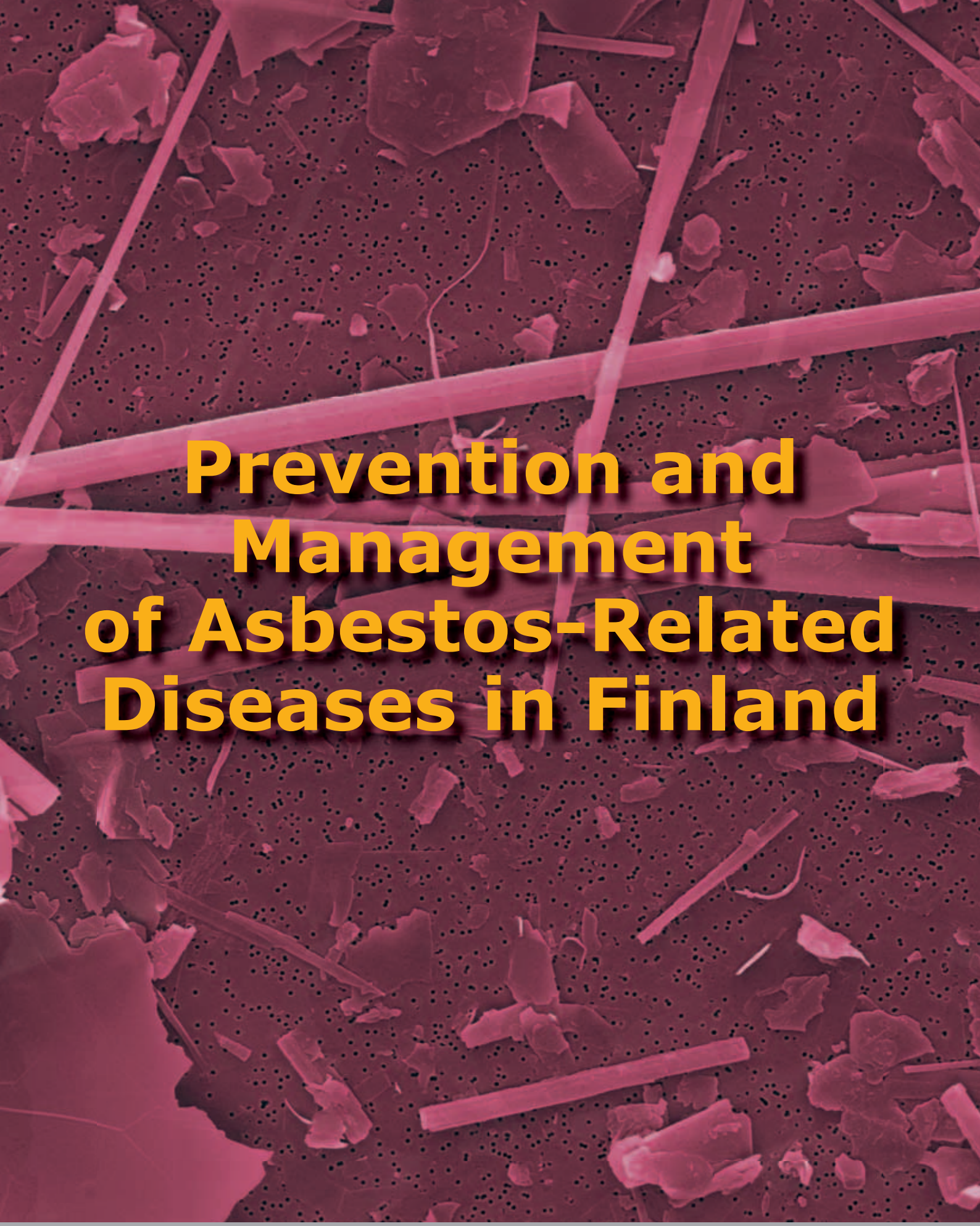

Prevention and Management of Asbestos-Related Diseases in Finland

Finnish Institute of Occupational Health

History of asbestos production and use in Finland

Geologically the Finnish ground is in many locations, particularly in Eastern Finland, rich in naturally occurring asbestos (anthophyllite) (Nikkarinen et al. 2001). The archaeological findings of asbestos use in Eastern Finland date back to 2500 BC. Asbestos was used for reinforcement and improvement of heat resistance of ceramic clay pots and other household items.

Industrial-scale asbestos mining was carried out in two mines in Eastern Finland. The larger one was located in Paakkila, Eastern Finland. Anthophyllite asbestos was first quarried in Paakkila by a Danish company for 1907–1910. The mining was continued in an industrial scale by Finnish companies since 1918 and it continued until 1975. The smaller Majasalmi mine was operating only for 10 years 1943–1953. The industrial production of anthophyllite was totally 350 000 tons of which 120 000 tons was used in Finland (Nikkarinen et al. 2001; Palomäki and Halonen 1968). Finland also imported asbestos: chrysotile, amosite, and crocidolite. Asbestos products were manufactured at various facilities between 1923 and 1988. The main uses were in asbestos cement, insulation and roofing materials. The highest consumption of all asbestos was about 12 000 tons a year in the mid-seventies and total cumulative consumption has been estimated at the level of more than 300 000 tons, of which about 200 000 was estimated to be left in existing buildings and structures in 1989/1990. Mining in Paakkila was closed in 1975 for economic reasons, namely steeply falling consumption and the change in the owner company's production strategy towards man-made mineral fibres.

