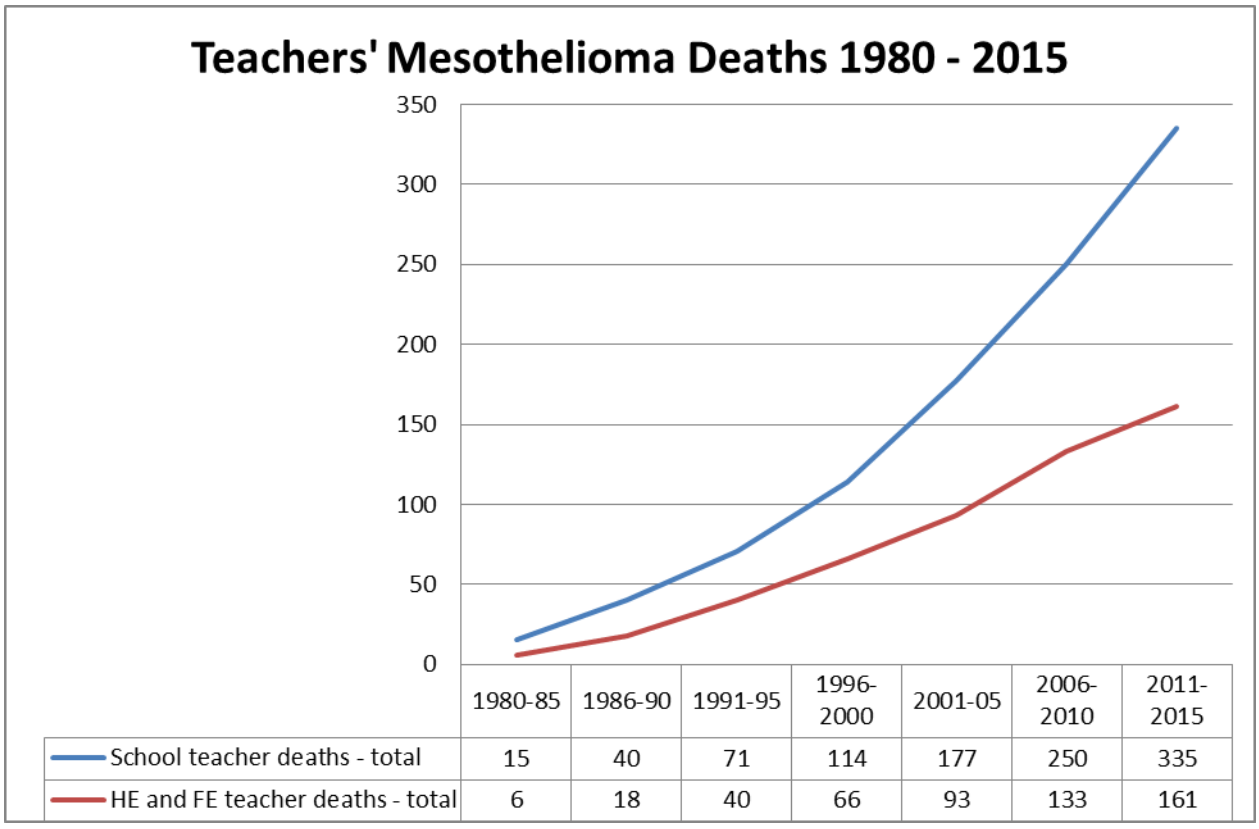
Mesothelioma deaths among school staff 1980 – 2015

Teachers' deaths

At least 335 primary and secondary school teachers have died of mesothelioma in Britain since 1980. 221 of those have died of mesothelioma since 2001.[1] At least 161 higher and further education teachers have died from mesothelioma since 1980. The real numbers are likely to be much higher as the occupational mortality figures do not include anyone who died over the age of 75.

The following graph shows the annual increase in deaths from 1980. The deaths of school teachers have increased from an average of 3 a year in 1980 to 17 a year by 2015.



	1980-85	1986-90	1991-95	1996-2000	2001-05	2006-2010	2011-2015
School teacher deaths - total	15	40	71	114	177	250	335
HE and FE teacher deaths - total	6	18	40	66	93	133	161

Support staff deaths

In addition, school support staff have died. Between 2003 and 2015, statistics record that 8 school secretaries, 8 nursery nurses, 24 teaching assistants and 18 school midday assistants died of mesothelioma. School caretakers, cleaners and cooks have also died of the cancer,[2] but the occupational statistics are generic and do not record their deaths under school occupations.

