

Web Search

Search Engines only take you to the start of a long paper. To go to exactly the right page:

**At the top of this screen click “edit” then click “search”.
Fill in the phrase or words you want and then click “search”.**

The paper will open at the right page.

RELEASE OF ASBESTOS FIBRES IN SYSTEM BUILT SCHOOLS

PART 2:

THE RISK. FIBRE LEVELS. HSE GUIDANCE

Michael Lees

Part 2 12th June 2008. AL 4 7 August 2008

This paper was completed in June 2008. It has not been updated in detail. If you need further up to date information on a particular issue please contact me.

Web-site for further information and **Part 1**
www.asbestosexposureschools.co.uk
look in “Research Papers”

Contact Email:
ml@asbestosexposureschools.co.uk

PART 2:	1
THE RISK. FIBRE LEVELS. HSE GUIDANCE	1
This paper	4
VULNERABILITY OF CHILDREN. MESOTHELIOMA DEATHS	4
Particular risk to children. Precautionary approach	4
Mesothelioma statistics.	11
Children	11
Teachers	14
Caretakers, cleaners, kitchen staff	19
Precautionary approach not taken.	19
LEGAL LIMITS FOR ASBESTOS EXPOSURE	21
Government policy based on asbestos in schools being in good condition	21
Clearance level	21
Control Limit	22
Environmental limit advocated as a fraction of Control limit	25
HSE Head of Asbestos Policy dismisses risk at Control Limit	27
Measurement and Analysis of airborne fibres.	28
TEM and SEM analysis confirms majority of fibres asbestos	30
SUMMARY OF FIBRE LEVELS	31
List of tests	33
FIBRE LEVELS BEFORE REMEDIATION	34
1987 ILEA tests in System built schools	34
2006 Tests. CLASP schools in the Rhondda. HSL 1 st report.	Before Remediation 38
Selection of schools for further testing before remediation	41
2006 to 2007 CLASP Offices. HSL 2 nd Report. Before Remediation	44
2006 to 2007 CLASP school chrysotile cladding. HSL 2 nd Report.	Before Remediation 46
2006 to 2007 CLASP school "A". HSL 2 nd Report.	Before Remediation 49
2006 to 2007 CLASP school in Rhondda.	HSL 2 nd Report.
Before Remediation	50
2007 CLASP Mk4 school in Brent.	Independent test.
Before Remediation	51
Ceiling voids	55
Before Remediation summary.	55
FIBRE LEVELS AFTER REMEDIATION	60
Air Testing Proves Effectiveness of Remedial Measures.	60
HSL 1 st Report. Fibre Levels After Remediation	63
HSL 2 nd report. After Remediation	65
Conclusion of Fibre Levels Before and after Remediation	71
SELECTION OF SCHOOLS. COMMERCIAL INTERESTS	73
NUMBER OF ASBESTOS FIBRES INHALED	76
Table 20: Number of amosite fibres inhaled by a child	77
Table 21: Total fibres inhaled in a year	78
RISK ESTIMATE	80
LACK OF OFFICIAL RISK ASSESSMENT	83
HSL REPORT. HSE, DfES, LGE and SCAPE GUIDANCE	86

HSE, Scape, DfES and LGE Guidance October 2006	86
Plate 14: Hall. Column after remediation.	89
Plate 15: After remediation. All the fittings remain in place with silicone sealant liberally applied around the edges.	90
Plate 16: After remediation. The cracks in the columns have been sealed. However the ceiling tiles are ill fitting.	90
HSL 1st and 2nd reports guidance	91
CLASP WORKING GROUP GUIDANCE	96
Summary	96
Flaws in the CLASP Working Group guidance	99
Working Group misleading statement about Control Limits and Clearance Levels	99
Working Group incorrectly state "Rare occasions release above Clearance Levels"	100
Working Group fail to advise rigorous controls despite the probability of asbestos debris. No longer recommend sealing gaps in walls	101
Working Group guidance deletes caption referring to large amounts of friable AIB debris	103
Working Group misleading statement about contamination of ceiling voids	103
Working Group recommend that a visual inspection by the maintenance staff will identify asbestos contamination	111
Working Group recommend maintenance staff to work on significantly contaminated areas	112
Working Group imply, incorrectly, that only serious damage to a column should cause concern	116
Working Group advise identifying fittings attached to column casings and cables running down inside casings, then give no further guidance	117
Plate 17: Central column with concertina door fittings and window pulleys screwed into casing	118
Plate 18: Socket screwed onto column casing.	119
Working Group fail to advise that the tops of the wall voids and wall skirting should be sealed	120
Plate 19: After remediation. Hole in school library wall.	121
Working Group's misleading statement implies that fibres may not be asbestos	122
AIB panels adjacent to doors. Doors are fixed to columns containing AIB. No guidance on how to assess whether asbestos fibres are being released.	123
Working Group recommend sealing asbestos debris and fibres into columns	127
Working Group fail to recommend viable method of determining effectiveness of sealing.	128
Working Group consider whether inspection and sealing can be carried out while schools occupied.	131
Conclusion to Flaws in CLASP Working Group guidance	132
CONCLUSION	133

This paper

This section examines the risks with particular emphasis on the increased risk to children. The mesothelioma deaths amongst teachers are given and it is questioned why the UK government has not followed the US governments policy of auditing the extent of asbestos in the nations schools and estimating the numbers of subsequent deaths from former pupils.

The fibre levels from the various air tests that have been carried out over the years are examined and questions are asked about the selection of System buildings for the 2nd series of HSL tests.

The use of decimal points and many noughts can make it appear that very few asbestos fibres are contained in a sample of air, therefore the levels are put into perspective by showing how many asbestos fibres a child will inhale. A risk estimate is given.

Decisions were made and guidance issued on remedial measures based on the results of the air tests. The earlier guidance issued by the Local Government Employers, the Department for Education, the HSE and Scape are examined. The CLASP Working Group was convened and issued far less rigorous guidance. Their guidance is critically examined.

VULNERABILITY OF CHILDREN. MESOTHELIOMA DEATHS

Particular risk to children. Precautionary approach

1. For at least forty years warnings have been given to successive Governments that children are more at risk from asbestos than adults. They have been told that very low levels of asbestos exposure can cause mesothelioma, but as knowledge was not complete preventative measures have to be taken in schools to prevent the release of asbestos fibres and the exposures of the staff and children.
2. Dr Rudd is a leading mesothelioma specialist consultant, he and other colleagues explained how all exposures to asbestos have a cumulative effect that can lead to the development of mesothelioma. They stated as expert witnesses:

“Mesothelioma can in theory be caused by a single fibre acting to create a mutation of a cell from which a malignant tumour may develop. ...all exposures up to 10 years before the appearance of symptoms is relevant, for two reasons; first, any inhalation may cause mutation...; secondly, the inhalation of asbestos is now known to have an adverse effect on the body’s natural ability...to deal with potentially mutating or mutated cells before a malignant tumour develops....Later exposure adds to earlier exposure. All exposures, other than in the last ten years before the emergence of symptoms, is cumulative and contributes to the risk of and the development of a tumour.”¹

¹ (Jeffrey Burke QC Edgson v Vickers plc (QBD) Dr Rudd, Dr Hugh Jones, Dr Britton p524 1994)

3. More than forty years ago it was known that mesothelioma could be caused by low levels of exposure to asbestos. The Factories Inspectorate report of 1965 stated:

“Mesothelioma has been shown to be associated in some cases with exposures to asbestos dating back 20 or more years previously and sometimes of astonishingly slight degree.”²

4. In 1967 Dr Lloyd-Davies, the Chairman of the Government's Advisory Committee on Asbestos, wrote to the Department for Education warning of the risks from low levels of asbestos exposure and stressing that children are particularly at risk. He stated:

“The important point to me is that you are dealing with children...

My advisory panel on the hazards of asbestos have suggested that wherever practicable, the exposure to asbestos should be restricted to persons of 40 years or over. ...

Considering the problem of asbestos in schools, it all depends what form of asbestos is used, and the amount of dust given off.

I must admit that you have a difficult problem, because of the youth of the persons exposed. The more I see of asbestos, the more I dislike it.”³

Because he accepted that knowledge was not complete, he advised that a precautionary approach should be taken, particularly in schools. His advice was not heeded.

5. The Factories Inspectorate report of 1966 also acknowledged that more research and epidemiological studies had to be undertaken over many years before many of the answers could be provided about asbestos. They gave a warning that in the interim a precautionary approach had to be adopted by taking preventative actions. The report stated:

“Of necessity, preventative action must precede absolute proof of the relative hazards of different sorts of asbestos..... Only epidemiological studies extending over many years can provide the answers. While such studies are proceeding the only safe course is to eliminate the escape of asbestos dust into the air.”⁴

6. In 1979 the Government's Advisory Committee on Asbestos again highlighted to the Government that children were more likely to be at risk from asbestos, and stressed the necessity to prevent the release of asbestos fibres, by stating :

“Children might be more at risk than adults because they have more chance to be affected by carcinogens with long latencies and because, in the young, susceptibility may be increased. It is therefore especially important that the presence of asbestos containing materials in any environment to which children

² Annual report of H.M Chief Inspector of Factories on Industrial Health 1965 p 82 Sep 1966

³ Letter Dr Lloyd Davies Head Medical Officer Factories Inspectorate Ministry of Labour/Department of Education 6 Mar 1967

⁴ 1966 Annual report of HM Chief Inspector of Factories on Industrial Health. Ministry of Labour P60 August 1967

are exposed should be identified so that steps can be taken where necessary to prevent dust release.”⁵

7. In 1980 the US Congress took evidence on the risks of asbestos in buildings. Their findings led to stringent laws on the management of asbestos in schools. They stated:

“Medical evidence suggests that children may be particularly vulnerable to environmentally induced cancers.”⁶

8. In 1987 the American Academy of Pediatrics stated:

“Mesothelioma risk is proportional to a power of time since first exposure, and calculated risk escalates rapidly when time since first exposure exceeds about 40 years. Early childhood exposure, even at very low levels, thus becomes a significant factor when estimating risk, because it allows for such long latent periods.

In addition to their long life expectancy, children in school exposure settings are a particular concern because, compared with adults, they are more active; they breath at higher rates and more often by mouth; they spend more time close to the floor, where sedimented dust and fibers accumulate; and they are more likely to seek direct contact with deteriorating surfaces out of curiosity or mischief. These factors must be considered when potential childhood exposures are estimated.”⁷

9. In 1989 Professor Peto highlighted that although knowledge was not complete it was probable that the risks to children were substantially greater than for adults. He stated:

“The effects of childhood exposure cannot be predicted. The models described above imply a roughly fourfold increase in risk for mesothelioma, but not for lung cancer, when exposure begins soon after birth rather than age 20, reflecting the cubic residence time assumption. Such an age-related effect would be expected for any carcinogen which initiates the induction of multi-stage carcinogenic process;

but this prediction takes no account of the possibility that children are particularly susceptible to carcinogenesis by virtue of factors such as stem cell expansion during growth and development. The risks caused by exposure in childhood may therefore be substantially greater than those predicted for both mesothelioma and lung cancer.”⁸

10. In 1991 a paper written by the Chairman of the US Committee on Environmental Hazards wrote:

⁵ (HSE Education Department “Asbestos in Educational Establishments – Position Paper.” ESAC/WG3/2C HSE Education NiG p1 September 1983)

⁶ (US Congressional statement of findings and purpose. Title 20> Chapter 49> 3601 14 Jun 1980)

⁷ American Academy of Pediatrics Asbestos Exposures in Schools Pediatrics 5/94 vol79 No 2 Feb 1987 p301-305

⁸ (Fibre Carcinogenesis and Environmental Hazards, J Peto IARC 90 1989 p463)

"Children constitute a population at potentially high risk of exposure to asbestos in place. We need to remember our children's future as we consider the hazards of the large amounts of asbestos in place in buildings in this country...."

Why is there so much asbestos in buildings today? How was it allowed to get there? What failure of preventive medicine, what failure of public policy, allowed this to happen?"⁹

11. In 1999 Southern Ireland took the policy decision to survey all their schools for asbestos and then because of the particular vulnerability of children they decided to remove the asbestos even in circumstances where it would not normally be considered necessary. The Irish Government's asbestos briefing document states in relation to their schools:

"Based on risk assessments and the result of surveys done by asbestos professionals, it (OPW) is making decisions on how and when the asbestos needs to be removed. It is important to remember that if asbestos is in good condition, it poses no threat to health, but because of the proximity of children to this material, the decision is being made to remove asbestos, even if this would not normally be considered necessary."¹⁰

12. In 2001 during the consultation process for the new Control of Asbestos Regulations (CAWR) there was criticism in Parliament and in the press that the regulations were going to far. HSE rebutted this criticism and emphasised the importance of taking a precautionary approach towards controlling asbestos exposure. They stated:

"What makes asbestos unique amongst recognised carcinogens is the amount of all forms of the mineral permanently present in the workplace, and the relative ease by which fibres can be released.....This makes it imperative that a precautionary approach is taken towards the control of exposure to all types of asbestos".¹¹

13. In 2004 the HSE Head of Asbestos Policy gave a presentation to the Local Authorities Forum about a campaign HSE intended to launch to improve the asbestos management in schools. The need for the campaign had become evident following a series of asbestos incidents in schools which had led to widespread contamination, exposure of contractors, staff and pupils and the subsequent disruption of school life. All of which had highlighted the fact that some authorities had ineffective systems of asbestos management, and because HSE recognised the particular risk to children they considered that the campaign was a priority. The HSE lecture notes state:

"A number of factors exist which have led HSE to regard education as a priority:

In recent years there have been a number of high profile incidents where maintenance activities carried out in schools has resulted in widespread exposure to asbestos. Local authorities and school managers have been

⁹ A Population of Children at Risk of Exposure to Asbestos in Place Llandrigan Annals New York Academy of Sciences 1991 p-283-286

¹⁰ European Agency for Safety and Health at Work. Asbestos Briefing Republic of Ireland Office of Public Works (undated)

¹¹ HSE position statement on the risks from white asbestos (chrysotile) 2001

subjected to serious criticism in the media, and in many cases education activities have been significantly disrupted.

Whilst the main risks of exposure to asbestos in schools will be to building and maintenance workers, there will always be the possibility of pupils being put at risk. Due to their physical immaturity they are at greater risk of suffering from asbestos related disease than adults, and will live long enough for any disease to develop.

Parents often have a heightened sense of awareness of the risks of asbestos exposure, and any failure to manage risks properly could result in the authority losing the confidence of their local communities. It can also lead to pressure on governing bodies to remove asbestos unnecessarily, leading to increased risks of exposure.

Whilst many authorities have been managing their asbestos effectively for many years, HSE believes a significant minority have still not established complete control of asbestos in their premises. Therefore HSE intends to launch an initiative to highlight the issues of asbestos in schools and to encourage LAs and others to manage these risks correctly.

HSE has set up a project team, which will prepare a series of initiatives designed to promote the effective management of asbestos in schools

Although the project will be aiming to reduce exposure dramatically over the next few years, initially we will be concentrating on achieving a 20% reduction in current exposure levels. "¹²

This was a most frank admission that some local authorities were not managing their asbestos and that by inference because of that staff and pupils in schools were being exposed to asbestos. The initial aim of a 20% reduction in exposure levels would in itself be an acknowledgement that the exposure levels were significant, however the ultimate aim of a "dramatic" reduction in exposures clearly shows the scale of the problem.

Despite HSE considering that the campaign was an important priority it was dropped a year later before the first meeting had taken place so that the resources could be reallocated to reducing asbestos exposure for building maintenance workers.¹³ The asbestos incidents, contamination and exposures continued in schools, two years after the campaign should have started reducing the exposures in schools the problem with asbestos release in system schools was rediscovered. Remedial measures could have been implemented two years earlier than they have been had the campaign gone ahead.

(The term "dramatic" was deleted from later transcripts of the presentation, including in a Ministerial briefing. A paper "Flawed Government Policies" examines the decision to drop the campaign and will be released later in the year)

¹² HSE Head of Asbestos Policy briefing to Local Authority Forum, Asbestos Management in Schools. Asbestos in Education LAFORUM/04 Nov 2004)

¹³ E-mail HSE Trevette/DfES Daniels HSE Asbestos campaign Education sector- An Exit strategy 23 Aug 2005

14. In 2007 the Government's scientific advisory committee, WATCH, discussed the risks from low level exposures to asbestos. At the meeting they considered the inexorable rise in mesothelioma deaths and how increasing numbers of both males and females were dying from the cancer, with the UK having the highest number of cases in the world.¹⁴ A study that was presently in progress had determined that now only about 1% of mesothelioma deaths were amongst people who had worked in the asbestos industry, and that very many more cases were "associated with the end use of asbestos." In the context of this paper it is relevant that the study also found that an increasing number of people were developing the disease with no apparent work related exposure. The minutes state:

*"In addition to occupational causes, environmental exposure may be important, as the lifetime risk in people seemingly not exposed to asbestos at work has increased to 1 in 1000."*¹⁵

15. The fact that an increasing number of people in the UK were developing the cancer with no apparent exposure at work was discussed further, and these so called "spontaneous, or non work related " mesotheliomas presently represented about half the cases in women and about a sixth of those in men. The minutes state:

*Professor Peto clarified that the term "spontaneous," used for some cases of mesothelioma referred to instances that could not readily be attributed to occupational exposure to asbestos; he considered that the most likely cause was ambient exposure from environmental air..."*¹⁶

*"A WATCH member commented that based on a comparison of the risks of mesothelioma across Europe, the background risks for the UK appeared to be higher than for other European countries, with an apparent four-fold increase since the 1970's. Furthermore, 15% and 50% of mesothelioma cases in men and women respectively were apparently "spontaneous," with no obvious occupational connection. In his opinion, this indicated that background ambient exposures to asbestos, as considered for the general population as a whole, presented a small but nevertheless notable risk."*¹⁷

If it is considered that this significant proportion of mesothelioma deaths could be caused by ambient exposure to environmental air one must question how many of these deaths are the result of asbestos exposure in schools. Although another WATCH member considered that the deaths were more likely to be attributable to "widespread environmental contamination with amosite" rather than exposure in buildings. His opinion must be questioned, for there is ample evidence that; One, background levels in schools can be considerably higher than "normal." Two, amosite was commonly used in schools and three, peak levels from common classroom activities can be dangerously high, at times above control limits. The problem is that although everyone attends school for at least twelve years of their

¹⁴ WATCH committee minutes. Assessing the risks arising from exposure to low level exposure to asbestos 7 Nov 2007 para 4.14

¹⁵ WATCH committee minutes. Assessing the risks arising from exposure to low level exposure to asbestos 7 Nov 2007 para 4.14

¹⁶ WATCH committee minutes. Assessing the risks arising from exposure to low level exposure to asbestos 7 Nov 2007 para 4.18

¹⁷ WATCH committee minutes. Assessing the risks arising from exposure to low level exposure to asbestos 7 Nov 2007 para 4.29

life there are no statistics of the number of children who were exposed to asbestos at school and subsequently developed mesothelioma many years later. For their deaths are recorded under whatever occupation they had at the time and not as the result of exposure at school. If such statistics did exist it would provide data base that would show the result of the exposures, instead the mesothelioma deaths of teachers has to be used as a barometer of the number of their pupils who are likely to have died.

