

Asbestos-related occupational cancers compensated under the Spanish National Insurance System, 1978–2011

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Background: In 1978, asbestos-related occupational cancers were added to the Spanish list of occupational diseases. However, there are no full accounts of compensated cases since their inclusion.

Objective: To analyze the cases of asbestos-related cancer recognized as occupational in Spain between 1978 and 2011.

Methods: Cases were obtained from the Spanish Employment Ministry. Specific incidence rates by year, economic activity, and occupation were obtained. We compared mortality rates of mesothelioma and bronchus and lung cancer mortality in Spain and the European Union.

Results: Between 1978 and 2011, 164 asbestos-related occupational cancers were recognized in Spain, with a mean annual rate of 0.08 per 10⁵ employees (0.13 in males, 0.002 in females). Under-recognition rates were an estimated 93.6% (males) and 99.7% (females) for pleural mesothelioma and 98.8% (males) and 100% (females) for bronchus and lung cancer. In Europe for the year 2000, asbestos-related occupational cancer rates ranged from 0.04 per 10⁵ employees in Spain to 7.32 per 10⁵ employees in Norway.

Conclusions: These findings provide evidence of gross under-recognition of asbestos-related occupational cancers in Spain. Future work should investigate cases treated in the National Healthcare System to better establish the impact of asbestos on health in Spain.

Keywords: Asbestos, Cancer, Compensation, Mesothelioma, Occupational diseases, Occupational health, Spain

Introduction

Occupational and environmental exposure to asbestos can cause a variety of diseases and cancers including: asbestosis, pleural plaques, benign pleural effusion, mesothelioma and bronchus, lung, larynx, ovary, colorectal, pharynx, and stomach cancers.^{1,2} Asbestos is an important occupational carcinogen in Europe.^{3,4}

Similar to other European countries, Spain has a national list of occupational diseases (ODs) to facilitate the compensation for workers who suffer morbidity or mortality as a result of occupational hazards. In accordance with International Labor Organization norms, workers with diseases on this list are not required to demonstrate the causal link with their condition, the harmful agent, or the exposure process, although the implementation of these norms is questionable. Asbestosis was not

recognized as an OD entitled to compensation under the Spanish insurance system until 1961, approximately 30 years after it was recognized in the UK.⁵ In 1978, a new list of 71 ODs was approved in Spain, which included primary bronchial or pulmonary carcinoma and mesothelioma for workers occupationally exposed to asbestos dust.⁶ The most recent OD list was approved in 2006 and comprises 141 diseases, including asbestos-related malignant bronchus, lung cancers, and mesothelioma (pleural, peritoneal, and other sites). Laryngeal cancer as a result of asbestos exposure was proposed for inclusion.⁷

Between 1906 and 2002, when asbestos was banned in Spain, a total of 2 514 391 metric tons (Mt) of asbestos were imported into the country, with an interruption during the Spanish Civil War (1936–1939).^{8,9} Given the lack of domestic mining, import data are the best indicator of the country's asbestos consumption. The majority of imported asbestos was raw and earmarked for manufacturing products, ranging from cement, insulation, and textiles to ships

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and automobiles. Imports steadily increased from 1906 until 1974 and peaked between 1973–1977, with an average 113 921 Mt per year and a maximum 130 293 Mt in 1974.⁹ In Spain, as in Italy and France, imports gradually decreased after 1980, while in the USA, Australia, UK, and Scandinavia, the decline began 10–20 years earlier.^{10,11} In 2006, Spain began regulating occupations involving asbestos exposure (post-prohibition, e.g. its handling and removing).¹²

Compensation for asbestos related diseases in Spain has recently been scrutinized. Between 1963 and 2010, only 815 cases of asbestosis and 46 cases of fibrous pleural or pericardial disease were recognized, indicating a severe under-reporting of the occupational origin of these diseases.¹³ The aim of this study was to analyze cases of asbestos-related cancers recognized as occupational by the Spanish National Insurance system between 1978 and 2011 and to compare them with data on mortality due to pleural mesothelioma, bronchus, and lung cancer in the Spanish population and other European countries.

Methods

Disease data were obtained from the Unit of Statistics of the Spanish Ministry of Employment.¹⁴ The Ministry of Employment and Social Security started gathering annual occupation-related statistics in 1982, although their report for the years 1982–1983 only contained the most frequently compensated ODs, not those caused by asbestos. Starting in 1984, following codification of the 1978 List of ODs, cases were recorded as “Primary bronchial and pulmonary carcinoma due to asbestos or pleural mesothelioma and other mesotheliomas from the same cause,” which were both included under the same code. From 2001 onwards, the codes of the tenth revision of the International Classification of Diseases (ICD-10) were introduced into the list, allowing the aforementioned category to be divided by tumor type. In 2007, the ODs were disaggregated, resulting in a corresponding code for each disease.