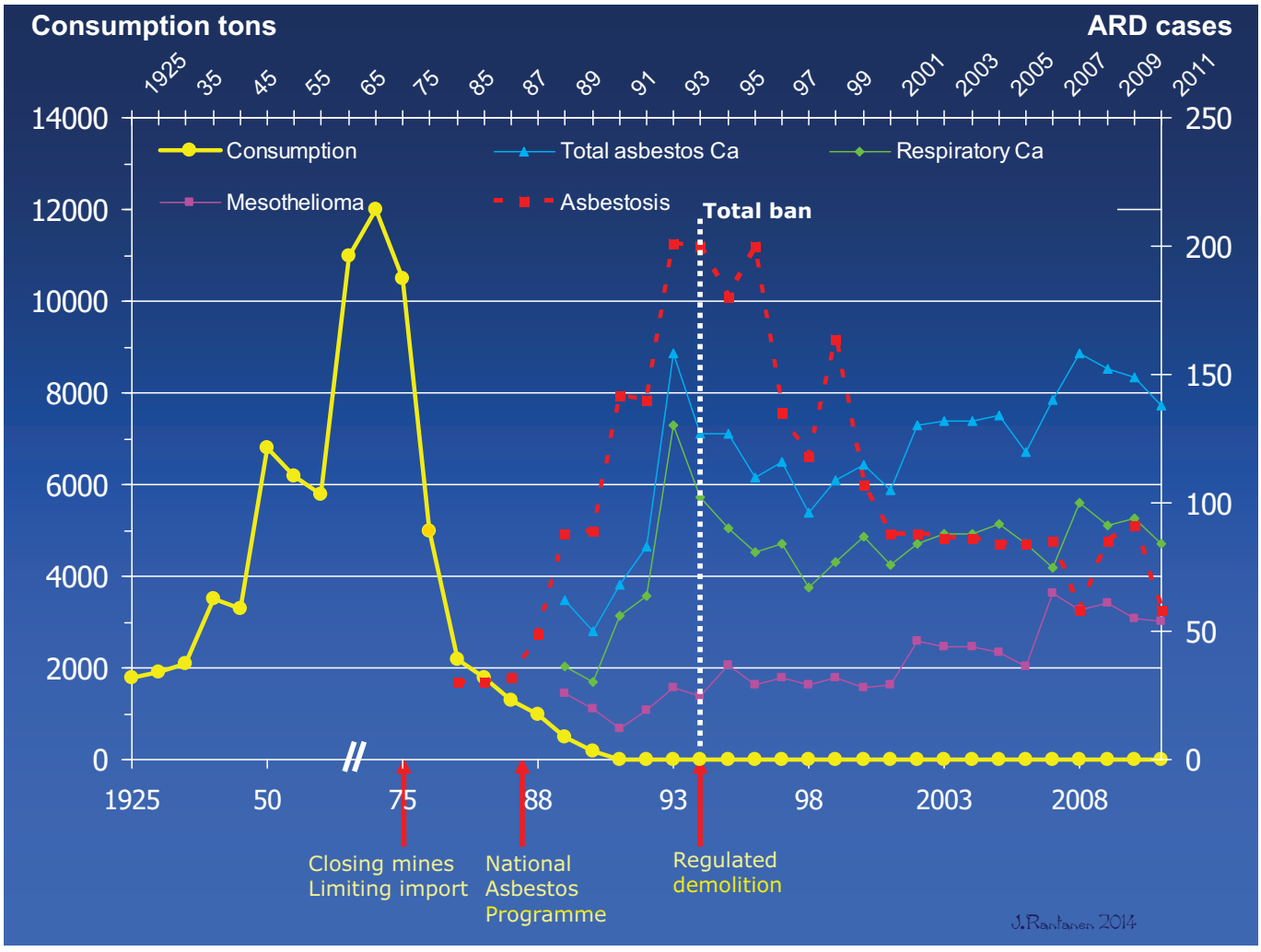

Figure 1. Consumption curve of asbestos in Finland in 1925–2008 and related health outcomes (Rantanen 2014a)

National strategy & policies

Policy

As typical in Nordic Countries, the actions for developing strategies, regulation and practical actions were carried out in collaboration between the Government (Ministry of Social Affairs and Health, the Occupational Safety and Health Administration (OSHA), and the Health Administration, MoSAH), the social partners (employers' and workers' federations), and expert institutions (mainly the Finnish Institute of Occupational Health, FIOH), social insurance institutions and NGOs, particularly the Organisation for Respiratory Health in Finland. The Finnish strategy combined soft regulation and hard law, as it was found that none of them alone was sufficient. Since Finland joined the European Union, EU regulations and their amendments concerning both the asbestos OSH regulations and the REACH regulations for chemicals have been continually transposed to Finnish regulations.

Strategy

The Finnish national asbestos strategy was included as an element in the Health for All strategy. (HFA2000 1985) In March 1985, the Government of Finland presented the National Health for All 2000 strategy to the Parliament, which included activity line (target) No. 13: Stopping the use of hazardous chemicals (such as asbestos and benzene) by 1995. In spring 1986, there was a public debate on the health risks caused by the improper dismantling of old asbestos insulation during the renovation of certain public buildings, such as schools. In April 1986, the Finnish Metal Workers' Union and the Construction Workers' Union called attention to the health problems associated with exposure to asbestos. The discussion led to actions by the Government and enhancement of activities related to asbestos by FIOH (See: Asbestos Programme).

The OSH law and related Government Decrees for the elimination of use of new asbestos and for the protection of workers' safety and health in demolition work, the law on Chemicals for banning asbestos and the tobacco law regulating tobacco smoke at workplaces represent hard legislation. The soft law used guidelines, requirements for the capacity and competence of actors dealing with asbestos, training programmes, information campaigns and numerous types of services, including health examinations of workers and advice for asbestos patients via an NGO phone service. Parallel to these preventive and diagnostic actions, social insurance provisions and practices were developed to better address the unique social security needs of workers with asbestos-related diseases (ARDs).

