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The Legacy of Asbestos in Public Buildings in Portugal

By Sónia Raposo[*]

Due to its numerous properties, asbestos was used in many industrial sectors during the 20th century. Asbestos fibres have been incorporated into many building materials in the construction sector to enhance fire resistance, improve mechanical strength, or even optimize acoustic and energy performance in structures. The increasing awareness of the health risks associated with inhalation of asbestos fibres has led to successive regulatory changes in Portugal, beginning in the 1980s. These regulations progressively tightened the conditions for using this mineral, gradually restricting its application until its complete ban in 2005. Although the extraction, manufacture, and processing of asbestos are banned, the EU continues to face challenges due to the so called "asbestos legacy". This ongoing issue threatens public health and worker safety, as asbestos remains present in many older buildings, which are likely to be renovated, adapted, or demolished in the coming years. In recent years, Portugal has enacted legislation on asbestos removal in public buildings, facilities, and equipment (Law No. 2/2011) and in company-owned buildings, facilities, and equipment (Law No. 63/2018). Legislation was also enacted to protect workers from the risks of asbestos exposure in the workplace (Decree-law No. 266/2007) and to establish standards for the safe removal of asbestos-containing materials (ACM), as well as for the packaging, transportation, and management of related construction and demolition waste, aiming to protect both the environment and human health (Ordinance No. 40/2014). This paper examines the Portuguese strategy for screening and registering asbestos in public buildings, as outlined in Law No. 2/2011. A survey of 12,944 public buildings was conducted in 2014, revealing that in 84% of cases, no materials suspected of containing asbestos were detected. The Working Conditions Authority (ACT) and the Directorate-General of the Treasury and Finance (DGTF) coordinated and oversaw the survey. A standard questionnaire was developed to support visual inspections of buildings, and an asbestos module was implemented in the State Property Information System on the DGTF electronic platform. The list of inspected buildings and their results were publicly posted on the government website. Despite these efforts, certain actions outlined in Law No. 2/2011 still need to be implemented, including an asbestos management program that establishes hierarchies and action priorities to prevent the release of asbestos fibres into occupied areas and protect building occupants from exposure.

Keywords: *Asbestos-containing material, Public Buildings, National Strategy, Screening of Asbestos*

Introduction

Asbestos is an extremely dangerous carcinogenic agent, whose presence poses a problem for various sectors, particularly construction. It is the leading cause of

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work-related cancer: 78% of occupational cancers recognized in EU Member States are linked to asbestos exposure. Although all forms of asbestos have been banned in the EU since 2005, asbestos fibres are still present in millions of buildings and infrastructures, causing over 70,000 deaths per year in EU-27 (European Commission, 2022).

Although the extraction, manufacture, and processing of asbestos are prohibited, the EU continues to face the issue of the so-called "asbestos legacy", which presents a challenge for public and occupational health. This substance is found in many old buildings that are likely to be renovated, adapted, or demolished in the coming years. The risk of exposure is mainly associated with handling asbestos-containing materials and the release of asbestos fibres during construction work.

When inhaled, airborne asbestos fibres can cause serious diseases, such as mesothelioma and lung cancer. The first signs of illness may take an average of 30 years to appear after exposure and can ultimately lead to work-related deaths. It is estimated that 97% of workers exposed to asbestos are employed in the construction sector, although other professions—such as waste management, extractive industries, and firefighting—are also considered at risk of exposure to asbestos dust.

A recent amendment to Directive 2009/148/EC (Directive 2023/2668) on the protection of workers from the risks related to asbestos exposure at work has introduced new requirements to more effectively protect workers and prevent exposure (European Parliament and the Council of the European Union, 2009 and 2023).

The revision of the Asbestos at Work Directive is part of a broader set of ongoing initiatives aimed at protecting public health and the environment. These include the European Plan to Fight Cancer (which seeks to reduce exposure to carcinogenic substances such as asbestos), the European Green Deal (which is expected to lead to increased renovation, adaptation, or demolition of old buildings, thereby raising the risk of asbestos exposure), and the EU Construction and Demolition Waste Management Protocol (which anticipates a rise in asbestos-containing waste and the need to explore alternatives to landfill disposal of ACW).

Literature Review

Asbestos is the generic term for a group of naturally occurring minerals composed of hydrated silicates with a crystalline structure. These minerals form through the metamorphism of rocks and are characterized by a fibrous and filamentous morphology, consisting of long, slender fibres with extremely small cross-sections that are parallel and readily separable. There are six types of asbestos, distinguished by their chemical composition and classified into two major mineral families: serpentines and amphiboles.

Chrysotile, also known as white asbestos, is the only type belonging to the serpentine family. The remaining five types of asbestos—actinolite, amosite, anthophyllite, crocidolite (or blue asbestos), and tremolite—belong to the

amphibole family. Chrysotile fibres are flexible and curved, whereas those from the amphibole family generally take the form of brittle needle-like structures.

Asbestos fibres have been incorporated into many building materials in the construction sector to enhance fire resistance, improve mechanical strength, or even optimize acoustic and energy performance in structures. Asbestos was widely used in construction, with an estimated 70–80% used in cement products (roofing, facades, sanitation pipes, tanks), and the remainder mainly in other construction materials such as flooring, textiles, cardboard, or insulating panels.