16. At this meeting WATCH were unable to reach a precise conclusion on the actual numbers of people who would develop mesothelioma from specific airborne fibre levels because of the incomplete epidemiological data on which risk assessments were based. However it was stressed how childhood exposure to asbestos was likely to be an important factor in mesothelioma developing in later life. The minutes record:

"A WATCH member asked Professor Peto for further insights into the relationship between age, asbestos exposure and cancer risk. Professor Peto commented that first exposures to asbestos before the age of 30 were much more critical in terms of cancer risk than first exposures that occurred after 30. If first exposures occurred after the age of 40, the risks of developing cancer were relatively low.

However, limited insights could be gained from age alone; time since first exposure was a more critical determinant of risk than the actual age at which exposures took place. This implied that exposure to asbestos in childhood would be an important factor in determining the appearance of cancer in later adult life."¹⁸

It should be noted that Professor Peto's expert opinion on childhood asbestos exposure given to the Governments Advisory Committee in 2007 is almost identical to that of Dr Lloyd Davies, the Chairman of the Government's Advisory committee on Asbestos given to the Government in 1967, some forty years before.

17. Although there was an acknowledgement that there are increasing numbers of people dying from "background ambient" exposures, they were unable to put a precise figure on the number or the specific fibre levels, and that was because knowledge is still not complete. What was not in question is that there is widespread agreement that there is no known threshold of asbestos exposure below which there is no risk. The present DCSF asbestos guidance for schools states:

As there is no known threshold level for exposure to asbestos below which there is no risk, it is important always to take whatever steps are necessary to reduce exposure from any form of asbestos to the lowest reasonably practicable level."¹⁹

18. In summary; More than forty years ago it was accepted that knowledge was not complete therefore because of the particular risk to children, a precautionary approach was advised. Regrettably successive Governments have not treated schools as a special place and have not taken a precautionary approach,

¹⁸ WATCH committee minutes. Assessing the risks arising from exposure to low level exposure to asbestos 7 Nov 2007

¹⁹ DfES Admin Memo 3/86. Welsh Office Admin Memo1/86. The use of Asbestos in Educational Establishments p1. Aug 1985

consequently asbestos continued to be used extensively in the construction of schools for twenty more years. Throughout this time they have failed to implement policies to prevent the release of asbestos fibres into the classrooms. All of the asbestos is now old and deteriorating, vandalism, botched maintenance and a lack investment coupled with ineffectual or non-existent asbestos management systems have resulted in raised background asbestos fibres levels and high peak levels. There is an increasing number of deaths from mesothelioma among people who have not worked in high risk occupations and have no recorded history of asbestos exposure. It is inevitable that far too many of these people had their first asbestos exposure while they were children at school.

19. In 1991 the Chairman of the US Committee in Environmental Hazards wrote:

" We are the inheritors of history and our children are the inheritors of our mistakes and our failures. We have failed in the past. The result of our collective failure is reflected in the fact that asbestos is widespread in schools and other buildings today.

Our task now is to do what we can to blunt the third wave of asbestos disease, which already is beginning and which inevitably will be much worse if exposure to asbestos in schools and other buildings is not reduced."²⁰

This statement was made just few years after the ILEA tests discovered that there was a serious problem with asbestos exposures in System built schools in the UK. The warnings were given, but they were not heeded then and they are not heeded now. Schools have not been treated as a special place so that over the intervening twenty years our teachers and children have continued to be exposed to asbestos. Despite the warnings, despite the evidence the Government has the temerity to deny there is a risk or there ever has been a risk. How much more proof do they need, how many more people will die before they listen.

Mesothelioma statistics.

Children

20. The inevitable result of raised background levels and periodic high peak levels is that the occupants of schools have developed mesothelioma.
21. Everyone is exposed to asbestos and yet everyone doesn't develop mesothelioma. At the relatively low levels of exposure experienced by the occupants of schools few people will develop the disease, however amongst any group of people exposed to the same levels some will develop the disease whereas others will not. The problem is that it not known what makes some people susceptible and others not.
22. Because of the long latency, there are no mesothelioma statistics for children who have been exposed at school, as they develop the disease and die many years later, their deaths being recorded under the occupation they had at the time of their deaths. Because typical exposures in schools are low level and normally

²⁰ Llandrigan A population of Children at Risk of Exposure to Asbestos in Place. Annals of New York Academy of Sciences 1991 p283 - 286

intermittent, the latencies are likely to be long. Latencies for mesothelioma from first exposure to first symptoms have been recorded from less than 10 years to over 60 years, with a mean of about 35 years. Consequently it is probable that mesothelioma that results from typical exposures at school as a child will be in the higher end of the scale, and will not manifest itself for many years after the person has left school.

23. In 1980 an estimate was made in the USA of how many children could be expected to die of asbestos exposure at school. A report from the American Academy of Pediatrics states:

“In 1980, the EPA provided a quantitative risk estimate for asbestos-containing materials in US schools. The EPA estimated that more than 8,500 schools in the nation had friable asbestos and that approximately 3,000,000 students (and more than 250,000 teachers, maintenance workers, and other adults) were potentially exposed. Using available field studies to estimate airborne asbestos levels and assuming a 30-year life expectancy for schools with asbestos, the EPA report concluded that: A total of approximately 100 to 7,000 premature deaths are anticipated to occur as a result of exposure to prevalent concentrations of asbestos in schools containing friable asbestos materials over the next 30 years. The most reasonable estimate is approximately 1,000 premature deaths. About 90% of these deaths are expected to occur among persons exposed as school children.”²¹

Note: The above estimates of mesothelioma deaths was based on an incorrect assumption of the number of schools that contained asbestos. Subsequently a nationwide audit was carried out when every school was required by law to carry out an asbestos survey. The number of schools that actually contained asbestos was found to be four times higher than originally thought.²²

24. In 1986 stringent laws were introduced in the USA specifically for schools, for it was acknowledged that because of the increased vulnerability of children schools had to be treated as a special place. Resources were allocated, people were trained and systems introduced so that the asbestos was rigorously managed, and staff and parents were kept informed of the asbestos in their schools and the system of management.²³ The problem was addressed, and although it has not solved it, it has kept it reasonably well under control for the last twenty years. In contrast in this country no such laws existed until the 2004 CAWR duty to manage. The particular vulnerability of children has not been taken into account and schools in the UK are not treated as a special place.

²¹ American Academy of Pediatrics Asbestos Exposure in schools Pediatrics vol 79, no 2 Feb 1987 p301- 305 Reaffirmed May 1994 .Support document for the proposed rule on friable asbestos-containing materials in school buildings EPA report 560/12-80-003

²² EPA Fact sheet AHERA 1986 Statement EPA Administrator 23 Oct 1986

²³ AHERA US code: title 15,2643. EPA regulations Chapter 53. EPA Fact sheet AHERA 1986 Statement EPA Administrator 23 Oct 1986

25. 98% of asbestos fibres counted in sampling tests in schools in the USA were chrysotile. In the UK most schools contain asbestos and many contain large quantities of amosite which is 100 times more dangerous than chrysotile. Some contain, or have contained, crocidolite which is 500 times more dangerous. A review also estimated that the average airborne asbestos concentration in US buildings, including schools, was 10-100 times less than in Britain.²⁴ It is therefore a reasonable assumption that proportionately the number of deaths among staff and children in UK schools will be higher than in the USA.
26. Despite requests, no official estimate has been published in the UK of the number of children who could subsequently die of mesothelioma caused by asbestos exposure at school.
27. As has been seen the campaign to dramatically reduce the asbestos exposures for staff and children in schools was dropped so that the resources could be reallocated to reducing asbestos exposure of the people in the building maintenance trades. It would not be disputed for one minute that a campaign should be directed at the maintenance trades for they are indeed at risk, however measures to improve their safety should not be at the expense of children. The decision to reallocate the resources was based on mesothelioma occupational statistics which record the persons occupation at death, including those in the building maintenance trades. A 2008 Department for Schools letter confirms this and states:
- "Schools are not the only buildings where asbestos is present and HSE is committed to preventing exposure to all those people who may be at risk. HSE's interventions are intelligence led and targeted at those most at risk. Analysis of mortality data based on last occupation has directed HSE's current effort towards maintenance trades.... The HSE does not propose to have an asbestos in schools campaign."²⁵*
28. What HSE and the Department for Schools fail to take into account is that there are far more children in schools than there are plumbers and carpenters. But unlike the plumbers and carpenters there are no statistics that give the "mortality data" for children who were exposed to asbestos at school and subsequently have developed mesothelioma and died as a result many years later. For their deaths are recorded under whatever occupation they had at the time. There are no death statistics and the UK Government refuse to estimate how many children are likely to die because of asbestos exposure at school. It is therefore a very easy step for them to deny that there is a problem.
29. Everyone is not a carpenter or plumber, however every single person attends school as a child for at least twelve years. In the United Kingdom approximately 1/6th of the population at any one time are at school, either as a pupil or as a teacher or ancillary staff. There are approximately 9,000,000 children and 800,000 teachers in UK schools.²⁶
30. There are frequent asbestos incidents in schools that release significant levels of asbestos fibres, and as the asbestos deteriorates the background levels are

²⁴ Toxicological profile for asbestos . US Department of Health and Human Services. Potential for human exposure. Sep 2001 para 6.4.1 p 163

²⁵ Letter Department Children, Schools and Families /R.Lees 27 Mar 2008

²⁶ Statistics of Education England 2004. National Statistics. Education Statistics Scotland the Scottish Office

raised where the asbestos is not in good condition. Children are more vulnerable to asbestos exposures than adults, and will live longer for mesothelioma to develop. Because they are more at risk it is probable that a significant number have, and will subsequently develop the cancer many years later and will die as a result of their asbestos exposures at school.

Governments have failed to take measures to assess the extent of the problem and because there are no specific statistics that show how many children have been exposed and died, they have failed to address the problem. Given all the evidence that indicates there is a significant problem, it is inexcusable that over the last forty years successive Governments have failed to take a precautionary approach.

Teachers

31. The statistics for teachers mesothelioma deaths have been inexorably rising over the years.
32. Although there are no statistics for the number of children who have been exposed at school and have subsequently developed mesothelioma, there are statistics that show how many teachers have died from mesothelioma. Those deaths are higher than should be expected in a profession where there should be little or no asbestos exposure. That is disturbing in its own right, but what is more disturbing is that children are more at risk and at any one time there are about eleven times more children in our schools than teachers. Therefore teachers deaths can be considered as a measure of the possible subsequent deaths amongst the children, they are in effect the visible tip of an iceberg.

33. Increasing deaths

It should be noted that the Southampton codes only listed teachers in higher education and teachers nec, whereas the SOC1990 codes break the occupation down into three separate codes for each and the SOC2000 into three groups for higher education and four for school teachers, with an additional code for senior educational administrators. Therefore to compare like with like in the following tables the higher education numbers have been added together, as have the school teaching professions.

34. The following table gives the deaths from mesothelioma amongst male and female teachers in higher education and in primary, secondary and special schools, and shows the increase over time:

Between 1980-1985,	21 teachers died. (Southampton coding)
Between 1986-1990,	37 teachers died.
Between 1991-1995,	53 teachers died.
Between 1996-2000,	69 teachers died
Between 2001-2005,	92 teachers died (SOC 90. 2000)

Increasing deaths amongst teachers and lecturers

(Southampton) ²⁷	1980-1985	1986-1990	1991-1995	1996-2000	2001-2005 (SOC 90,2000)
HIGHER EDUCATION					
MALE	6	12	22	26	24
FEMALE					4
TOTAL HIGHER EDUCATION	6	12	22	26	28
TEACHERS NEC , SCHOOL TEACHERS					
MALE	11	16	18	27	42
FEMALE	4	9	13	16	22
TOTAL TEACHERS NEC SCHOOL TEACHERS	15	25	31	43	64
TOTAL HIGHER EDUCATION & SCHOOL TEACHERS	21	37	53	69	92

NB: The five year tables above from 1980-2000, includes the only two groups of teachers under Southampton occupational coding -Teachers nec and teachers in higher education. For some reason the HSE table does not include female teachers in higher education, even though statistics show that there were some deaths. In addition education assistants, nursery nurses and childcare related occupations are not classified separately under this coding but are "lost" amongst other groupings. Therefore some mesothelioma deaths are not be included.²⁸

The data for 2001-2005 uses the SOC1990 occupational coding for the first few months of 2001 and SOC2000 for the remainder of 2001. The period 2002-2005 only uses SOC2000 coding. Because of this HSE took the decision not to include data for 2001 in the published statistics.²⁹ However HSE Statistics Branch kindly provided me with the mesothelioma deaths in the education sector for 2001. Therefore the period 2001-2005 uses both sets of codes, which in the education sector makes little difference

²⁷ 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

²⁸ (HSE mesothelioma occupational statistics male and female deaths aged 16-74 1980-2000 (Southampton coding) 5 year time period. Tables 3,4.)

²⁹ HSE Mesothelioma mortality in Great Britain: Analyses by Geographical area and occupation 2005 Occupational analysis page 3 para 7

35. Average annual number of teachers and lecturers dying from mesothelioma

The following table shows how many school teachers and teachers/lecturers in higher education have died each year from mesothelioma, as can be seen the numbers continue to rise:

1980-1985	1986-1990	1991-1995	1996-2000	2001-2005
School teachers				
3 a year	5 a year	6 a year	9 a year	13 a year
Higher education				
1 a year	2 a year	4 a year	5 a year	6 a year
Total Higher education and School teachers				
4 a year	7 a year	11 a year	14 a year	18 a year

(NB: Southampton code for 1980-2000. SOC1990 and SOC2000 code for 2001-2005.

Numbers are taken to nearest decimal point)

In an occupation where there should be minimal or no asbestos exposure the above statistics show that there has been a significant exposure. The numbers of deaths and the associated PMRs under each individual code in their own right are far too high. However the teaching profession is amongst the few where the statistics split the occupation into many different codes, which is a bonus when attempting to define for instance whether primary or secondary teachers suffer more mesothelioma, but what it tends to do is make the numbers seem less significant than they actually are. It is only when they are examined as a group that the numbers show their true significance.

36. If one compares the Proportional Mortality Ratio (PMR) of one occupation with another then a measure is given of which occupation has the higher incidence of mesothelioma and hence asbestos exposure. Females are less likely than males to have been exposed by DIY or to have worked in a former high-risk profession therefore a good comparison of likely occupational exposure can be made between female occupations. It is therefore worth comparing female teachers with female nurses, as both are professions in which a similarly large numbers of females are employed.³⁰ In addition one would imagine that the risk from asbestos exposure in both professions should be minimal.

37. NB: (The number of female deaths from mesothelioma is increasing and statistics show that in the period 1995 to 2004 amongst all cancers in females, mesothelioma had the most rapidly increasing rate.)³¹

38. The statistics show that between 1980 and 2000 the PMR for female teachers school teachers dying from mesothelioma was 100 and female nurses 50.³² (Southampton coding)The teachers' PMR is twice that of nurses. As there is a direct correlation between asbestos exposure and mesothelioma one must

³⁰ Total number female primary and secondary teachers 395,282. Total number of female nurses 578,269. Teacher numbers; DfES annual survey 618g, 727-tla 98/99. National assembly of Wales stats 3 survey Table 19,21. Teacher statistics for Scotland Table 9, 10, 1999. Independent schools England and Wales DfES 727-tla statistics of education 1999 edition. Scottish Executive statistics 2003 census Table 14 2003. Nursing and Midwifery Council statistics 2002

³¹ Cancer Research UK Percentage change in the age standardised (European) incidence rates, major cancers, UK. 1995-2004 Fig 6.4 Aug 2007

³² HSE Mesothelioma occupation statistics male and female deaths aged 16-74 1980-2000 Table 4, 6.

conclude that the asbestos exposure amongst teachers has been about twice that of nurses. It can therefore be concluded that compared to a similar profession, a disproportionate number of female school teachers have died from mesothelioma.

39. The disproportionate number of mesothelioma deaths amongst school teachers is not unique to this country. The American mesothelioma statistics have a summary of "Selected Highlights" which states:

*"Occupations associated with significantly elevated mesothelioma mortality in 1999 include: plumbers, pipefitters/steamfitters, mechanical engineers, electricians and elementary school teachers"*³³

40. One would presume that a teacher should suffer little or no asbestos exposure,³⁴ and hence the number of deaths that one would expect should be in line with people who have had only background levels of exposure. The HSE mesothelioma statistics have a section entitled "Interpretative issues"³⁵ which describes a hypothetical scenario where a female with no asbestos exposure would have a PMR of about 36. (this figure is derived from the number of cases where exposure is deemed as "background")³⁶ This figure must always be borne in mind when considering the PMRs of any of the occupations.
41. The PMR of 100 given for female school teachers shows that the number of deaths is average for all occupations. However this is an average of occupations which include the former high risk trades such as weaving and carding asbestos cloth. (Using the Southampton coding)³⁷ What it does not show is that the level of exposure is nil or at background levels, for that PMR would be 36.³⁸ What a PMR of 100 does show is that there has been a considerable level of asbestos exposure among female school teachers. The number of deaths is almost three times higher than one should expect in an occupation where the asbestos fibre levels should be no more than that of normal background levels.
42. The same interpretative issues gives 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.)³⁹ Male teachers were usually the ones who taught science and workshop skills, and their greater number of deaths resulting from those exposures is perhaps reflected in these figures. It is also possible that in the past some male teachers might also have been employed in the high risk professions before becoming teachers, their deaths would therefore be recorded under this, their final profession. This is more likely in higher education.

³³ US Department of Health and Human Services Work Related Lung Disease Surveillance Report 2002 Selected Highlights p xxvii (Tables 7-8)

³⁴ HSE Statistics Branch Darnton/ Lees 22 Oct 04

³⁵ HSE Mesothelioma occupation statistics male and female deaths aged 16-74 page 5 interpretative issues.

³⁶ P5 Interpretative issues Mesothelioma Occupation Statistics.

³⁷ HSE Mesothelioma occupational statistics 1980-2000 Table 2 and 6

³⁸ HSE Mesothelioma occupational statistics male and female deaths aged 16-74 page 5 interpretative issues.

³⁹ HSE Mesothelioma occupation statistics male and female deaths aged 16-74 page 5 interpretative issues.

In the Southampton tables the actual PMR of male teachers in higher education is given as 121 and for other male teachers as 57.⁴⁰ When one considers that these PMRs are formulated from a comparison with other occupations, including high risk ones such as shipyard workers and builders, one can see that male teachers' deaths are respectively 22 times, and 10 times higher than they would have been if there had been no exposure. 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 purely background asbestos exposure.