The strategy was shaped as follows (Figure 2):

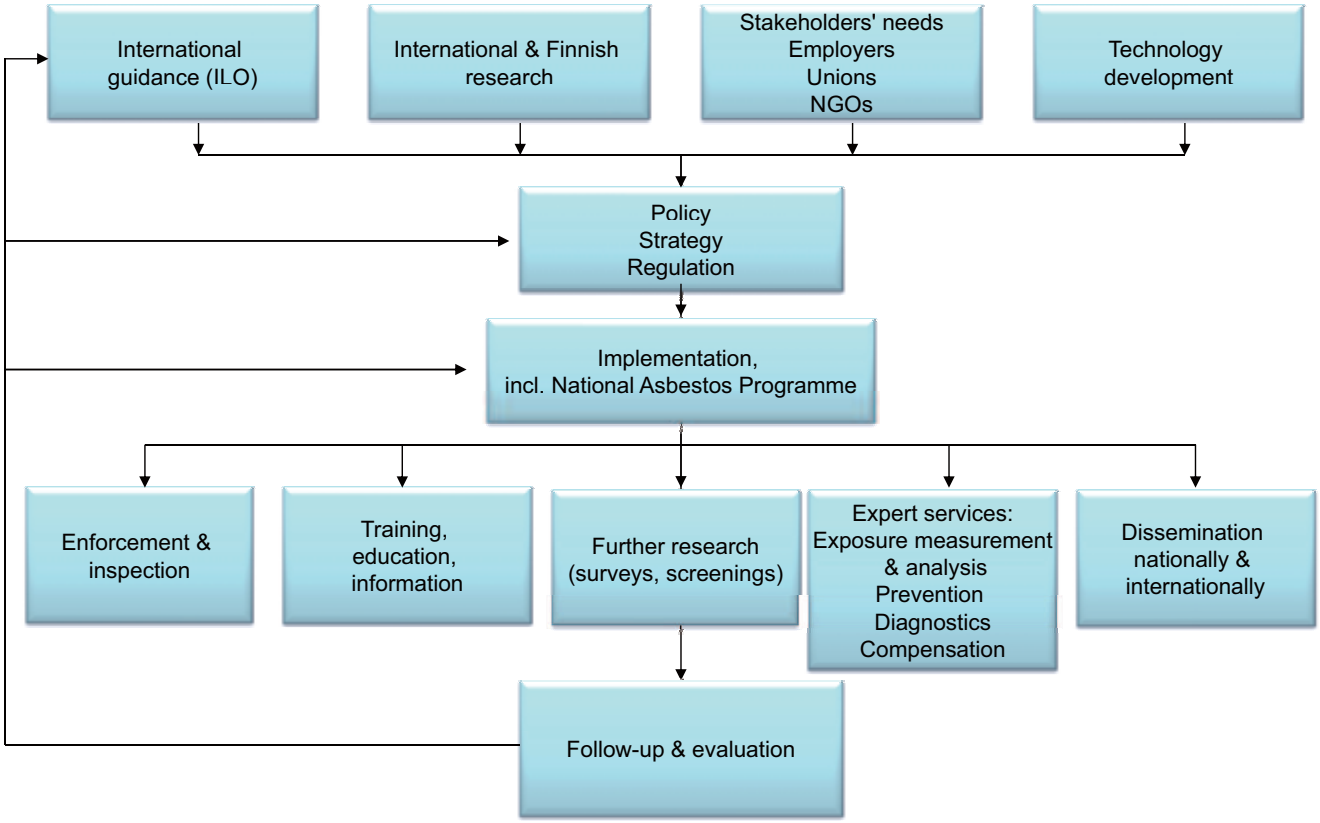

Figure 2. Strategic outline for the Finnish Asbestos Programme (Rantanen 2014b)

FIOH's National Asbestos Programme

Background

Many industrialized countries paid increasing attention to the alleviation and prevention of health hazards caused by asbestos in the late 1970s and the 1980s. Extensive legislative, administrative and practical measures were introduced in, for example, the USA, Sweden, Norway and the then Federal Republic of Germany. The International Labour Organization (ILO) published numerous guides on safety in the use of asbestos, and in 1986 approved ILO Convention No. 162, which set technical and medical principles for the prevention of asbestos risks. Finland was one of the first countries to ratify the Convention in 1988. WHO experts have evaluated the effects of occupational and environmental exposure to asbestos in several contexts. (Huuskonen et al. 1993.) On the initiative of the International Commission on Occupational Health, ICOH, the 13th Joint ILO/WHO Committee on Occupational Health agreed upon a Joint Programme for Elimination of Asbestos-Related Diseases in 2003.

The Finnish Metal Workers' Union and the Construction Workers' Union called attention to the health problems associated with exposure to asbestos. In May 1986, the Ministry of Social Affairs and Health requested that FIOH prepare a proposal on how to tackle the problem. In October 1986, FIOH proposed the following:

1. Minimization of exposure to asbestos
2. Determination of the number of people exposed to asbestos, and identification of the asbestos-exposed individuals
3. Assessment of the health risks caused by exposure to asbestos
4. Development of diagnostics for asbestos diseases in Finland.

The National Asbestos Programme initiated by FIOH in 1987–1992 constituted a key instrument for the implementation of the National Strategies. In addition to the four tasks included in the FIOH proposal for the Ministry, the programme also contained a research section and a great deal of training supported by a wide element of awareness raising and information dissemination. A special initiative was the establishment of the Government Asbestos Committee for updating and completing regulations (Rantanen 1988; Huuskonen et al. 1994; Asbestos Committee 1989).

Objectives of the Asbestos Programme were:

- Identification of asbestos-exposed groups and screening for asbestos-related diseases
- Identification of health effects of asbestos exposure among the population
- Supporting the work of the Government Asbestos Committee in updating a regulatory basis
- Proposal to prohibit the manufacture, import, trade and use of new asbestos (see Asbestos Committee)
- Numerous actions for minimizing asbestos exposure, particularly in demolition work (see Asbestos Committee)
- Training and information for workers, employers, decision-makers and the public at large
- Research activities
- International activities.