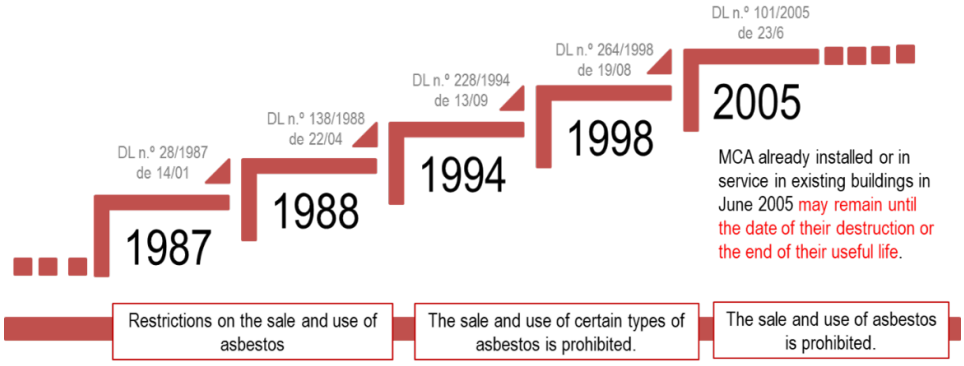
However, as the health risks associated with asbestos became evident in the mid-20th century, several countries enacted restrictive legislation governing its use—initially to protect the health and safety of industrial workers directly involved in asbestos handling and therefore exposed to significantly elevated risks, and subsequently to safeguard public health more broadly. These regulations progressively tightened the conditions for using this mineral, gradually restricting its application until its complete ban in 2005.

Although the extraction, manufacture, and processing of asbestos are banned, the EU continues to face challenges due to the so called "asbestos legacy". This ongoing issue threatens public health and worker safety, as asbestos remains present in many older buildings, which are likely to be renovated, adapted, or demolished in the coming years.

Regulatory Evolution in Portugal Concerning Restrictions on Asbestos Fibre Trade and Usage

The Portuguese legislative framework governing the restriction of asbestos fibre marketing and use, has evolved over time, essentially reflecting the transposition of European Directives into national law. This transposition was implemented through successive Decree-Laws, each of which marked a key regulatory milestone. (Figure 1).

Figure 1. *Key dates concerning the restriction of asbestos marketing and use in Portugal*



Source: Author

The marketing and use of crocidolite fibres (the most dangerous type of asbestos) and products containing them were prohibited in Portugal in 1987 (Portugal, 1987).

However, the European Directive allowed each Member State to exclude certain products containing crocidolite, such as fibre cement pipes, gaskets and joint sealants, from the ban.

In 1988 (Portugal, 1988), Portuguese legislation introduced a prohibition on the marketing and use of construction products containing fibres of any kind when intended for application by flocking, incorporation into insulation devices used in liquefied gas heating appliances, or inclusion in paints and varnishes.

In 1994 (Portugal, 1994) restrictions were extended, prohibiting the marketing and use of all types of asbestos except chrysotile, for which 14 different applications in various fields were also prohibited, namely: materials intended for application by flocking, fillers, mortars, protective coatings and bases for plastic wall and floor coverings; felts for roof coverings; bonding products; paints and varnishes; and sound insulation materials.

The sale and use of all forms of asbestos, as well as products incorporating asbestos fibres, were definitively prohibited as of 2005 (Portugal, 2005). However, the legislation stated that materials containing asbestos installed before it came into force could remain in use until they were removed, destroyed, or had reached the end of their functional lifespan.

Portuguese Legal Approach to Asbestos Management

In 2003 (Portugal, 2003), the Assembly of the Republic approved a Resolution recommending that the Government implement a series of measures aimed at mitigating public health risks associated with the use of asbestos as a raw material or component in various construction products incorporated into public buildings. The recommendations were:

- Within a maximum period of one year, conduct an inventory of all public buildings containing asbestos in their construction.
- Prepare a list of these buildings and establish a hierarchized and time-bound action plan aimed at the removal of asbestos and its replacement with alternative materials, whenever justified by the condition of the materials or the associated health risks.
- Ensure that removal is carried out in accordance with internationally recommended environmental safety procedures, specifically regarding equipment, area isolation, worker protection, proper removal, containment, transport, storage, and disposal of the extracted asbestos materials.
- Conduct an analysis of the area cleared of asbestos to ensure the complete elimination of dust from structures and the surrounding environment.
- Subject workers and frequent users of the affected buildings to active epidemiological surveillance.
- Enforce a total ban on the use of asbestos in the construction of public buildings, particularly in school facilities and health and sports infrastructures.

Although the recommendations were clearly defined, no corresponding actions were executed or disclosed at the time.

In 2007 (Portugal, 2007), legislation was published transposing into national law Directive 2003/18/EC of the European Parliament and of the Council, of 27 March, concerning the protection of workers' health against the risks of exposure to asbestos during work. This Decree-Law applies to all activities in which workers are, or may be, exposed to asbestos dust or to materials containing asbestos. In the construction sector, this includes the demolition of structures containing asbestos or ACM; the removal of such materials from installations, buildings, structures, or equipment; and the maintenance or repair of existing asbestos-containing components. It also extends to activities involving the transport, treatment, and disposal of asbestos waste, including operations carried out in landfills authorized for asbestos-containing residues.