The following variables were used in the data analysis:

Individual: gender, age, and occupation (National Classification of Occupations *CNO-94*).¹⁵

Company: economic activity (National Classification of Economic Activities *CNAE-93*).¹⁶

Disease: report date and type of OD (based on the OD list code):

1. from 1978 to 2006: primary bronchial and pulmonary carcinoma due to asbestos. Pleural mesothelioma and mesothelioma from the same cause: code F2.
2. from 2007 to 2011:
 - bronchial and pulmonary cancer due to asbestos: codes 6A0101 to 6A0112;
 - mesothelioma: codes 6A0201 to 6A0212;
 - pleural mesothelioma: codes 6A0301 to 6A0312;
 - peritoneal mesothelioma: codes 6A0401 to 6A0412;

- mesothelioma at other anatomical sites: codes 6A0501 to 6A0512;
- laryngeal cancer from the inhalation of asbestos dust: code C601.

The quality and accuracy of the data sources were examined by analyzing the agreement between the ICD-10 codes and the codes in the OD lists.^{6,7} Disease rates per 100 000 employees were computed for the years 1997–2011 using the employed population corresponding to each variable as the denominator. Data on the Spanish wage-earning population and their distribution by gender, age, occupation, and economic activity were obtained from the Spanish Economically Active Population Surveys for the years 1997–2011. We plotted temporal trends and annual rates and then analyzed the distribution of cases by province. Comparisons were made between asbestos-related cancers and the total number of compensated occupational cancers.

The recognition rate of asbestos-related cancers as ODs in Spain was estimated by comparing the number of cases of pleural mesothelioma, bronchus, and lung cancer recognized to have occupational origin with the mortality due to these diseases in Spain for the years 2007–2011 (ICD-10 code C45 for mesothelioma and C33–C34 for bronchus and lung cancer). The number of deaths from occupational pleural mesothelioma was estimated under the assumption that 80–85% of cases in people 40 years or older were attributable to occupational asbestos exposure.¹⁷ The number of deaths from bronchus and lung cancer attributable to occupational asbestos exposure was estimated to be 4% of deaths coded as bronchial and pulmonary cancer in individuals 40 years or older.¹⁸ Comparisons with other European countries were based on the year 2000 Eurogip report on the recognition of asbestos-related ODs, which provided lung cancer and mesothelioma rates per 100 000 social security-affiliated workers in nine countries; a separate rate is provided for each tumor type in all countries except Spain, which recorded both under the same code in 2000.¹⁹ We calculated the combined rates for comparative purposes.

Results

Between 1978 and 2011, 164 asbestos-related cancers were recognized as ODs in Spain, with the first case being recorded in 1997. More than a half of these cases were recognized between 2010 and 2011, including 63 cases in 2011 (Fig. 1). The rate of cases per 100 000 social security-affiliated employees showed a similar trend, rising from 0.01 in 1997 to 0.43 in 2011 (mean rate for 1997–2011 of 0.08, 0.13 in males and 0.002 in females).

For the years 2002–2011, when mesotheliomas, bronchus, and lung cancers could be separately analyzed, 151 cases of asbestos-related carcinoma

