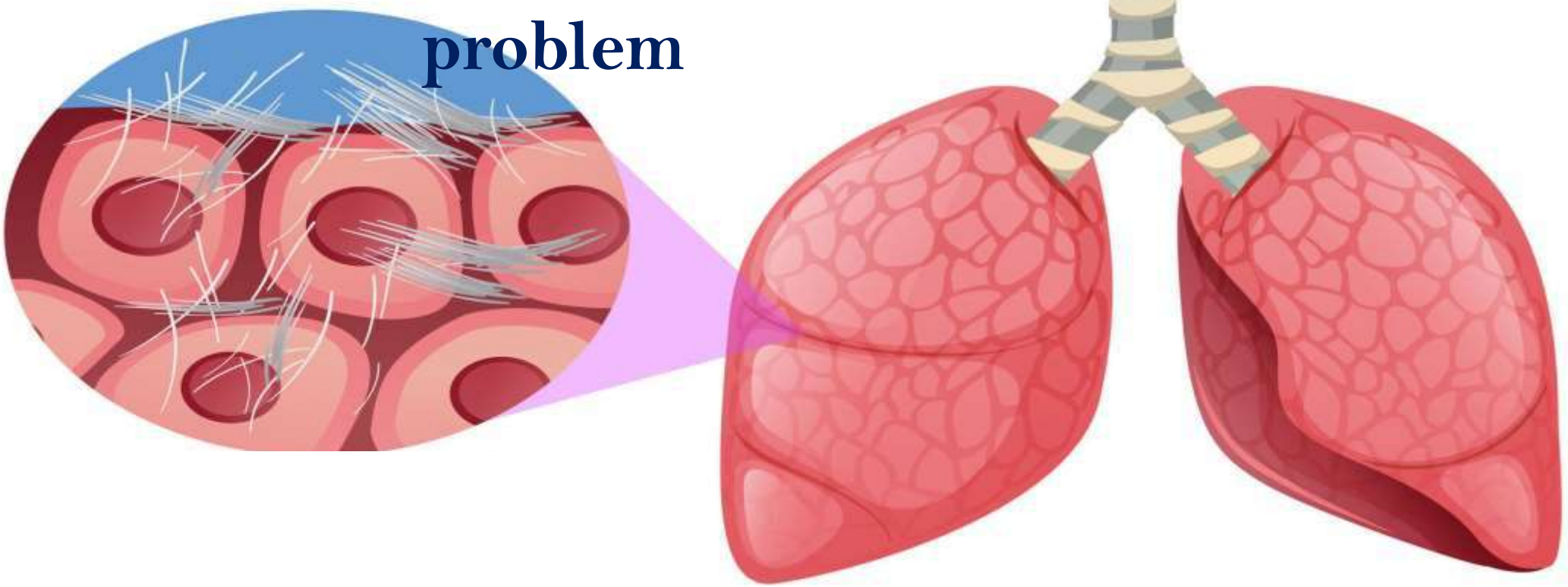
Project work on the topic:

Asbestos use in Central Asia and the related health problem



Content:

INTRODUCTION

- Asbestos fibers in their different mineralogical forms of **chrysotile** and **amphiboles** are a well known carcinogen acting on the respiratory tract and other organs. In 2009, the International Agency for Research on Cancer (IARC) updated the evaluation of asbestos fibers and confirmed that all types of asbestos cause malignant mesothelioma (MM), and cancer of lung, larynx and ovary in humans (Class 1).

Luberto, F., Ferrante, D., Silvestri, S., Angelini, A., Cuccaro, F., Nannavecchia, A. M., Oddone, E., Vicentini, M., Barone-Adesi, F., Cena, T., Mirabelli, D., Mangone, L., Roncaglia, F., Sala, O., Menegozzo, S., Pirastu, R., Azzolina, D., Tunesi, S., Chellini, E., Miligi, L., … working group (2019). Cumulative asbestos exposure and mortality from asbestos related diseases in a pooled analysis of 21 asbestos cement cohorts in Italy. *Environmental health : a global access science source*, *18*(1), 71. https://doi.org/10.1186/s12940-019-0510-6

3

Relevance for Central Asia

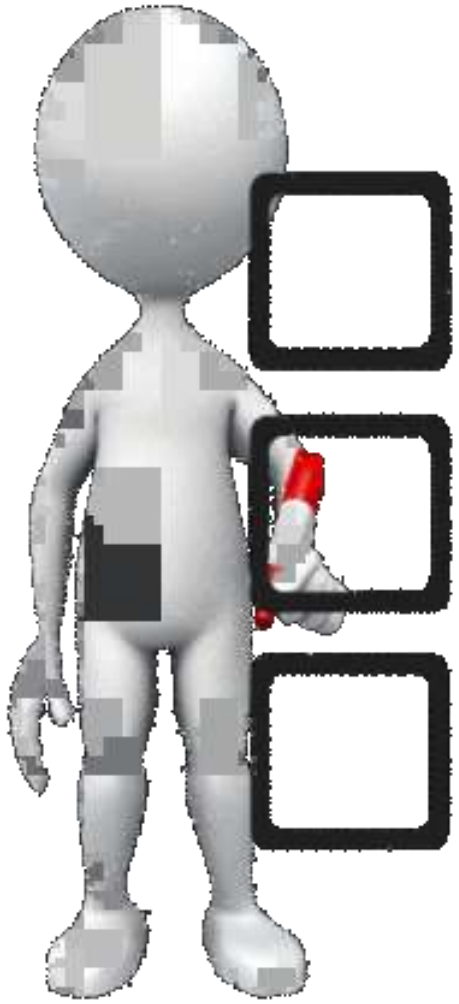
1. Chrysotile asbestos is still being mined and used in the countries of Central Asia (CA) despite World health organization (WHO) recommendations to ban it;
2. Low quantity data about health status of the population and few research in the CA countries
3. The low number of researches is possibly related with insufficient level of diagnosis and detection of asbestos-related diseases (ARD)

AIM:

The aim of this study is to assess the prevalence of ARD in the CA countries (Kyrgyzstan, Kazakhstan and Uzbekistan),

to compare epidemiological data with Italy, and to examine the risk factors associated with these diseases.

TASKS:



- 1. To examine the situation in the countries of CA as well as in Italy, based on available literature data from Pubmed, scopus, WHO, IARC, Google scholar, eLibrary.
- 2. To study the incidence of ARD in Italy and in CA countries.
- 3. Compare the data received from CA and Italy.