In 2011, Law No. 2/2011 (Portugal, 2011) was published with the aim of establishing procedures and objectives for the removal of products containing asbestos fibres still present in public buildings, installations, and equipment. The law reiterates several of the recommendations set out in the 2003 resolution, namely:

- The Government undertakes the identification of all public buildings, installations, and equipment containing asbestos in their construction, within a one-year timeframe.
- Inventory of public buildings containing asbestos, disclosed via the Government's official website.
- Timetable for monitoring and remedial measures.
- Asbestos safety rules.
- Duty to disclose relevant information to facility users.
- Authorized entities for asbestos removal.
- Waste treatment and final disposal.

The procedural framework and strategic objectives for the systematic removal of any remaining asbestos-containing materials in corporate buildings, facilities and equipment are defined by Law No. 63/2018 (Portugal, 2018). The deadline for identifying these materials was December 2019, but no public information is available regarding the outcome.

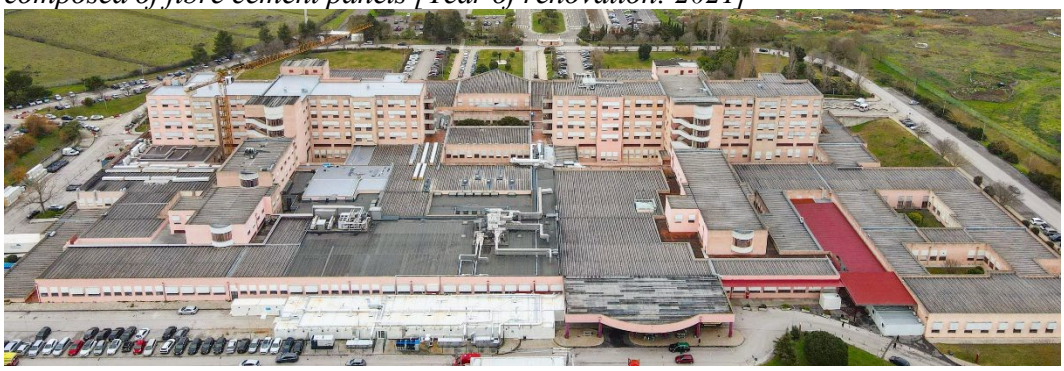
Ordinance No. 40/2014 (Portugal, 2014) sets out the technical standards for the correct removal of asbestos-containing materials, and for the packaging, transportation and management of resulting construction and demolition waste. The overarching aim is to protect environmental integrity and public health.

Public buildings incorporating ACM

In Portugal, the presence of ACM in buildings is predominantly associated with the extensive use of fibre cement products. The fibre cement industry emerged in Portugal in 1933 with the establishment of "*Lusalite*", the first Portuguese company to manufacture products made from this material. It expanded during the 1940s with the creation of two additional companies in the same sector: "*Cimianto*" and "*Novinco*".

Corrugated or ribbed fibre cement sheets used in pitched roofs and as discontinuous exterior cladding for ventilated façades, as well as gutters and downpipes in rainwater drainage systems, were widely used. These materials are commonly found throughout Portugal's built environment, particularly in schools, hospitals (Figure 2), and primary care units.

Figure 2. *Hospital Professor Dr. Fernando Fonseca (HFF) [Year of construction: 1995] – Coverage of roof renovation works, including the replacement of sections composed of fibre cement panels [Year of renovation: 2021]*



Source: https://hff.min-saude.pt/hff-iniciou-obras-de-substituicao-da-totalidade-da-cobertura/

Throughout the country, numerous P3-type schools—also known as pavilion-type schools—can be found, easily recognizable by their distinctive architectural features.

P3-type schools were designed using modular construction principles, comprising functional units that included a central multipurpose block and interconnected classroom wings. The multipurpose block typically accommodated key communal and operational facilities, such as the kitchen, pantry, sanitary installations, bathing area, cafeteria, gymnasium, and administrative and management offices.

From a construction standpoint, prefabricated systems were frequently employed—either in full or in specific building components—with a deliberate emphasis on durable and low-maintenance materials. Fibre cement sheets were extensively used in these buildings, particularly for cladding and roofing applications (Figure 3).

Figure 3. *P3 type schools. Construction period 1970 - 1990*

Source: Barrelas J. (2012)

Fibre cement was also used in numerous industrial and manufacturing buildings, as well as in agricultural facilities (Figure 4).

Figure 4. *Roof of an agricultural building and detail of the fibre cement sheet with the "Lusalite" logo*

Source: Author

In general, the situation in Portugal regarding the use of asbestos in buildings, particularly public ones, is thought to be more favourable than in other countries. Intensive use of thermal insulation and fire protection solutions incorporating this type of fibre has generally resulted in friable products there, which pose a greater health risk. On the one hand, regulatory requirements for energy saving and thermal insulation in buildings had not yet been established at that time in Portugal, so the use of thermal insulation solutions was very limited. On the other hand, metal structures were not traditionally prevalent in Portugal, which contributed to the less widespread use of flocked coatings and asbestos insulation boards for fire protection, compared to other countries.

Aside from fibre cement materials, there is no reliable data regarding the introduction of other types of asbestos-containing materials into the Portuguese market, nor on their incorporation into buildings throughout the 20th century. As such, further information must be collected to support accurate identification and risk assessment.