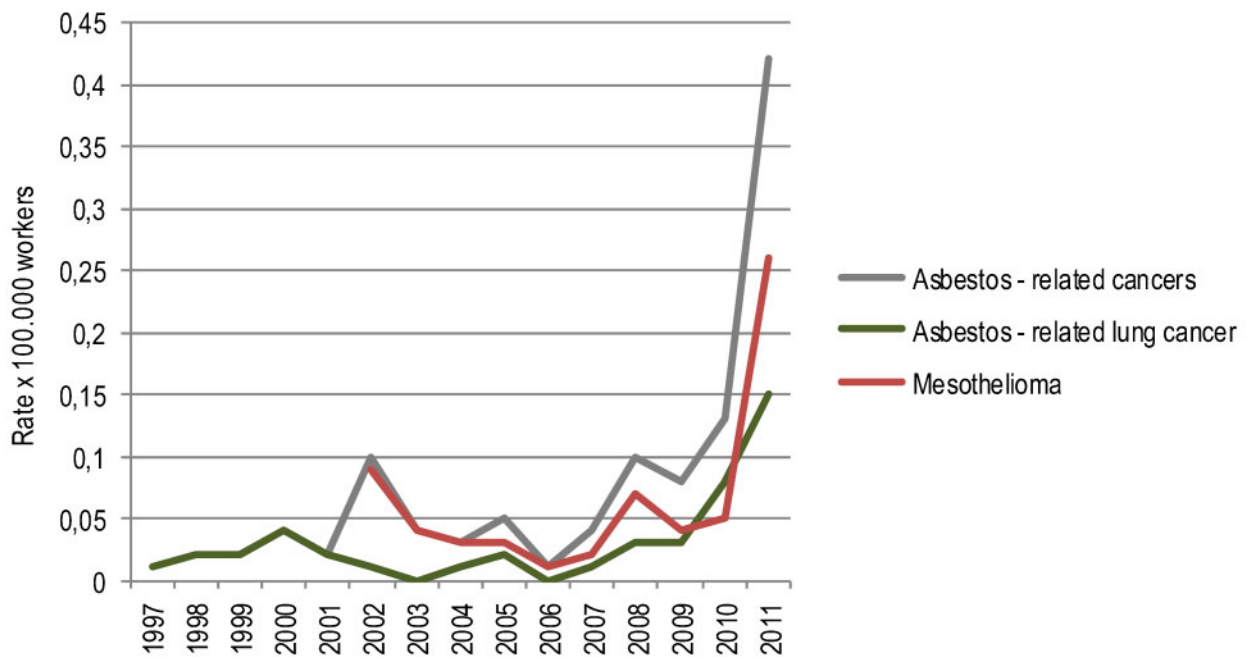


Figure 1 Rates per 100 000 workers of asbestos-related cancer recognized as occupational disease by year and tumor type. Spain 1997–2011. Source: Yearbook of Professional Statistics and General Division of Social and Labor Statistics of the Ministry of Employment and Social Security.

were recorded, with mesothelioma being the most common (99 cases, 65.6% of the total). With the new 2006 list and corresponding codification, 50 (71.4%) of the 70 mesotheliomas recognized between 2007 and 2011 were pleural. No cases of laryngeal cancer were recorded. Between 1978 and 2011 there were 162 recognized cases of occupational cancer caused by asbestos in males and only two in females, and 98.8% of cases were in workers over 40 years of age. Among these over 40-year-olds, 75 (45.5%) were aged between 50 and 64 years and 27.4% (45 cases) were over 65 years. The highest incidence was in the over 60-year-olds (0.84 per 100 000 wage-earners). The youngest person compensated for cancer was 39 years old.

Table 1 shows rates of occupational cancer caused by asbestos per 100 000 workers by industry between 1997 and 2011. Manufacturers of transport materials (rate of 1.05/100 000 workers) and industries involved in non-metallic minerals (1.32/100 000), metallurgy and the manufacture of metallic products (1.34/100 000), and construction (0.09/100 000) accounted for 74.4% of compensated cases during this period. In the transport materials sector, cases were concentrated in railway material manufacture (21 cases, 55.3% of all cases in the sector) and in shipbuilding and repair (12 cases, 31.6%). Fibrocement manufacturing represented almost all of the cases ($n=27$) in the non-metallic mineral sector (Table 1, codes 264, 265, and 267), with an increase in the frequency of recognized cases after 2007. In the construction sector, most cases were in building construction ($n=12$) and thermal

insulation, soundproofing, or plumbing ($n=6$) (Table 1, codes 452 and 453, respectively).

Table 2 shows the distribution of asbestos-related cancer cases by occupation. Approximately half (51.85%) of all cases were among craft and related trades workers. These occupations had tripled the average rate of asbestos-related cancers for the time period, with cases being concentrated among metal workers in shipbuilding and construction-related occupations. Plant and machine operators and assemblers compromised 26.54% of cases. Seventy-six percent of all occupational cancers recognized in Spain between 1997 and 2011 were asbestos-related cancers (Fig. 2).

In Spain, 1297 individuals aged 40 years and over died from pleural mesothelioma between 2007 and 2011 (925 men and 372 women). Following the assumption proposed by the IARC that 80–85% of cases in men are the result of occupational exposure, an estimated 1038–1102 of these deaths can be attributed to work exposure (740–786 in males, 298–316 in females).¹⁷ However, only 50 pleural mesotheliomas were recognized as ODs during the same period (49 in males, 1 in females). In 2007–2011, there were 101 906 deaths coded as bronchus and lung cancer (86 093 cases in men and 15 813 in women). If 4% of these deaths were attributable to occupational asbestos exposure, an estimated 4076 deaths were the result of asbestos exposure (3444 in males and 633 in females).¹⁸ During this period, only 47 cases of bronchus and lung cancer due to asbestos were recognized as occupational (none among females).