Methods:


IL REGISTRO NAZIONALE
DEI MESOTELIOMI
SETTIMO RAPPORTO
INAIL

ITALY

in1970

132.358 tons

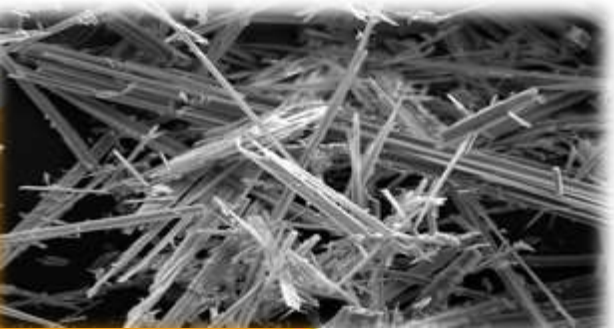
180.528 tons

1980

1992-1994

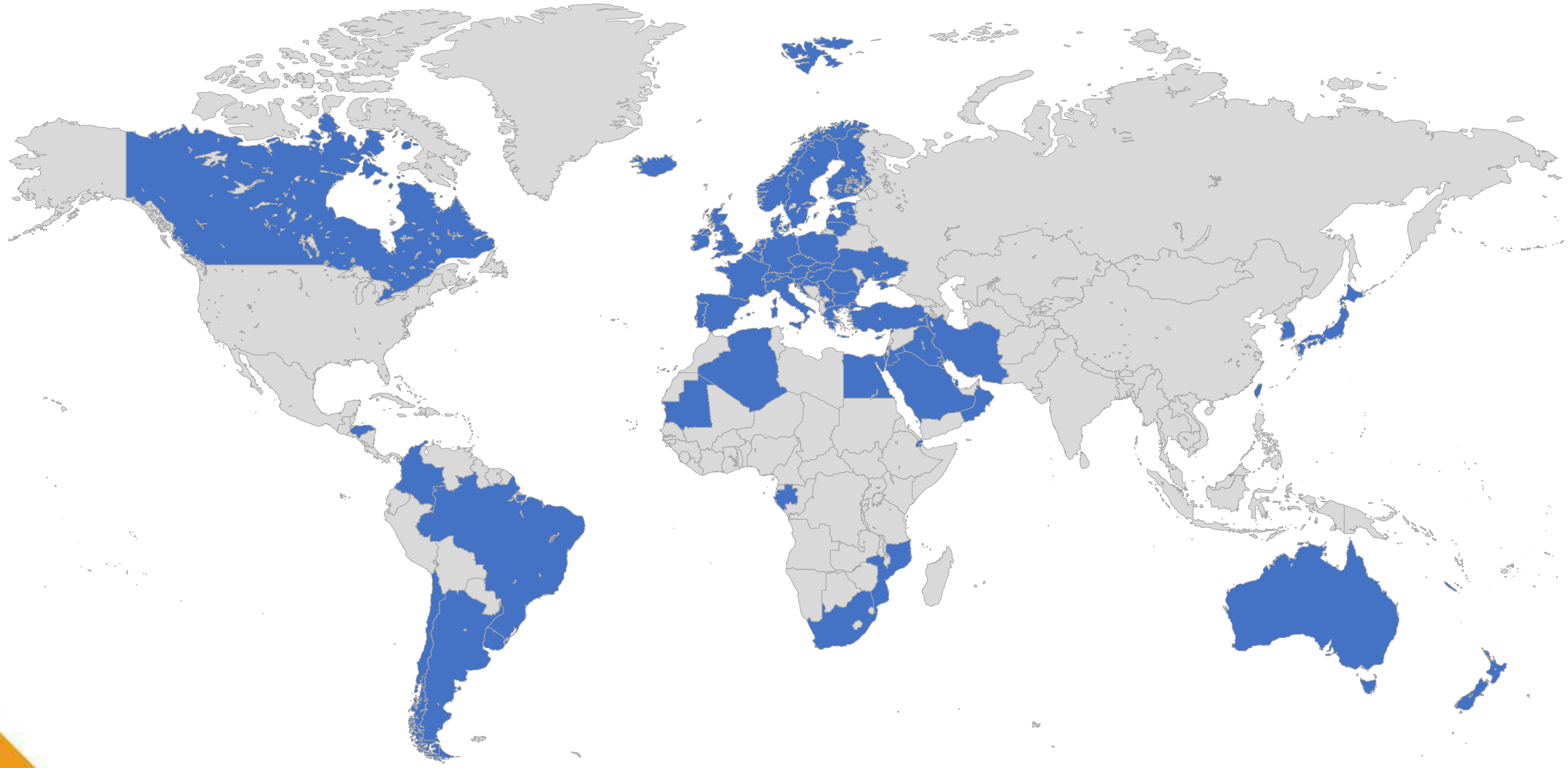
ban on the production, import, export and trade of asbestos in Italy

despite the ban, the number of diseases is increasing



[Magnani, C., Silvestri, S., Angelini, A., Ranucci, A., Azzolina, D., Cena, T., Chellini, E., Merler, E., Pavone, V., Miligi, L., Gorini, G., Bressan, V., Girardi, P., Bauleo, L., Romeo, E., Luberto, F., Sala, O., Scarnato, C., Menegozzo, S., Oddone, E., … Working group Studio Multicentrico Italiano di Coorti di lavoratori dell'Amianto (SMICA): (2020). Italian pool of asbestos workers cohorts: asbestos related mortality by industrial sector and cumulative exposure. *Annali dell'Istituto superiore di sanita*, *56*(3), 292–302. https://doi.org/10.4415/ANN_20_03_07].

69 countries that currently ban asbestos



http://ibasecretariat.org/alpha_ban_list.php

Which types of asbestos…

…were used in Italy?

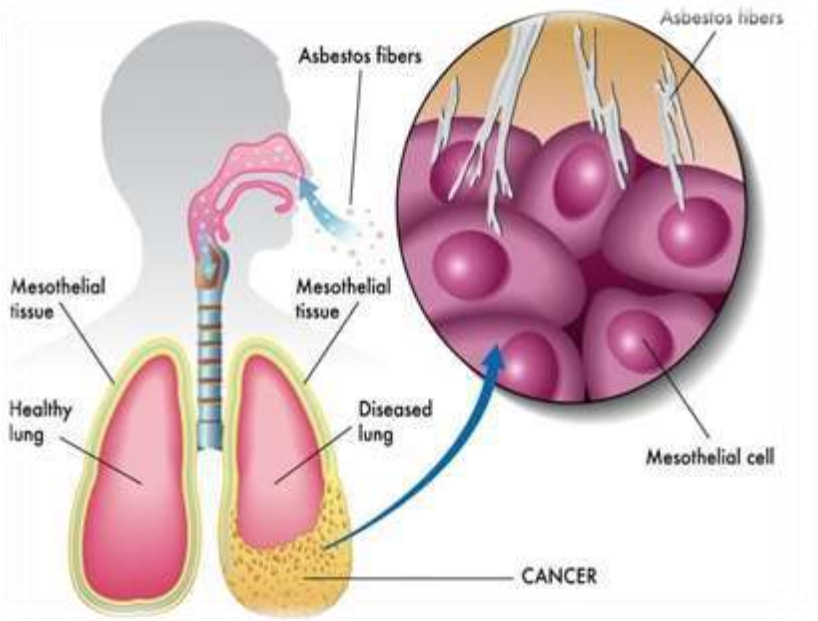
- **The Eternit factory located in Bagnoli** started its activity in 1939. (Plant production activities virtually came to halt in mid-1943 and resumed in early 1947). Production ended permanently in 1986.
- Asbestos fiber types used in the plant were **blue long-fiber (crocidolite)** and **yellow mid-fiber (amosite)** from **South Africa**; **white mid-fiber from Canada**; **white short-fiber (chrysotile) from Italy**.