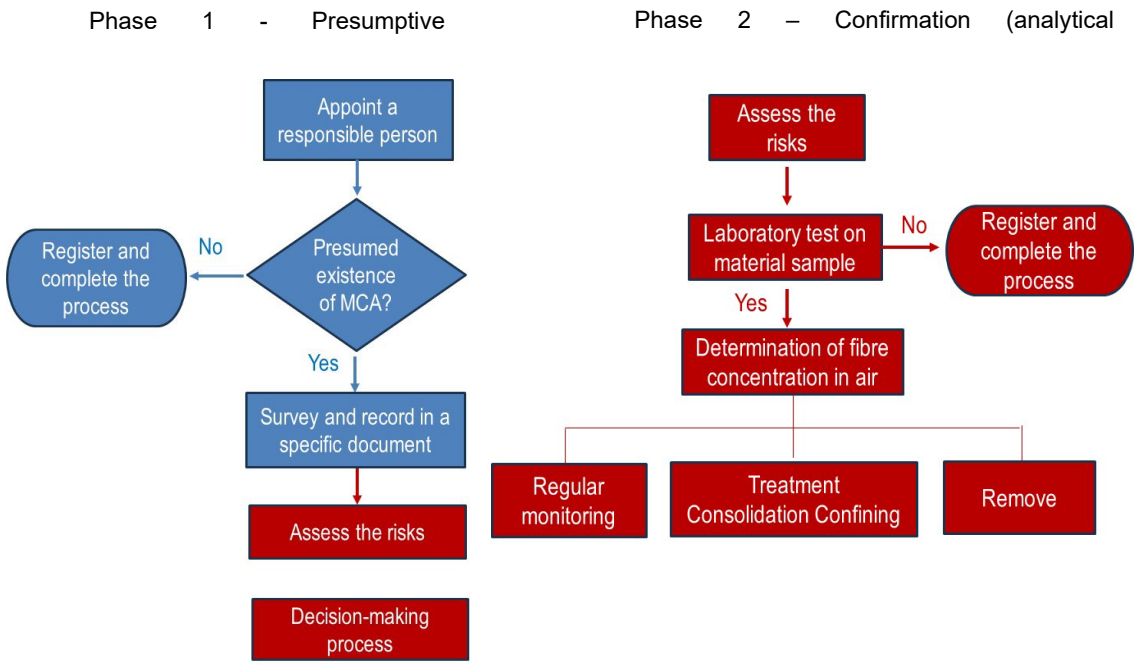
Mandatory Inventory of Asbestos in Public Buildings

The aim of Law No. 2/2011 was to identify and monitor public infrastructure containing asbestos, ensure its safe and phased removal, and protect the health of workers and occupants. It was defined:

- Mandatory inventory of asbestos in all buildings, facilities, and public equipment in the central administration sector. A one-year timeframe is defined for its implementation (Art.º 3).
- The Working Conditions Authority must recommend monitoring or corrective action based on risk levels, and a publicly accessible list must be issued (Art.º 4).
- A calendarized plan to prioritize monitoring, removal, and replacement of asbestos materials had to be adopted (Art.º 5).
- Removal must follow safety protocols and be carried out by licensed firms, with all hazardous waste disposed correctly (Art.º 6).

Figure 5 illustrates the two sequential phases—Phase 1 (Presumptive Identification) and Phase 2 (Analytical Confirmation)—alongside the corresponding regulatory enforcement activities associated with each stage.

Figure 5. *Diagram of risk evaluation for asbestos in public facilities*



Source: Adapted from Authority for Working Conditions (ACT, 2014)

Screening and Registration of Asbestos in Buildings Methodology

In June 2014, the Authority for Working Conditions (ACT) organized several training sessions aimed at building managers and responsible personnel, focusing on the implementation of surveys of buildings, facilities, and public equipment containing asbestos.

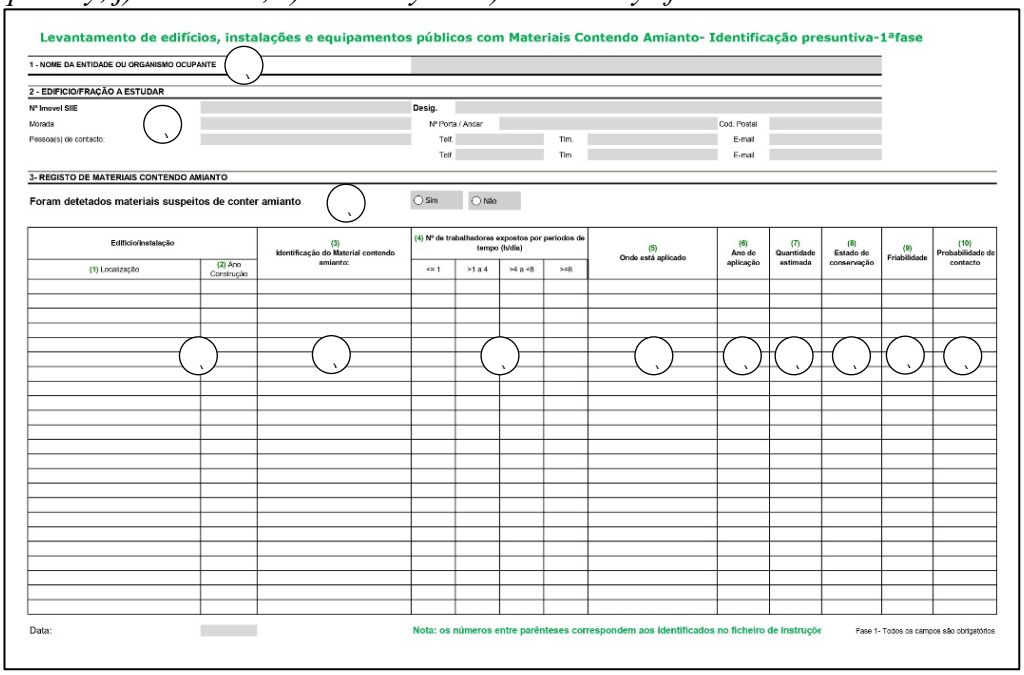
The training sessions lasted half a day and aimed to: (a) provide an understanding of the legal framework governing the commercialization and use of asbestos in Portugal; (b) present the main characteristics and applications of asbestos, along with the consequences of occupational exposure; and (c) enable participants to apply the acquired knowledge in completing a registration form designed to support the survey of buildings, facilities, and public equipment containing asbestos.