[1] Male and female mesothelioma deaths and PMRs aged 16-74 for selected occupations in the health and education sectors in Great Britain in 2013 and PMRs for 2003-2014 Freedom of Information Request Reference No: 201709143 September 2017

[2] See: Asbestos in Schools. The scale of the problem and the implications. P34-42
http://www.asbestosexposureschools.co.uk/pdfnewslinks/AiSreportonASBESTOSINSCHOOLS.pdf

There are a significant number of deaths amongst cleaners and caretakers, and the individual occupational code with the greatest number of mesothelioma deaths amongst females, are cleaners.[3] However the occupational codes include caretakers and cleaners in every occupation and not just schools[4], therefore it is not possible to state how many had worked in schools. It is known however that school cleaners and caretakers have died of mesothelioma. If asbestos fibres have been released in a school then it is the cleaners who invariably, and unknowingly, clean it up so that inevitably they are exposed. It is relevant that the statistics for 2002-2010 show a significantly greater PMR for female primary school teachers at 118.6 than female cleaners at 101.8.

School caretakers are also acknowledged to be at risk as they are likely to disturb asbestos materials. There are numerous cases of school maintenance men and caretakers drilling walls to hang up notice boards, fitting ceiling tiles, removing ceiling tiles to mend leaks, patching up dents in walls and a whole plethora of other tasks all of which can potentially disturb asbestos. HSE and DfE highlight the risk by stating "*School caretakers have been identified as a particular group at risk due to the nature of their work (i.e. Drilling and fixing.)* [5]

Former pupils' deaths

Former pupils are also dying of mesothelioma. In the context of mesothelioma occupational statistics, schools are unique as the vast majority of the occupants are not listed under an occupation as they are children. The teachers' deaths are therefore the visible tip of the iceberg, as for every teacher there are 20-30 children. Because of the long latency, the occupational statistics record the former pupils' deaths under whatever occupation they had at the time and not as a mesothelioma caused by asbestos exposure at school. Therefore, an estimate has to be made if the scale of the problem is to be realised.

In 1980 the American Environmental Protection Agency estimated that for every teacher and support staff death from mesothelioma nine former pupils would subsequently die. [6] Because they had assessed the scale of the problem, stringent asbestos laws were introduced specifically for schools.[7] In 2013 an authoritative estimate was made of the number of former pupils who could die in Britain, but the government has not acted on it. The asbestos most commonly used in the construction of US schools was chrysotile, whereas the most common asbestos used in UK schools was amosite which is around 100 times more dangerous. Therefore, the incidence of mesothelioma in former pupils in the UK is likely to be significantly higher than that in the USA.[8]

In addition to their greater numbers in schools, children are more at risk. In 2013 the Committee on Carcinogenicity (CoC) concluded that children are more vulnerable to exposure to asbestos than adults, the younger the child the greater the risk. The lifetime risk of developing mesothelioma for a five year old child is about five times greater than an adult aged thirty.[9] A leading epidemiologist, and member of the CoC, gave evidence to the Education Select Committee. He estimated that between 200 and 300 people could die each year of mesothelioma because of their asbestos exposure as children at school.[10]

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[3] HSE Mesothelioma Occupation Statistics Male and female deaths aged 16-74 in Great Britain 2002-2010 Mar 2013 http://www.hse.gov.uk/statistics/causdis/mesothelioma/mortality-by-occupation-2002-2010.pdf
[4] National Statistics Standard Occupational classification 2000 Vol 1
[5] HSE Asbestos An important message to schools Mar & Aug 2006. DfES Asbestos An important update for schools Jun 2006
[6] EPA report Health effects and magnitude of exposure of Asbestos containing materials in school buildings. 560/12-80-003
[7] AHERA US code: title 15,2643. EPA regulations Chapter 53. EPA Fact sheet AHERA 1986 Statement EPA Administrator 23 Oct 1986
[8] http://www.asbestosexposureschools.co.uk/pdfnewslinks/USA%20v%20GB%20Mesothelioma%206Sep%2010%20_5_%20_2_.pdf
[9] Committee on Carcinogenicity Statement on the relative vulnerability of children to asbestos compared with adults. 7 June 2013
[10] Education Select Committee hearing asbestos in schools 13 Mar 2013 Q 13 . Personal correspondence Professor Peto/Lees 3 May 2013

That would equate to between 4,000 and 6,000 mesothelioma deaths over a twenty year period because of asbestos exposure as a child at school.