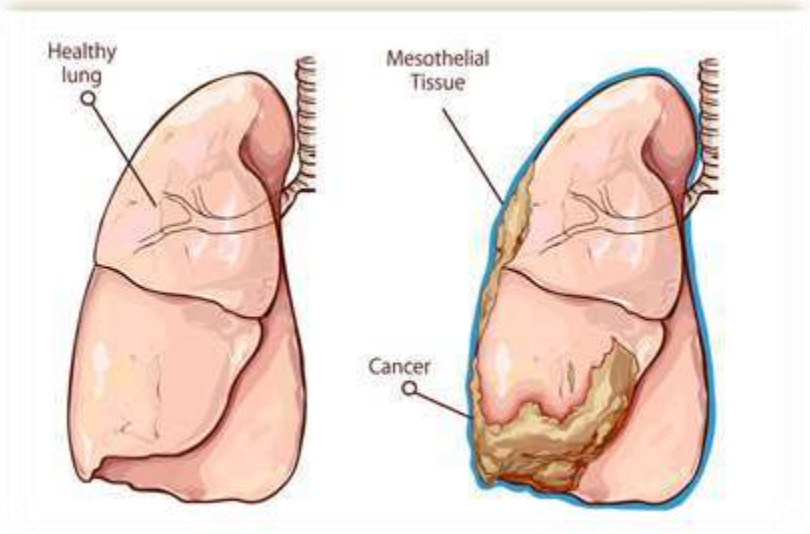
…are still used in Kyrgyzstan?

- A very interesting fact. PhD student of Professor Kolozio, Zhyldyz Kurzhunbaeva together with a professor conducts research. Zhyldyz Bekbaatyrovna brought elements of slate produced by «Kant slate and pipe enterprise» from Kyrgyzstan. A research was conducted in Italy, where under the SEM-EDS microscope it was confirmed that it was **chrysotile asbestos.**
- At the same time she brought to Italy about 100 of lung's tissue in formaldehyde, 100 dead people from Kyrgyzstan. Histological examination was carried out. But surprisingly not a single case of fibrosis was found in any of the preparations. This is very interesting. The research is ongoing.

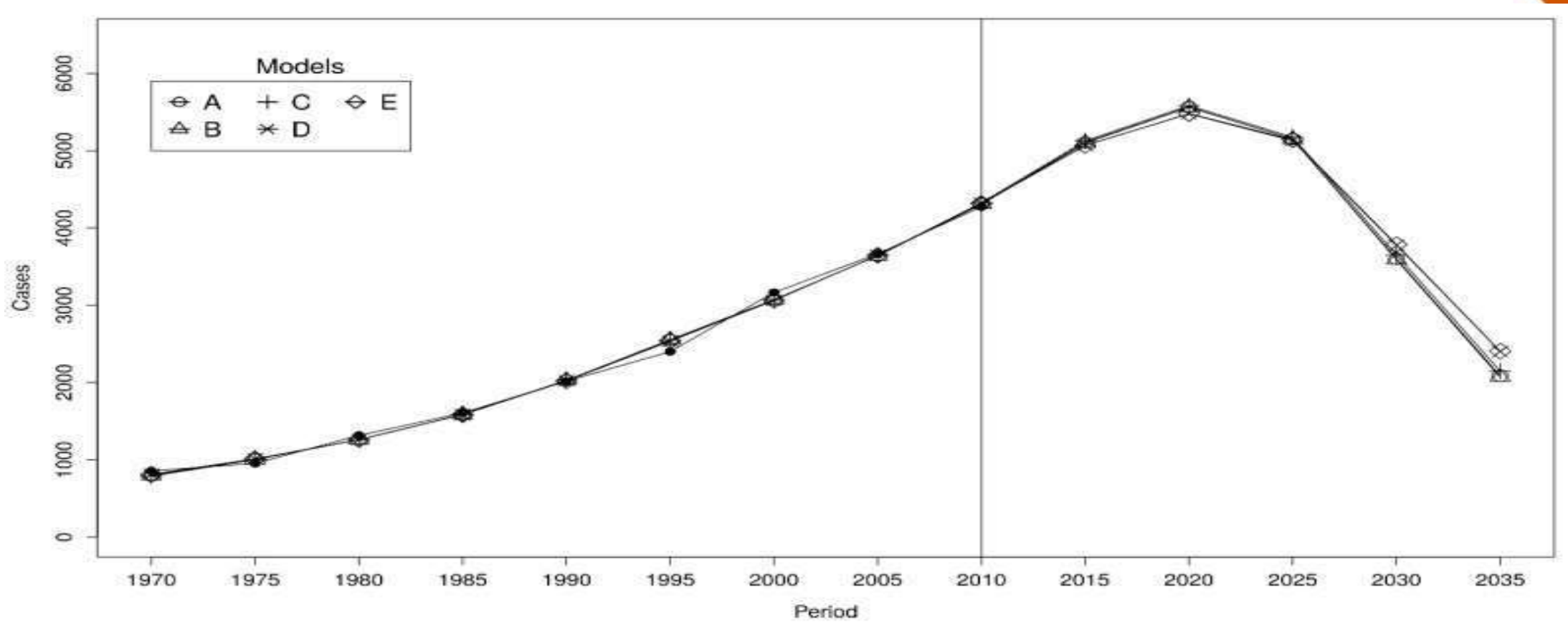
(Menegozzo, S., Comba, P., Ferrante, D., De Santis, M., Gorini, G., Izzo, F., ... & Menegozzo, M. (2011). Mortality study in an asbestos cement factory in Naples, Italy. *Annali dell'Istituto superiore di sanita*, *47*, 296-304)