Figure 3 shows the distribution of asbestos-related cancer, mesothelioma, and lung cancer cases by province. Between 2007 and 2011, 37 cases were recorded in Catalonia, 33 in Madrid, and 27 in the Basque Country, with these three regions representing 59.14% of all recognized cases.

The concordance between OD and ICD codification systems was 81% for the period between 2001 and 2006 and 47% for that between 2007 and 2011.

Discussion

The first case of asbestos-related occupational cancer in Spain was recognized in 1997, two decades after

their inclusion in the list of ODs. Despite mesothelioma's long latency period, this delay in recognition is in contrast with the numerous clinical cases of mesothelioma published in the Spanish medical literature beginning in 1969, many of which were reported in individuals occupationally exposed to asbestos.^{20,21}

We estimated the magnitude of under-recognition of asbestos-related cancers as ODs in Spain using mortality data. Between 2007 and 2011, the years with available data on the number of occupational caused pleural mesotheliomas and mortality due to this cause, we found that 93.4–93.8% of all cases in

Table 1 Distribution of asbestos-related cancer cases by economic activity. Spain from 1997 to 2011

NACE-93	Classification of economic activities in the European Community	Cases number (% over total)	Cases number (% of total for activity)	Rate ($\times 10^5$)
DM	Manufacture of transport material	38 (23.17%)		1.05
343	Manufacture of parts and accessories for motor vehicles		5 (13.16%)	
351	Building of ships and boats		12 (31.58%)	
352	Manufacture of railway locomotives and rolling stock		21 (55.26%)	
	Total for the activity		38 (100.00%)	
DI	Manufacture of other non-metallic mineral products/ other non-metallic mineral products	37 (22.56%)		1.32
266	Manufacture of articles of concrete, cement, and plaster		10 (27.03%)	
265	Manufacture of cement, lime and plaster		17 (45.95%)	
267	Cutting, shaping and finishing of stone		7 (18.92%)	
264	Manufacture of clay building materials		3 (8.11%)	
	Total for the activity		37 (100.00%)	
DJ	Metallurgy and manufacture of metallic products	25 (15.24%)		1.34
271	Manufacture of basic iron and steel and of ferro-alloys		7 (28.00%)	
272	Manufacture of tubes, pipes, hollow profiles, and related fittings		1 (4.00%)	
274	Manufacture of basic precious and other non-ferrous metals		3 (12.00%)	
275	Casting of metals		4 (16.00%)	
281	Manufacture of structural metal products		4 (18.00%)	
284	Forging, pressing, stamping, and roll-forming of metal; powder metallurgy		1 (4.00%)	
285	Treatment and coating of metals; machining		2 (8.00%)	
286	Manufacture of cutlery, tools and general hardware		1 (4.00%)	
287	Manufacture of other fabricated metal products		2 (8.00%)	
	Total for the activity		25 (100.00%)	
FF	Construction	22 (13.41%)		0.09
451	Demolition and site preparation		3 (13.64%)	
452	Construction of residential and non-residential buildings		12 (54.55%)	
453	Electrical, plumbing and other construction installation activities		6 (27.27%)	
454	Building completion and finishing		1 (4.55%)	
	Total for the activity		22 (100.00%)	
DH	Rubber and plastic products industry	7 (4.27%)		0.40
GG	Trade and repairs	7 (4.27%)		0.16
EE	Electrical energy, gas and water	5 (3.05%)		0.57
LL	Public Administration	5 (3.05%)		0.03
II	Transport, storage and communication/transport and communications	4 (2.44%)		0.07
DG	Chemical industry	2 (1.22%)		0.08
DK	Mechanical machinery and equipment	2 (1.22%)		0.07
PP	Households that employ domestic personal	2 (1.22%)		0.02
BB	Fishing	1 (0.61%)		0.24
CB	Extraction of other minerals	1 (0.61%)		3.70
DA	Food, beverage and tobacco industry	1 (0.61%)		0.02
DB	Textile and clothing industry	1 (0.61%)		0.08
DE	Paper industry; publishing, and graphic arts	1 (0.61%)		0.15
DL	Electrical, electronic, and optical equipment	1 (0.61%)		0.45
NN	Health and veterinary activities; social services	1 (0.61%)		0.01
OO	Other social services and activities; personal services	1 (0.61%)		0.10
	Total	164 (100.00%)		0.08

