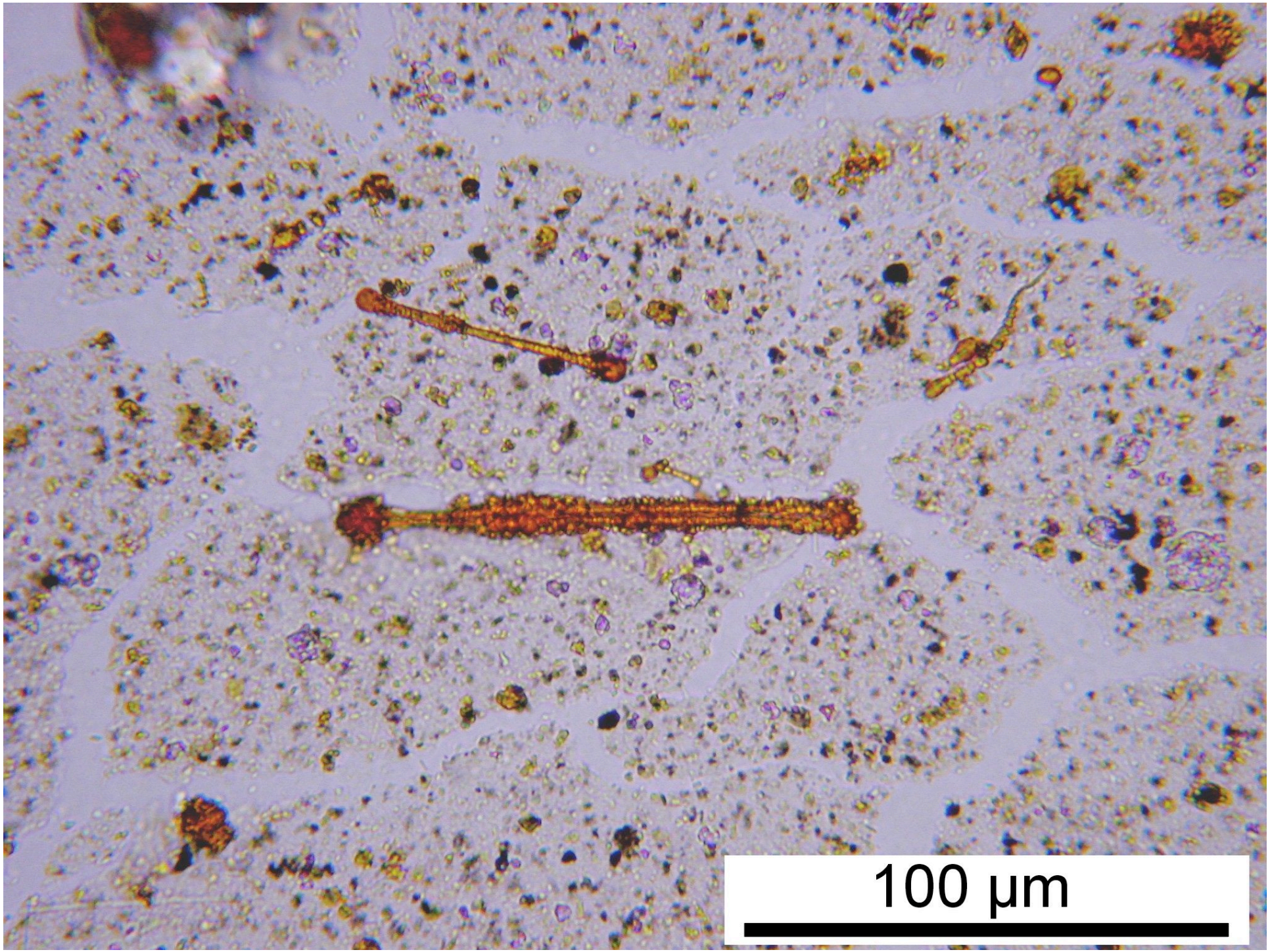
Country and area	Population	Age, years	Chrysotile	Amphiboles	Over I million asbestos fibres/g dry tissue
		mean (range)	mean (range)	mean (range)	
Finland, Helsinki	Male autopsy series (N=300)	52 (33-69)	<0.1	1.4 (<0.1-163) ant, cro, amo, tre	54/300
Finland, Helsinki	Male lung cancer patients (N=113)	62 (35-81)	<0.1	3.3 (<0.1-150) ant, cro, amo, tre	39/113
Finland, Tampere	Lung cancer patients (N=25)	61 (43-78)	<0.1	1.0 (<0.1-7.7) ant, amo	7/25
Estonia, Tallinn	Lung cancer patients (N=20)	61 (39-72)	0.2 (<0.1-1.6)	0.1 (<0.1-0.2) tre	2/20
Russia, Karelian Republic, Petrozavodsk	Lung cancer patients (N=20)	54 (43-70)	0.3 (<0.1-1.3)	0.1 (<0.1-0.3) tre	1/20
Hungary, Budapest	Lung cancer patients (N=25)	58 (35-78)	1.0 (<0.1-11)	0.1 (<0.1-0.6) cro, tre	4/25