Research

During the Asbestos Programme, a number of scientific research projects related to asbestos diseases were conducted. The topics of the studies included the role of asbestos as an etiological factor in lung cancer and mesothelioma, diagnostic methods for asbestos-related diseases, the occurrence of pulmonary changes caused by exposure to asbestos among different population groups, and the impact of asbestos exposure on decisions to stop smoking. (Huuskonen et al. 1994; Huuskonen & Rantanen 2006; Huuskonen 2009).

Between 1990 and 1992, FIOH carried out broad-based screening of asbestos-related diseases which showed that 22% of circa 19 000 persons who had worked in housing construction and shipbuilding had pulmonary fibrosis and changes in their pleura (Koskinen et al. 1998).

The National Health Survey 'Mini-Suomi project' showed that, as a result of work-related exposure to asbestos, 6.8% of men and 2% of women in the population aged over 30 had bilateral pleural plaques. Radiological findings in the lung caused by asbestos are detectable in over 100 000 Finns. This incidence, which is very high by international standards, is a result of the extensive use of anthophyllite asbestos in building materials, which began in the 1920s (Zitting et al. 1995).

According to epidemiological studies, about 10% of the male population who smoke die of lung cancer, while the figure for insulation workers with high asbestos exposure who also smoke is about 25%. About half of those who have been highly exposed and fallen ill with asbestosis have died of lung cancer. Lung cancer incidence starts to increase 10 years after the beginning of exposure to asbestos, and is at its highest after 40 years (Meurman et al. 1994; Karjalainen 1994; Oksa 1998; Henderson et al. 2004).

The number of mesotheliomas in the general population and worker groups reflects how common exposure to asbestos has been. Even short exposures are sufficient to increase the occurrence of mesotheliomas. All types of asbestos, including anthophyllite and chrysotile have been associated with mesothelioma. Mesothelioma occurrence is increasing with increasing time since first exposure. Latency times of between 15 and 20 years have been reported, but latencies as long as 40 years have also been reported. (Tuomi 1991; Karjalainen et al. 1993; Karjalainen et al. 1994a; Karjalainen et al. 1994b; Karjalainen et al. 1996; Karjalainen et al. 1997; Takahashi et al. 1999; Tossavainen 2004; Hodgson et al. 2005; IARC 1987; IARC 2012).

In addition to well-known asbestos-related diseases, a new type of asbestos-related disease, retroperitoneal fibrosis, was described by Uibu and co-workers (2004).

Training

Training related to asbestos dismantling work, asbestos surveys, and the diagnostics of asbestos-related diseases was organized during the Programme. In addition, numerous other training sessions and courses on asbestos were organized as part of the FIOH training programme. Asbestos as a topic was included in the training curriculum of occupational health physicians and occupational health nurses specializing at FIOH, and in the basic medical training of the University of Helsinki. During the programme, some 20 experts, including staff from the six Regional Institutes of Occupational Health, received training in the Dust Laboratory of FIOH on the microscopic asbestos analytics of material, dust, air and lung samples. OSH inspectors were specially trained to detect and advise on measures concerning the management of asbestos at the workplace, particularly in the demolition work.

Information

One of the important aims of the Asbestos Programme was to raise awareness among the public at large. This was mainly done through the media: the press, radio and TV. Hundreds of articles to raise public awareness were published during the Programme. Numerous small guides and leaflets were produced for workplaces to increase the knowledge of all actors. One of the practical information activities was

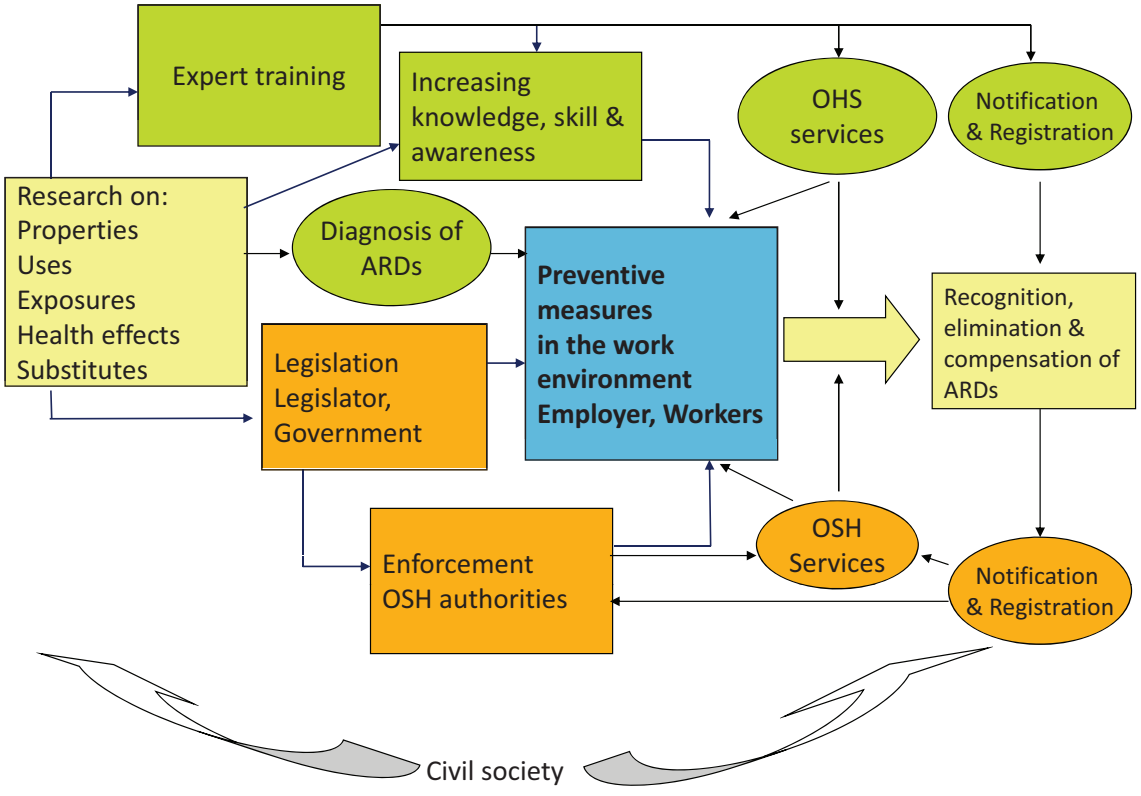

Figure 3. Information as a tool for elimination of hazards (Modified from Lehtinen 2013)