Source: Yearbook of Statistics Professional and General Division Social and Labor Statistics of the Ministry of Employment and Social Security.

males were under-recognized. Under-recognition was even higher in females, for whom only 0.33% of deaths from pleural mesothelioma were attributed to occupational asbestos exposure and recorded as occupational cancers, contributing to the overall masking of occupational cancers among women. One possible explanation for the gender difference may be that the women left the workforce at an earlier age compared to men, obscuring the link between mesothelioma and its occupational origin.²² For the same period, under-recognition of bronchus and lung cancer attributable to asbestos was 98.8% (98.6% in males and 100% in females).

Our results also highlight the large number of occupational mesothelioma cases compared to lung cancer cases, despite the much lower frequency of mesothelioma in the general population. This may be attributable to the specificity of the relationship between mesothelioma and asbestos exposure compared to lung cancer, which can be caused by other

factors such as tobacco consumption. This may also explain why many lung cancers are not recognized as ODs. These estimations of the under-reporting of asbestos-related occupational cancers are consistent with reports on the underestimation of cancer deaths attributed to occupational exposure in the official Spanish records, considered to represent only a very small fraction (between 0.1 and 0.2%) of the expected mortality.²³ Differences between recognition rates reported in this study and our estimations for pleural mesothelioma are largely attributable to the increase in the number of men compensated for asbestos-related cancers between 2010 and 2011, while rates for females remained constant. Although asbestos-related occupational cancers have been vastly under-reported, they make up the bulk of the cancers in the system, as shown in Fig. 2. Between 1997 and 2011, only 53 workers with occupational cancers unrelated to asbestos exposure received compensation under the Spanish insurance system.

Table 2 Distribution of asbestos-related cancer cases by occupation. Spain from 1997 to 2011

International Standard Classification of Occupations	Cases number	% of occupation	Rate × 10 ⁵
Craft and related trades workers	84 (51.85%)		0.25
Foremen of building frame and related trades workers		2 (2.38%)	
Building frame and related trades workers		18 (21.43%)	
Building finishers and related trades workers		19 (22.62%)	
Shopfloor foremen of metal moulders, welders, and sheet-metal workers		10 (11.90%)	
Painters, building structure cleaners, and related trades workers		2 (2.38%)	
Metal moulders, welders, sheet-metal workers, structural-metal preparers, and related trades workers		22 (26.19%)	
Electrical and electronic equipment mechanics and fitters		9 (10.71%)	
Handicraft workers in wood, textile, leather and related materials		2 (2.38%)	
Total of occupation		84 (100.00%)	
Plant and machine operators and assemblers	43 (26.54%)		0.20
Stationary plant and related operators — mining and mineral-processing-plant operators, metal-processing plant operators, glass, ceramics and related plant operators, wood-processing-and papermaking-plant operators, chemical-processing-plant operators, power-production and related plant operators		39 (90.70%)	
Machine operators and assemblers		3 (6.98%)	
Drivers and mobile plant operators — locomotive engine drivers and related workers, motor vehicle drivers, agricultural and other mobile plant operators, ships' deck crews and related workers		1 (2.32%)	
Total of occupation		43 (100.00%)	
Elementary occupations	18 (11.11%)		0.05
Building caretakers, window and related cleaners; messengers, porters, doorkeepers and related workers; garbage collectors and related laborers		2 (11.00%)	
Transport laborers and freight handlers		1 (5.56%)	
Mining and construction laborers		3 (16.67%)	
Manufacturing laborers		8 (44.44%)	
No information		4 (22.22%)	
Total of occupation		18 (100.00%)	
Clerks — office clerks and customer services clerks-	5 (3.09%)		0.01
Technicians and associate professionals	4 (2.47%)		0.02
Skilled agricultural and fishery workers	3 (1.85%)		0.01
Professionals	3 (1.85%)		0.01
Legislators, senior officials, and managers	1 (0.62%)		0.02
Service workers and shop and market sales workers	1 (0.62%)		0.04
Total for the period	162* (100.00%)		0.08

Note: *In two cases is unknown occupation.

Source: Yearbook of Statistics Professional and General Division Social and Labor Statistics of the Ministry of Employment and Social Security.