To support the workers carrying out this activity across various public bodies, ACT created a dedicated section on this topic on its official website. This section contains the Standard Questionnaire, a list of Frequently Asked Questions, instructions for completing the questionnaire, supporting materials and relevant legislation.

Similarly, the Directorate-General for the Treasury and Finance (DGTF) created an asbestos module within the electronic State Property Inventory System (SIIE) platform, enabling the processing, updating and systematisation of all collected data. The database 'State Property Information System' contains asbestos information.

Figures 6 and 7 show the registration form and the instructions given to each building manager or responsible person, respectively. During Phase 1—the presumptive identification stage—the assessment was restricted to visual inspection, relying solely on observable characteristics without analytical verification.

Figure 6. *Registration form "Survey of buildings, facilities, and public equipment containing ACM. Presumptive Identification – Phase 1" a) Name of the occupying entity or organization; b) Property/Unit subject to survey; c) Registration of materials containing asbestos; d) Location and year of construction; e) Classification of ACM type; f) Number of workers exposed or likely to be exposed for time periods (hours per day); g) Location of application; h) Year of presumed application; i) Estimated quantity; j) Condition; k) Friability and l) Probability of contact*


Levantamento de edifícios, instalações e equipamentos públicos com Materiais Contendo Amianto- Identificação presuntiva-1ªfase

1 - NOME DA ENTIDADE OU ORGANISMO OCUPANTE

2 - EDIFICIO/FRAÇÃO A ESTUDAR

Nº Imovel SIIE | Desig.

Morada | Nº Porta / Andar | Cod. Postal

Pessoa(s) de contacto: | Telf. | Tlm. | E-mail

Telf. | Tlm. | E-mail

3- REGISTO DE MATERIAIS CONTENDO AMIANTO

Foram detetados materiais suspeitos de conter amianto ○ Sim ○ Não

Edifício/instalação		(3) Identificação do Material contendo amianto:	(4) Nº de trabalhadores expostos por períodos de tempo (h/dia)				(5) Onde está aplicado	(6) Ano de aplicação	(7) Quantidade estimada	(8) Estado de conservação	(9) Friabilidade	(10) Probabilidade de contacto
(1) Localização	(2) Ano Construção		<= 1	>1 a 4	>4 a <8	>=8						

Data:

Nota: os números entre parênteses correspondem aos identificados no ficheiro de instruçõe

Fase 1- Todos os campos são obrigatórios

Source: Authority for Working Conditions (ACT, 2014)

The instructions comprise (A) a categorized list of ACM types and their typical locations within the building, and (B) a procedural document detailing the steps required to complete the registration form.

The list of ACM types includes fibre cement; floor coverings; partition walls; panels and ceilings; filling compounds; cardboard; paper and paper-based products; mastics, sealants and paints; trims; packaging materials; woven fabrics and laces; spray-applied coatings; reinforced plastics; electrical cable insulation; and bituminous products.

For fibre cement-based ACMs, approximately 22 potential application points were identified within building structures. These include wall and ceiling linings; fireplace protection; floating floors; surface finishes; window frames; paving slabs; cisterns and tanks; water and wastewater collectors and conduits; gutters; ventilation and exhaust duct systems; cable trays and conduits; sealing systems; interior partitions; formwork; decorative panels; profiled roofing sheets; roofing tiles; and fire-resistant composite panels.