the production of good practice guidelines for asbestos work and, for example, information on substitutes for asbestos materials.

In the times of the Asbestos Committee, there were about one million dwellings in detached houses and about an equal number of blocks of flats. The houses constructed between the 1920s and the 1970s were most likely constructed with materials containing asbestos. Therefore, the Committee recommended that the Ministry of Environment organize an information campaign with the Associations of dwelling building owners for the identification, labelling, and if necessary, safe removal of existing asbestos from the dwelling buildings.

Services

Numerous types of services were organized within the frames of the Asbestos Programme. The assessment of exposure was supported by training in interview practices for occupational health physicians and occupational health nurses and for the physicians in hospitals' pulmonology clinics. A standardized method of asbestos fibre analysis was organized in FIOH's Regional Institutes of Occupational Health, the occupational hygiene experts of which provided practical advice for protective and preventive measures at workplaces.

Diagnostic services were strengthened in occupational health services, University Hospital polyclinics and in FIOH's Department of Occupational Medicine.

A national mesothelioma panel was set up at FIOH in 1989. It can be consulted in cases of difficulties in differential diagnosis. There are some 70 incident cases of mesothelioma every year. Diagnostics is managed well in Finland these days, and only the most difficult cases are sent to the panel for confirmation (Anttila et al. 2011; Huuskonen et al. 2006).

All the university hospitals in Finland have set up expert groups in pneumoconiosis diseases that can be consulted in problematical cases. The Helsinki pneumoconiosis group operates at FIOH. Every year, the asbestos fibre contents in the lung tissue of about 300 samples are examined (320 in 2005) for occupational disease diagnostics. In forensic medicine studies of cause of death carried out because of a suspicion of an occupational disease, tests for asbestos in the lung tissue are generally requested. The method has been found well standardized; the regional differences were found negligible (Nordman et al. 2006; Huuskonen et al. 2006).

Government Asbestos Committee

The Council of State established a multisectorial Asbestos Committee in August 1988, which comprised representatives of six Ministries and State Agencies. The Asbestos Committee, chaired by the Director General of FIOH, submitted its report in December 1989, with a total of 27 recommendations for action in six different ministerial jurisdictions.

The Asbestos Committee reviewed the use and occurrence of asbestos in buildings, chemicals, consumer products and materials used at work. It also evaluated the occupational and environmental exposures to asbestos in Finland, as well as the data on asbestos-related diseases. The Committee proposed several technical, legislative, administrative and educational measures for the prevention of human exposure to asbestos. The proposed actions included a ban on manufacture, import, trade or use of asbestos-containing products such as chemicals, vehicle parts, consumer appliances and building materials. It was proposed that the use of asbestos at work be prohibited and the occupational exposure limit be lowered to the level of 0.1 fibres/cm3. More effective handling of asbestos waste was to be organized and its control strengthened. As an urgent measure, surveillance of the occurrence of asbestos in all public buildings was also proposed, as well as voluntary initiation of

measures for the identification of asbestos in private buildings and houses. These voluntary measures were to be supported by appropriate information and guidance. (Report of the Asbestos Committee 1989).

Early recognition of diseases

Asbestos-related diseases constitute a unique type of morbidity in several aspects: Cumulative dose with poor or no elimination and clearance, long latency period between exposure and disease outcome, several types of morbidity with different shapes of dose-response, for example, asbestosis, pleural plaques and numerous types of cancers (FIOH Asbestos Programme 1993). In all these aspects, early diagnosis is of the utmost value, but simultaneously, challenging. The Finnish strategy started early with conventional (administrative) health examination schedules and proceeded to the use of biomarkers and, the screening of exposed workers with conventional chest X-rays, and gradually moved to advanced imaging technologies (HRCT and LDCT) and screening after the 1998 International Consensus Report (Kusaka et al. 2005). The sensitivity of screening tools for early detection has substantially increased.

The Finnish Strategy paid special attention to reliable exposure interview methods by the health personnel, and where possible, the assessment of exposure on the basis of measured data and the use of HRCT. Today HRCT is routinely used in occupational clinical practice (Nordman et al. 2006). Without the screening project of the Asbestos Programme for registered asbestos-exposed workers, a high number of asbestos-related cancers had remained undiagnosed or the diagnosis had been delayed. (Koskinen et al. 2003; Vehmas 2012)

It was found that the sensitivity of the HRCT test is higher than that of a conventional thorax X-ray for diagnosing diffuse interstitial pulmonary fibrosis, emphysema and changes in pleura. Low-dose spiral computed tomography is superior in sensitivity for diagnosing lung cancer (Oksa et al. 1994, Lehtola et al. 1999; Huuskonen et al. 2001, Tiitola et al. 2002a; Tiitola et al. 2002b; Kusaka et al. 2005; Huuskonen et al. 2006; Vierikko et al. 2007).