WD
Mag
HV
Det
Spot
20.0µm


WD
Mag
HV
Det
Spot
5.0µm


WD
Mag
HV
Det
Spot
50.0µm

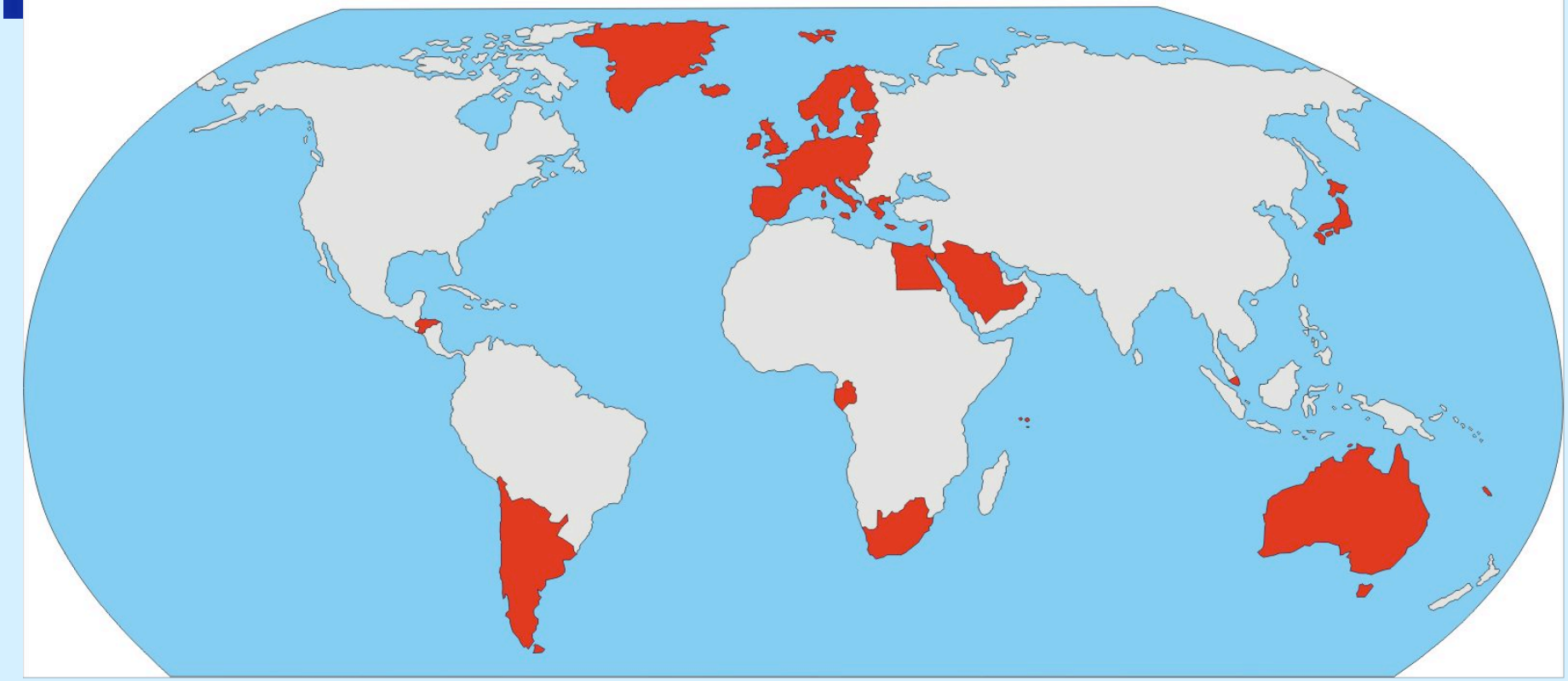

WD
Mag
HV
Det
Spot
5.0µm


100 µm

ASBESTOS BANS

- Marketing and use of all products containing asbestos fibres added intentionally are prohibited (EU countries before 1.1.2005, Estonia 2.11.2000
- Worldwide over 40 countries have banned the use of asbestos