Although the estimates were based on the levels of exposure during the 1960s and 1970s, most of the asbestos remains in place and so does the risk. All of it is now old and much is deteriorating as the school stock has been poorly maintained due to lack of capital funding from Government. The evidence is that asbestos incidents continue,[11] consequently staff and pupils are still being exposed to asbestos, in some cases over a prolonged period of time. Therefore the deaths will continue for many years to come, but precise numbers will never be known.

Statistics understate numbers.
As well as the lack of statistics on the number of former pupils who have subsequently died, the statistics also significantly understate the actual numbers of teachers who have died. This is because they do not include mesothelioma deaths above the age of 74, although almost as many people die of mesothelioma above that age as below. Studies have shown that lower exposures on average have longer latencies,[12] and therefore in a profession such as teaching it is possible that as many, or perhaps more, teachers have died over the age of 74.

Evidence of asbestos exposures at school.
In their evidence to the Education Select Committee the HSE claimed that the teachers' mesothelioma deaths had been caused by exposures other than in a school.[13] No doubt some school teachers have been exposed to asbestos elsewhere, but many are known to have been exposed at school which either caused the mesothelioma or materially contributed towards its development. At a significant number of teachers' inquests the evidence examined by the coroners has led them to conclude that asbestos exposure occurred at school, and therefore they have given a verdict of 'Death from industrial disease.' For instance, in December 2016, a coroner ruled that Sue Stephens, a former primary school teacher from Buckinghamshire, died from mesothelioma after being exposed to asbestos through her work. [14]

In addition, because of school teachers' career pattern, the occupation recorded on their death certificate is likely to have been their occupation when the exposure occurred.[15]

Higher mesothelioma incidence than other comparable occupations
The incidence of mesothelioma deaths amongst school teachers is higher than in some other comparable occupations and far higher than occupations where much of the time is spent outdoors. The Proportional Mortality Ratio (PMR) gives a comparison with other occupations. Between 2003 and 2014 the PMR for female primary school teachers was 125.7, which is more than three times greater than had there been no asbestos exposure.[16] If female primary and secondary school teachers are combined then the PMR is 109.8. This compares with a PMR of 83.5 for female nurses. This is a valid comparison as the

[11] See, for example: https://www.teachers.org.uk/help-and-advice/health-and-safety/a/asbestos-survey-report-2017
[12] Asbestos exposures in malignant mesothelioma of pleura; a survey of 557 cases Bianchi Industrial health 2001,39, 161-167 . Malignant mesothelioma due to environmental exposure to asbestos: follow up of a Turkish cohort living in a rural area. Chestp2228. Metintas Mesothelioma: cases associated with non-occupational and low dose exposures Hillerdal Occup Environ Med 1999:56:505-513
[13] Education Select Committee. Asbestos in Schools hearing. HSE David Ashton oral evidence. 13 March 2013.
[14] http://www.juac.org.uk/wp-content/uploads/2013/11/JUAC-press-release-Coroner-report-.pdf
[15] E-mail DCSF Workforce Group /Lees 27 January 2010 15:47 Case Reference 2010/0004693 "*The average length of service for full-time teachers is about 30 years*". And Scottish Parliamentary written answer S2W-15080 18 Mar 2005 http://www.theyworkforyou.com/spwrans/?id=2005-03-18.S2W-15080.h Death certificate is based on last occupation. Therefore occupation on retirement or death. Average length of service at retiring age, early retirement or because of ill health is about 33 years.
[16] HSE statistics Mesothelioma Occupational statistics 1980-2000 Interpretative issues p5

occupations are comparable and there are similar numbers of female nurses as there are female teachers.

If the incidence of mesothelioma in male school teachers is compared with similar professions then once again the teachers have a higher PMR. The PMR for male secondary teachers for 2003 to 2014 was 72.7. If male primary and secondary school teachers are combined then the PMR is 66.9. This compares with 47.3 for doctors. The statistics for 2002-2010 show the combined primary and secondary male teachers PMR is 64.45 compared with 46.4 for solicitors, lawyers, judges and coroners.

Statistics indicate that widespread asbestos exposure occurs in buildings

The difference in mesothelioma incidence is even more pronounced when a comparison is made with outdoor occupations. For instance, over the same period the combined male primary and secondary school teachers' PMR was 64.45 compared to 17.2 for male farm workers and 24.2 for forestry workers.[17] It is therefore a reasonable conclusion that people in occupations, such as teaching, where long periods are spent in buildings suffer a greater asbestos exposure than people in occupations where most of the time is spent outside.