FIOH has proposed screening of lung cancer among asbestos-exposed workers (FIOH 2011). There is increasing evidence suggesting that screening of high-risk groups for lung cancer with low-dose computed tomography can reduce mortality from lung cancer and all causes (Humphrey et al. 2013; Wender et al. 2013); however, the harms associated with screening must be balanced with the benefits. These new opportunities for early diagnosis are expected to allow early surgical and other interventions, which may improve the prognosis of the patients.

Sharing information at international level

As asbestos-related diseases are an important issue of both European and international health, FIOH participated actively in the related international activities.

1997

Helsinki Criteria Meeting

The progress in Finland in tackling the asbestos situation in the 1980s and early 1990s led to a decision at FIOH to organize a meeting of international renowned experts at the Hanasaari Cultural Centre in 1997, to discuss the prevention of diseases caused by exposure to asbestos. The result of the expert meeting, now known as Helsinki Criteria, was published in the Scandinavian Journal of Work, Environment and Health (Consensus Report 1997), and in a separate publication with the background papers: Asbestos, Asbestosis, and Cancer (Work and Health, Research Reports 14).

Asbestos Symposium for the Countries of Central and Eastern Europe

In December 1997, a regional meeting of the Countries of Central and Eastern Europe was organized, in collaboration between the Hungarian Institute of Occupational Health, FIOH, and Collegium Ramazzini. Ten Central and Eastern European countries described their situation concerning asbestos exposure and their plans for the prevention of asbestos-related occupational diseases. The country reports of Bulgaria, Estonia, Hungary, Latvia, Poland, Romania, Russia, Slovakia, Slovenia and Ukraine, keynote presentations and the recommendations of the meeting have been published as a separate report. (Work and Health, Research Reports 19. Helsinki, 1998)

2000

As new knowledge and diagnostic methods were developing rapidly, FIOH organized another expert meeting in February 2000, which dealt with new advances in radiology and the screening of asbestos-related diseases. The result of the expert meeting was published in the Scandinavian Journal of Work, Environment and Health (Tossavainen 2000). The papers presented and

the recommendations of the meeting were published as a separate report. (Work and Health, Research Reports 36)

2002
In September 2002, a Regional Asbestos Symposium for Asian Countries was organized in collaboration between the University of Occupational and Environmental Health, Kitakyushu, Japan and FIOH, and supported by ILO and WHO-WPRO. The Proceedings containing the asbestos situation reports of Singapore, Republic of Korea, China, Japan, Vietnam, the Philippines, Malaysia, Thailand, Indonesia and Taiwan, and the presentations held at the Symposium were published as a joint publication by UOEH and FIOH in the University Series: Journal of UOEH in 2002.

2006
In April 2006, an Asbestos Symposium for Latin American Countries was organized in Sao Paulo, Brazil, by FUNDACENTRO in collaboration with ICOH, FIOH, ILO, WHO and Mount Sinai Hospital. A few country reports (Brazil, Cuba, Ecuador and Venezuela) were published in a Chilean Journal on Occupational Health (Ciencia &Trabajo 2008).

Demolition work

The strategy proposed by the Asbestos Committee was based on the immediate removal of asbestos in buildings and industrial facilities, in which the release of fibres and thus the exposure of workers was probable. In structures in which asbestos existed, but did not release fibres it was recommended that removal be carried out in conjunction with normal renovation projects (typically in Finland every 20 to 25 years). As well as by Government Decrees 1380/1994, 318/2006 and 863/2010 on asbestos work, the protection of workers in asbestos demolition work was supported by guidelines for good protection practice (Riala 1991; Oksa 2013). These used the information on research concerning the efficiency of respiratory protection, which was in certain cases found to be ineffective. Thus the development of safety in demolition work has been warranted (Ylioinas et al. 2012). Demolition work was estimated to produce about 5 million tons of asbestos-contaminated construction waste. Waste handling was regulated by amendment to the Waste law (1072/1993) and by drawing up a special Government Decree on the handling of asbestos waste (centralized collection of asbestos waste and special procedures for disposal).

Current situation and further challenges

The post-hoc evaluation shows, by several indicators, that the Finnish strategy has in many respects been successful (See Summary table), though not 100% perfect. The use of new asbestos practically ceased 24 years ago, but asbestos will continue to cause health problems for decades due to the consequences of exposures in the past and from potential failures in protection during demolition work. Asbestosis cases still need follow-up throughout the whole life span of the exposed and new disease cases will still occur when the latency periods expire. Screening programmes for the early detection of both fibrosis and cancers among the exposed are planned. The protection of workers in demolition work and in waste handling needs improving. FIOH experts propose a review of safety and the efficiency of current working methods, and the development of safer techniques for the removal of existing asbestos.

Globally, the health consequences of the worldwide use of asbestos are starting to be increasingly visible in countries that have sufficiently efficient systems for diagnosis, notification, registration and compensation. The growth rates have created concern about possible over-diagnosis, while concern has also been expressed by trade unions worried about both under-diagnosis and under-reporting or delayed diagnosis. From a purely methodological perspective, we also know that the bias is more likely to be an underestimation instead of overestimation of the risk. There are several reasons for this; first, even in the best registered countries such as the Nordic ones under-reporting is substantial due to insufficient coverage of exposure assessment, and the high probability that occupational etiology is not observed by the clinicians who do the major part of cancer diagnosis. In addition, the prevention of asbestos exposures and the elimination of asbestos-related diseases are not given equally high priority in all parts of the world. (Rantanen & Henderson 1998)

Mesothelioma is used as a marker of asbestos-related carcinogenicity. The 56 well registered countries show strong correlation between the cumulative historical asbestos consumption and the cumulative numbers of mesothelioma. On the other hand, a high number of countries with known consumption of asbestos show no or low rates of mesothelioma demonstrating a substantial (20-25%) gap in the global recognition and reporting system. (Park et al. 2011).