Health effects of asbestos





Projected mortality rates from mesothelioma in Italy from 1970-2040



Expected peak in 2021 - 1122 cases , Expected mortality 2039 -344 episodes

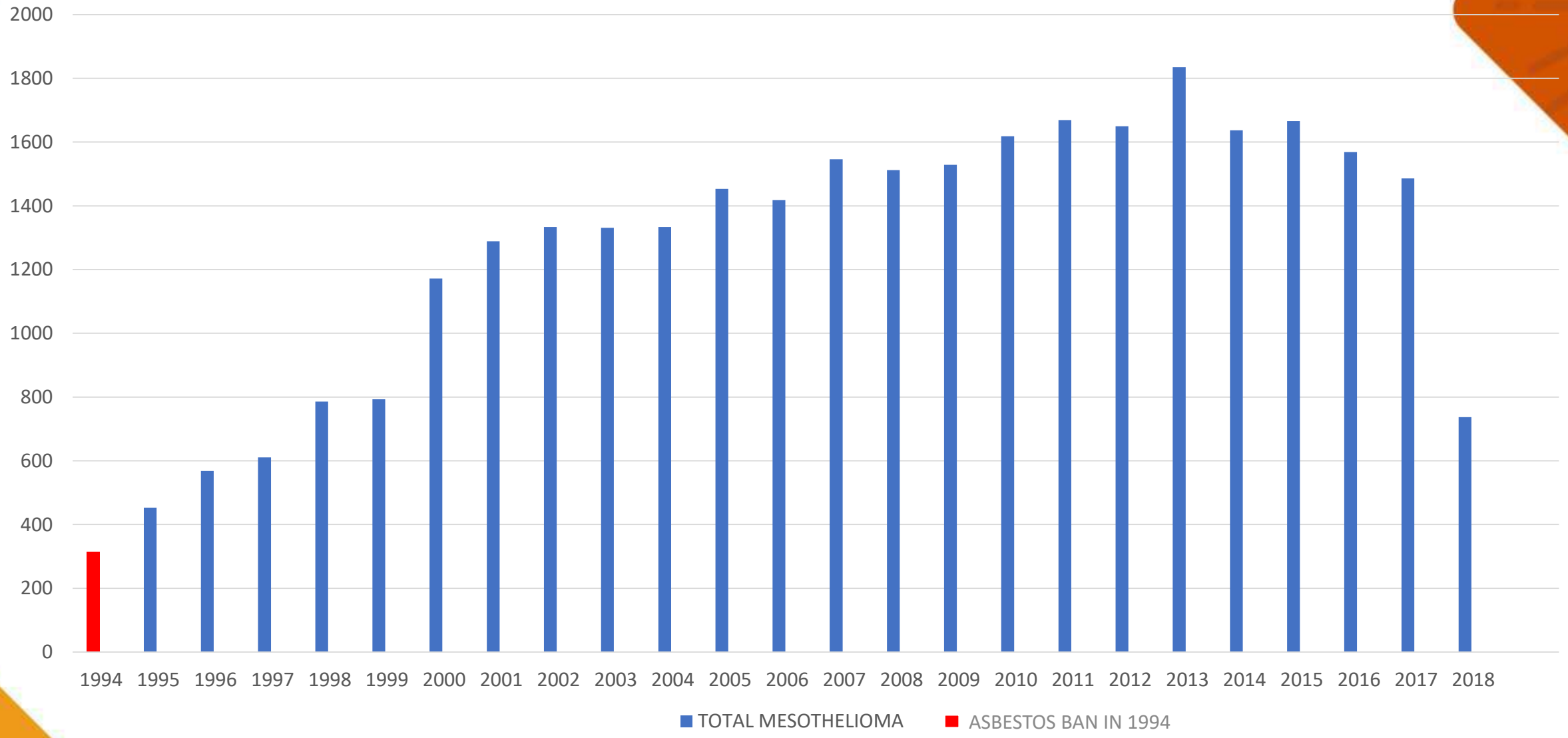
Oddone E, Bollon J, Nava CR, Consonni D, Marinaccio A, Magnani C, Gasparrini A, Barone-Adesi F. Effect of Asbestos Consumption on Malignant Pleural Mesothelioma in Italy: Forecasts of Mortality up to 2040. Cancers (Basel). 2021 Jul 3;13(13):3338. doi: 10.3390/cancers13133338. PMID: 34283067; PMCID: PMC8267929. Доступно по ссылке: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8267929/

Tabella 1 Dimensione dell'archivio. Numero di casi di mesotelioma segnalati al ReNaM, per tutte le sedi, per entrambi i sessi e per tutti i livelli di certezza diagnostica, per anno di incidenza e regione di residenza alla diagnosi (1993 - 2018, N = 31.572)

Regione di residenza	Anno di incidenza																										Totale	%
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018*		
Piemonte	118	101	118	132	165	178	179	193	196	196	223	219	229	207	218	240	235	217	221	219	255	246	256	294	229	-	**5.084**	**16,1%**
Valle d'Aosta	-	-	-	-	-	-	-	1	4	4	4	4	1	3	3	-	2	4	3	5	4	3	4	4	3	3	**59**	**0,2%**
Lombardia	-	-	-	-	-	-	-	277	281	309	313	297	339	323	357	355	359	409	424	404	478	437	459	417	415	-	**6.653**	**21,1%**
Veneto	51	50	77	69	62	81	91	90	94	83	82	82	114	88	110	104	110	128	114	110	123	118	119	120	85	89	**2.444**	**7,7%**
Friuli-Venezia Giulia	20	26	45	48	38	54	50	75	63	65	57	45	62	66	58	56	57	36	38	62	59	50	52	46	68	50	**1.346**	**4,3%**
Liguria	-	42	72	97	113	122	132	118	133	154	133	135	166	181	160	151	152	145	133	140	150	135	135	106	136	122	**3.263**	**10,3%**
Emilia-Romagna	20	30	52	73	80	83	73	86	96	114	105	120	119	107	115	133	121	130	155	156	154	133	152	159	158	149	**2.873**	**9,1%**
Toscana	29	30	44	46	49	66	64	69	77	70	68	71	69	77	85	90	89	79	100	93	108	69	80	106	85	88	**1.901**	**6,0%**
Umbria	-	-	1	1	1	1	1	2	-	-	2	-	3	11	18	19	12	22	17	18	26	20	18	22	15	8	**238**	**0,8%**
Marche	-	-	1	24	18	20	27	26	30	31	31	27	31	28	37	30	29	36	35	27	43	26	30	16	13	15	**631**	**2,0%**
Lazio	-	-	1	-	2	-	3	2	55	63	59	75	70	72	86	82	76	73	103	104	87	93	82	77	98	85	**1.448**	**4,6%**
Abruzzo	-	-	-	1	-	-	-	4	10	5	7	5	11	12	12	10	13	11	8	14	14	13	9	-	-	-	**159**	**0,5%**
Molise	-	-	-	-	1	-	-	-	-	1	1	-	-	2	3	-	1	5	1	2	5	1	3	-	-	1	**27**	**0,1%**
Campania	2	3	6	23	22	47	36	62	85	88	84	92	80	88	87	73	74	111	103	99	101	98	85	-	-	-	**1.549**	**4,9%**
Puglia	22	31	32	45	50	55	63	70	68	58	66	43	57	52	65	60	63	67	66	73	75	53	58	57	63	45	**1.457**	**4,6%**
Basilicata	-	-	3	5	2	8	2	8	9	4	2	6	5	4	8	5	7	3	3	6	3	6	2	-	2	1	**104**	**0,3%**
Calabria	-	-	-	-	-	-	-	-	2	1	1	4	7	4	4	2	3	9	4	6	7	12	5	9	2	1	**83**	**0,3%**
Sicilia	-	1	-	2	4	67	67	75	75	73	80	95	66	66	92	82	101	99	106	86	112	101	95	118	94	53	**1.810**	**5,7%**
Sardegna	-	-	-	-	-	-	-	7	5	8	8	11	19	17	19	14	18	21	21	15	15	16	8	11	9	12	**254**	**0,8%**
PA di Bolzano	-	-	-	-	-	-	-	-	-	1	-	-	1	-	1	-	1	3	8	7	8	3	8	3	7	10	**61**	**0,2%**
PA di Trento	-	-	1	2	4	4	5	7	6	6	5	3	4	10	8	6	6	10	6	4	8	4	6	4	4	5	**128**	**0,4%**
Totale	**262**	**314**	**453**	**568**	**611**	**786**	**793**	**1.172**	**1.289**	**1.334**	**1.331**	**1.334**	**1.453**	**1.418**	**1.546**	**1.512**	**1.529**	**1.618**	**1.669**	**1.650**	**1.835**	**1.637**	**1.666**	**1.569**	**1.486**	**737**	**31.572**	**100,0%**