43. In 2004 the School's Minister wrote to the General Secretary of the NUT stating:

*"The mortality rate for female teachers is broadly in line with the average for the whole of the female working population, ie there is no higher risk for female primary school teachers."*⁴¹

Although he is pedantically correct his statement is dangerously misleading, for as has been seen the PMRs of all teachers, both male and female, is considerably higher than they should have been had their asbestos exposure been at background levels, as one should expect in such an occupation.

(See the article that explains why the Minister's statement is misleading. Environmental Health Scotland Vol 18 "Asbestos in the classroom II, Presentation of disease statistics and assessment of annual death risk" www.rehis.org)⁴²

44. The unexpectedly high level of deaths from mesothelioma in the teaching profession has been highlighted by the HSE Statistics Branch who stated in relation to the deaths amongst female teachers:

"Perhaps in this case the term "expected" is unfortunate because it could give the impression that if the observed deaths are in line with the expected deaths then there is no risk.

*The PMR of 100 (average, expected) does not indicate that there is no risk.....Even if the proportion of mesothelioma deaths among teachers was in line with the proportion of females that are teachers, one could still draw the conclusion that there are too many deaths among a group which are supposed to have had very little asbestos exposure."*⁴³

45. The numbers of teachers listed in the mesothelioma occupational statistics is likely to be lower than the actual numbers, for deaths certificates do not record the person's former occupation after the age of 74 and many mesothelioma deaths occur after that age. Hence it must be assumed that some of those deaths are amongst former teachers.

46. Children are more at risk than adults and there are many more children than there are teachers, we know how many teachers have died and therefore it must

⁴⁰ HSE Mesothelioma occupational statistics 1980-2000 Table 1

⁴¹ Letter Minister of State for Schools David Milliband /General Secretary NUT Steve Sinnott 2004/0043423PODM Aug 04

⁴² Environmental Health Scotland. Journal of the Royal Environmental Health Institute of Scotland Vol 18 "Asbestos in the classroom II, Presentation of disease statistics and assessment of annual death risk" Howie Number 2 Summer 2006 www.rehis.org

⁴³ HSE Statistics Branch Darnton/Lees 22 Oct 04

be presumed that proportionately more children will subsequently developed mesothelioma and die years later as a result of their asbestos exposure at school.

For further information on the mesothelioma statistics see the paper "Asbestos in schools" and "Education sector mesothelioma statistics" for 2001-2005 at www.asbestosexposureschools.co.uk

Caretakers, cleaners, kitchen staff

47. Because of the manner in which death certificates record a person's occupation there are no records that specifically show the mesothelioma deaths amongst school caretakers, catering staff or cleaners. Despite this some will have been exposed to asbestos in their schools particularly if it has deteriorated or if it is damaged. The greatest number of female deaths from mesothelioma between 1991 and 2000 was cleaners,⁴⁴ but the statistics do not define where they cleaned, whether it was in a school or anywhere else.
48. School caretakers are acknowledged to be at risk because of their jobs 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 DfES highlight the risk by stating:

*"School caretakers have been identified as a particular group at risk due to the nature of their work (ie. Drilling and fixing.)"*⁴⁵

In the USA studies have been carried out into the prevalence of asbestos related disease in school custodians. The Health Effects Institute report stated:

*"In both studies, a significant proportion of custodians, without known asbestos exposure prior to their employment with the school board, had radiographic abnormalities (parenchymal, pleural or both) consistent with the presence of asbestos-related disease."*⁴⁶

Although there are documented cases of school caretakers developing mesothelioma once again there are no specific statistics for school caretakers as the occupational classification includes all caretakers of churches, schools, offices and other buildings and furnishings.⁴⁷

Precautionary approach not taken.

49. Teachers other staff and children have been exposed to asbestos in their schools, many have died of the asbestos related cancer mesothelioma. No doubt if their deaths had occurred soon after the exposure Governments would have

⁴⁴ National Statistics Mesothelioma occupational statistics Table 8 Mesothelioma proportional mortality ratio for females aged 16-74 in Great Britain by Standard Occupational Classification (1990) unit group 1991-2000

⁴⁵ HSE Asbestos An important message to schools Mar & Aug 2006. DfES Asbestos An important update for schools Jun 2006

⁴⁶ HEI Asbestos in public and commercial buildings. 1991 A2.3.1.5

⁴⁷ National Statistics Standard Occupational classification 2000 Vol 1

been compelled to take immediate action, but with asbestos the resultants of exposure are only seen many years after the event and their source can be difficult to identify. Therefore decisions and actions to solve the problem can, and have been delayed indefinitely, and as has been seen the exposure of staff and pupils can even be denied.

Forty years ago the Department of Education were warned that that low levels of asbestos exposure could cause mesothelioma and that children are particularly at risk. They were told that knowledge was not complete and hence a precautionary approach had to be taken by implementing measures that prevented the exposure of children to all types of asbestos. Despite the warnings the expert advice was put to one side and a precautionary approach was not taken as other Government priorities were more pressing. If that guidance had been acted on when first given then the widespread use of asbestos in the construction of schools throughout the country could have been stopped. However it was not, this was partially because of a strong lobby from the asbestos industry who were mindful of protecting their commercial interests, their lobby being supported by the Board of Trade which gave it extra weight. The consequence of this was that thousands of schools continued to be built using vast amounts of asbestos in their structure.

Despite increasing evidence of the dangers sufficient measures have not been taken since then, for successive Governments have not listened to the warnings, rather over the years they have chosen to listen to the asbestos industry and other "experts" who have played down the dangers. In 1986 the ILEA tests gave definitive proof that common every day activities could release asbestos fibres at dangerous levels, but for whatever reasons this critical evidence was ignored. It took another twenty years for the rediscovery of fibre release in System schools when once again the Government had a chance to heed the warnings and take actions that would once and for all prevent the releases of asbestos. But instead they have recommended a sticky plaster solution and deny the evidence presented to them.

The consequence of this is that the British Government has not followed the lead of other more enlightened governments who have taken the precautionary path and treated schools as a special place. Instead they have refused to adopt the policy of the phased removal of all asbestos that has been advocated by the teaching unions, the Association of Metropolitan Authorities (AMA) and ILEA, for if that had taken place over the last twenty years the worst, most dangerous schools would now be safe or would have been replaced. Instead the Government policy has been to leave the asbestos in situ and manage it, but this has been no more than empty rhetoric as they have failed to match their words with resources. BSF and other schemes are a step in the right direction in sorting out the problem, but it is now a mammoth task and will take decades to make every school safe. Inadequate policies and funding has resulted in ineffectual systems of asbestos management, so that over the last forty years the asbestos has been allowed to gradually deteriorate so that just slamming a door releases dangerous levels of asbestos fibres into the classrooms.

(NB: Government policy towards asbestos in schools is examined in a separate paper which will be released later this year)

LEGAL LIMITS FOR ASBESTOS EXPOSURE

Government policy based on asbestos in schools being in good condition

50. Because of the widespread use of asbestos in the "civilised" world everyone is exposed to asbestos fibres at the "background" level. The background asbestos fibre levels are between 0.000001f/ml and 0.0001f/ml,⁴⁸ which are frequently referred to as the background rural level and urban level respectively. However the background asbestos fibre levels in schools with asbestos in good condition is 0.0005f/ml, which is five times higher than the urban level. A Department of the Environment document states:

*"Surveys of asbestos in schools have been used to indicate the type of asbestos materials present according to the age of the school buildings. Based on averages of measurements of asbestos levels inside buildings, it is estimated that where asbestos materials are in good condition fibre levels may be around 0.0005 f/ml."*⁴⁹

51. An assumption was made that the exposure of the occupants of buildings containing asbestos would be between the urban background level and the level in buildings with asbestos in good condition, with Government policy for schools being based on the exposures being between 0.0001 f/ml and 0.0005 f/ml. The DETR document states:

"The long term average exposures to occupants working or living in asbestos containing buildings are of the order of 0.0001-0.0005 f/ml."

*Only occupants in areas where the damaged asbestos is being regularly disturbed by humans, birds or vermin is the long term average exposure likely to exceed this range"*⁵⁰

As will be seen it is common place for these levels to be comprehensively exceeded.

Clearance level

52. Various limits have been set for airborne fibre levels in buildings, however they are all designed for people who work on asbestos materials and for buildings where work is being, or has been carried out on asbestos. There are no limits specifically set down for the occupants of rooms.

53. As no such limit existed, in 1985 the Association of Metropolitan Authorities (AMA) suggested that LAs should adopt the policy that a room should not be

⁴⁸ Department of the Environment, Transport and the Regions. Asbestos and man made mineral fibres in buildings. Final draft Aug 1998 Schools p11. Table 4 Estimates of exposure to asbestos p14

⁴⁹ Department of the Environment, Transport and the Regions. Asbestos and man made mineral fibres in buildings. Final draft Aug 1998 Schools p11. Table 4 Estimates of exposure to asbestos p14

⁵⁰ Department of the Environment, Transport and the Regions. Asbestos and man made mineral fibres in buildings 4th edition 1999 reprinted 2003 para 4.3.1 p16

occupied unless the level was beneath the Clearance level,⁵¹ and in 1986 the policy was adopted by ILEA ,⁵² and since then it has been generally accepted as the limit.

54. The level was designed to determine whether a sealed enclosure had been sufficiently cleaned following work on asbestos. Air tests are carried out in conjunction with a visual examination, if the level is at or above the Clearance level of 0.01f/ml then the enclosure has to be re-cleaned and further sampling undertaken, but if it is beneath the level then the enclosure can be dismantled and the area cleared for reoccupation. The level of 0.01 f/ml was set more than forty years ago when it was the limit of detection for asbestos fibres on an optical microscope, and is therefore a historical limit with little or no relation to safe levels. ILEAs asbestos joint working party state:

*"The adoption of the 0.01 f/ml standard is not to give a level of contamination which is safely achieved; it is adopted because the optical microscope cannot accurately measure low or medium concentrations."*⁵³

55. Indeed, despite the fact that by law a room can be cleared for reoccupation when the level is only a fraction less than 0.01 f/ml, the Clearance level is not a safe long term level, particularly for children.

The ILEA asbestos joint working party report stated:

"The standard of 0.01 f/ml has been adopted by ILEA since 1986. It is the standard to be applied in all cases, except where removal is taking place. Higher levels of contamination call for the immediate closure of the area concerned.

*Even 0.01 f/ml (10 fibres /litre) is not a safe level. At this measurement the average person would be inhaling 10,000 fibres per hour. This would be a very dangerous level for children."*⁵⁴

HSE confirm this and the latest 2006 Control of Asbestos Regulations state:

*"The threshold of less than 0.01 f/ml should be taken only as a transient indication of site cleanliness.. and is not an acceptable permanent level."*⁵⁵

Control Limit

56. When considering the levels of airborne asbestos fibres found in System built schools another relevant level in the Control limit. This is the limit of "acceptable" asbestos exposure for asbestos contractors and people who work with asbestos. The first level set in 1966 by the Ministry of Labour was supposedly based on a biological or "tolerable" level despite the fact that it was actually greater than the

⁵¹ Association of Metropolitan Authorities Asbestos Policy and Practice in Local Authorities September 1985 paras 2.2.11, 7.5

⁵² 1983-1988; Five years progress by the ILEA's asbestos joint working party. Report of the staff side co-ordinator. Jan 1988 p7.

⁵³ 1983-1988; Five years progress by the ILEA's asbestos joint working party. Report of the staff side co-ordinator. Jan 1988 p7

⁵⁴ 1983-1988; Five years progress by the ILEA's asbestos joint working party. Report of the staff side co-ordinator. Jan 1988 p7

⁵⁵ HSC CAWR 2006 Work with materials containing asbestos ACOP para 17 p68

levels of bagging (120 particles/cc) and weaving asbestos (125 particles/cc)⁵⁶. The 1967 report from the Government's asbestos advisory committee considered that this level was unacceptable for various reasons, the main one being that it was an arbitrary standard rather than one based on evidence that people would be safe at the level. Their report states:

"While any ultimate standard for a harmful agent should be based on biological effect, there are great difficulties in arriving at such a standard in the case of a slow acting long-term toxic or harmful agent and in this case asbestos is no exception.

The first issued standard in this country was that currently published by the Ministry of Labour Although issued notionally as a biological standard this value of 177 particles per cu cc lacks recent confirmation and includes in its several practical defects, absence of definition of type of sampling instrument, ... sampling strategy or range and type of particles to be sampled

Retention of this value in British practice as a biological standard is unjustified, although in its favour originally, it did provide in the USA a guide albeit largely an arbitrary one....⁵⁷

A biologically based threshold limit for asbestos exposure cannot yet be defined but its establishment should be a long term objective.⁵⁸

57. In 1966 the limits were arbitrarily set based upon a review of deaths and what can be achieved by industry. This has remained the case and although over the years the levels have progressively reduced it has been in response to problems of the past not of the future. Each time a new Control limit has been set one must presume that it was because the new standard was considered acceptable. Yet on the six occasions the limit has been revised and reduced it has in effect been a tacit acknowledgement that the previous level had not been an acceptable level.
58. Forty years later knowledge is still not complete as the present deliberations of the Government's scientific advisory committee, WATCH, confirm, and a safe threshold limit still cannot be defined.⁵⁹ Hence once again the present level was not set because of evidence that it is a safe level, but rather that it achievable by industry and will inevitably be just another incremental step.
59. The Control limit is designed for asbestos contractors where certain control measures come into force and by law they have to wear breathing apparatus and protective overalls. It is not a safe level, it is not designed for the occupants of rooms and it is particularly dangerous for children. 1984 HSE guidance on Control limits states:

⁵⁶ Ministry of Labour Memorandum of the Senior Medical Inspector's Advisory Panel. Problems arising from the use of Asbestos 1967 p26

⁵⁷ Ministry of Labour Memorandum of the Senior Medical Inspector's Advisory Panel. Problems arising from the use of Asbestos 1967 p26 para 52

⁵⁸ Ministry of Labour Memorandum of the Senior Medical Inspector's Advisory Panel. Problems arising from the use of Asbestos 1967 p29 para 59

⁵⁹ WATCH committee minutes 7 Nov 2007

<http://www.hse.gov.uk/aboutus/hsc/iacs/acts/watch/agendas.htm>

"Exposure to all forms of asbestos should be reduced to the minimum reasonably practicable.

In addition, the personal exposures of workers should not exceed the Control limits. The Control limits **do not represent safe levels** which once attained make further improvements in dust control unnecessary. They represent the upper level of permitted exposure, for each form of asbestos, above which the risk to health is unacceptable."⁶⁰

The 2005 HSE medical guidance emphasises that fact that the limit is not a safe level by stating:

"Exposure to all forms of asbestos should be reduced to the minimum reasonably practicable. ... The Control limits **do not represent safe levels...**"⁶¹

60. The following table list the various control limits which have reduced from 177 particles/cc in 1966 to 0.1 f/ml in 2006

Standard in 1966	177 particles/cc ⁶²
(1968	
British Occupational Hygiene Society suggested a safety standard for chrysotile	
0.2 f/ml.	
Asbestos industry suggested	2 f/ml

Later it was considered that 1 in 10 workers would contract asbestos-related disease at this level.)

1969 limit of exposure	
Asbestos Regulations 1969	2 f/ml ⁶³

Limits up to 31 July 1984	
"when measured as a time weighted average over a four hour period."	
for crocidolite:	0.2 f/ml
For amosite:	0.5 f/ml
For other types of asbestos:	1 f/ml ⁶⁴

Limits after 31 July 1984	
"when measured or calculated in relation to a 4-hour reference period."	
for crocidolite and amosite:	0.2 f/ml
For other types of asbestos:	0.5 f/ml ⁶⁵

Limits in November 1995	
For crocidolite and amosite	0.6 f/ml measured over a 10 minute period or

⁶⁰ HSE EH10 revised 1984 Asbestos control limits measurements of airborne dust concentrations and assessment of control measures. Para 9

⁶¹ HSE MS13 Asbestos Medical guidance note 4th edition 2005.

⁶² Ministry of Labour. Safety, Health and Welfare New series No. 8 Dust and fumes in Factory atmospheres. 1966

⁶³ UK asbestos - the definitive guide General Insurance Convention 2004 Lowe Chairman, 1 Nov 2004

⁶⁴ HSE EH10 revised 1984 Asbestos control limits measurements of airborne dust concentrations and assessment of control measures. Annex 1

⁶⁵ HSE EH10 revised 1984 Asbestos control limits measurements of airborne dust concentrations and assessment of control measures. Para 9 para 26

for chrysotile alone
0.2 f/ml averaged over a 4 hour period
1.5 f/ml averaged over 10 minutes
0.5 f/ml averaged over 4 hours⁶⁶

Limits in February 1999
For crocidolite and amosite
0.6 f/ml measured over a 10 minute period or
0.2 f/ml averaged over a 4 hour period
for chrysotile alone
0.9 f/ml averaged over 10 minutes
0.3 f/ml averaged over 4 hours⁶⁷

Limits at November 2006 for all types of asbestos:
0.6 f/ml measured over a 10 minute period or
0.1 f/ml averaged over a 4 hour period.⁶⁸

(The levels are put into perspective when one considers the number of fibres present in a cubic metre of air:

0.6 f/ml	600,000 fibres
0.1 f/ml	100,000 fibres

Or the number of asbestos fibres a person would inhale at the control limits:
Over the 10 minutes a person would inhale about 60,000 asbestos fibres
Over the 4 hours a person would inhale about 240,000 asbestos fibres)

61. As can be seen the limits for contractors working on asbestos have reduced to a level that is significantly less than it was initially, but even now it is still not considered a safe level. The Control limit and the Clearance level apply to contractors and it is only by default that the latter has been generally adopted as the level below which a room can be occupied. One must question why an "environmental" level has never been officially defined for the occupants of rooms despite such a level being proposed at least 25 years ago:

Environmental limit advocated as a fraction of Control limit

62. In 1983 a Parliamentary select committee on asbestos took evidence from both the Institution of Environmental Health Officers (IEHO) and the Association of Metropolitan Authorities (AMA). Both organisations and the European Commission advocated that in addition to control limits for people who work on asbestos there should be an environmental control limit for all other people, especially the occupants of rooms. A Department of Education Memorandum records the submissions of AMA and IEHO:

"Both these organisations strongly advocate adoption of a specific environmental control limit "To protect para-occupational groups (those whose exposure to asbestos is incidental to their main occupation.)"

The evidence given by AMA stated in relation to an environmental limit:

*"The single most important measure required to provide the foundation on which environmental programmes can be based."*⁶⁹

⁶⁶ HSE MDHS 39/4 Asbestos fibres in air sampling Nov 1995

⁶⁷ HSE EH71 Working with asbestos cement and asbestos insulating board Amendment Feb 1999

⁶⁸ HSC CAWR 2006 Work with materials containing asbestos ACOP para 32, 33 p10

The evidence given by IEHO stated:

"Such a limit is necessary to ensure reasonable protection for those people unaware of the presence of the material."⁷⁰

63. The 1983 Department for Education internal briefing memorandum examined the evidence in light of the particular risk to children, and suggested environmental asbestos fibre levels for schools. The memorandum stated:

"The IEHO report says that the European Commission recently suggested an environmental control limit of 1/1,000 of the occupational limit, although a factor of 1/40 is more normal..."