Conclusion

The statistics show that the occupants of schools are dying of mesothelioma. The mesothelioma deaths amongst school teachers continue to increase as do the mesothelioma deaths amongst many other occupations where one should not expect asbestos exposure. Comparison of the data shows that people who work in buildings are dying at a greater rate than outdoor occupations such as farmers and forestry workers. This indicates that people are being exposed to asbestos in buildings. Further comparison shows that over the last thirty five years the incidence of mesothelioma deaths amongst school teachers has consistently been greater than some manual workers and consistently greater than some similar occupations. It is therefore reasonable to conclude that the asbestos exposure of school teachers has consistently been higher than these other occupations. The concern is that the school teachers' deaths show that there has been widespread release of asbestos fibres in schools over many years.

As a profession teaching is different from other occupations because for every teacher there are twenty to thirty children, and they are more vulnerable to asbestos exposure. Everyone attends school as a child. The statistics for the education sector therefore only show the tip of the iceberg as they do not show how many people have subsequently died from their asbestos exposure as a child at school. Any comparison with other occupations should take that into consideration. It is therefore reasonable to conclude that if the subsequent deaths caused by exposure at school as a child were included in the statistics then the mesothelioma deaths in the education sector would be amongst the worst of all sectors.

Annex 1: Notes on tables: PMRs and Expected Deaths

The incidence of mesothelioma between occupations is compared by the "Proportional Mortality Ratio" (PMR). The number of people in each occupation is different; therefore a large number of deaths from mesothelioma in an occupation employing very few people would be more remarkable than the same number of deaths in an occupation employing many thousands of people. A PMR of 100 shows that the number of mesothelioma deaths in a particular occupation is average for all the occupations. However

[17] HSE Mesothelioma Occupation Statistics Male and female deaths aged 16-74 in Great Britain 2002-2010 Mar 2013
http://www.hse.gov.uk/statistics/causdis/mesothelioma/mortality-by-occupation-2002-2010.pdf

that includes the high risk professions such as ship-building and the construction industry where asbestos exposure is known to occur. In those occupations the number of actual deaths is understandably far higher than the number of "Expected Deaths" and consequently the PMRs are far higher than 100.

The term "Expected Deaths" is used in the HSE tables. It is a misleading term for all it shows is the numbers of mesothelioma deaths that can be "Expected" in each profession based purely on a mathematical calculation of proportions. What it does not show is the number of deaths one would expect in each profession based on the assumed risk from asbestos exposure.
One would presume that a teacher should suffer little or no asbestos exposure, and hence the number of deaths that one would expect should be in line with people who have had no exposure or only background levels of exposure. The HSE mesothelioma statistics had a section entitled "Interpretive issues" which describes a hypothetical scenario where a group of females with *"zero exposure to asbestos would record a PMR of approximately 36."*[18] As well as comparing the incidence of mesothelioma between occupations it is therefore equally relevant to compare the actual PMR with the "background" PMR.

School teachers' PMRs significantly greater than "background" levels.
From 1980 to 2005 the PMR for female school teachers was 92[19], which is just under the average for all occupations. This shows that there has been a significant level of asbestos exposure among female school teachers, for the PMR would be considerably lower at 36 if there was no exposure or it was at purely background levels. The number of deaths was more than two and a half times higher than one should expect in an occupation where the asbestos fibre levels should be no more than that of normal background levels.
Male teachers' deaths also significantly exceed the number that one should expect in a profession with little or no asbestos exposure. The same interpretive issues give a PMR of 6 for men with a hypothetical zero exposure. (This figure is less than that of females purely because the total number of male mesothelioma deaths is far greater than that of females, and the number of background cases represents a smaller proportion of the whole.)[20] Between 1980 -2005 the PMR of male teachers in higher education was 100 and for male school teachers was 62.[21]

When one considers that these PMRs are formulated from a comparison with other occupations, including high risk ones such as asbestos stripping, boiler lagging and the building maintenance trades, one can see that male teachers' deaths in higher and further education is 17 times higher than they would have been if there had been purely "background" exposure and the male school teachers' deaths are 10 times greater. It can therefore be concluded that male teachers' deaths from mesothelioma far exceed the number that one would expect from an occupation where there should be minimal or no asbestos exposure.