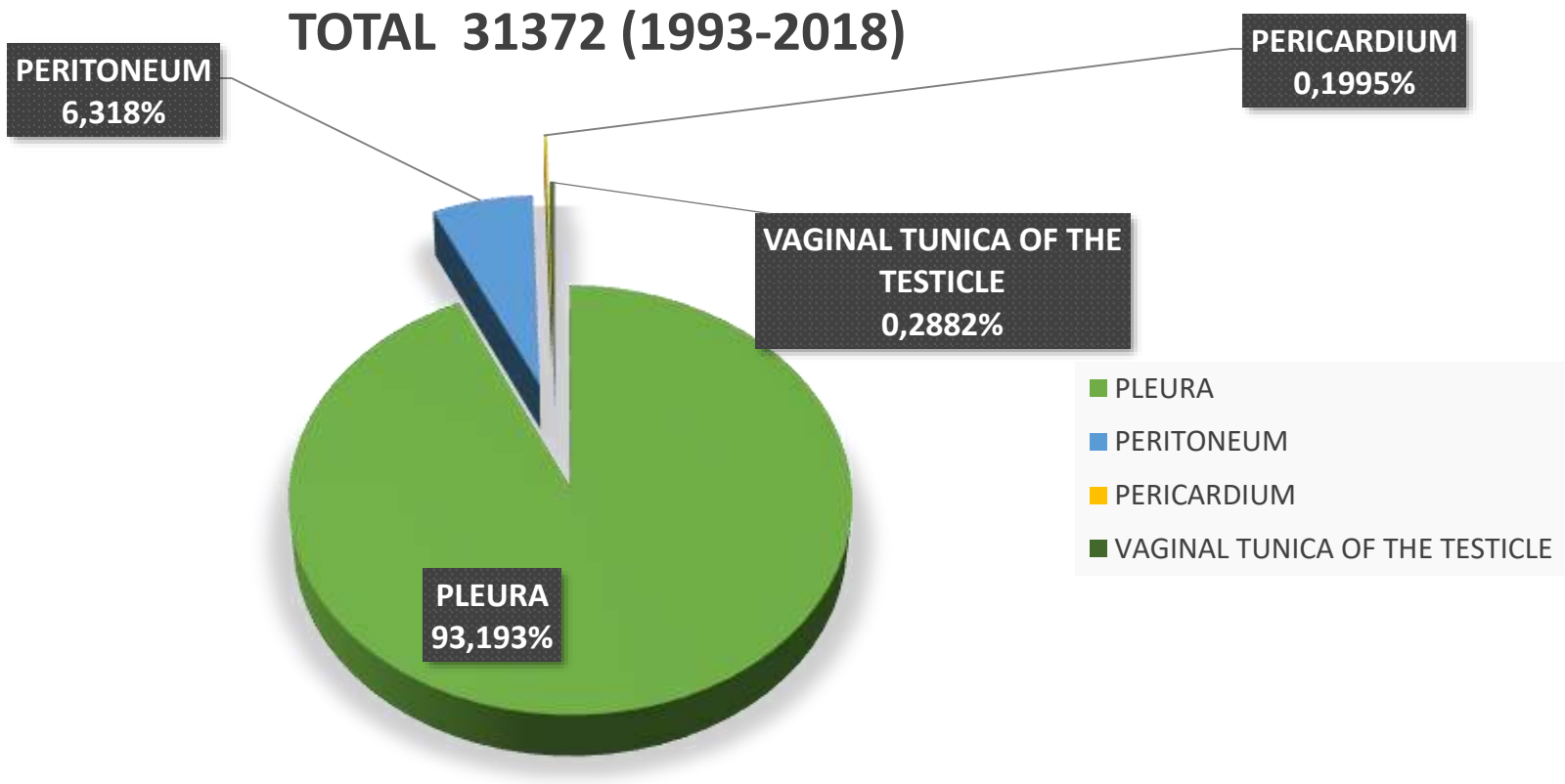
Data source : ReNam - National Mesothelioma Registry.

Number of mesothelioma cases reported to ReNaM, for all locations, for both sexes and for all levels of diagnostic certainty (1993 - 2018, N = 31,572)



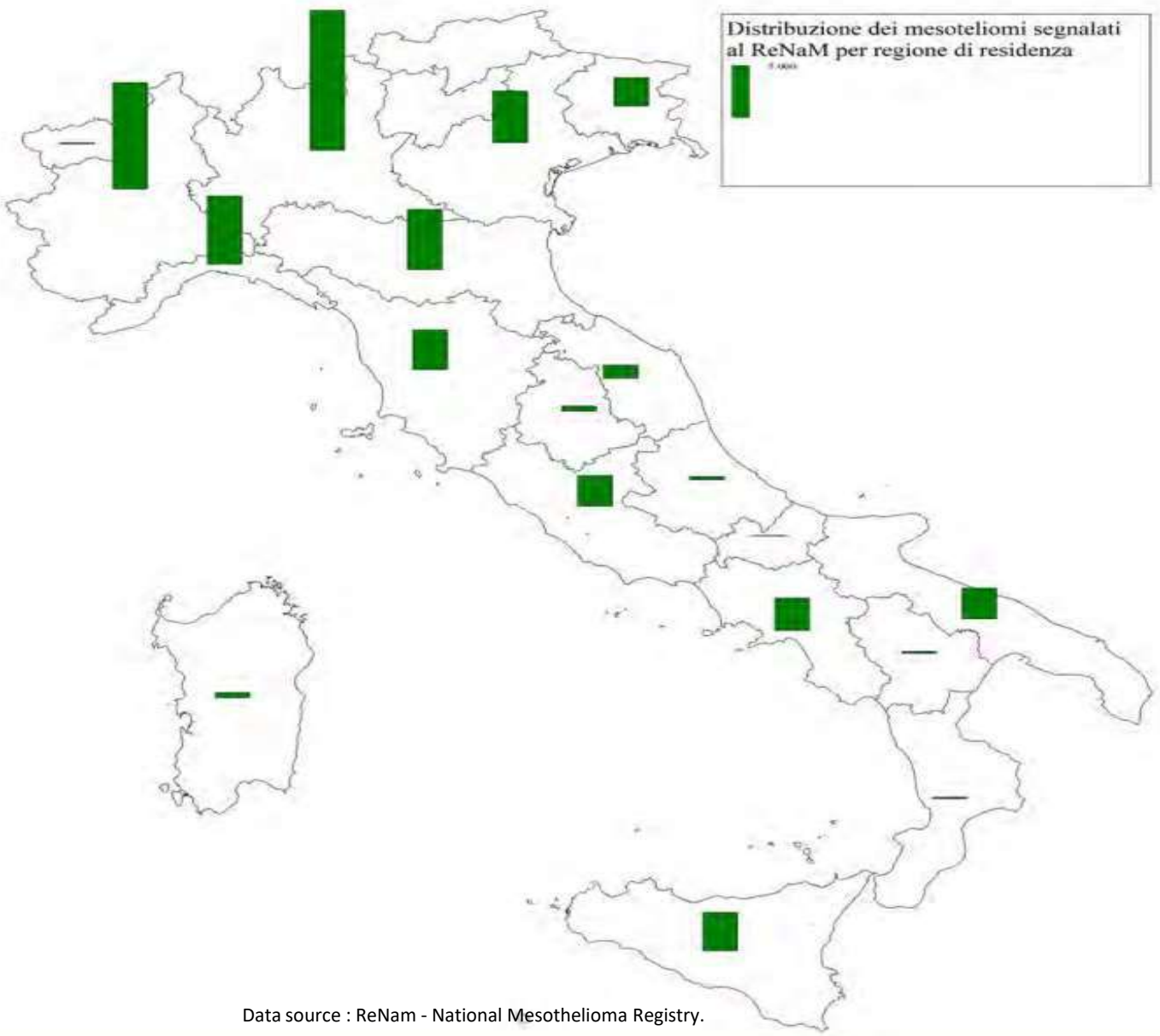
Data source : ReNam - National Mesothelioma Registry.