The Advisory Committee on Asbestos (ACA) drew attention to the possibility that children may be more at risk than adults; they have more chance of being affected by carcinogens with long latencies, and the susceptibility to cancer may be increased in the very young. It may therefore be not unreasonable to suggest that in schools the levels should, be lower than those for an "average" population and a factor of, say, 1/80 or 1/100 of the occupational limits should be adopted. A Table on the next page illustrates the suggested limits:

Types of asbestos	HS occupational limits (January 1983)	Control limits as factors of occupational limits 1/40	1/100	1/1000
Chrysotile	1 f/ml	0.025 f/ml	0.01 f/ml	0.001 f/ml
Amosite	0.5 f/ml	0.0125 f/ml	0.005 f/ml	0.0005 f/ml
Crocidolite	0.2 f/ml	0.005 f/ml	0.002 f/ml	0.0002 f/ml

71

The advice was not acted upon, for twenty five years later there is still no environmental limit for any building let alone schools. If the advice had been accepted then the environmental limit for schools would be 1/100 of the present Control limits. The Control Limits since 2006 for all types of asbestos and the consequential environmental limits would be as follows:

0.6 f/ml measured over a ten minute period 1/100 = **0.006 f/ml**
 0.1f/ml averaged over a four hour period.⁷² 1/100 = **0.001 f/ml**

It is worthwhile bearing these levels in mind when reading the section that gives the actual fibre levels measured in System built schools from common everyday occurrences. Those levels are frequently far higher than these suggested

⁶⁹ Health and Safety at Work evidence submitted to the Commons select committee of Employment Feb 1983. Department for Education memorandum AM on asbestos Stepan/Griffin 2 June 1983

⁷⁰ Health and Safety at Work evidence submitted to the Commons select committee of Employment Feb 1983. Department for Education memorandum AM on asbestos Stepan/Griffin 2 June 1983

⁷¹ Department for Education memorandum AM on asbestos Stepan/Griffin 2 June 1983

⁷² HSC CAWR 2006 Work with materials containing asbestos ACOP para 32, 33 p10

"environmental" levels, indeed some tests have even shown levels in classrooms many times higher than the Control limits.

HSE Head of Asbestos Policy dismisses risk at Control Limit

64. The views of the current HSE Head of Asbestos Policy run contrary to accepted opinion. He made some extraordinary statement at an Education sector briefing on System built schools, where he stated that it is not only pointless making an assessment of risk unless the level is well above the Control Limit, but that there was no evidence of high asbestos fibre levels in the CLASP schools in the Rhondda. He further considers that the levels that have been found in schools are low and present no risk to children. The particular statements were in response to a question about whether a risk assessment had been carried out for the occupants of the schools in the Rhondda, and whether a further one had been carried out for a school in Derby. In the latter a significant release of amosite had taken place for three weeks during the uncontrolled ripping-out, breaking and power sawing of AIB in a primary school while staff and children looked on, inevitably the levels had been very high. Contemporaneous notes of the meeting record the official's statement:

"He reiterated that although there had been asbestos incidents in schools the levels of airborne fibre release had invariably been very low level. The levels he claimed were on par with background levels. Such fibre releases, he stated, were perfectly safe even for children. He added that everyone in the world is exposed to asbestos fibres throughout their lives to no ill effect...."

HSE would not be making a risk estimate of the exposure of the staff and children. He stated that there was no evidence of high fibre levels in the past...."

There was no point in carrying out a risk assessment unless the airborne fibre levels were well above the control limits. He stated that it was pointless attempting to make any risk estimate at lower levels.

He continued that, if this principle was generally accepted, then it would stop the nonsense of people going on about the dangers of low level exposures."⁷³

The above statements are not only unacceptable from an official in his position they are in parts factually incorrect, particularly as some levels were above the Control limit. Although one cannot put a definitive level of risk on the present control limit, he is incorrect when he states that the levels are safe even for children. Such statements are particularly disturbing when one considers that the official is responsible for asbestos policy in all places including schools, and it is his briefings that supposedly inform the Department for Education and Government Ministers so that they can make informed decisions. As will be seen Ministers have formally reiterated his statements that there is no evidence of dangerous levels of asbestos fibre release in System built schools. As this is contrary to a considerable volume of evidence, one can only presume that they are either intentionally making misleading statements or they have been badly briefed. The section on airborne fibre levels gives the evidence.

⁷³ HSE Education Sector briefing. Statements HSE Head of Asbestos Policy Dr K.Walkin. Minutes from contemporaneous notes .Lees 13 Dec 2006

Measurement and Analysis of airborne fibres.

65. Conventional asbestos surveys only identify the visible asbestos materials and can only assess their condition from appearance. A proper type 1 or 2 survey should look in the accessible ceiling voids, lift shafts, floor ducting etc but even then much of the material will remain concealed, for System built schools frequently contain large amounts of asbestos materials that are hidden from sight behind partition walls, in columns and in other inaccessible locations. It will therefore be unknown how much material is present and what condition it is in. As has been seen it was only when the column casing was removed in a CLASP school that it was discovered that the AIB cladding was damaged and that large amounts of friable AIB debris and asbestos fibres lay concealed behind the casing. Destructive surveys disturb the asbestos and create their own risks, therefore the safest and most effective method of determining whether the hidden asbestos materials are damaged and releasing fibres is by comprehensive air sampling.
66. If asbestos is in good condition and not disturbed then it is not a risk to health as the asbestos fibres are not released. It is when asbestos is damaged or disturbed that it releases asbestos fibres that become airborne and can be inhaled by the occupants of the room. It is only then that it is a risk. However most of the fibres are too small to be seen by the naked eye so the only way that the fibres can be identified is by air sampling
67. Air sampling sucks in the air and collects the airborne fibres so that a calculation can be made of the concentration of fibres in the air. The highest fibre levels are found near the source of release and during the time and immediately after the release has taken place, for as time passes the fibres gradually settle unless further disturbance occurs. There is normally considerable activity in a school with constant disturbance so that any damaged asbestos materials could potentially release fibres and any settled fibres would constantly be re-entrained. If sampling is undertaken in an occupied school then the samplers should be placed in a position that will collect air samples from the sort of activity and disturbance that is typical of that school. A busy corridor or an occupied classroom, for instance, would give more representative values than an empty classroom or an office. It is not always possible or practical to measure peak fibre releases from more aggressive disturbance when the school is occupied. For unless for instance someone happens to hit a column while the samplers are running it will not be known if the column contains damaged asbestos with the potential to release fibres. Sampling should therefore also take place where these more aggressive disturbances can be simulated under controlled, and safe conditions when the school is not occupied.
68. A sample of air can be taken for a short time during and immediately after any disturbance so that the peak levels are measured, or over a longer period of time so that average levels are measured. The period of sampling in the series of tests was normally between 30 minutes to an hour and a half. If disturbance took place in the form of hitting the column or slamming a door that usually occurred at the start of the sampling period so that the initial peak level would have been higher than the average level measured over the period. As will be seen in many of the tests reported in the 2nd HSL report the offices and schools were occupied and sampling took place over a day in some cases and a week in others. Long sampling periods such as this will give an idea of background levels but any peak levels will tend to be ironed out.

69. Air is sampled by either a static sampler placed in the room or by a personal air sampler worn by the operator. The samplers suck in air and any fibres contained in the air are deposited on a filter, the volume of air sampled and the number of fibres deposited on the filters are measured. The fibres will be both asbestos and any other fibres in the air such as wool, chalk and a whole host of other fibres. The fibres that are counted have to be within the standard dimensions of a length greater than 5µm, a width less than 3µm and a length to width ratio greater than 3 to 1.⁷⁴ Fibres of other dimensions do cause asbestos disease, however many of these cannot be seen on PCM microscopes, so the standard dimensions and PCM analysis are not ideal, but they do provide a universal, practical and cheap method of counting. In addition tests results can be compared like for like with each other and limits and controls can be set based on comparable standards. Because many fibres are not counted the standardised fibre count is only an index of the total number of fibres of all dimensions that are contained in a volume of air. An example of this was when comprehensive air sampling was carried out in US buildings including 177 schools. The results were analysed by TEM, which counted both standard asbestos fibres and non standard asbestos fibres. The schools had the highest level of airborne asbestos fibres compared to the other buildings and by far the greatest number of non standard fibres. There were more than two hundred times more non standard asbestos fibres than standard.⁷⁵ If this is replicated in UK schools then the number of airborne asbestos fibres is significantly greater than the results of standard fibre counts would make it appear.
70. The analyst then examines only a fraction of the slide with a microscope and therefore the result that gives the fibre count is only an indication of the numbers of fibres and not the total number of fibres on the filter. Having established the number of fibres on a certain area of the filter, a formula is then used to calculate the number of fibres that are contained in each millilitre of air and that is represented as Fibres per Millilitre of air, or more normally as f/ml. (a millilitre is a thousandth of a litre or a cubic centimetre)
71. The fibres are normally analysed by an optical microscope which in this case is a Phase Contrast Microscope (PCM). A skilled operator can differentiate between the different types of fibres and can readily identify the types of asbestos, particularly amosite, however the counting rules do not allow differentiation on the initial count and all fibres within the standard dimensions have to be counted. A dusty room will therefore deposit asbestos and other fibres onto the filter. If the samplers are close to the source of asbestos fibre release then it is probable that the majority of fibres will be asbestos. As will be seen this has been proved to be the case in many of the PCM measurements taken during the various tests.
72. Once the initial count has been completed then discrimination of the type of fibres is allowed but is dependant on the analytical techniques available, the skills of the operator and the strategy used.⁷⁶ One method of overcoming this problem is by analysing the slides with Transmission Electron Microscope (TEM) or a Scanning Electron Microscope (SEM), both of which readily differentiate between different

⁷⁴ HSE Asbestos: The analyst's guide for sampling, analysis and clearance procedures. HSG248 Jan 2005 para A.1.6 p46

⁷⁵ Toxicological Profile for Asbestos U.S Department of Health and Human Resources. Sep 2001 Table 6.3

⁷⁶ HSE Asbestos: The analysts' guide for sampling, analysis and clearance procedures HSG 248 Fibre Discrimination Jan 2005 para A1.6

fibre types. Therefore a fibre count can be made of just asbestos fibres. In addition electron microscopes can see asbestos fibres that are far smaller than the standard dimensions. This is an expensive system of analysis and can only be carried out in the laboratory as the equipment is large and immobile. If a number of samples are taken and analysed with PCM a percentage check can be carried out with TEM or SEM analysis to confirm the precise number of the fibres that are asbestos. As TEM and SEM can see fibres that are far smaller than the standard dimensions, the fibre count is frequently standardised with PCM counting rules so that only fibres within the standard dimensions are counted. These counts are defined as PCM Equivalent, or PCME.

TEM and SEM analysis confirms majority of fibres asbestos

73. The 1987 ILEA tests were mainly analysed by PCM optical microscopes however so that the type of fibres could be definitively confirmed a limited number of samples were analysed by Scanning Electron Microscopes (SEM). The samples all contained asbestos fibres which in the case of one school where the general fibre release was high the majority of fibres were amosite. In the other school the fibre release was generally lower but asbestos fibres were present albeit to a lesser degree, however once again in one sample the majority of the fibres were asbestos. The report for Ernest Bevin secondary school stated:

*"Filters examined by Scanning Electron Microscopy found the majority of fibres to be amosite fibres."*⁷⁷

At Roehampton primary school the report stated:

*"Examination of filters using SEM showed a maximum asbestos concentration of 0.015 f/ml"*⁷⁸

74. During both sets of 2006/2007 tests HSL analysed some of the samples with an electron microscope (TEM) so that they could definitively identify and state the numbers and type of fibres present. The 1st HSL report states:

*There is a significant amount of data that shows that **amosite fibres** can be released into the classroom air when some of the casings are struck or adjacent windows and doors are banged.*⁷⁹

*After further field sampling work had confirmed the probable mechanisms for release (damaged and /or poor sealing) and that **predominately amosite** asbestos fibres were being released,*⁸⁰

*"These have generally confirmed that a high percentage of the fibres released when the columns were struck were **amosite**."*⁸¹

⁷⁷ ILEA Investigation into fibre release from low level asbestos panels - Ernest Bevin school LS/AP/52 May 1987

⁷⁸ ILEA Investigation into fibre release from asbestos panels surrounding door frames at Roehampton Gate primary school LSS/AP/78 (1987) September 1987

⁷⁹ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos. HSL/2007/22 10 Apr 2007

⁸⁰ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Introduction p1

⁸¹ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos. HSL/2007/22 10 Apr 2007 para 3.6 p12

75. The fibre counts from the second series of tests and reported in the 2nd HSL report were generally far lower with none or very few asbestos fibres being counted, the fibres being mainly organic clothing and paper fibres.⁸² It was only when sampling was repeated in a school in the Rhondda that higher fibre levels were found and proportionately a higher number of asbestos fibres were identified when the results were analysed by TEM. It stands to reason that when asbestos is damaged and releasing asbestos fibres, higher fibre counts are obtained with a higher proportion of the fibres being asbestos. However when asbestos is in good condition asbestos fibres are not being released, hence the proportion of asbestos fibres are less.

SUMMARY OF FIBRE LEVELS

76. The problem with significant asbestos fibre release in System built schools was known about in 1987 when ILEA conducted a series of air tests in their schools, the problem was then rediscovered some twenty years later. This section examines the reports and test results in detail from 1987, the two series of tests carried out in 2006 and 2007 and the independent tests carried out in December 2007.

77. Air sampling shows the airborne asbestos fibre levels in a room and therefore the level of exposure of the occupants. Ideally sampling pumps would be placed in various locations in every room in every school that contains asbestos and run continuously while the rooms are occupied, with the filter slides being changed every hour or so. A complete picture would then be obtained of the normal background levels and also the peak levels in schools throughout the country. It would identify where asbestos fibres were being released and measures could be taken to remedy the problem. An accurate assessment could also be made of the asbestos exposure levels of the occupants. However widespread sampling in schools has not happened, presumably on grounds of cost, therefore instead limited spot sampling has been carried out that is hopefully typical of the school or schools in general. Great care has to be taken in selecting the schools and in the positioning of the samplers to ensure that they do collect a representative sample of air.

78. If sampling is carried out in an occupied school then care has to be taken to site the pumps so that the actual rooms are occupied and the activity is as it normally is. False lessons could be learnt if a pump is placed in a room with little or no activity. What is also important to bear in mind is that hitting a wall or column, slamming a door and sitting on window sills can release significant levels of asbestos fibres into the rooms. Therefore if none of those activities happens to take place during the time that the air is being sampled these raised levels will be missed. It is therefore important to carry out disturbance under controlled conditions after school hours, so that it can be determined whether these activities do release asbestos fibres. If this controlled disturbance is not carried out then people could be left with the false impression that the room is safe, when in fact the very opposite could be true. In addition it is important that the level of

⁸² HSL. Further measurement of fibre concentrations in CLASP construction buildings..Apr 2008 Para3.2

risk from these peak exposures is known so that they can be included in any risk assessment that is carried out.

79. Airborne asbestos fibres gradually settle onto surfaces of desks, carpets, computers, books and equipment and they will remain there if they are not disturbed and any sampling will collect very few fibres. Therefore if sampling is carried out after school hours when the classrooms are empty, it is vitally important to simulate the level of activity typical of a class full of boisterous children.
80. In 1987 ILEA carried out a series of tests that showed a very significant release of asbestos fibres from slamming a door, in addition the majority of their other tests showed very high levels when the walls were barged or kicked. These results were confirmed twenty years later when tests were carried out in a number of schools in the Rhondda before any remediation had taken place, where again the majority showed significant levels of airborne asbestos fibres when doors were slammed, window sills shaken and columns hit. The tests after remediation were carried out in both occupied and non occupied schools, the results showed that the remedial measures generally reduced the fibre release but could not be guaranteed to eliminate it. When disturbance was carried out some levels were significantly above the Clearance level, showing that fibres were still being released despite the remedial measures.
81. A second series of tests were then commissioned by HSL and the majority were carried out by local authorities. The tests before remediation were in stark contrast to the earlier tests, as all the results were extraordinarily low. Two series of tests were carried out in occupied CLASP buildings and were supposedly meant to show fibre levels in typical System built schools. However instead of carrying out the tests in a busy school, they were carried out in a couple of offices in an office block. Sampling continued for every working day for five weeks with the samplers remaining in the same position throughout the whole time, and despite vast volumes of air being sampled only one asbestos fibre was collected. The second tests were carried out in an occupied school, but in this case the columns were clad in asbestos cement containing chrysotile and not AIB containing amosite, which, because of the nature of the material will release far less asbestos fibres. Not surprisingly once again only one asbestos fibre was counted. Neither of these buildings were typical of CLASP schools and therefore should not have been selected for these crucial air tests. The results are not typical of other System built schools and should not be treated as such.
82. In the second series of tests comprehensive sampling was carried out after remediation in occupied schools A to H, where only one asbestos fibre was collected in total despite the fact that once again huge volumes of air had been sampled. The results show that in some rooms very few fibres of any sort were collected and one must question whether a hall where only 2 fibres were counted, was the correct location for a sampler. Or a classroom where only 3 fibres were counted was typical of a busy classroom. Without knowing more about the schools and where the pumps were placed one must question whether these results were a truthful representation of typical System built schools. HSL were asked for the documentation that would have shown this but the request was refused.
83. In contrast during the 2nd series of tests sampling was also carried out in a school after remediation that was not occupied so that controlled disturbance was carried out to assess whether the remediation had been successful. Some of the

levels were high both in the rooms and in the ceiling void. These confirmed some of the results from the first series of tests, which had also shown significantly raised fibre levels after remediation when the columns were hit. HSL made a series of excuses why the levels were raised, and excluded the results from their calculations. One must question why further sampling was not carried out to confirm these results as they were important tests being the only ones carried out after remediation with disturbance which were analysed by TEM. The test results should not be dismissed as they confirm the earlier results that show that remediation does not always work.

84. The various tests have proved that there is a considerable variation in asbestos fibre levels between one school and another, one room and another and indeed even different parts of the same room can give significantly different levels. Some of the tests, particularly in the 2nd HSL report, collected very few fibres and mainly on the strength of these tests HSE and the CLASP Working Group came to conclusions and issued guidance to every authority and owner of a System built school in the country. However one must seriously question the selection of the schools and offices and the viability of some of the tests.
85. This section summarises the various tests that have been carried out. The section is split into two parts. The first part "Fibre levels Before remediation," and the second "Fibre levels After remediation."