More than 100,000 people worldwide die each year from mesothelioma, lung cancer and asbestosis. Although the epidemic of asbestos-related disease has plateaued or is expected to plateau in the industrialized world, little is known about the epidemic in developing countries. It is obvious that increased asbestos use by these countries will result in an increase in asbestos-related diseases in future (WHO 2006; ILO 2006; Stayner et al. 2013; ICOH 2013).

Still less than one fifth of the 185 Member Countries of ILO has ratified the ILO Convention No. 162 and less than one third has decided on the ban of asbestos.

The global ban of asbestos has been declared or supported by several bodies, including Collegium Ramazzini and ICOH. In January 2014, a total of 55 out of 185 ILO Member Countries had banned asbestos. Two million tons of asbestos is still produced by five countries. Dozens of millions of tons of asbestos still prevail in the existing buildings and industrial facilities. The global epidemic of ARDs can only be managed by the global ban of asbestos and the global regulations and their effective implementation in demolition work.

Summary

Table 1. Evolution of Finnish asbestos policies, regulations and practices

Time period	Action
~2500 BC	Use of fibres in clay pots for mechanical strength and fire resistance
1917–1975	Mining of anthophyllite in Eastern Finland
1922–1992	Use of asbestos in construction and construction materials (Top 1965–75).
1940s to 1990s	Historical perspectives of asbestos exposure and disease in Finland Health research on asbestos miners and industrial workers, including detection of lung cancer (Noro 1945) Asbestosis radiology (Wegelius 1947) Asbestos bodies and pleural changes (Meurman 1966) An elevated mortality and increased lung cancer rates among anthophyllite miners (Nurminen 1972; Meurman et al. 1974, Meurman et al. 1979). Mesothelioma mortality (Nurminen 1975) Mortality of asbestosis patients (Huuskonen 1979) Morbidity and mortality of asbestos workers (Huuskonen 1979; Huuskonen et al. 1980) Mesothelioma studies (Tuomi 1991) Lung cancer studies (Karjalainen 1994) Follow-up of anthophyllite miners (Meurman et al. 1994)
1975	Closure of asbestos mine for economic reasons (due to rapidly declining consumption and development of new materials because of growing information on health and environment hazards)
1979	Ratification of ILO Occupational Cancer Convention No. 139 (1974), listing asbestos as registered carcinogen and registering asbestos-exposed workers Saalo et al. 2011. Registry of workers exposed to carcinogens in their work. FIOH: Annual Reports of the ASA Registry, 1979–
1985	Health for All (HFA) National Programme for Finland (1985), Target line 13: Stopping the use of asbestos by the year 1995
1987–1992	FIOH's National Asbestos Programme to support the achievement of the HFA Target, including: • Identification of asbestos-exposed people and screening of their health • Identification of health effects of asbestos exposure among the population • Initiative for establishing the Government Asbestos Committee • Proposal to prohibit manufacture, import, trade and use of asbestos (see Asbestos Committee) • Numerous actions for minimizing exposure, particularly in demolition work (see Asbestos Committee) • Training and information for workers, employers, decision-makers and the public at large • Research reports • Evaluation of impact: Policy & regulations, consumption & exposures, prevention & protection, compensation for diseases, training, education, information, research knowledge (Final Report: Finnish Institute of Occupational Health 1993).

1988–1989	Government Asbestos Committee: 27 proposals for asbestos management in 6 jurisdictions, including the total ban of asbestos, stringent regulation regarding demolition and waste handling work and surveys of the health of exposed workers (Government Committee Reports 1989:66)
1987	Government Decree 886/1987 on asbestos work.
1987–1988	Ratification of ILO Asbestos Convention No. 162 (1986)
1989	Decision by the National Board of Labour Protection 205/1989 on health examinations of workers in asbestos work
1989	Establishment of a National Mesothelioma Panel
1992–1993	Government Decree 852/1992 on the prohibition of manufacture, import, trade and use of all main types of asbestos, including chrysotile. Waste Law 1072/1993
1994	Government Decree 1380/1994 on asbestos work for the prevention and minimizing of asbestos exposure and health hazards at work, including employers' responsibilities for recognition of asbestos, registration, prevention and protection, training and education, licensing, health surveillance and occupational exposure limit, OEL, to 0.25 f/cm^3
1997–2005	International Expert Meeting: Asbestos, Asbestosis, and Cancer in Espoo, Finland 20–22 January 1997, publishing a Consensus Report: Asbestos, Asbestosis, and Cancer: the Helsinki criteria for diagnosis and attribution Scand J Work Environ Health 1997;23:311–6 (Meeting Report: Asbestos, Asbestosis, and Cancer. Work and Health. Research Reports 14. Finnish Institute of Occupational Health, Helsinki 1997. 98p. New Advances in Radiology and Screening of Asbestos-Related Diseases. Scandinavian Journal of Work, Environment and Health 2000;26(5):449–54. Work and Health. Research Reports 36. Finnish Institute of Occupational Health, Helsinki 2000. 89 p. FIOH contribution to the World Health Organization (1998) "Chrysotile Asbestos" and to the World Trade Organization (2001) ruled on the ongoing dispute concerning the banning of asbestos. Finnish contribution to international HRCT classification: Y. Kusaka, K.G. Hering, J.E. Parker (Eds.). International Classification of HRCT for Occupational and Environmental Respiratory Diseases (Springer 2005).
1997–2006	Regional Asbestos Meetings: Proceedings of the Asbestos Symposium for the Countries of Central and Eastern Europe. Work and Health, Research Reports 19. Finnish Institute of Occupational Health, Helsinki 1998. 112p. Proceedings of the Asbestos Symposium for Asian Countries. FIOH, UOEH 2002;24(Suppl. 2):1–120. Asbestos Symposium for Latin American Countries, 25–27 April 2006, Fundacentro, Sao Paulo, Brazil. Ciencia & Trabajo 2008;27(10). www.cienciaytrabajo.cl
2004	Government Decree 975/2004, on the prohibition of manufacture, import, trade or use of products (with a few exceptions), containing any type of asbestos, including chrysotile