Number of mesothelioma cases reported to ReNaM, for all locations, for both sexes and for all levels of diagnostic certainty (1993 - 2018, N = 31,572)



Data source : ReNam - National Mesothelioma Registry.

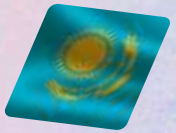
Figura 1 **Dimensione dell'archivio. Numero di casi di mesotelioma segnalati al ReNaM, per tutte le sedi, per entrambi i generi e per tutti i livelli di certezza diagnostica, regione di residenza alla diagnosi (Italia, 1993 - 2018, N = 31.572)**



Data source : ReNam - National Mesothelioma Registry.

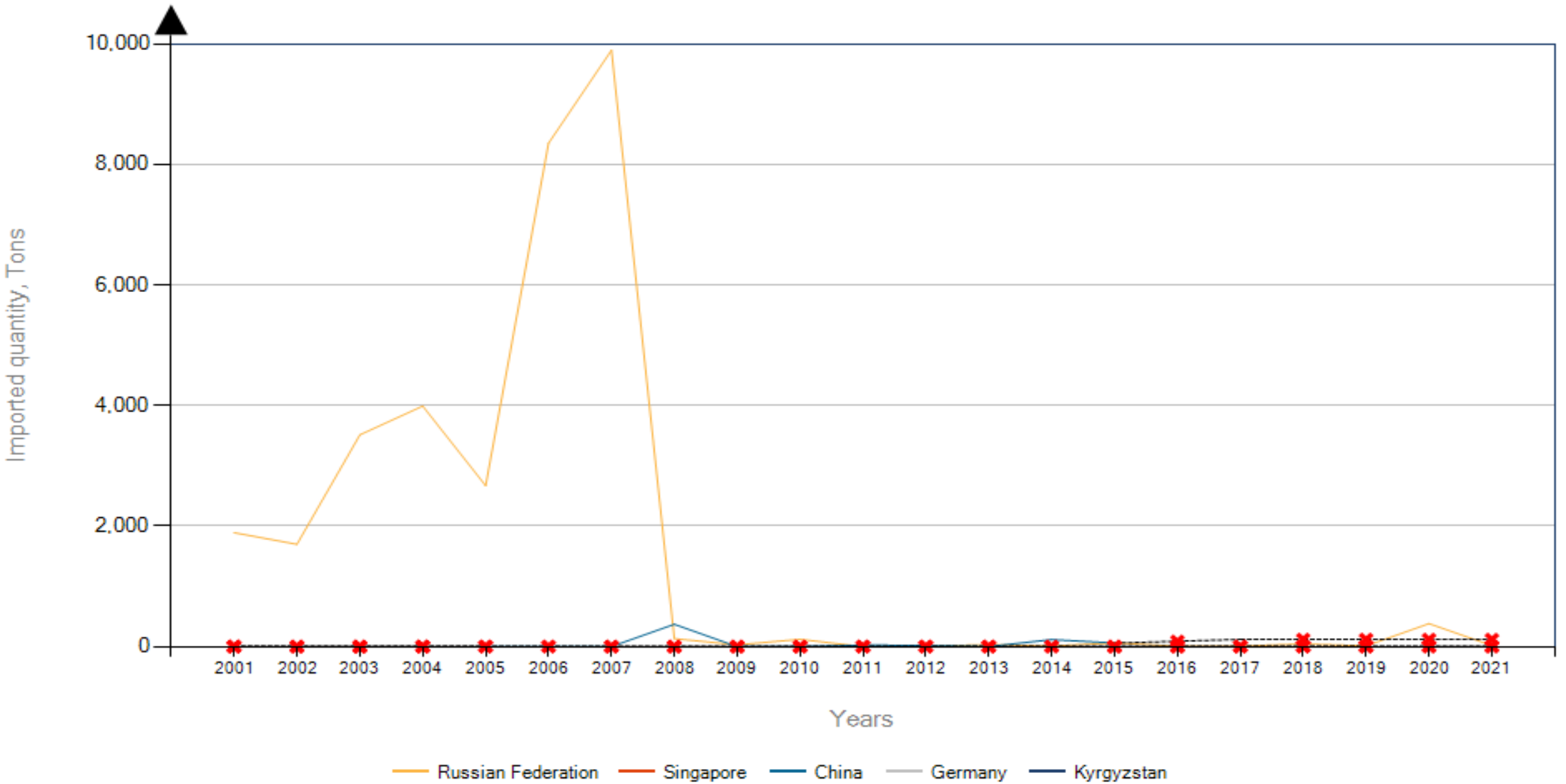
Zhitikarinsky quarry. Founded 1965.
Employees - 2 000 people.
Capacity over 200 000 tons/year

KAZAKHSTAN



Semey KM (Semey slate factory).
Founded in 1961.
Employees-203 people.
Capacity- no data

Shymkent Slate Plant TOO
"Techtum Engineering“
Employees 100.
Capacity-5 mln sq/m/y



https://www.trademap.org/Country_SelProductCountry_TS_Graph.aspx?nvpm=1%7c398%7c%7c%7c%7c2524%7c%7c%7c4%7c1%7c1%7c1%7c2%7c1%7c2%7c2%7c1%7c2

Table - Distribution of occupational groups depending on the connection with work with asbestos

Regions	Occupationally exposes	Non Occupationally exposes
Astana	2	17
Almaty	-	22
Alma-Ata's region	-	39
Akmola region	1	15
Aktobe region	1	16
Atyrau region	-	4
East Kazakhstan region	-	11
Jambyl Region	-	21
South Kazakhstan region	3	-
Karaganda region	2	25
Kyzylorda Region	2	2
Kostanay region	1	32
Mangystau region	-	10
Pavlodar region	6	14
North-Kazakhstan region	-	9
West-Kazakhstan region	-	2
TOTAL	18	239