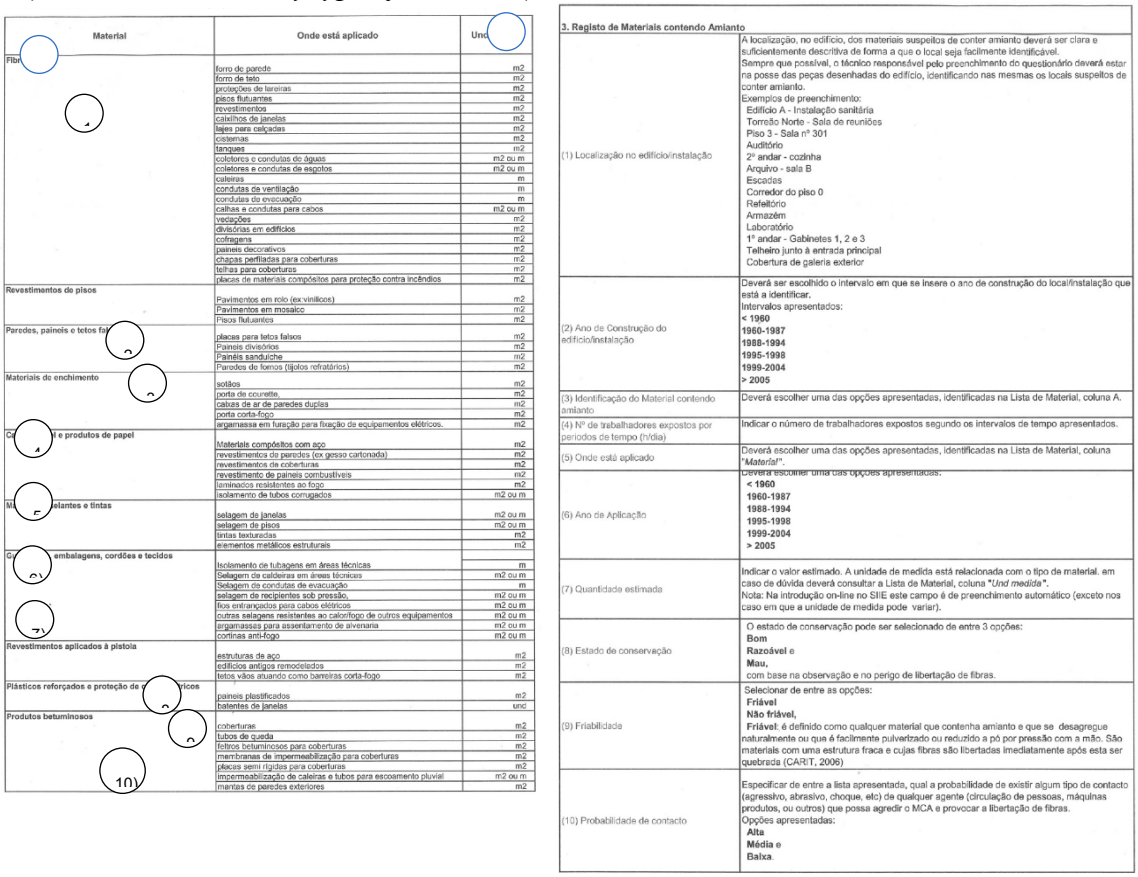
Some guidance was provided in the filling instructions for the condition, friability and probability of contact assessment.

The condition can be classified as Good, Fair, or Poor, based on visual inspection and the potential risk of fibre release:

- Good: no deterioration or minor scratches or marks and no risk of fibre release.
- Fair: damaged materials or areas with risk of fibre release.
- Poor: severely damaged, unsealed material with loose fibres.

The friability of a material is defined as its ability to break down into particles or fibres when subjected to light forces, such as touch, handling, or environmental wear, which potentially results in the release of inhalable fibres. Some examples were given during the half-day training session in the ACT.

Figure 7. *Instructions: A - List of types of ACM and B - Filling instructions. A1) Fibre cement; A2) Floor coverings; A3) False walls, panels and ceilings; A4) Filling materials, A5) Cardboard, paper and paper products; A6) Mastics, sealants and paints; A7) Trims, packaging, laces and fabrics; A8) Spray-applied coatings; A9) Reinforced plastics and electrical cable protection; A10) Bituminous products; AA) Common location by type of ACM; AB) Units of measurement*



Material	Onde está aplicado	Und
Fibr		
	forro de parede	m2
	forro de teto	m2
	proteções de lareiras	m2
	pisos flutuantes	m2
	revestimentos	m2
	caixilhos de janelas	m2
	lajes para celçadas	m2
	cisternas	m2
	tanques	m2
	coletores e condutas de águas	m2 ou m
	coletores e condutas de esgotos	m2 ou m
	caleiras	m
	condutas de ventilação	m
	condutas de evacuação	m
	calhas e condutas para cabos	m2 ou m
	vedações	m2
	divisórias em edifícios	m2
	cofragens	m2
	painéis decorativos	m2
	chapas perfiladas para coberturas	m2
	telhas para coberturas	m2
	placas de materiais compósitos para proteção contra incêndios	m2
Revestimentos de pisos		
	Pavimentos em rolo (ex:vinílicos)	m2
	Pavimentos em mosaico	m2
	Pisos flutuantes	m2
Paredes, painéis e tetos fal		
	placas para tetos falsos	m2
	Painéis divisórios	m2
	Painéis sanduiche	m2
	Paredes de fornos (tijolos refratários)	m2
Materiais de enchimento		
	sotãos	m2
	porta de courette.	m2
	caixas de ar de paredes duplas	m2
	porta corta-fogo	m2
	argamassa em furação para fixação de equipamentos elétricos.	m2
C e produtos de papel		
	Materiais compósitos com aço	m2
	revestimentos de paredes (ex gesso cartonado)	m2
	revestimentos de coberturas	m2
	revestimento de painéis combustíveis	m2
	laminados resistentes ao fogo	m2
	isolamento de tubos corrugados	m2 ou m
M elantes e tintas		
	selagem de janelas	m2 ou m
	selagem de pisos	m2 ou m
	tintas texturadas	m2
	elementos metálicos estruturais	m2
C mbalagens, cordões e tecidos		
	Isolamento de tubagens em áreas técnicas	m
	Selagem de caldeiras em áreas técnicas	m2 ou m
	Selagem de condutas de evacuação	m
	selagem de recipientes sob pressão.	m2 ou m
	fios entrançados para cabos elétricos	m2 ou m
	outras selagens resistentes ao calor/fogo de outros equipamentos	m2 ou m
	argamassas para assentamento de alvenaria	m2 ou m
	cortinas anti-fogo	m2 ou m
Revestimentos aplicados à pistola		
	estruturas de aço	m2
	edifícios antigos remodelados	m2
	tetos vãos atuando como barreiras corta-fogo	m2
Plásticos reforçados e proteção de c ricos		
	paineis plastificados	m2
	batentes de janelas	und
Produtos betuminosos		
	coberturas	m2
	tubos de queda	m2
	feltros betuminosos para coberturas	m2
	membranas de impermeabilização para coberturas	m2
	placas semi rigidas para coberturas	m2
	impermeabilização de caleiras e tubos para escoamento pluvial	m2 ou m
	mantas de paredes exteriores	m2