List of tests

86. The tests that have taken place are as follows:
- a. 1987 Before remediation. ILEA.
System school. boys secondary school. Slamming doors. kicking panels.
 - b. 1987 Before remediation ILEA..
Primary school. Infant toilet cubicles. Slamming doors. Closing doors. Kicking panels.
 - c. 2006 Before remediation Rhondda Cynon Taff.
HSL 1st Report
CLASP Mk4 and Mk4b schools. Slamming doors, hitting columns.
 - d. 2006 and 2007 Before remediation Unspecified locations and original school in Rhondda.
HSL 2nd report
Two CLASP Mk4 offices. Static sampling over five weeks . Results pooled
One CLASP school chrysotile cladding. Static sampling occupied classrooms.
Results pooled.
CLASP School "A" unoccupied kitchen and storeroom. Slamming door . Hitting column
One CLASP Mk 4b school in Rhondda. Slamming door hitting column.
 - e. 2007. Before remediation. Independent tests
CLASP Mk4 Special school Brent.
Slamming door hitting column.
 - f. 2006. After Remediation. Rhondda Cynon Taff and other unspecified locations
HSL 1st Report
20 CLASP Mk4 and 4b and School "A"

Clearance testing. Minimal disturbance. Hitting columns. Slamming doors

- g. 2006. After Remediation. Eight A-H Unspecified location and school in Rhondda. HSL 2nd Report
CLASP Schools Mk4 and 4B. Schools A to H. Occupied. Results pooled
CLASP Mk4b Special school. Hitting column.

FIBRE LEVELS BEFORE REMEDIATION

1987 ILEA tests in System built schools

87. In 1984 the Inner London Education Authority (ILEA) started surveying its schools and other premises for asbestos, and although it was initially thought that the task would take a year, by the end of 1987 only a quarter of their premises had been surveyed. ILEA's asbestos joint working party wrote a report which stated that :

*"Staff side inspections have shown that almost all schools contain asbestos which is damaged to some extent, in a few cases so seriously that we have insisted on immediate closure of the room or building concerned."*⁸³

88. Because of their concerns ILEA adopted a policy of removal of asbestos from schools, the report then gave examples of asbestos releases from schools where asbestos had been sealed in. The report stated:

"ILEA, rightly, stresses that removal is the only safe way to deal with asbestos in schools..."

*"...sealing in, or encapsulating, asbestos is more dangerous and more expensive than removal."*⁸⁴

Such was the extent of the problem of deteriorating and damaged asbestos in their schools that in 1987 ILEA undertook air sampling to determine the levels of asbestos fibres being released into the schools.

89. The tests were conducted in Wandsworth following specific concerns that had been expressed about asbestos fibre release from unsupervised pupils kicking AIB panels. They were designed by the ILEA Architect and the Environmental Health Advisor and were carried out by the highly respected London Scientific Services which was also part of ILEA. The first tests were in a System built school, the Ernest Bevin Boys Secondary school where as well as kicking panels other tests were carried out to assess the asbestos fibre release from slamming doors. The report states:

"Asbestos panels containing amosite (15-30%) are situated around door frames at floor and ceiling level in a boys Secondary School in South West London. Concern was expressed by the school safety representative that unsupervised pupils were kicking or could kick these unprotected panels and there might be a release of fibres...."

⁸³ 1983-1988 Five years progress by the ILEA's asbestos joint working party. Report of the staff side co-ordinator 28 Jan 1988 p1

⁸⁴ 1983-1988 Five years progress by the ILEA's asbestos joint working party. Report of the staff side co-ordinator 28 Jan 1988 p4

"The panels are situated around the doorways on three floors of North Block and are painted and seem to be in good condition.This panel was chosen for the initial tests since it was considered to be more vulnerable to kicking than those obscured by a steel radiators.

*The school was occupied at the time and it was noticed that **when pupils passed through the doorway, slamming of the doors shook the frame containing the panels. This vibration was considered to be another possible fibre release mechanism.** Door closing springs appear to be missing or have been disconnected from some doors.*¹⁶⁵

90. Air sampling was carried out, Twenty three samples were between sixteen and eighty seven times greater than the Clearance level, however six slides were obscured by large numbers of fibres so that counting was not possible. SEM analysis was also carried out which confirmed that the majority of fibre release was amosite.

91. The tests showed that just slamming a door five times in this System built school released asbestos fibres into the classroom at levels up to thirty three times greater than the accepted level for the room to be occupied.

"Slamming a door five times resulted in measurements averaging 330 fibres per litre of air: that is 33 times higher than the safety limit set by the Health and Safety Executive."¹⁶⁶

The level of 0.33f/ml was the average fibre level measured over the period of sampling which was between 60-90 minutes.⁸⁷ Therefore if after each lesson the door was slammed five times this level would have been maintained throughout the day.

92. At the same time air sampling was carried out to determine airborne fibre levels that could be released from the "worst possible case" of kicking and bumping into a wall with asbestos panelling. The level of fibre release was up to eighty seven times greater than the Clearance level. The report states:

" From the results of the tests it has been demonstrated that airborne fibre concentrations in the range 0.16 to 0.87 fibres/ml can be generated by repeated kicking of asbestos panels, and by the slamming of doors in close proximity to the panels. Analysis of the fibres by electron microscopy has confirmed the majority of the fibres to be amosite asbestos."¹⁶⁸

⁸⁵ ILEA report LSS/AP/52 (1987) Investigation into fibre release from low level asbestos panels - Ernest Bevin school May 1987

⁸⁶ Dust to Dust Eddie Rowe Trade unions technical advisor ILEA Asbestos Joint Working Party 27 Nov 1987

⁸⁷ ILEA report LSS/AP/52 (1987) Investigation into fibre release from low level asbestos panels - Ernest Bevin school May 1987

⁸⁸ ILEA report LSS/AP/52 (1987) Investigation into fibre release from low level asbestos panels - Ernest Bevin school May 1987

⁸⁸ ILEA report LSS/AP/52 (1987) Investigation into fibre release from low level asbestos panels - Ernest Bevin school May 1987

93. The tests were carried out in two separate locations with three of the four tests simulating the worst case situation. The report states:

*"It should be borne in mind however that the exercises were designed to represent the "worst possible" case, simulating the actions of unsupervised secondary school boys, and that approximately 100 kicks, and 5 door slams were delivered in a period of 10 minutes at the commencement of the sampling period."*⁸⁹

The five results were between 0.43f/ml and 0.87 f/ml with 240 litres being sampled over 60-90 minutes⁹⁰

94. The first part of the test was specifically designed to determine the worst possible asbestos fibre release when unsupervised secondary pupils slammed doors and kicked the walls. The resultant levels were very high, and although the behaviour might be considered excessive there are known cases of pupils kicking and punching holes in walls (see plate 19 as an example). Therefore although such excessive behaviour would probably not take place every day, when it does the levels can be very high. A child exerting himself for ten minutes by slamming a door and kicking a wall would be breathing up to 30 litres a minutes, thereafter his breathing rate would gradually reduce to about 7litres a minute, say it would average 10 litres a minute.⁹¹ Over the hour he would inhale more than 700,000 mainly amosite fibres. If he punched a hole in the wall the number of fibres inhaled would be far higher.

In addition what the test also shows is that when walls that contain asbestos in apparently good condition are struck then significant numbers of asbestos fibres can be released. HSL advocate that the visual appearance of a column will indicate whether the AIB is in good condition or not, and therefore whether it will release asbestos fibres. Although in this case these were wall panels, it would seem to indicate that HSL's theory is not necessarily correct.

95. Another worst case test was requested by the Environmental Health officer where the panel was actually damaged and stoved in. The levels were so high that the air sampling filters were:

"obscured by particulate matter and could not be counted."

Although the number of fibres could not be counted and a specific airborne fibre level determined it would have been very high, and therefore the results from this test should not be discounted. For as has been seen similar damage is known to have taken place in schools when holes are kicked in the walls,⁹² so that similar contamination and consequential exposure will have taken place.

96. Four months later further air tests were carried out at another ILEA school, Roehampton Gate Primary school. It is uncertain whether this school was a System built school or not, however the tests are relevant whether it was or was

⁸⁹ ILEA report LSS/AP/52 (1987) Investigation into fibre release from low level asbestos panels - Ernest Bevin school May 1987

⁹⁰ ILEA report LSS/AP/52 (1987) Investigation into fibre release from low level asbestos panels - Ernest Bevin school May 1987

⁹¹ Californian Environmental Protection Agency. Air Resources Board. How much air do we breath? August 1994

⁹² Westward insulation Sweeney/Lees Nov 2000

not. Air sampling was undertaken in the infant toilets where there were stud walls with asbestos panels in apparently good condition. The panels contained chrysotile, amosite and a trace of crocidolite.

97. The two cubicle doors were slammed every half minute with a total of 10 slams. All the air samples gave levels above the Clearance level with an SEM analysis giving a level of 0.015f/ml of asbestos fibres.⁹³ The results from these tests show a significant asbestos fibre release from slamming an infant toilet cubicle door 10 times. They are lower than the similar tests carried out at Ernest Bevin school, but then one must presume that any asbestos panels adjoining a door at the top of the stairs in a boys secondary school will over time have been subjected to considerable disturbance from being bashed and vibrated by pupils barging the walls and slamming the doors, far more than panels adjacent to a door of a toilet cubicle used by infants.
98. A further test was carried out in the same couple of toilet cubicles. In this case the doors were closed 10 times rather than slamming them, they were closed "*more gently*" with "*a force estimated to be that of a teacher or infant school child.*" All the results were beneath 0.01f/ml. No doubt this was comforting that the infants were not being regularly subjected to high levels of asbestos fibres every time they went to the loo. However what the series of tests prove is that in a school where it is likely that the asbestos was in good condition if care is taken to gently close doors then asbestos fibre release will be within the legal limits for the rooms to be occupied. However if boisterous behaviour such as slamming doors takes place then significant release of asbestos fibres will occur.
99. A final test was carried out in a different couple of toilet cubicles where every half minute for ten minutes the wall was kicked, body barged and had 10 heel drums. All the fibre levels were beneath the Clearance level with a SEM fibre count giving a level of 0.002f/ml of asbestos fibres. This last test shows that it is important to carry out comprehensive testing in a number of different areas, as results will vary presumably depending on the state of the asbestos regardless of the kind of activity taking place. For in adjoining cubicles higher levels were obtained from slamming doors, which either means that the asbestos was in a worse condition or perhaps that slamming doors is an activity that releases a greater number of fibres than other apparently more aggressive activities.
100. As every single test in both schools gave fibre releases above the Clearance level when doors were slammed, they prove conclusively that slamming doors can potentially release significant levels of asbestos fibres. In all cases the asbestos panels appeared to be in good condition, however in the secondary school in a busy corridor the levels from slamming a door were consistently high. When the tests were replicated in a school where it is likely that the asbestos was in good condition the levels were lower, but once again they were above the Clearance level. In the secondary school more aggressive, but not untypical behaviour released even higher levels. Remedial measures were taken in these particular schools and ILEA must be commended for undertaking the tests and adopting a policy of surveying and phased removal of all asbestos from their schools. Regrettably the policy of phased removal was not continued when ILEA was broken up some years later.

⁹³ ILEA report LSS/AP/78 (1987) Investigation into fibre release from low level asbestos panels at Roehampton Gate Primary September 1987

101. These tests had proved that when schools contain asbestos, common every day activities can release significant levels of asbestos fibres. Alarm bells should have rung throughout the Department of Education and every local authority in the land. Warnings should have been sent out and remedial measures taken to lessen the fibre release. However it would appear that the lessons were not learned and nothing was done in the thousands of schools with potentially similar problems. Twenty years passed before another set of air tests were carried out. This time it was in schools in the Rhondda that showed once again that slamming doors in System built schools releases dangerous levels of asbestos fibres.
102. About half the 26,000 schools in the country are System built and many of those are of similar design where asbestos has been used extensively, therefore during the course of those twenty years millions of children have been educated in schools with potential asbestos problems. It is probable that in some, if not many of those schools asbestos fibres have been released every time a door has been slammed, a wall kicked or a child has run into a wall, exposing the staff and children on a daily basis to significant levels of amosite fibres. These exposures could and should have been prevented.

2006 Tests. CLASP schools in the Rhondda. HSL 1st report. Before Remediation

103. In July 2006 asbestos contractors had removed AIB ceiling tiles from a CLASP special school in the Rhondda, during the Clearance procedure the fibre levels were repeatedly above 0.01f/ml. It was discovered that the source of the fibre release was from gaps in the column cladding, which ejected asbestos fibres into the rooms when they were banged with a fist.⁹⁴ The asbestos consultants decided to carry out further air testing to determine the asbestos fibre release from slamming doors, sitting on window sills and hitting walls and columns. The levels they obtained were very much on par with the levels that had been obtained from similar activities in London some twenty years before.
104. A series of tests were carried out in other schools to assess the scale of the problem, where the columns were hit, doors slammed and window sills shaken. In most cases asbestos fibres were ejected into the rooms at significant levels. The results were reported in the 1st HSL report.
105. The 2006 air sampling was carried out in more than 20 schools before and after remediation.⁹⁵ The tests were carried out by council funded independent analysts and confirmed by HSE, who stated that although at times levels were low, other levels had exceeded the Control Limit:

*" It has been found that if the cladding is struck, asbestos fibre can escape into the room. The degree of escape of fibre varies. In some cases levels in the general atmosphere of the room are very low. But in others levels have been found that **exceed the control limit.***

The striking was three or four sudden blows and is the kind of disturbance that is foreseeable in a school environment.

⁹⁴ Presentation HSE Airborne fibre measurements in CLASP Mk4 and 4b buildings. BOHS October 2007

⁹⁵ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos. HSL/2007/22 10 Apr 2007 Main Findings p iv

Disturbance is also foreseeable when doors are slammed where the doors are adjacent to damaged AIB / loose cladding or where possible wind loading on replacement windows which have been fixed by screws directly into the steel columns which are clad with AIB.

HSE sampling has confirmed sampling results found by independent Council funded sampling.⁹⁶

106. The report states:

"To induce movement and vibration, the columns were either banged directly with a fist a number of times or the attached / adjacent doors and windows were repeatedly slammed. In window sections the sills were also disturbed by sitting on them a number of times and the windows opened and banged shut."⁹⁷

107. The average level from these normal everyday activities in classrooms and corridors was 0.094f/ml, which is nine times greater than the level that a certificate of reoccupation could be legally issued. At that level a child would breath in about 50,000 amosite fibres in an hour. Out of 39 slides that were analysed 31 gave levels above the Clearance Limit. The highest levels were above the Control limit at 0.44 f/ml, and 0.42 f/ml from a 67 minute personal sample.⁹⁸ During the 67 minute period a child would breath in almost a third of a million asbestos fibres. Although the majority of the slides were analysed by PCM, six slides were analysed by TEM, four of which gave asbestos fibre levels above the Clearance level, the highest two being 0.02 f/ml and 0.24 f/ml.

108. The largest value found in the first series of tests before remediation was 2.37f/ml. This was sampled during disturbance testing in a "*non-school medical room*," where 480 fibres were counted (from a 512 litre volume of air). The casing had been removed and was hanging from a single screw so that in this case most of the fibres were free to enter the enclosure rather than being partially contained by the casing⁹⁹ as would normally happen. What is disturbing is that this significant fibre release could be indicative of the numbers of fibres that are normally released but most settle and accumulate within the confines of the casing. Which could partially account for the considerable accumulation of debris and fibres found when a casing was removed. 2.37 f/ml is five times higher than other levels that had been found in this series of tests, and although this is a most significant finding no mention is made of it in the conclusions, tables graphs or the HSL and HSE presentations.

109. This high level was later replicated in a school when independent tests were carried out in December 2007, when the column was hit and the window sill shaken under controlled conditions an airborne fibre level of 2.53 f/ml was obtained. (measured on a personal sampler over a 12 minute period.) Although in that case there was an obvious gap in the front of the casing, there was no other

⁹⁶ Scape formal Notice Release of asbestos fibres in CLASP buildings Potential for asbestos fibre release in CLASP buildings Recommended actions. Potential for asbestos fibre release in CLASP buildings. 12 Oct 2006 para 4

⁹⁷ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos. HSL/2007/22 10 Apr 2007 para 3.3 p10

⁹⁸ HSE FOI request/Lees 2007010226 15 Jan 2007

⁹⁹ HSL FT 20080010493 30 Jan 2008 work/data sheets. HSL Summary of fibre concentrations in CLASP construction schools containing asbestos. HSL/2007/22 10 Apr 2007 para 3.5 Upper estimate of possible releases para 4.5

significant damage to the casing.¹⁰⁰ To put the level into perspective a child would breath in more than a quarter of a million asbestos fibres during that twelve minute period.

110. The HSL 2nd report summarised the fibre release from all of their tests as follows:

*"As part of deliberate disturbance, the metal casing around the steel support columns were struck a number of times with the fist or other similar disturbance took place (sitting on or flexing the window sills). The measured fibre concentration inside the enclosure suggested a significant release of airborne fibres could take place from some columns."*¹⁰¹

111. A senior HSE specialist gave a definition of significant exposure as:

*"Significant: Sufficient to cause significant, meaningful "real" risk."*¹⁰²

112. Remedial measures were then taken by sealing the columns with sticky tape or silicone sealant and further tests were carried out. The fibre release was reduced but some samples proved that the remedial measures were not completely successful. (The tests that were carried out to assess the effectiveness of the remediation is examined in the next section.)

113. Most of the tests proved that normal every day activities that are typical in schools had released significant levels of asbestos fibres into the classrooms. At times the levels had been above the Control limit, TEM analysis had proved that the majority of fibres were amosite. These results are on par with those that had been found twenty years before in a System built school. It must be assumed that similar levels have been released over the course of many years in many of the thousands of System built schools throughout the country, if so many staff and children have inhaled cumulatively dangerous levels of amosite fibres over the course of those years. HSE acknowledge that the Control limit is not a safe level, and yet these are schools full of children who are significantly more vulnerable than adults.

114. By December 2006 there was ample evidence of cumulatively dangerous exposures of teachers and children in schools throughout the country. The Minister with responsibility for the HSE had this evidence and yet he stated in reply to a letter:

*"... There is no evidence that teachers and children have been exposed to dangerous levels of amosite fibres in these schools."*¹⁰³

115. The Minister is at the very best ill-informed, for his statement is wrong, for there is ample evidence of dangerous levels of exposure to teachers and children in all sorts of schools including System built schools. Not only is it

¹⁰⁰ Air sampling disturbance testing System built school London Borough of Brent. Name of school available but withheld. 16 Dec 2007

¹⁰¹ HSL. Further measurement of fibre concentrations in CLASP construction buildings.. Dated Sep 2007. Circulated Jan 2008. Introduction p6

¹⁰² Background notes. HSE HM Principal Specialist Inspector Piney/ HSE Head of Asbestos Policy e-mail 4 Feb 2004

¹⁰³ Letter Parliamentary Under Secretary of State for Work and Pensions. Lord Hunt of Kings Heath OBE/Lees 6 Dec 2006

unacceptable that he professes to be unaware of this, but it also shows a profound ignorance of the subject. As the Minister for the HSE he is the man who is responsible for overseeing HSE policies, and such ignorance of the risks to teachers and children in part explains why asbestos exposures in schools have continued unabated for decades and nothing has been done to prevent it.