2006–2010	Government Decrees 318/2006 and 863/2010 on asbestos work. Setting OEL to 0.1f/cm^3 and requiring proven competence from supervisors and workers in asbestos (demolition) work
2007–2010	Guidelines for diagnostics of asbestos-related diseases (Huuskonen 2005; Nordman et al. 2006; Huuskonen et al. 2010). Research on asbestos exposures in demolition work & related guidelines
2006–2009	Guidelines and articles on exposure and diagnostics of ARDs for occupational health services (Riala 1991; Nordman et al. 2006; Huuskonen et al. 2006; Huuskonen et al. 2009; Oksa 2013)
2009	EU Commission Decree No. 552/2009 for the Harmonization of national regulations on chemicals with EU Regulation 1907/2006 called REACH Regulation containing prohibition of asbestos use
2006–2012	Research on increased risk in demolition work in spite of careful protection (Ylioinas et al. 2012) Guidelines for protection of workers in construction work (including demolition of asbestos) (FIOH data package 2011, Ekman 2011)
2000–2013	About 80% reduction in the number of registered asbestos-exposed workers from the year 2001 to 2011 and about 50% reduction in the number of registered asbestosis cases from the highest values in the mid-90s. The numbers of lung cancer and mesothelioma show an almost flat trend. The Ministry of Social Affairs and Health Working Group on Occupational Cancer (2013): Compensation criteria for asbestos diseases in principle unchanged, but clarified. Compensation for mesothelioma even in low exposure, lung cancer and larynx cancer in heavy exposure (25 fibre-years), compensation for ovarian cancer in heavy exposure and individual judgement.
2014	International Conference on Monitoring and Surveillance of Asbestos-Related Diseases, 10–13 February 2014, Espoo, Finland

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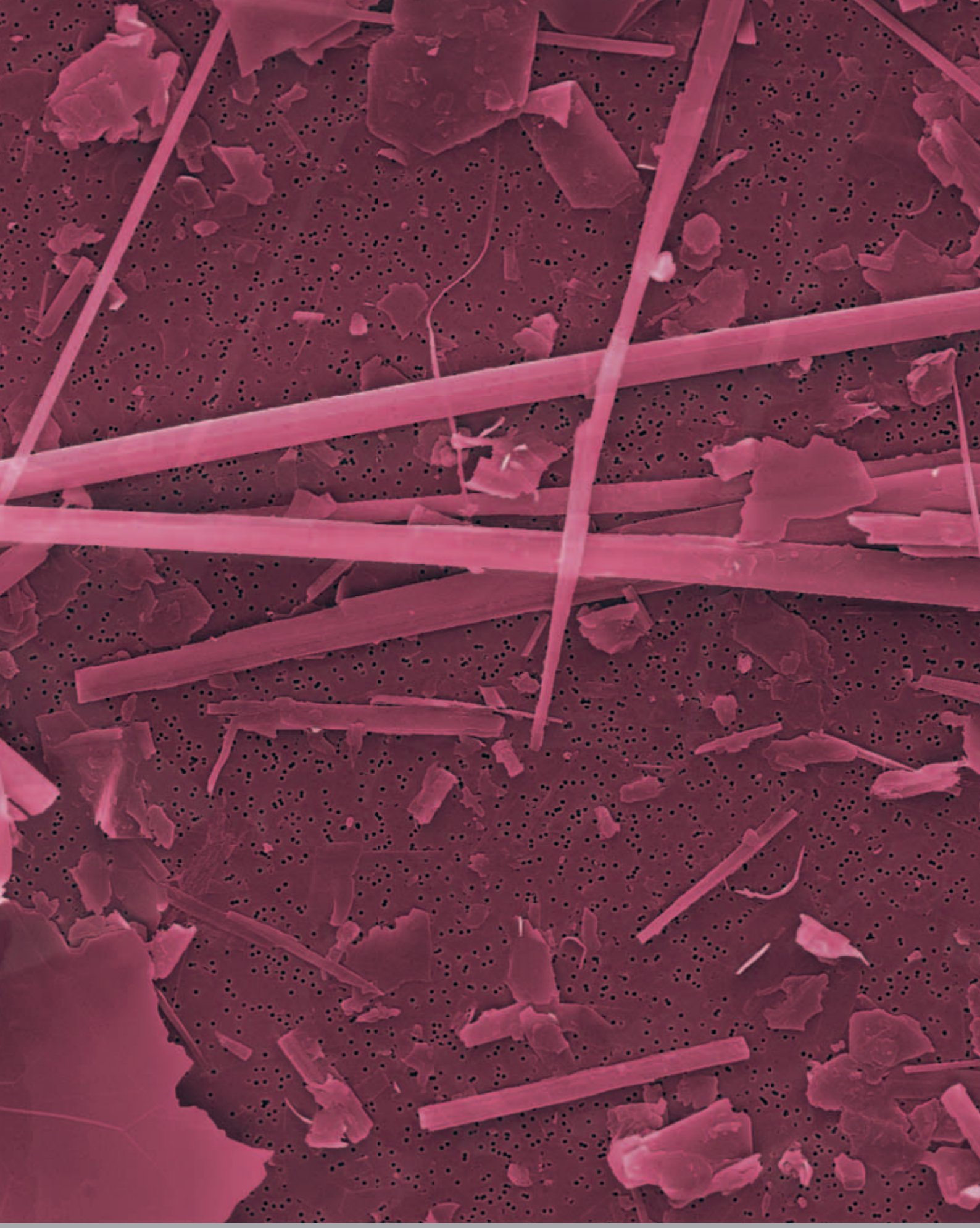

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