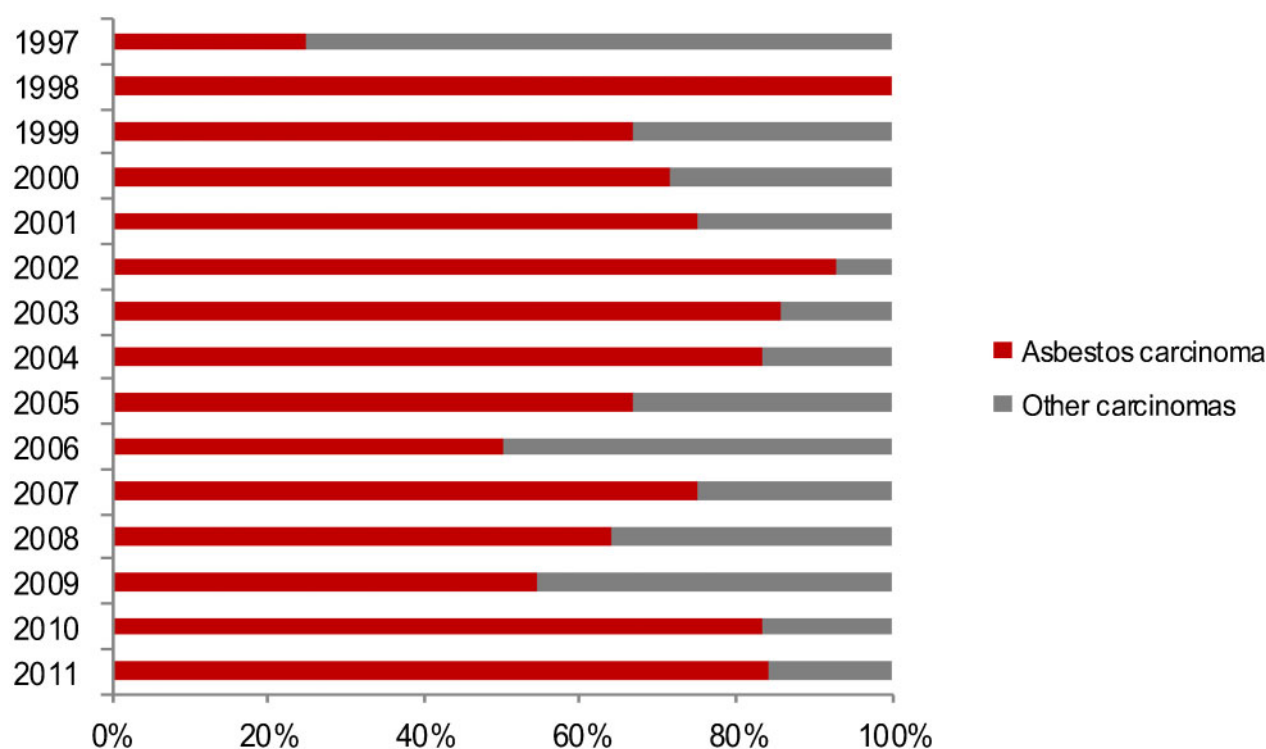


Figure 2 Percentage of asbestos-related occupational cancers with respect to the total number of compensated occupational cancers. Spain 1997–2011. Source: Yearbook of Professional Statistics and General Division of Social and Labor Statistics of the Ministry of Employment and Social Security.

Spain has the lowest recognition rates of asbestos-related ODs among European countries. To compare, Norway recognized 183-fold and Denmark 133-fold more cases of asbestos-related cancers per 100 000 insured workers than Spain. Among countries with a comparable industrial infrastructure, France recognized 124-fold more cases and Italy recognized 41-fold more.¹⁹ Besides the diversity of insurance systems among European countries, other explanatory factors, including asbestos consumption, the exposed population, and the intensity of exposure in specific industrial sectors should be considered. In Spain, no records on workplace exposure to carcinogens are available to calculate the number of exposed workers, their occupations, or level of exposure. Estimates of occupational exposure to asbestos in Spain by the European CAREX (CARcinogen EXposure) project ranged from 56 600 workers by the late 1990s to 65 548 by 2004.^{24,25} The most comprehensive official report, issued in 1992, stated that the consumption of asbestos in Spain had decreased from 1.2 kg/inhabitant/year in 1988 to 0.9 kg/inhabitant/year in 1991.²⁶ The concentration of asbestos fibers was below 1 f/cc in 40–90% of the workplaces evaluated, with a mean of 0.22–0.31 f/cc. Nevertheless, very high concentrations (31.9 f/cc) were reported in the railway material repair and maintenance sectors in the late 1980s. Elevated concentrations were also reported in brake and clutch manufacturing (12.2 f/cc), brake and clutch repair