Selection of schools for further testing before remediation

116. The majority of schools that were tested had released significant levels of amosite fibres, when doors were slammed, by sitting on window sills and when the walls and columns were hit. Having established the peak levels it would have been a simple matter to undertake air sampling in a number of other typical System built schools to establish the fibre levels when the schools were occupied, however at the time no such sampling took place. Perhaps the reason is that following the discovery in a school in the Rhondda the same problem was identified in six other schools and a community centre. At which point the schools and the centre were closed.¹⁰⁴ Therefore it is possible that these tests were carried out in these particular schools that had been closed.
117. It is important to know the background level when a risk assessment is carried out, for if the level is raised over the course of days, weeks or years the cumulative exposure can be considerable, particularly when it is in addition to the periodic high peak exposures. In almost every case when risk assessments are undertaken after an asbestos incident in a school, the incident is treated in complete isolation, whereas the exposure during the incident should be added to the constant background level. This is particularly relevant if the asbestos in the school is deteriorating or there is an inadequate system of asbestos management making it most likely that other damage to asbestos has occurred.
118. The NASUWT member of the CLASP Working Group therefore requested that further sampling be carried out before remediation in other CLASP schools. The 2nd HSL report states:
- " The objectives of further sampling were to:
To carry out more sensitive analysis of the airborne asbestos fibre concentrations in CLASP 4 and 4A type buildings under conditions of normal occupation...*
- As notices and information to schools had already gone out to take remedial measures, the sampling was focused on post-remedial measures and the effectiveness of the advice given.*
- However, as the Teaching union representative on the working group continued to be interested in exposures prior to and during remediation, we did follow up opportunities to sample in occupied buildings before remediation."¹⁰⁵*
119. If a limited number of tests are to be carried out to assess the likely exposure of the occupants of the schools then the selection of the schools is critical. For if a building is chosen that is not typical then false lessons will be learnt. In addition it is very necessary to establish a worst case situation, for although all schools

¹⁰⁴ BBC News. School closes after asbestos find 7 April 2006. Asbestos found in valley schools 24 Aug 2006

¹⁰⁵ HSL. Further measurement of fibre concentrations in CLASP construction buildings. Apr 2008. Sampling objectives p7

will not contain asbestos in bad condition that is regularly disturbed, regrettably some do and hence their fibre levels have to be established. Schools should be selected that have this particular asbestos problem, for it would be pointless to take samples in a school with a different type of asbestos that has been used in a completely different manner. The condition of the school has to be representative, as has the type and condition of the asbestos. If the school is occupied then the positioning of the samplers is critical and they have to be placed in an area where there is activity, and not in a quiet corner of a room that is rarely used. Regardless of where the samplers are sited it is possible that during the period of sampling the doors might not be slammed or perhaps no one will sit on the window sill. Consequently further tests should be carried out under controlled conditions after school hours to assess the levels that would be present during this kind of disturbance. If a building is selected with a different use, different type of asbestos, little activity and is in pristine condition, then the results will be superlative but they will not be representative.

120. HSL carried out very limited sampling themselves, most of it being undertaken by local authorities. This had to be done on trust, for the credibility of the results relied on the local authorities taking the samples in schools and classrooms that were representative of the majority of System built schools in the country and positioning the samplers so that the results would be equally representative. HSL explained why they didn't carry out these crucial tests but instead relied on the expertise and impartiality of local authorities:

*"Sampling for extended periods in occupied classrooms has many logistic problems and is also very time consuming. Therefore every effort was made to work with local education authorities and their own local sampling agencies to carry out sampling, with HSL personnel only going on site for more specific simulation activities."*¹⁰⁶

121. As they were not choosing the schools and the positioning of the samplers, HSL drafted instructions which they issued to the local authorities. The instructions stipulated the need for sampling in occupied classrooms:

"Static sampling objectives:

..To sample under normal conditions of occupancy over the duration of the pupils school day....

Static sampling considerations:

*The site to be sampled should be an occupied classroom and if required one pump can be placed in each selected classroom."*¹⁰⁷

122. The purpose of the air sampling was to gather data so that an assessment could be made of the typical exposures of staff and pupils in System built schools. Therefore the tests should have been carried out in schools that were in typical of the condition, asbestos content and cleanliness of others in the country, and also the type of activity should have been representative of a classroom full of boisterous children. But this did not happen.

¹⁰⁶ HSL. Further measurement of fibre concentrations in CLASP construction buildings. Dated Sep 2007. Circulated Jan 2008. Main Findings p3

¹⁰⁷ HSL. Further measurement of fibre concentrations in CLASP construction buildings. Apr 2008. Annexes. Sampling strategy for increasing the analytical sensitivity of air monitoring in schools and for TEM analysis. Para 6.1 p31, 32

123. Instead HSL accepted that the local authority who volunteered to carry out these crucial tests intended to use an office block rather than a school. Comprehensive air testing was carried out over the course of five weeks in two offices in an office block, where clearly the activity would not have been typical of a busy classroom. It also appears that the offices were in good condition and very clean, which is unfortunately not typical of many schools. Only one asbestos fibre was counted throughout the whole of the five weeks and a total of just 93 other fibres. This was clearly neither typical of the boisterous activity nor the cleanliness of a school full of hundreds of children. However on the results from this test HSE claimed that:

*"The level was an order of magnitude lower than the average background value for asbestos containing materials in buildings."*¹⁰⁸

124. To gather more data further sampling was carried out before remediation and this time a school was used for the test. The HSL guidance was also followed as the sampling took place in two occupied classrooms over the course of a day. However the local authority chose a school where the columns were clad in chrysotile cement. HSL and the local authority undertaking the test are fully aware that this material is far less friable than AIB or sprayed asbestos and that in comparison very few asbestos fibres would be released. This proved to be the case for once again just one chrysotile fibre was collected, so that on the strength of this test HSE/HSL claimed that the levels were;

"...below the previously monitored average in asbestos containing buildings."

125. The results of these two series of tests were given in presentations by the HSE Head of Cancer and Asbestos Unit to the CLASP Working Group at their final meeting,¹⁰⁹ on the back of the results conclusions were reached and decisions taken. A similar briefing was given by the HSL project leader to an asbestos seminar at the British Occupational Hygiene Society. He skirted over the results from the HSL 1st report, and concentrated on the results from the offices and the school with chrysotile. The whole impression was that there has been very little risk and that these exceptionally low asbestos fibre levels were typical of System built schools throughout the country. One was left with the impression that the asbestos fibre levels in System built schools even before any remedial actions had been taken, was nothing of concern.¹¹⁰ This is certainly the impression left on the DfES member of the CLASP Working Group when the preliminary results were given. The minutes record:

*"Richard Daniels questioned the need for duty holders to take action given the low level of risk indicated by the sampling results and in light of what duty holders are doing already to manage asbestos."*¹¹¹

No doubt the presentations given to members of the Government have given a similarly incorrect and misleading impression.

¹⁰⁸ CLASP Working Group minutes 16 July 2007

¹⁰⁹ Minutes HSE CLASP Working Group 16 July 2007. Powerpoint Presentation HSE Head of Asbestos and Cancer . Walkin. 16 July 2007.

¹¹⁰ Presentation HSL Project leader, Burdett. BOHS 17 Oct 2007

¹¹¹ HSE CLASP Working Group minutes 26 Feb 2007 para 3.3

2006 to 2007 CLASP Offices. HSL 2nd Report. Before Remediation

126. As mentioned above air sampling was carried out in two occupied CLASP offices over the course of five weeks. The 2nd HSL report stated:

"A CLASP 4 building that was previously used as a school and now used as offices was subjected to a period of continuous monitoring over several weeks. No remediation of the columns had been carried out, which contained amosite containing insulating board attached to the column casings.

"The sampling strategy was to collect weeklong samples during the day (8am-6pm) to capture normal occupation and cleaning activities.

Two samplers were set up... in two office rooms."¹¹²

sampling was conducted at two locations, close to where the doors in frequent use were attached to the columns."¹¹³

127. Each sample took a week, the samplers being switched off each night and then switched on again in the morning. 85,000 litres of air were sampled but just one asbestos fibre was counted and 94 PCME fibres in total. This is a remarkably low number of fibres when one considers that the offices were supposedly normally occupied and being regularly cleaned. On the third week of sampling only 25 fibres were counted in total despite violent gales taking place¹¹⁴ The average asbestos concentration of all the samples was <0.000194 f/ml. HSL then pooled all the results, which mathematically reduced the result even further to 0.000007f/ml

128. In the 1st HSL report they acknowledged that occupied schools tend to be very active and dusty so that the filters can easily become overloaded. They state:

"Occupied schools tend to be an active environment, which can easily lead to overloading filters with particulates and the volumes of air sampled are often more limited."

Therefore having stated that, one would have imagined that HSL would have questioned whether the 94 fibres counted in total after five weeks sampling were a true reflection of a school environment that in their own words "*can easily lead to overloading filters with particulates.*"

129. The activity in an office cannot be compared with that of a school and hence these results cannot be considered as being representative. Not only is the activity and disturbance far less, than would be the case with hundreds of children running around, the cleanliness of these offices has to be commended as they were spotlessly clean with hardly a speck of any dust in the air, even when dusting and vacuuming was taking place. Because of this HSL concluded

¹¹² 007. Circulated Jan 2008. Sampling objectives para1.1

¹¹² HSL.Further measurement of fibre concentrations in CLASP construction buildings. Apr 2008. Results and discussions. para 3.1

¹¹³ HSL.Further measurement of fibre concentrations in CLASP construction buildings. Apr 2008. Sampling objectives Executive summary p 3

¹¹⁴ HSL.Further measurement of fibre concentrations in CLASP construction buildings. Dated Sep 2007. Circulated Jan 2008. Table 2 p13

that the air concentrations in the building were below the average normally found in asbestos containing buildings. This is quite a claim but what it does more than anything else is highlight the fact that the offices were not "average." And yet the data from these unrepresentative tests has been used to make decisions and draft guidance. The fact that the tests were carried out in offices that were unrepresentative of the cleanliness and activity of most schools, must make one question why they were chosen when it must have been known that the results would be exceptionally low.

- 130.** After the first week more than 14,000 litres of air had been sampled in the two rooms and yet no asbestos fibres had been collected and only 8 other PCME fibres had been detected. The tests continued for a further month sampling a total of 85,000 litres of air. This is a superb exercise for assessing in fine detail the precise asbestos content of this particular building, and in other circumstances would be a commendable exercise. But in these circumstances it was not. After the first week it was self evident that as not a single asbestos fibre had been detected, this building did not have an asbestos problem. At this stage sufficient was known to make a very reasonable assessment of the exposures of teachers and children, and this data could have then been used as an example of asbestos fibre levels in a CLASP building with asbestos in good condition, which in itself is useful information. At that point the limited resources could have been reallocated to sampling in a more representative CLASP building to assess the asbestos fibre levels in that. For HSL had been tasked to carry out sampling to assess the exposures of the occupants of System built buildings before any remedial measures had been carried out. Despite the stated aims of this series of tests HSL collected no data in occupied schools where the asbestos was in poor or bad condition.
- 131.** One must therefore question why the test was continued every working day for another month as they continued to collect hardly any fibres. Perhaps the reason lies in the fact that the intention was to make it appear that the level of asbestos fibres in System built schools is lower than in most other buildings in the country. By pooling the results HSL would have been fully aware that if only one asbestos fibre was found then the greater the volume that was sampled then the concentration of asbestos fibres would mathematically reduce. For one fibre in 85,000 litres of air is less concentrated than one fibre in 14,000 litres of air. Therefore every extra day that the pumps ran the pooled results became even smaller, so that after five weeks the calculation was made based on the huge volume of air that had been sampled. HSL were therefore able to claim that the airborne asbestos concentration was 0.000007 f/ml.
- 132.** The fact that only one asbestos fibre was found during the course of five weeks sampling is remarkable in its own right, however by mathematically pooling the results the average appears to be significantly lower, for the actual average of <0.00019 f/ml for PCME asbestos fibres was reduced to 0.000007f/ml. In these circumstances it appears that the practice of pooling was not done in the interests of assessing the exposures of the buildings occupants, but rather in the interests of being able to show a very low level of asbestos fibres in CLASP buildings.
- 133.** HSE were not only able to claim that the levels were lower than one would expect in a building with asbestos in good condition, they were indeed lower than fresh air:

"The calculated pooled value of PCME asbestos fibres was 0.000007 f/ml ... based on a single amosite fibre being detected and a 5-day working week.

This meant that the upper 95% value for PCME asbestos fibres was an order of magnitude lower than the background average value for asbestos containing materials (ACMs) in buildings ...

and three and two thirds orders of magnitude below the control limit. .."¹¹⁵

"The average values for the building can be calculated from the pooled individual samples. This gave a calculated value of PCME asbestos fibres of 0.000005f/ml... for 7 days monitoring

with values of 0.000007f/ml ... during a 5 day working week."¹¹⁶

134. In the Executive summary of the 2nd HSL report HSL made further claims based on the pooled averages, they stated:

"The airborne asbestos fibre concentrations were on average at least 1,000 times lower than the Control limit

The air concentrations in the buildings were below the average concentrations (0.0005f/ml) of regulated asbestos fibres encountered in buildings containing asbestos materials."¹¹⁷

135. These tests were carried out on the request of the teaching unions so that the risk to staff and pupils in typical System built schools could be assessed, therefore the selection of the schools was critical. Despite this, offices were selected and not schools, and although the offices were occupied the very low numbers of fibres of any sort demonstrate that the activity was minimal. Because of the nature and use of the offices they cannot be considered as being representative of typical schools, and any results should not be used to reassure people that there is no risk.

2006 to 2007 CLASP school chrysotile cladding. HSL 2nd Report. Before Remediation

136. A further test was carried out to determine typical exposure levels of the staff and pupils before remediation, however once again a building was chosen that was not typical of most other CLASP buildings. This time the local authority chose a CLASP school which contained chrysotile asbestos cement cladding to the columns.

137. Asbestos cement is a hard material and is significantly less friable than AIB and will therefore release asbestos fibres far less readily. In addition in the same matrix, it is thought that chrysotile is released at least ten times less readily than

¹¹⁵ HSL.Further measurement of fibre concentrations in CLASP construction buildings. Dated Sep 2007. Circulated Jan 2008. Executive summary p3

¹¹⁶ HSL.Further measurement of fibre concentrations in CLASP construction buildings. Dated Sep 2007. Circulated Jan 2008. Para 3.1 p 13

¹¹⁷ HSL.Further measurement of fibre concentrations in CLASP construction buildings. Dated Sep 2007. Circulated Jan 2008. Para 3.1 p 11

amosite,¹¹⁸ this is further exacerbated by the fact that materials made with crocidolite or amosite tend to become more friable with age than similar materials made with chrysotile alone. It is therefore only to be expected that the fibre release from cement containing just chrysotile would be very low.

138. The description in the 2nd HSL report describes the tests and the material around the columns:

*"Two occupied classrooms were sampled over 1 day in the autumn term 06 at the school, which was constructed using chrysotile containing asbestos cement board as insulation for the columns."*¹¹⁹

*...an unremediated school containing asbestos cement board in the columns."*¹²⁰

*When an normally occupied school classroom with unsealed columns was sampled (reportedly containing chrysotile board) a single chrysotile fibre was detected."*¹²¹

139. Chrysotile cladding was on occasions used instead of AIB behind the metal casing surrounding the columns in CLASP schools, although it is not typical, for the manufacturers specified material for cladding is AIB containing amosite. Scape and the CLASP Consortium publish an Asbestos handbook for their buildings in which they list the "standard details" where the use and type of asbestos material was specified in the construction. The use of AIB containing amosite was specified for column cladding as a standard detail in CLASP Mk 3, 3b, 4 and 4b:

"Asbestos in CLASP Standard Details:

<i>Asbestos product:</i>	<i>Asbestolux (Cape).</i>
<i>Component:</i>	<i>Board.</i>
<i>Asbestos Type content:</i>	Amosite 18-20%
<i>Location/Use:</i>	Backings to pressed metal sheet casings to columns and window heads.
<i>Building Mark. Known Location</i>	<i>MK3, 3b, 4, 4b</i>
<i>Remarks</i>	<i>Unlikely to be damaged due to concealment...</i> ¹²²

(Note: it is somewhat ironic that the handbook advises that the cladding is unlikely to be damaged because it is concealed behind the metal casing. For the whole problem is that the damage and deterioration of the AIB cladding has continued for many years, and yet has passed unnoticed purely because it lies concealed behind the metal cladding. In parts the Scape guidance is not well written and tends to underplay the extent and risks from asbestos in CLASP

¹¹⁸ HSE amendment to the CAWR 1987 and ACOP Regulatory impact assessment July 2002 para A67 p 34

¹¹⁹ HSL.Further measurement of fibre concentrations in CLASP construction buildings. April 2008 Results and discussion para 3.1 p 11

¹²⁰ HSL.Further measurement of fibre concentrations in CLASP construction buildings. April 2008 Conclusions Airborne fibre concentrations in unremediated buildings during normal occupation. P28

¹²¹ HSL.Further measurement of fibre concentrations in CLASP construction buildings. April 2008 Executive summary p4

¹²² Scape. Asbestos awareness handbook March 2003 Appendix 2 Location tables

buildings, which no doubt partially explains why this problem with the columns was not identified during asbestos surveys a very long time ago.)

140. Two day long samples were taken in two separate occupied classrooms. 6000 litres were sampled and again just one asbestos fibre was counted. This gave an airborne concentration of <0.0007 f/ml.
141. Despite the result being <0.0007f/ml based on that one fibre, HSE again pooled the two results despite them being taken in different rooms, and calculated that the level was 0.00005 f/ml. Because of pooling and the presence of chrysotile cement they were able to make remarkable claims. They claimed that airborne fibre levels were less than the average that had previously been measured in an asbestos containing buildings. HSL stated:

"The calculated pooled result was equivalent to the analytical sensitivity of 0.00005f/ml with a limit of detection of <0.0003.