[18] HSE Mesothelioma occupation statistics male and female deaths aged 16-74 1980-2000 page 5 interpretive issues
[19] HSE Mesothelioma occupational statistics 1980-2000 Table 2 and 6. . HSE Mesothelioma mortality in Great Britain: Analyses by Geographical area and occupation 2005 Tables 11 (2002-2005)
[20] HSE Mesothelioma occupation statistics 1980-2000 male and female deaths aged 16-74 page 5 interpretive issues
[21] HSE Mesothelioma occupational statistics 1980-2000 Table 1 HSE Mesothelioma mortality in Great Britain: Analyses by Geographical area and occupation 2005 Table 13 (2002-2005)

Mesothelioma Deaths: MALE and FEMALE School Teachers and Teachers and Lecturers in Higher and Further Education aged 16-74 1980-2015

	1980-1985 (5 years) [22]	1986-1990 (5 years)	1991-1995 (5 years)	1996-2000 (5 years)	2001-2005 (5 years) [23]	2006-2010 (5 years) [24]	2011-2015 (5 years) [25]	Total 1980-2015
School Teachers	15	25	31	43	63	73	85	**335**
Average deaths per annum	3	5	6	9	13	15	17	
Higher/Further Education	6	12	22	26	27	40	28	**161**
Average deaths per annum	1	2	4	5	5	8	6	
TOTAL Higher/Further Education School Teachers.	21	37	53	69	90	113	113	**496**

Mesothelioma deaths in Great Britain aged 16-74 for selected occupations

		Deaths, 2015			Deaths, 2011-2015								
		Male	Female	Total	Males			Females			Total		
					England	Wales	Scotland	England	Wales	Scotland	England	Wales	Scotland
2211	Medical practitioners	2	1	3	5	0	1	4	0	1	9	0	2
2231	Nurses	1	5	6	4	0	1	28	2	1	32	2	2
2311	Higher education teaching professionals	1	0	1	7	0	2	2	0	0	9	0	2
2312	Further education teaching professionals	5	1	6	14	1	0	1	1	0	15	2	0
2313	Education officers, school inspectors	0	0	0	0	0	0	0	0	0	0	0	0
2314	Secondary education teaching professionals	5	1	6	30	0	4	3	0	0	33	0	4
2315	Primary & nursery education teaching professionals	1	9	10	1	0	0	37	1	0	38	1	0
2316	Special needs education teaching professionals	0	0	0	1	0	0	0	0	1	1	0	1
2317	Senior professionals of educational establishments	0	0	0	1	0	0	2	0	0	3	0	0
2318	Education advisers and school inspectors	0	0	0	0	0	0	1	0	0	1	0	0
2319	Teaching and other educational professionals n.e.c.	0	0	0	0	0	0	1	0	0	1	0	0
4213	School secretaries	0	0	0	0	0	0	1	1	0	1	1	0
6121	Nursery nurses and assistants	0	0	0	0	0	0	0	0	0	0	0	0
6122	Childminders & related occupations	0	1	1	0	0	0	1	0	1	1	0	1
6123	Playworkers	0	1	1	0	0	0	1	0	0	1	0	0
6125	Teaching assistants	0	5	5	1	0	0	13	0	0	14	0	0
6126	Educational support assistants	0	0	0	0	0	0	1	0	0	1	0	0
9244	School mid-day and crossing patrol occupations	0	0	0	0	0	0	9	0	0	9	0	0

[22] HSE Mesothelioma occupational statistics: Male and female deaths aged 16-74 1980-2000 Table 3,4 Southampton Occupation Group. 5 year time period 1980-2000 excluding 1981

[23] E-mail HSE Statistics Unit/Lees 21 Nov 2012 . Mesothelioma deaths in the education sector for males and females 2001-2010. HSE Mesothelioma mortality in Great Britain: Analyses by Geographical area and occupation 2005 Tables 11, 13 (2002-2005).

[24] E-mail HSE Statistics Unit/Lees 21 Nov 2012 . Mesothelioma deaths in the education sector for males and females 2001-2010. HSE Mesothelioma mortality in Great Britain: Analyses by Geographical area and occupation 2005 Tables 11, 13 (2002-2005)

[25] Male and female mesothelioma deaths and PMRs aged 16-74 for selected occupations in the health and education sectors in Great Britain in 2013 and PMRs for 2003-2013 Freedom of Information Request Reference No: 201709143 September 2017.