(4 f/cc), the asbestos textile industry (2.87 f/cc), and asbestos joint manufacturing (2.6 f/cc).²⁶

In general, Europe showed an increasing trend in the declaration of mesothelioma and asbestos-related lung cancer between 1980 and 2003.¹⁹ In Spain, certain neoplasms were first declared in 1997, although the number remained small until 2007, when declared cases began rising. The increase recorded in the years around 2000 is consistent with the higher asbestos consumption and exposure levels in the 1970s and the latency period of these cancers (20–40 years). However, the multiplication of recognized OD cases over the past few years appears largely attributable to improved information regarding these diseases, judicial lawsuits for their recognition/compensation, sanctions against non-compliant companies, union campaigns, and the continued activity of the National Health Surveillance Program of Workers Previously Exposed to Asbestos in Spain (PIVISTEA).²⁷ Thus, the implementation by some countries (e.g. Finland, France, and Italy) of effective national surveillance programs to detect workers previously exposed to asbestos facilitated the establishment of a causal relationship, which was difficult to demonstrate because of the long latency period of asbestos-related cancers.^{28–30} Studies on the incidence of asbestos-related diseases in state-run shipyards confirmed the importance of health surveillance campaigns in stimulating recognition.³¹ We are currently witnessing a rise in number of these diseases, with the