*Again this was below the previously monitored average for asbestos containing buildings."*¹²³

142. Sampling was supposedly carried in this school to assess the typical fibre release from gaps in the metal casing and the tops of column casings containing asbestos cladding. However it is possible that this school did not even have the same problem. For in some cases the columns in CLASP Mk4 buildings are encased in moulded asbestos wood that contains chrysotile, however this is painted and not clad in a metal casing. Hence the problem of damaged and deteriorating asbestos cladding releasing asbestos fibres from gaps in the metal casing, does not apply. Although the moulded material would be liable to damage the damage would be visible and the process of fibre release would be very different. The CLASP asbestos handbook gives the specification for this moulded cement cladding:

" Asbestos in CLASP Standard Details:

<i>Asbestos product:</i>	<i>Moulded Asbestos Wood Insulation (TAC).</i>
<i>Component:</i>	<i>Moulded casing.</i>
<i>Asbestos Type content:</i>	<i>Chrysotile 25%</i>
<i>Location/Use:</i>	<i>Moulded casings to columns.</i>
<i>Building Mark. Known Location</i>	<i>4</i>
<i>Exposed/concealed</i>	<i>Exposed</i>
<i>Applied finish</i>	<i>Painted</i>
<i>Remarks</i>	<i>Likely to be mechanically damaged by furniture etc. Consider removal through a licensed specialist and replacement with suitable equivalent.</i> ¹²⁴

143. The warnings, guidance and descriptions given in the various documents released by Scape, HSL, HSE, DfES and the CLASP Working Group have all focussed on the problem of fibre release from gaps in the metal casing from the asbestos cladding. If this school did not have a metal casing but instead had moulded asbestos cement cladding around the columns, then the fact that the

¹²³ HSL. Further measurement of fibre concentrations in CLASP construction buildings. April 2008. Para 4.1 p28

¹²⁴ Scape. Asbestos awareness handbook March 2003 Appendix 2 Location tables

problem is a very different one should have been very clearly spelt out by HSL, HSE and the CLASP Working Group. But it was not. One must give them the benefit of the doubt, however if by any chance these tests were carried out in classrooms with moulded asbestos column casings then HSE, HSL and the CLASP Working Group have given misleading data in their reports, presentations and minutes.

- 144.** This sampling was commissioned by HSL to determine the exposure levels of teachers and children that had occurred in the preceding decades before any remedial measures were taken. To give representative data they needed to be carried out in typical occupied CLASP schools. Quite why the local authority selected this school is not known, however both they and HSL would have been well aware that the fibre release from asbestos cement would have been far lower than from AIB or sprayed asbestos. Therefore their decision to select the school must be questioned, as must HSE and HSL's decision to present the data as being representative of System built schools. Once again this data should not be used to assess the level of asbestos exposure and the risks that staff and pupils have typically experienced in System built schools.

2006 to 2007 CLASP school "A". HSL 2nd Report. Before Remediation

145. Further data was collected by HSL of fibre levels before remediation so that a risk assessment could be carried out and so that the levels before and then after remediation could be compared. To achieve that HSL carried out air sampling in school "A" which they state was intentionally chosen because the columns were in reasonable to good condition. HSL state:

"The disturbance testing of unremediated columns that were judged to be in reasonable to good condition (with no obvious gaps or holes in the casing). Showed that they released relatively low levels of asbestos fibres into the adjacent areas of the rooms as the PCME asbestos fibre concentration did not exceed the clearance indicator. (0.01 f/ml)"

This supports the HSE advice that visual inspection of the condition of the column at room level is a good initial guide for assessing whether fibres can be released into the room due to mechanical impacts against the column casing." ¹²⁵

- 146.** The sampling was carried out in an unoccupied kitchen and storeroom. It is not stated whether the columns contained AIB, asbestos cement or neither. Although when previous tests had been carried out in school "A" the columns in that test had been clad in AIB. Once again this test tends to prove that background levels can be low when the asbestos is apparently in good condition, and also when columns are disturbed then fibre release can be comparatively low.
- 147.** Nonetheless these results should not be dismissed as inconsequential as they have to be compared with schools with asbestos in good condition where the level is 0.0005f/ml. The kitchen was not occupied and therefore the disturbance tests have to be considered as more representative of normal

¹²⁵ HSL. Further measurement of fibre concentrations in CLASP construction buildings. Dated Sep 2007. Circulated Jan 2008. Table 14 para 3.3.2 p22, 23

occupation than the "before disturbance" figures. The TEM asbestos fibre level of 0.0054f/ml is almost 11 times greater than 0.0005 f/ml. The samples were taken for up to 60 minutes,¹²⁶ during which time a person would inhale about 3,000 asbestos fibres. That is legal but if the column was regularly knocked by kitchen staff then the cumulative inhalation of asbestos fibres could be significant.

2006 to 2007 CLASP school in Rhondda. HSL 2nd Report. Before Remediation

148. Further tests were carried out in the school where the problem had been first identified in the Rhondda. The school was not occupied when these tests were carried out and therefore "disturbance" testing was carried out to simulate possible fibre releases that would take place when the school was occupied.
149. Samples were taken near a column in reasonable condition and near a column where sprayed material had been applied. Two tests were taken near the column in reasonable condition which was hit five times and the door slammed five times. In the first two samples the sampling took place from 30-60 minutes,¹²⁷ the column was specifically selected as it had less damage than the other columns in the school, therefore it is probable that the fibre concentrations would have been greater on the other columns. HSL state:

" Previous PCM data with very limited use of TEM analysis had shown that a damaged, poorly sealed column casing can release asbestos fibres into the classroom, when repeatedly struck.

However, it was apparent that the columns tested had usually been chosen specifically for testing because they were the most damaged.

This was a source of obvious bias and testing of columns more representative of the typical condition was undertaken. This would give a better estimate of the release and the effectiveness of the remediation.

Therefore suitable unoccupied area in schools were sought for further testing and sampling of airborne releases of fibres from columns when they were subject to impact (heavy striking with the fist 5 times).¹²⁸

"One of the less damaged columns at the school, where the problem first came to light, was sampled both during and after partial remediation. The column had an amosite containing AIB attached to the casing, which would be mechanically disturbed by the impacts."¹²⁹

¹²⁶ HSL. Further measurement of fibre concentrations in CLASP construction buildings. Dated Sep 2007. Circulated Jan 2008. Table 14 para 3.3.2 p21

¹²⁷ HSL. Further measurement of fibre concentrations in CLASP construction buildings. Dated Sep 2007. Circulated Jan 2008. Executive summary Asbestos concentrations released into rooms and ceiling voids from striking columns before and after remediation p4

¹²⁸ HSL. Further measurement of fibre concentrations in CLASP construction buildings. Dated Sep 2007. Circulated Jan 2008. Para3.3 p19

¹²⁹ HSL. Further measurement of fibre concentrations in CLASP construction buildings. Dated Sep 2007. Circulated Jan 2008. Para3.3.1 p19

150. Despite a column being chosen because it was less damaged, the level was seven times above the Clearance Level when the column was hit five times which shows a considerable release of fibres. The door was also slammed five times which is an every day occurrence in a school. The higher level of 0.07f/ml was sampled next to the column, whereas the lower sample of 0.03f/ml was taken somewhere else in the room and therefore would be expected to be lower. It shows a significant spread of fibres in the room from a simple common activity. Both levels are well above the Clearance Level where a person would breath in about 18,000 fibres over the course of an hour at the lower level and 40,000 fibres at the higher.
151. In the remaining samples the levels were between 0.005f/ml and 0.009 f/ml with the higher level being a count of just asbestos fibres as it was analysed by TEM. A teacher in the staff room would breath in about 5,400 amosite fibres in the hour.
152. Air sampling was also carried out in the ceiling void before remediation with levels being counted between 0.005 f/ml and 0.022 f/ml with other TEM analysis showing the majority of fibres being asbestos. However the levels both in the staff room and the ceiling void after remediation were even higher, at 0.044f/ml and 0.229 f/ml, and that is examined in the next section. There was significant asbestos contamination in the ceiling void. When one considers that asbestos fibres can filter through a crack as readily as air, then these fibres could potentially filter down into the room beneath, and the only way to prevent that is to hermetically seal the suspended ceiling.

2007 CLASP Mk4 school in Brent. Independent test. Before Remediation

153. Independent tests were carried out in a CLASP Mk4 special school in December 2007. The school had been badly maintained with ill fitting, badly damaged and missing ceiling tiles. An AIB tile in a classroom was broken. A child had knocked a hole in the library wall, there were other holes in a corridor ceiling and a toilet ceiling. Some of the columns were badly scuffed. At least one column had no skirting board thus allowing fibre release into the classroom, the ground floor and first floor column cladding contained AIB, both the ground floor and first floor column cladding vented freely into the ceiling void. Many columns had visible gaps in the casing. Many columns had fittings and fixtures screwed onto the casing into the AIB cladding. Doors were hung from AIB clad columns. The AIB cladding was fastened to the casing. Although one column was identified as containing chrysotile in asbestos cement, the other columns were identified as being AIB containing amosite and chrysotile.¹³⁰ No attempt had been made by the local authority to inspect the school or to seal any of the gaps.
154. A free standing column with AIB cladding in a classroom was tested under controlled conditions for fibre release. There was a gap in the cladding, otherwise it appeared to be in reasonable condition.

¹³⁰ Asbestos surveys Environmental Evaluation 1 September 2004, and 25 July 2006

155. Brent council had commissioned an asbestos survey in 2004 and another one in 2006. Both the surveys note the presence of unsealed AIB cladding on the columns with minor damage.¹³¹ The 2004 asbestos survey had recommended "*Encapsulate and manage... by March 2005*" but it appears that this had not been done. The following is an extract from the 2004 asbestos survey:

Asbestos survey 1st September 2004

Room	Description	Extent	Location	Condition/ Surface treatment	Asbestos type	Material assessment	Recommend ation. Within timescale
Classroom 96	Insulating board panels	Presume throughout	Surrounding vertical RSJs & extending from ceiling void to wall void	Minor Damage Unsealed	Amosite chrysotile	7 Medium Risk	Encapsulate Manage By March 2005

¹³²

The following is from the July 2006 asbestos survey. Note that the problem with the AIB column cladding remained as it still had "*minor damaged unsealed*". The two entries are precisely the same apart from the fact that in the 2006 survey the date by which the recommended encapsulation should have been completed has been deleted:

Asbestos survey 25th July 2006

Room	Description	Extent	Location	Condition/ Surface treatment	Asbestos type	Material assessment	Recommend ation. Within timescale
Classroom 96	Insulating board panels	Presume throughout	Surrounding vertical RSJs & extending from ceiling void to wall void	Minor Damage Unsealed	Amosite chrysotile	7 Medium Risk	Encapsulate

¹³³

156. In October 2006 HSE and the DfES issued every local authority and owner of CLASP buildings with guidance warning them of the problem of asbestos fibre release in CLASP schools. The guidance instructed them as a priority to inspect their columns, walls and ceilings for gaps and then seal them. The warnings had particularly highlighted the problem in CLASP Mk4 and 4b schools. Brent council were aware that this school is a CLASP Mk4 building. They had commissioned the asbestos survey, which had been completed less than three months before the HSE and DfES warning had been issued to them. They were therefore aware that the columns contained unsealed AIB and that at least one was damaged. They were fully aware that staff and children were potentially at risk from the possibility of significant asbestos fibre releases into the classrooms. Despite this more than a year later the council had neither inspected the columns, ceilings and walls for gaps nor had they carried out any remedial actions.

157. Concerns had been expressed by teaching unions and members of staff that the council had inadequate systems of asbestos management in their schools. In December 2007 as part of an investigation into the problem of asbestos in schools, ITN commissioned and undertook air tests in the school. The tests

¹³¹ Asbestos surveys Environmental Evaluation 1 September 2004,p14 and 25 July 2006 p17

¹³² Asbestos survey. for Brent council MM /72719 1 Sep 2004

¹³³ Asbestos survey. for Brent council MM /19595 25th July 2006

showed levels significantly above the Control limits when the door was slammed, the window sill shaken and the column banged.¹³⁴

158. Before the enclosure was erected the air sampling in the surrounding area ranged from 0.004f/ml in the adjacent corridor, to 0.016f/ml in the adjoining toilet.¹³⁵
159. When the ceiling tiles were lifted a level of 0.034f/ml was sampled. When the polythene enclosure was being taped into the ceiling void a level of 0.062f/ml was sampled.¹³⁶ Both of these showed a significant level of contamination in the ceiling void.
160. The disturbance took place over the course of 12 minutes, during which time high levels of mainly amosite fibres were ejected out of the gap in the side of the column and the top of the cladding into the ceiling void.
161. The level at the base of the column was 0.49 f/ml. This sample was taken over the period of an hour with the disturbance taking place at the beginning of the period.¹³⁷ This level is above the Control Limit of 0.1 f/ml averaged over 4 hours.¹³⁸ It is also 49 times higher than the Clearance Level. During that hour a person in the classroom would inhale about a quarter of a million fibres. The level is on par with the samples reported in the 1st HSL report of 0.42f/ml and 0.44 f/ml.
162. The fibre level in the ceiling void measured over the hour was 0.72f/ml. That shows that significant quantities of asbestos fibres were ejected out of the tops of the columns into the ceiling void.¹³⁹ That would have happened every time the column was hit kicked or squeezed, and every time the door was slammed. The fibres would have accumulated in the ceiling void to filter down through any crack or gap into the classrooms beneath. The tiles had been lifted in that particular classroom so that Christmas decorations could be hung onto the ceiling grid, consequently there were gaps between the tiles and the grid. The level is also significantly above the Control Limit.
163. The person carrying out the disturbance wore a personal sampler that ran for 12 minutes. The fibre level was 2.53 f/ml. This level is high, being more than three times higher than the Control Limit, which is 0.6f/ml for 10 minutes.¹⁴⁰ During the 12 minutes a child sitting at their desk would breath in more than 200,000 fibres. A child hitting and kicking the column would have inhaled about half a million mainly amosite fibres.

¹³⁴ G&L Consultancy Ltd Report for asbestos investigation 15-16 Dec 2007. Name of school available but withheld

¹³⁵ G&L Consultancy Ltd Report for asbestos investigation 15-16 Dec 2007. Name of school available but withheld para 4.2.2

¹³⁶ G&L Consultancy Ltd Report for asbestos investigation 15-16 Dec 2007. Name of school available but withheld para 4.3.1, 4.3.2

¹³⁷ G&L Consultancy Ltd Report for asbestos investigation 15-16 Dec 2007. Name of school available but withheld para 4.8.2

¹³⁸ HSC CAWR 2006 ACOP para 33 p10

¹³⁹ G&L Consultancy Ltd Report for asbestos investigation 15-16 Dec 2007. Name of school available but withheld para 4.8.2

¹⁴⁰ HSCCAWR 2006 ACOP para32 p10

164. The level of 2.53 f/ml is very much on par with a fibre level reported in the 1st HSL report. In that case the level was 2.37f/ml, although that was sampled over about an hour.¹⁴¹
165. The column was kicked and hit and the door slammed, although this was significant disturbance, the type of activity was not out of the ordinary in the school as a wall had a hole knocked in it and ceiling tiles had holes knocked in them. Boisterous activities can be expected in schools, therefore it must be assumed that similar high levels of asbestos fibres have been released over the course of many years whenever boisterous activities took place. The levels are very much on par with those when disturbance was carried out during the tests in schools in the Rhondda. They are also similar to the level of 0.33f/ml found in the ILEA school when a door was slammed five times, and 0.87f/ml when the door was slammed and the wall kicked.
166. Brent Council were notified of the tests and the concerns that they had not followed the Working Group guidance. HSE issued enforcement notices, however in February 2008 the Parliamentary Under Secretary of State for Work and Pensions replied to a letter in connection to the risks from the high asbestos fibre levels that had been obtained during the independent air sampling in Brent. He made a remarkable statement:

"The independent air sampling tests carried out by the Independent Television News showed that the level of total fibres in the classroom was below the control level before they carried out their experiments, and therefore there has been no previous risk to staff and pupils.

I can assure you that the history of testing at these premises show no evidence that staff or pupils had been exposed to asbestos at any time."¹⁴²

In his letter the Minister totally dismisses any of the findings of the independent tests despite them being above the Control limit. His statement is flawed but very similar to his predecessor who a year before denied that there was any evidence of dangerous levels in System built schools despite HSE data from the schools in Wales that also showed levels above the Control limit.

167. The ITN tests clearly demonstrated a very real risk to the staff and children as significant levels of amosite fibres were ejected into the classroom and ceiling void, with all three samples being significantly above the Control limit. Although the disturbance was vigorous it was not excessive and the results were very much on par with previous results from sampling in other CLASP, and similar System built schools. The Minister is therefore incorrect, as the sampling carried out by ITN clearly demonstrated that there had been a previous risk to staff and pupils.

In addition the Minister's statement demonstrates a fundamental lack of knowledge of the risks from asbestos. If one is charitable one has to assume that he has been incorrectly briefed that there is no risk beneath the Control limit. Not only is that wrong but it runs contrary to HSE guidance that states that the Control limit does not represent a safe level, in addition he should realise that

¹⁴¹ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos. HSL/2007/22 10 Apr 2007 Upper estimate of possible releases para 4.5 p19

¹⁴² Letter Parliamentary Under Secretary of State for Work and Pensions Lord McKenzie/Lees 19 Feb 2008

there remains a risk at levels significantly beneath the Control limit, particularly to children.

168. The Minister gave his reasons for dismissing the tests, for he claimed that excessive force had been used. He stated:

*"The TV crew went on to subject a column to excessive force and this did result in fibres being released within the safety of an enclosure. The force went far beyond that used by the Health and Safety Laboratory or what can be reasonably expected during normal occupation of a classroom."*¹⁴³

I was there when these tests were carried out, and the Minister was not. The Minister is incorrect, for although the disturbance was vigorous it was not excessive and was a fair simulation of what can happen when a child loses his temper and hits out. There was evidence elsewhere in the school where holes had been hit in walls and ceilings where considerably more force would have been used, for this was a special school with children from infants to school leaving age, some with severe mental and physical disabilities.

I would not dispute that it is possible that the levels were higher than they might have been had the disturbance not been repeated three or four times for the purposes of filming. But that does not mean that they can or should be dismissed. It is most relevant that similar tests had been carried out in the Rhondda where the results had been very much on par as were the ILEA tests. One of their tests had shown that the levels after 5 door slams were very much on par with slamming the door and kicking the adjacent AIB panel with steel capped boots for 10 minutes. Hence without doubt in these similar circumstances the ITN tests would still have been significantly raised had the disturbance not been repeated.

The Minister should not dismiss these tests, for without doubt they show that a significant release of asbestos fibres occurs when the doors are slammed and the window sills and columns disturbed. Although he might argue over the precise levels obtained, boisterous disturbance was common in this school and these results prove that there has been a very real risk to staff and pupils. Regrettably it is probable that staff and pupils have been subjected to significant asbestos exposure in this school over the course of many years.

Ceiling voids

169. The subject of asbestos contamination in ceiling voids is covered in the section "CLASP Working Group guidance" at the end of Part 2.

Before Remediation summary.

170. In 1987 tests carried out in a System built schools proved that significant levels of asbestos fibres could be ejected when doors were slammed. Even higher levels were found when the walls were kicked and the doors slammed, at times the levels were above the Control limit. Twenty years later very similar levels were found in other System built schools from very similar activities where once again some levels were above the Control limit.