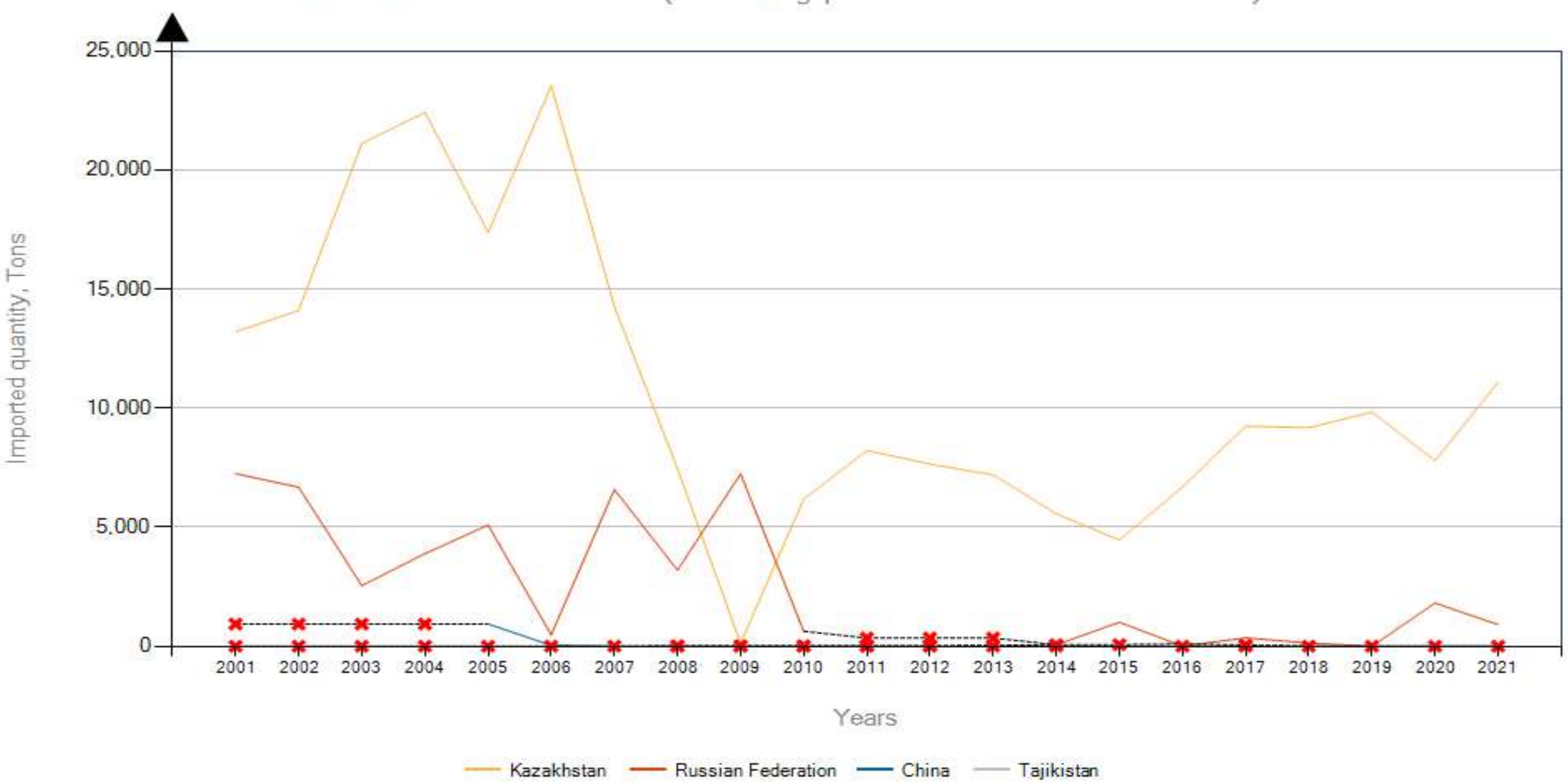
Алтынбеков, М. Б. Региональная оценка заболеваемости мезотелиомы в Республике Казахстан / М. Б. Алтынбеков, Ж. Х. Сембаев, Б. М. Салимбаева // Молодежь - практическому здравоохранению : Материалы XII Международной научно-практической конференции студентов и молодых ученых-медиков, Тверь, 18 мая 2018 года. – Тверь: Государственное бюджетное образовательное учреждение высшего профессионального образования Тверская государственная медицинская академия Министерства здравоохранения Российской Федерации, 2018. – С. 58-61. – EDN BBSODQ.

Kyrgyzstan

«Kant kurulush»
Founded in 2013.
Employees-no data.
Capacity- no data

«Kant Pipe and slate enterprise»
Founded in 1967.
Employees-300.
Capacity- 5 mln sq/m/year

«Kant Pipe and slate enterprise» in Kyzyk-kiya.
Founded in 2020.
Employees-150.
Capacity- 3,7 mln sq/m/year



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Uzbekistan

QIZILQUMSEMENT AJ

"MUNJAL SHIFER"

"OHANGARON XRIZOTIL"

"MEGA-MEBIKO"

"SHERBULOQ ADIRLARI"

"ELDORBEK SANOAT"

"EVEREST ASBEST"

"XUDARGAN UMID"

"RAJABBOY RO'ZMETOV"

"NURAFSHON OBOD QURILISH"

"DOLINA GRAND SHIFER"

"QUVASOYSHIFER HRIZOTIL"

"OCEAN SHIFER"

"DSX LIDER SUPER HOUSE"

"ISTIQLOL SHULASI

"YATRA INVEST"

"URGUT TEKISTILE SHIFER"

"JOMBOY SHIFER"

"SURKHON SHIFER"

"KAVSAR MADAD"

"VAZIRA DILNURA"