3. Registo de Materiais contendo Amianto	
(1) Localização no edifício/instalação	A localização, no edifício, dos materiais suspeitos de conter amianto deverá ser clara e suficientemente descritiva de forma a que o local seja facilmente identificável. Sempre que possível, o técnico responsável pelo preenchimento do questionário deverá estar na posse das peças desenhadas do edifício, identificando nas mesmas os locais suspeitos de conter amianto. Exemplos de preenchimento: Edifício A - Instalação sanitária Torreão Norte - Sala de reuniões Piso 3 - Sala nº 301 Auditório 2º andar - cozinha Arquivo - sala B Escadas Corredor do piso 0 Refeitório Armazém Laboratório 1º andar - Gabinetes 1, 2 e 3 Telheiro junto à entrada principal Cobertura da galeria exterior
(2) Ano de Construção do edifício/instalação	Deverá ser escolhido o intervalo em que se insere o ano de construção do local/instalação que está a identificar. Intervalos apresentados: **< 1960** **1960-1987** **1988-1994** **1995-1998** **1999-2004** **> 2005**
(3) Identificação do Material contendo amianto	Deverá escolher uma das opções apresentadas, identificadas na Lista de Material, coluna A.
(4) Nº de trabalhadores expostos por períodos de tempo (h/dia)	Indicar o número de trabalhadores expostos segundo os intervalos de tempo apresentados.
(5) Onde está aplicado	Deverá escolher uma das opções apresentadas, identificadas na Lista de Material, coluna "*Material*".
(6) Ano de Aplicação	Deverá escolher uma das opções apresentadas: **< 1960** **1960-1987** **1988-1994** **1995-1998** **1999-2004** **> 2005**
(7) Quantidade estimada	Indicar o valor estimado. A unidade de medida está relacionada com o tipo de material. em caso de dúvida deverá consultar a Lista de Material, coluna "*Und medida*". Nota: Na introdução on-line no SIIE este campo é de preenchimento automático (exceto nos caso em que a unidade de medida pode variar).
(8) Estado de conservação	O estado de conservação pode ser selecionado de entre 3 opções: **Bom** **Razoável** e **Mau,** com base na observação e no perigo de libertação de fibras.
(9) Friabilidade	Selecionar de entre as opções: **Friável** **Não friável,** **Friável**, é definido como qualquer material que contenha amianto e que se desagregue naturalmente ou que é facilmente pulverizado ou reduzido a pó por pressão com a mão. São materiais com uma estrutura fraca e cujas fibras são libertadas imediatamente após esta ser quebrada (CARIT, 2006)
(10) Probabilidade de contacto	Especificar de entre a lista apresentada, qual a probabilidade de existir algum tipo de contacto (agressivo, abrasivo, choque, etc) de qualquer agente (circulação de pessoas, máquinas produtos, ou outros) que possa agredir o MCA e provocar a libertação de fibras. Opções apresentadas: **Alta** **Média** e **Baixa**.

Source: Authority for Working Conditions (ACT, 2014)

The probability of contact with MCA can be classified as Low, Medium, and High:

- Low: outdoor or indoor location, inaccessible, with no probability of interference with the material.
- Medium: slightly accessible, with little probability of interference with the material.
- High: indoor location, daily and intensive use, with high probability of interference with the material.

Results and Discussion

The results of the inspections carried out, along with the official list of public buildings containing asbestos materials, were published by the Government of Portugal in July 2014 (Table 1).

Despite the extensive information requested in the survey, the published data referred only to "Buildings where no asbestos-containing materials were detected" (84%) and "Buildings with materials presumed to contain asbestos" (16%).