ASBESTOS BANS IN 2006



JHS/2006

Antti Tossavainen/Twinning/atoka44.ppt

Asbestos policy documents

World Health Organization, www.who.int
- Elimination of asbestos-related diseases (2006),

International Labour Organization, www.ilo.int
-Asbestos Convention and Recommendation(1986)
-Resolution concerning asbestos (2006)

World Trade Organization, www.wto.org
-European Communities-Measures affecting asbestos and asbestos-containing products (2001)

United Nations Rotterdam Convention, www.pic.int
-Prior Informed Consent (PIC) Procedure for chrysotile (2006)

Ratifications of ILO Asbestos Convention 162

Belgium 1996
Bolivia 1990
Bosnia-Herzegovina 1993
Brazil 1990
Cameroon 1989
Canada 1988
Chile 1994
Colombia 2001
Croatia 1991
Cypros 1992
Ecuador 1990
Finland 1988
Germany 1993
Guatemala 1989
Japan 2005
Macedonia 1991
Netherlands 1999
Norway 1992
Portugal 1999
Russia 2000
Serbia 2000
Slovenia 1992
Spain 1990
Sweden 1987
Switzerland 1992
Uganda 1990
Uruguay 1995
Zimbabwe 2003

EU ASBESTOS DIRECTIVES

2003/18/EC	on the protection of workers from the risks related to exposure to asbestos at work
1999/77/EC	on the marketing and use of asbestos products
1987/217/EEC	on the prevention and reduction of environmental pollution by asbestos

Estonian asbestos regulations

- Asbestitööle esitatavad töötervishoiu ja tööohutuse nõuded,Vabariigi Valitsuse määrus nr 32,2.2.2000 ja nr 224,11.10.2007
- Elanikkonnale ja loodusele ohtlike kemikaalide käitlemise piirangud,Sotsiaalministri määrus nr 36,28.2.2005
- Asbesti sisaldavate jäätmetekäitlus nõuded,Keskkonnaministri määrus nr 22, 21.4.2004

OTHER REGULATIONS

- Tööõnnetuste ja kutsehaigestumise registreerimise,teatamise ning uurimise kord, Vabariigi Valitsuse määrus nr 146,13.5.2003
- Töötajate tervisekontrolli kord, Sotsiaalministri määrus nr 74, 28.4.2003
- Kutsehaiguste loetelu, Sotsiaalministri määrus nr 66, 9.5.2005
- Töötervishoiu ja tööohutuse seadus, 16.6.1999 ja 20.12.2006
- Töötervishoiu ja tööohutuse nouded ehituses, Vabariigi määrus nr 377

Kutsehaiguste loetelu 2005 Sotsiaaliministri määrus nr 66

§2. Respiratorised kutsehaigused ja **-kasvajad:**

- ¤ asbestoos
- ¤ mesotelioom, mis on põhjustatud asbestitolmu sissehingamisest
- ¤ pneumokonioos, mis on põhjustatud silikaattolmu sissehingamisest
- ¤ asbestoosi tüsistusena tekkinut kopsukasvaja
- ¤ asbestist põhjustatud pleura fibroossed haigusest
- ¤ kopsukasvaja, mis on põhjustatud asbestitolmu sissehingamisest
- ¤ respiratoorised haigused, mida põhjustavad kvartsitolm, asbestitolm või tsemenditolm

MANAGING OCCUPATIONAL RISKS RELATED TO ASBESTOS, EST-FIN Twinning Project

Component 1. Survey of asbestos containing materials, work practices and regulations

Component 2. Training of medical personnel

Component 3. Screening study

Component 4. Awareness raising and information

Component 5. Kick-off and concluding meetings

NECESSARY ACTIONS

1. **Implementation of asbestos directive 2003/18/EC**
   - notification and inspection of demolition works
   - training of employers and workers
   - health examinations of exposed people

2. **Ratification of ILO Asbestos Convention**
   - tripartite preparation of policies and regulations
   - licencing of competent demolition companies

3. **Total revision of diagnosis, registration and compensation practices of occupational diseases**
   - mandatory insurance for work accidents and occupational diseases (TõKS)
   - revival of the Occupational Health Center for research, service and information activities

Four - dog defense of asbestos

1. Nothing has happened. (Asbestos diseases don't occur here)
2. We don't own a dog, another dog bit him. (Old companies don't exist anymore, diseases were caused by smoking)
3. The dog bit him but didn't hurt. (Diseases are benign and signs of exposure only)
4. He knew that the dog was dangerous. (Workers should have worn respirators and paid their own accident insurance)