Number of employees

179

Date of registration

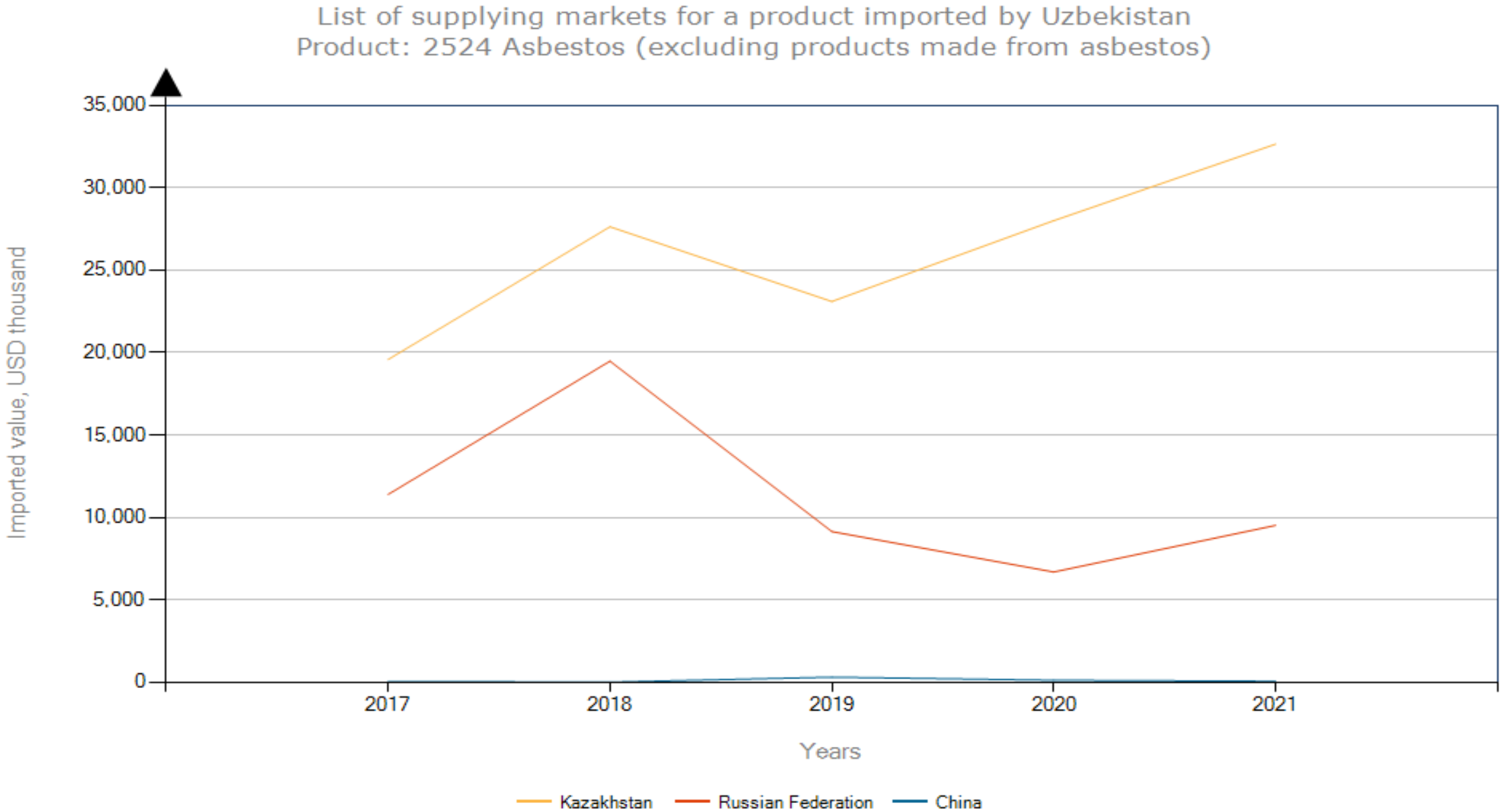
2008

Power

1.2 million products per year

Product

Asbestos pipes and asbestos slate



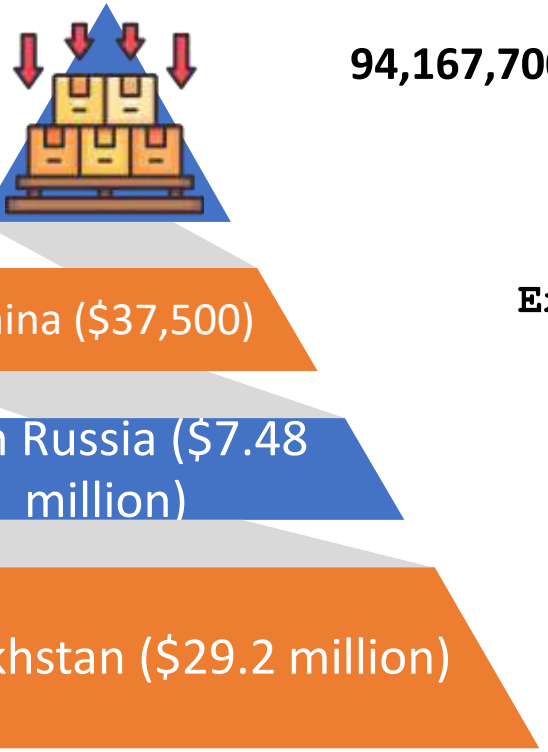
https://www.trademap.org/Country_SelProductCountry_TS_Graph.aspx?nvpm=1%7c860%7c%7c%7c%7c2524%7c%7c%7c4%7c1%7c1%7c1%7c2%7c1%7c2%7c1%7c1%7c2

Asbestos import by Uzbekistan

36.8 million $

4th largest asbestos importer in the world

Asbestos import market for Uzbekistan from 2020-2021 was Kazakhstan ($18.2k)

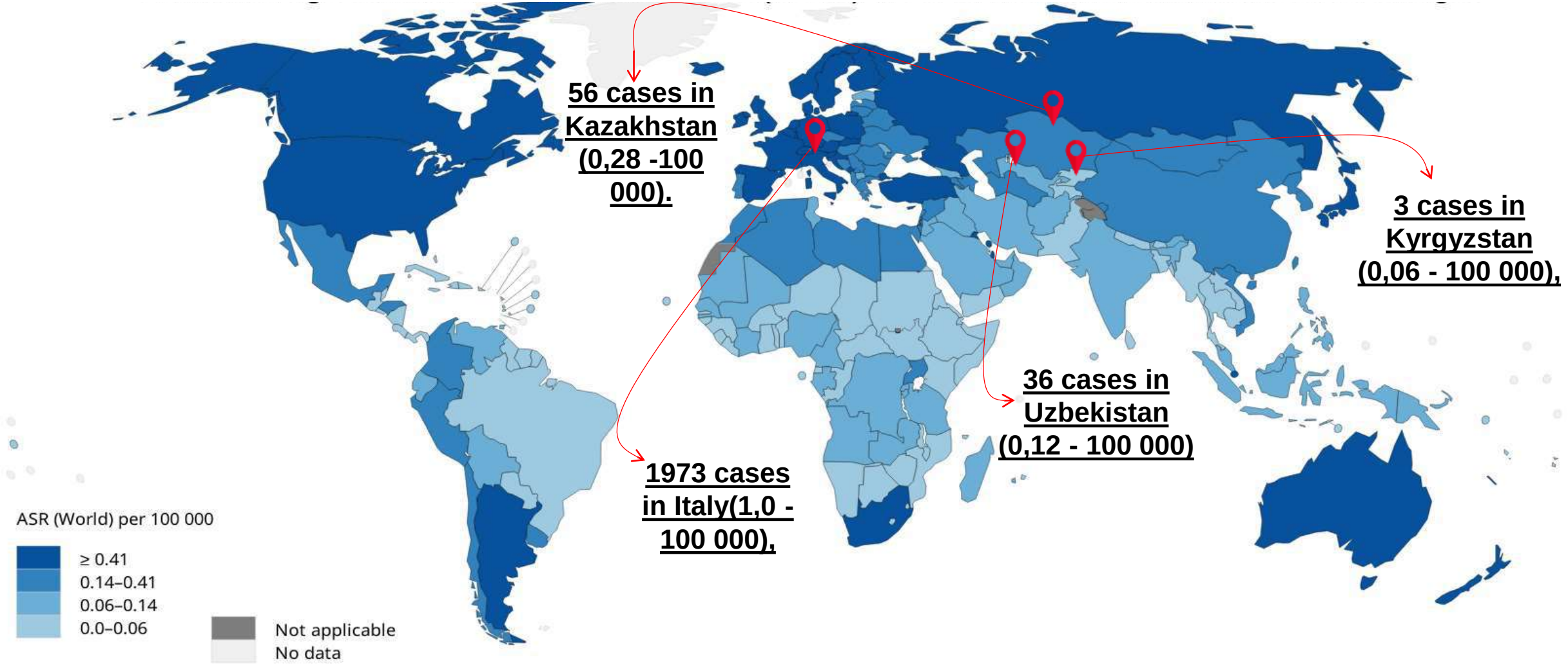


94,167,700 kg = 94,167.7 tonnes

Exports rank 153 out of 1,148

More than 20 companies producing asbestos materials

Estimated age-standardized incidence rates (World) in 2020, mesothelioma, both sexes, all ages



Data source: GLOBOCAN 2020
Map production: IARC
(http://gco.iarc.fr/today)
World Health Organization

https://gco.iarc.fr/today/online-analysis-map?v=2020&mode=population&mode_population=continents&population=900&populations=900&key=asr&sex=0&cancer=18&type=0&statistic=5&prevalence=0&population_group=0&ages_group%5B%5D=0&ages_group%5B%5D=17&nb_items=10&group_cancer=1&include_nmsc=0&include_nmsc_other=0&projection=natural-earth&color_palette=default&map_scale=quantile&map_nb_colors=5&continent=0&show_ranking=0&rotate=%255B10%252C0%255D

Discussion

Economic interest

Absence and small number of reseraches on this topic in Central Asia

Insufficient diagnosis and detectability of asbestos-related diseases

Conclusion

More researches need to be done

Possible solutions

Apply Italy's experience


Thank You