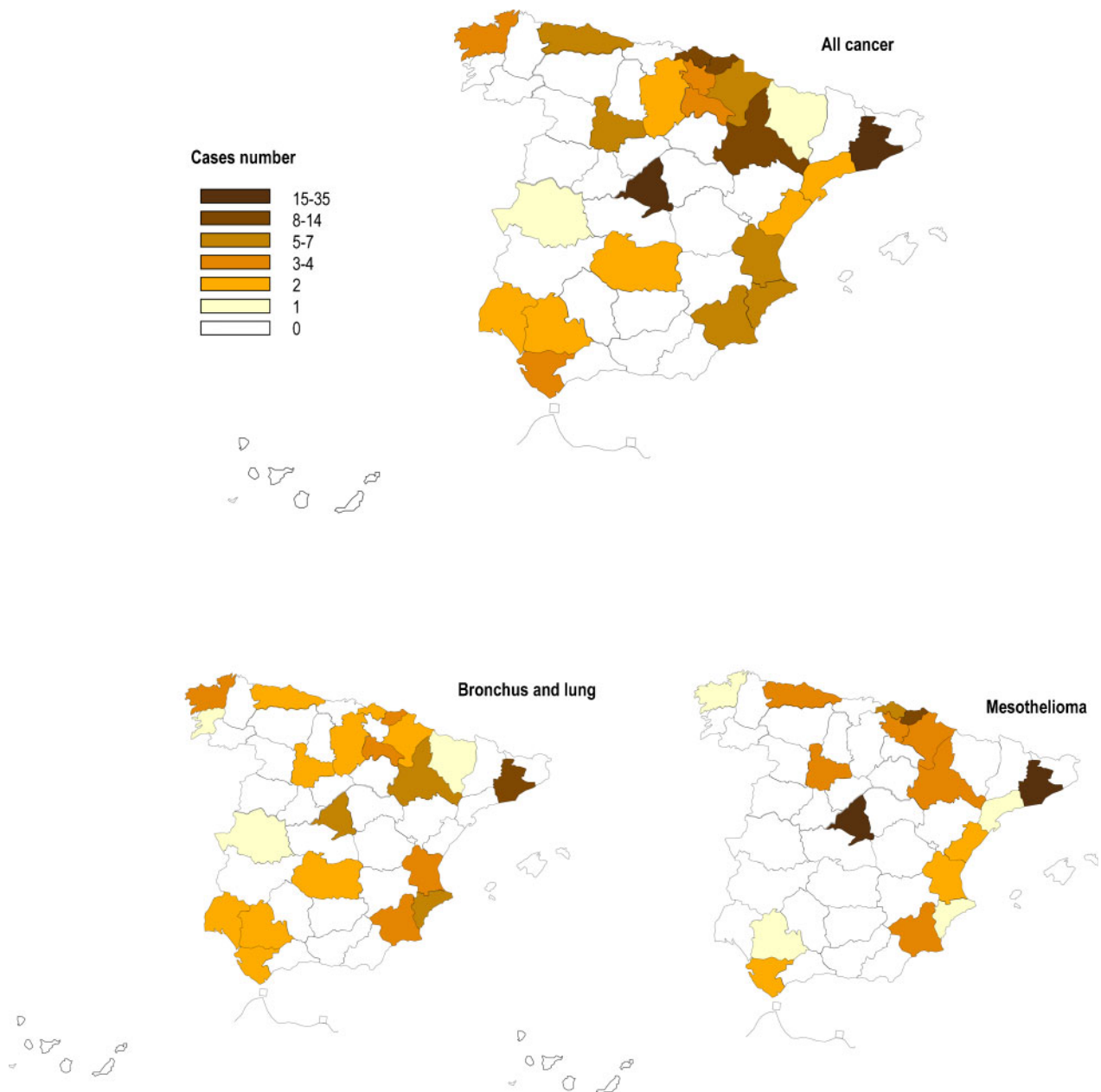


Figure 3 Distribution of asbestos-related cancers recognized as occupational disease in Spain by province, 1997–2011. Source: Yearbook of Professional Statistics and General Division of Social and Labor Statistics of the Ministry of Employment and Social Security.

prediction that occupationally-related deaths due to pleural mesothelioma will continue in Spain until at least 2040.³²

Changes in the Spanish insurance system have been called for as a matter of urgency, and further research is required on OD recognition criteria.³³ Asbestos-related cancers were included in the OD list in 1978 in Spain, earlier than in France (1985), Italy (1994), and Belgium (1999). Nevertheless, cases have not been adequately recognized, which can be attributed to the restrictive character of the OD compensation system in Spain.^{34,35}

The geographic distribution of cases in Spain (Fig. 3) is associated with the locations of asbestos-cement factories, shipyards, and companies that

utilized asbestos.³⁶ In the case of mesothelioma, the geographic pattern of recorded cases coincides with mortality data gathered at the municipal level between 1989 and 1998.³⁷ Recent research on asbestosis recognition suggests that medical professional awareness helps explain the geographic distribution of asbestos-related mesothelioma and lung cancer cases recognized as ODs in Spain.^{13,20}

The limitations of our study are associated with the difficulties in gathering data from earlier periods and the quality of information. There have been numerous changes in information sources, and the data were not initially broken down by occupation, activity, age, or gender. Unfortunately, information

on the number of compensation claims and the number of cases accepted is not available from the Social Security system in Spain, which only issues data on accepted cases, hampering insight into the inadequacies of the insurance system. Another shortcoming is the discrepancy in diagnostic criteria for cancer between the OD and ICD codification systems, which showed an agreement of 81% between 2001 and 2006, but only 47% between 2007 and 2011. There are also errors in the evaluation of severity. For example, we identified a case of bronchopulmonary cancer categorized as “mild.”

The thoroughness of the data sources is also questionable. Although all compensated cases are listed, there will also have been cases not included for various reasons. For example, workers with environmental exposure whose activities were not considered an asbestos exposing occupation. Furthermore, although the OD list provides the main activities capable of producing the diseases listed, in practice, it only permits the codification of limited activity types. Additionally, lung cancer and mesothelioma are characterized by long latency periods; therefore, workers may be retired at the time of diagnosis or otherwise excluded from the labor market due to disability. Insurance companies do not issue an OD report in these cases. In fact, 45 out of the 164 asbestos-related cancers recognized were detected in retired workers aged between 66 and 88 years, consistent with the latency period of these cancers. These diseases are not recognized as occupational unless requested by the worker or reported by the physician.

The fact that the occupational origin of a disease is not recognized hampers the design and application of appropriate prevention policies and also deprives victims of their rights and benefit payments. The recognition of both identified and hitherto unidentified cases is therefore important.

Our findings on the number of recorded asbestos-related cancers indicate a gross under-declaration and under-recognition of these diseases in Spain. Hence, the OD data do not reflect the true burden of asbestos-related disease, which should include all cases of mesothelioma treated in the National Healthcare System and the fractions of lung, larynx, and ovary cancer patients with asbestos-related etiology. It is essential that an information and surveillance system be established to ensure the recognition of these cases, given that deaths due to occupational exposure to asbestos are expected to continue in Spain over the next several decades.

Disclaimer Statements

Contributors All authors have contributed in the research and analysis of the material under scrutiny and all had collaborated in the writing of the paper.

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Conflicts of interest The authors declare that they have no competing interests.

Ethics approval No ethical approval is required.

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