Table 1. *List of public buildings, facilities and equipment containing asbestos in their construction*

Summary Table					
		Buildings where no ACM were detected		Buildings with materials presumed to contain asbestos	
Ministries	Number of occupied Units	nº	%	nº	%
Ministry of the Interior	1899	1702	90%	197	10%
Ministry of Agriculture and Maritime Affairs	1520	1392	92%	128	8%
Ministry of National Defence	1120	927	83%	193	17%
Ministry of Economy	176	120	68%	56	32%
Ministry of Education and Science (*)	2214	1401	63%	813	37%
Ministry of Justice (*)	1136	1043	92%	93	8%
Ministry of Health	2579	2308	89%	271	11%
Ministry of Social Affairs and Employment	831	694	84%	137	16%
Ministry of Finance	919	864	94%	55	6%
Ministry of Environment, Land Use and Energy	117	101	86%	16	14%
Ministry of Foreign Affairs	44	35	80%	9	20%
Presidency of the Council of Ministers	389	342	88%	47	12%
TOTAL	**12944**	**10929**	**84%**	**2015**	**16%**
(*) In these ministries the survey, in this initial phase, focused primarily on detecting the presence of fibre cement materials					

Source: Government of Portugal (2014)

The Ministries of Education, Science and Justice reported that the initial survey focused primarily on identifying fibre cement in their buildings, facilities and equipment.

Although the published results appeared encouraging, they were not supported by detailed information on the types, quantities or condition of the asbestos-containing materials identified, nor on their friability. In other words, the essential data required for a comprehensive risk assessment was missing.

Concerns about the liability of the results disclosed were raised by multiple stakeholders within civil society. The reliability of the results may have been affected by several constraining factors, including insufficient technical preparedness, limited timeframes for planning and conducting inspections, and a shortage of both human and financial resources (Janela, 2017).

Execution Period for the building assessment

It was clear that the one-year timeframe set by law, for checking all public buildings was, from the start, clearly not enough. Moreover, inadequate planning often resulted in inspections and data uploads to the platform being carried out within a very short period of just a few months.

Building-related technical data

In most cases, there is no complete technical information available for the buildings. This applies to information regarding the original design and material specifications at the time of construction. It also applies to information about successive repair and improvement works carried out over the years. In many cases, available data is limited to the year of construction and the dates of significant renovation interventions.

The absence of original building plans, combined with successive modifications carried out over the years, poses considerable challenges to accurate inspection and risk assessment.

In such cases, inspections aimed at identifying potential ACM were conducted through visual assessment alone — a methodology with significant challenges and limitations. Visual identification is often inaccurate, as many ACM closely resemble non-asbestos equivalents. Furthermore, asbestos may be encapsulated between layers or obscured by surface coatings in certain composite materials, making detection particularly difficult without invasive procedures or laboratory-based analysis.

Inspectors' Professional Qualifications and Domain Expertise

The inventory of asbestos-containing materials was conducted by personnel designated by the relevant ministries (in-house). However, several of these individuals lacked specialised training and technical expertise in asbestos identification and classification. Only persons with sufficient training, qualifications, knowledge and experience should perform these types of survey.

Supporting documentation and the availability of structured checklists provide important guidance for inspectors, yet they cannot substitute for practical field experience, which remains essential for accurate identification and assessment. In addition to appropriate training, certain personnel qualification schemes include a mandatory requirement for fieldwork on asbestos surveys to be carried out under the supervision of an experienced inspector (HSG 264, 2012). Completing the registration form issued by ACT proves to be difficult. This is without the right training and experience.

Resources

Even within the scope of a presumptive asbestos register, the effort to map a representative stock of public buildings, entails significant demands on human resources and gives rise to organisational and financial impacts that were not sufficiently anticipated during the planning phase.

Conclusions

At the European level, there is a plan to eradicate asbestos from buildings and infrastructure. Support for the implementation of public policies remains essential, as does emphasising the need for a national asbestos removal strategy that prioritises interventions according to various factors and exposure risks. These include the type of asbestos-containing material (ACM) and its friability, condition, and the level of exposure for occupants or residents.

Law No. 2/2011marks a significant milestone in Portugal's public health and environmental safety policy, particularly concerning the management of asbestos in public buildings. The implementation framework was structured into two consecutive phases, Phase 1, focused on presumptive identification, and Phase 2, dedicated to analytical confirmation and monitoring. For phase 1, brief training was provided to the personnel responsible for conducting surveys in ministry buildings. A standardised registration form and accompanying instructions were issued, and all collected data was subsequently entered into the designated digital platform.

The results of the inspections carried out, along with the official list of public buildings containing asbestos materials, were published by the Government of Portugal in July 2014. Although the survey requested extensive information, the published results only indicated two categories: "Buildings with no asbestos-containing materials" (84%) and "Buildings presumed to contain asbestos" (16%).

Several civil society stakeholders have expressed concerns about the reliability of the published results. The key limitations that were identified included short assessment schedules, unavailability of original building documentation, inadequate technical training and expertise among survey personnel, and constrained human and financial resources.

Although the 2014 legislation outlined follow-up measures—including analytical confirmation of materials and air, corrective actions, monitoring, and

ACM removal—the actual execution of these provisions remains insufficiently reported and largely unknown.

From a building practice perspective, a strategy focused on the complete removal of all asbestos may not be strictly necessary, as the associated health risks depend significantly on how asbestos and asbestos-containing materials (ACMs) are installed and integrated within the building structure.

In view of the constraints identified, strategic revision appears warranted. Instead of implementing a blanket screening of public buildings, a more effective approach may lie in deploying locally adapted, risk-oriented removal strategies—prioritizing interventions based on exposure levels, structural typology, and resource capacity.

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