¹⁴³ Letter Parliamentary Under Secretary of State for Work and Pensions Lord McKenzie/Lees 19 Feb 2008

171. Guidance was sent out to authorities advising them to seal the gaps in columns, walls and ceilings. More than a year after the guidance had been issued ITN carried out air tests in a System built school. The doors were slammed, windows shaken and columns banged, again the levels were above the Control limit.
172. These three completely separate sets of tests prove that common everyday activities in classrooms in System built schools can release cumulatively dangerous levels of amosite fibres.
173. Despite the overwhelming evidence Government Ministers have denied the fact that teachers and children in these schools have been at risk.
174. At the request of a teaching union HSL commissioned a local authority to carry out further tests before remediation to assess typical fibre levels. Despite the instructions that sampling should be carried out in occupied classrooms the local authority carried out a series of sampling lasting five weeks in a couple of offices in an office block. Only one asbestos fibre was counted and very few other fibres of any sort. Despite it being apparent that hardly any fibres were being counted the sampling pumps continued for five weeks collecting a huge volume of air. HSE then pooled all the air tests together so that they could claim that the concentrations on average were a 1,000 times less than the Control limit. This test cannot be considered to be representative of a busy classroom. The results should not be used in an assessment of typical exposure levels of staff and children in System built schools.
175. A second test was again specifically carried out to assess the typical exposures of teachers and children. This time the local authority chose a CLASP school with chrysotile cement cladding to the columns, which they fully realise will release very few asbestos fibres in comparison to AIB cladding. There is also a possibility that the cladding was moulded cement and would therefore have little similarity to the problem that was being investigated in CLASP buildings. Again one fibre was counted in a large volume of air. HSL pooled the samples and were able to state that the concentration was below the levels previously found in asbestos containing buildings. This school was not representative and neither are the results. Again the results should not be used in an assessment of the typical exposure levels of staff and children in System built schools.
176. It was irresponsible of the local authority to select these buildings for these particular tests. Because the buildings were not representative it is immaterial that they were analysed by TEM, and it was therefore misleading of HSL and HSE to present the results as supposedly having more authority than the samples from the first series of tests.
177. Decisions and policy have been made, and guidance written mainly based on the results and calculations of the 2nd HSL report and the HSE and HSL presentations. Consequently certain critical decisions, policies and guidance are flawed.
178. It appears that the 2nd series of HSL tests were specifically designed and executed so that they achieved very low results. Buildings were selected that predictably would produce very low levels of airborne asbestos fibres. The intention of the sampling was to determine the level of risk to the occupants of the room which and in the case of the offices had been determined after the first

week of sampling where it had been proved that there was no risk. At which point the limited resources should have been relocated in another more representative building, however sampling continued for another month and the results were pooled. On the strength of these results the presentations given by senior HSE and HSL officials gave the impression that there was minimal risk and little need to be concerned about asbestos in System built schools. That is not only wrong it has given a dangerously misleading impression to the public and members of the Government.

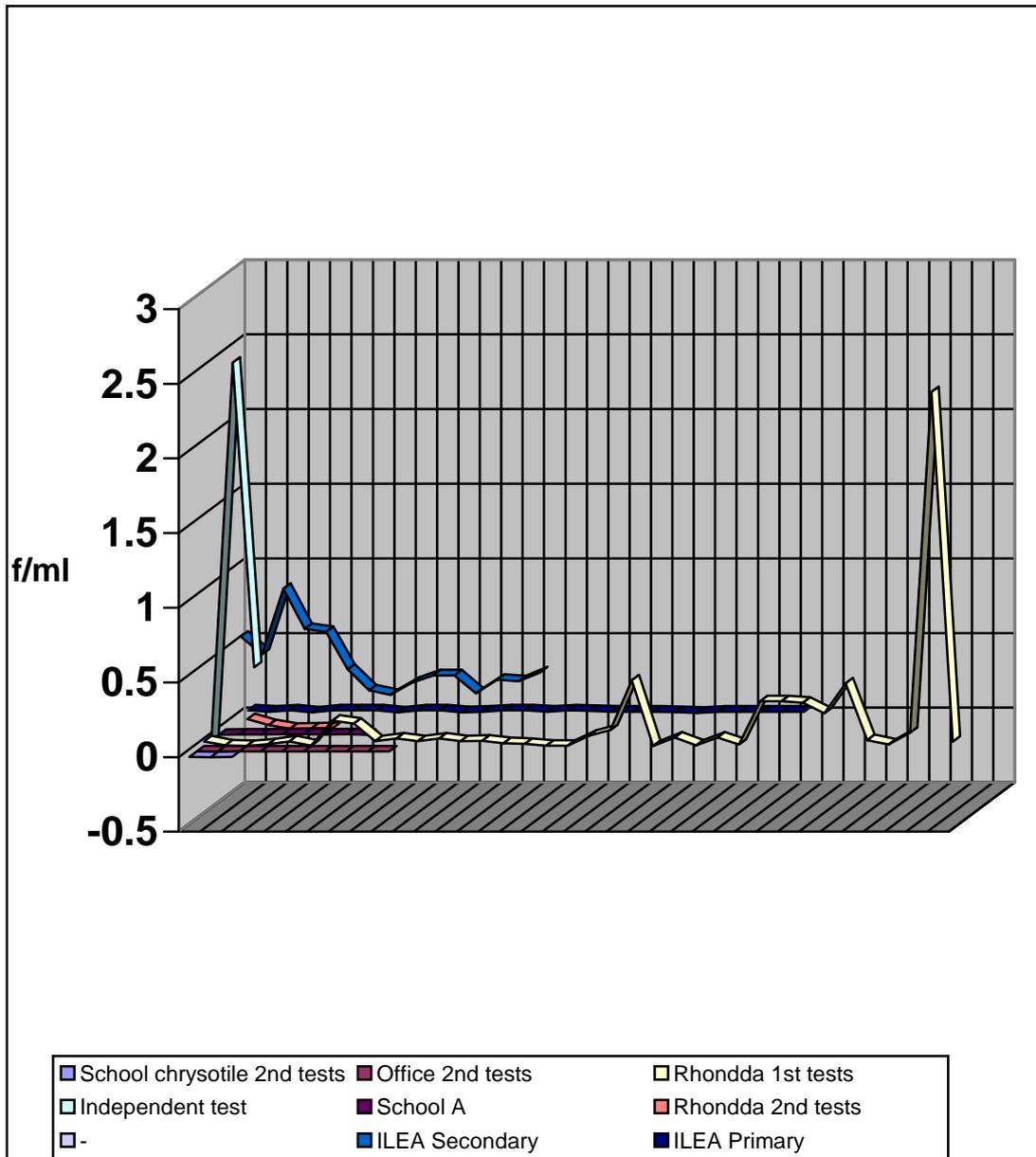
179. Although in some cases the visual appearance of the column gave an idea whether the asbestos was likely to release fibres into the room, in other cases the material looked as if it was in good condition but then released significant levels of asbestos fibres when disturbed. Consequently the visual appearance cannot be relied upon as definitive proof, it was only air sampling that detected that fibres were being released. Most of the badly damaged and deteriorating asbestos material in System built schools is hidden. Therefore the only way that it can be determined whether asbestos fibres are being released into the rooms is by comprehensive air sampling in every System built school in the country that contains asbestos.

180. What can be concluded from the ILEA, independent, HSL 1st and HSL 2nd series of tests is that the asbestos fibre levels are low, or very low, in buildings with asbestos that is probably in good condition. However where the asbestos is in poor or bad condition the airborne asbestos fibre levels can be very high.

Graphs of Fibre Levels Before Remediation

181. The following graphs show the various fibre levels before remediation. They are included purely for graphic purposes to demonstrate how many of the tests gave levels above the Clearance Level and some above the Control level. They also show the very considerable difference between most of the tests in the 2nd HSL report and the majority of other tests that have been carried out in System built schools.

Graph 1: Column Fibre levels pre-remediation



Graph 1 Column fibre levels pre-remediation

Note: The Clearance Level is 0.01 f/ml . the Control Level is 0.1f/ml
 To better illustrate the differences between the HSL 2nd tests in an office / school with chrysotile and the 1st tests/independent tests, the next graph does not include the value of 2.37f/ml sampled in the first series of tests and the value of 2.53 f/ml sampled in the independent tests

FIBRE LEVELS AFTER REMEDIATION

Air Testing Proves Effectiveness of Remedial Measures.

182. In 1987 ILEA identified that there was an asbestos problem in their schools. It would appear that other local authorities did not learn the lessons from these tests as the release of asbestos continued in System built schools throughout the country. In 2006 the problem was rediscovered in a CLASP school in the Rhondda, and on further investigation the council found that six other CLASP schools and a community centre had similar problems. Once the releases of asbestos fibres had been identified as emanating from the gaps in the columns, the council sealed the gaps with silicone sealant or sticky tape so that the damaged AIB, debris and asbestos fibres were enclosed within the columns. The HSL 1st report states:

"The recommended initial action to seal any gaps at room level in the metal casing, which enclosed the structural steel columns and the AIB, was a simple, cheap and fast way to improve the integrity of the enclosure in the occupied areas."¹⁴⁴

183. Strong sticky tape is widely used as a temporary repair for many other tasks, but it is accepted that it is not a permanent solution it is just a stop-gap, which is why it has justly earned its name "bodge tape." The silicone sealant and sticky tape remedy does not solve the problem, it just hides it, and can only be considered as a short-term expediency. This process was found to reduce the release of asbestos fibres but it did not necessarily eliminate it, for in some cases significant fibre release continued after remediation.

184. Silicone sealant around the bath does not last indefinitely, and frequently starts lifting within the year, but in schools the sealant is being used on surfaces that are even less ideal, and hence it is even more likely to come unstuck and once again allow asbestos fibres to seep into the rooms. In addition it is inevitable that curious little fingers will peel off strips of sealant or sticky tape. Therefore the integrity of the seals has to be regularly checked, both visually and with air monitoring.

In the HSL reports the sealing of the gaps is classified as "Partial remediation."

185. A visual inspection hadn't determine that the sealing had not worked, for it was only when air sampling was carried out that the continued release of fibres was detected. Further investigation and air sampling found that in some cases the fibres were also being ejected from the tops of the columns into the ceiling void where they were able to filter down into the rooms beneath. Some walls also contain damaged and deteriorating asbestos which was filtering into the rooms from around the skirting and being ejected out of the tops of the wall voids again into the ceiling void. HSE and Scape guidance was to seal all the gaps in the skirting, walls, window surrounds and ceilings with silicone sealant or sticky tape, and squirt expanding foam into the top of the columns and where necessary the tops of the wall void. The guidance stipulated air sampling/monitoring to prove

¹⁴⁴ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos. HSL/2007/22 10 Apr 2007Introduction p1

whether the sealing had worked. In addition they instructed that the continued integrity of the seals has to be periodically checked by further sampling. HSE and Scape advised:

- " Carry out a visual inspection of following items to ensure that there are no gaps in the elements of the internal lining to the external wall, pay particular attention to column casings and blind boxes.
- Priority for the visual inspection be given to:
 - ...Where refurbishment works have disturbed the column casings and the internal lining to the external wall.
 - Where ceilings have been accessed and tiles not replaced correctly

...If gaps are found they need to be sealed with a silicone seal."¹⁴⁵

"Short-term Solution

All gaps to column cladding, skirtings, and walls to be sealed to enclose the AIB dust and debris. Also UPVC finishing strips can be used as finishing over the top of the gaps using the same sealant.

Following remedial works, air monitoring to be carried out to ensure enclosure/encapsulation of asbestos has been successful.

Re-assurance air monitoring is then carried out on the basis of a risk assessment.

Longer-term Solution

Use expanded foam to fill tops of the columns and cavity walls where they are open to the ceiling void above the suspended ceilings. This work should only be carried out by Licensed Asbestos Removal Contractors. ."¹⁴⁶

186. This emergency guidance was a simple, practical stop gap measure to reduce the fibre release. And no doubt if it had been followed rigorously and in full it would have worked reasonably well until proper measures could be taken to solve the problem permanently. For complete removal of the asbestos materials, debris, off-cuts and fibres is the only safe long term solution. However the final guidance issued in March 2007 by the CLASP Working Group put aside much of the earlier good advice. It failed to mention sealing the window surrounds, the walls and the gaps in the suspended ceiling, and instead concentrated on sealing the gaps in the columns casing and around the casing. Although the guidance mentioned sealing the tops of the columns it was played down by stating, incorrectly, that there was little evidence of contamination in the ceiling void. No mention was made of sealing the top of the wall voids. What is also a critical omission is that the Working Group recommended that a visual inspection was sufficient to confirm that remediation had been successful, when tests have shown that a visual inspection cannot determine that asbestos fibres are being released.

In the HSL reports this is classified as "Full remediation." However no distinction is made in the reports between the remedial measures that sealed every gap in the walls, ceiling and columns and the less rigorous guidance given by the Working Group.

¹⁴⁵ Scape Formal Notice Recommended actions. 12 Oct 2006 p2

¹⁴⁶ Scape Formal Notice.HSE guidance note Methodology 12 Oct 2006

187. HSE and HSL were asked why important aspects of the previous advice had been omitted from their Working Group guidance, including why they had removed the advice to confirm the effectiveness of the sealing by air sampling. HSE Head of Cancer and Asbestos Unit¹⁴⁷ justified the decision as being based on the evidence of the HSL air tests. The question and answer were as follows:

Question 5.

The guidance, issued in October 2006 by HSE as part of the Scape Formal Notice, advises that "Following remedial works, air monitoring to be carried out to ensure enclosure/encapsulation of asbestos has been successful. Reassurance air monitoring is then carried out on the basis of a risk assessment." However the HSE CLASP Working Group guidance instructs "visually check to ensure that the sealing is effective," and there is no mention of air monitoring being carried out.

a. Why has this advice been removed from the final guidance?

HSE's reply was:

Question 5a concerns the advice on CLASP schools published by HSE in October 2006. You must remember that this was an early alert, and HSE published later advice after the CLASP working group had examined the issue in more detail. It is not unusual for an early precautionary alert to be issued using wording which is later revised after further assessment of the effect of remedial measures. I do not agree that refinement of the advice can be characterised as inconsistent. Having established the effectiveness of sealing of columns, HSE issued its updated guidance.

b. In the absence of air tests how are people expected to determine whether the sealing has been effective?

Question 5b. The sealing of any gaps or holes in the column casing has been shown to be effective in maintaining the integrity of the enclosure and in preventing any direct ingress of asbestos into the room. Visual assessment that the gaps are properly sealed is a direct check of the completeness of the sealing and identifies where further work is required.

There is no evidence that a properly sealed casing would give rise to a significant risk to occupants in the room.

In these circumstances air monitoring would serve little additional purpose. The air monitoring suggestion was qualified from the start by being subject to a risk assessment. The results referred to in the HSL report (Summary of fibre concentrations in CLASP construction schools containing asbestos (HSL/2007/22) are relevant and have already been drawn to your attention.¹⁴⁸

188. This is just one extract from the letter that on almost every point raises more issues than it resolves. The HSE reply justifies the later guidance being less rigorous on the fact that there was no evidence of fibre release after sealing. That is factually wrong as there is ample evidence that sealing of the columns does

¹⁴⁷ Former title HSE Head of Asbestos Policy

¹⁴⁸ Letter HSE Head of Cancer and Asbestos Unit/Lees 20 May 2008

not always prevent the release of asbestos fibres. In addition there is evidence of significant contamination of wall and ceiling voids so that the potential for fibre release remains if the voids are not sealed.

189. The HSE official is also incorrect in his statement "*In these circumstance air monitoring would serve little additional purpose. The air monitoring suggestion was qualified from the start by being subject to a risk assessment.*" Once the sealing had been completed and a visual inspection had passed it as being successful. Air testing was then carried out which found that fibres were still being released and in fact the sealing had not been successful. Because of this the initial guidance advised "*Following remedial works, air monitoring to be carried out to ensure enclosure/encapsulation of asbestos has been successful.*" The air monitoring therefore served a vital additional purpose, for without it the continued release of asbestos fibres would have gone undetected.

As a separate recommendation the initial guidance then advised that "*Re-assurance air monitoring is then carried out on the basis of a risk assessment.*" The second lot of sampling would be periodically carried out at later dates to determine whether over time the sealing remained effective, and any risk assessment would have to consider the location, the use and the vulnerability of the sealant so that it could determine how often the monitoring would have to be undertaken.

190. The tests are as follows:

HSL 1st Report. Fibre Levels After Remediation

191. 95 samples were taken in the 20 CLASP schools after remedial work had been complete when the schools were not occupied but disturbance took place. These results were reported in the 1st HSL report¹⁴⁹ The average value was 0.005f/ml which is ten times higher than schools with asbestos in good condition. The largest value was 0.058 f/ml which is almost six times the Clearance Level and one hundred and sixteen times greater than in schools with asbestos in good condition. Not only is that an unacceptable level it clearly demonstrates that significant fibre release was still taking place.

192. 96 further tests were carried out, in these tests the staff and pupils were allowed to return to their studies so that the school life continued as normal. The average level was the same as it had been when deliberate disturbance had taken place, at 0.005 f/ml. The largest value was 0.022 f/ml, which is more than twice the Clearance level, and forty four times greater than the level that should be expected in a school when the asbestos is in good condition.

193. The tests clearly show, and HSL acknowledges in their 1st report (HSL/2007/22) that the sealing of the columns was not always successful. The report states :

"The samples were collected during the clearance testing of the seal by carrying out a physical disturbance of the column and surrounding area by banging the casing hard with a fist several times and sitting on window seats, banging doors

¹⁴⁹ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos
HSL/2007/22 Apr 2007 Table 2 p 12

etc. This was normally carried out on a number of sealed columns in a single room or smaller enclosure with no extraction.

The distribution of the counts is not log normal and shows that there is a tail to the distribution of higher counts,

suggesting that a few columns are giving a small releases even after sealing has taken place. The level of release is still relatively low ~0.01 f/ml.¹⁵⁰

194. Their statement that the level of release was low at approximately 0.01f/ml implies that 0.01 f/ml is an acceptable level in a classroom, but it is not. Particularly as some of the levels were significantly higher than the Clearance indicator. In the 1st HSL report a table lists the highest level after remediation as being 0.058 f/ml.¹⁵¹ Some other results were 0.022f/ml, 0.033 f/ml, 0.048 f/ml, 0.021f/ml as well as five other results being ~0.01/ml.¹⁵² It must be remembered that at 0.01f/ml or above, a certificate of reoccupation could not be legally issued for these rooms, as the level is only acceptable as a transient indicator and not as a permanent level.¹⁵³
195. In his reply the HSE Head of Cancer and Asbestos Unit used the term that *"There is no evidence that a properly sealed casing would give rise to a significant risk to occupants in the room."* Perhaps if one was being pedantic there is not, but there is evidence that an improperly sealed casing can give rise to significant levels of asbestos fibre release, that do pose a significant cumulative risk to the occupants of the rooms. He also avoids addressing the point that sealing the casing was only the initial part of the process as there was also considerable evidence of asbestos debris and fibres in the ceiling, and wall voids. None of which had to be sealed in the Working Group guidance, and all of which would give rise to significant risk to the occupants in the rooms.
196. It must not be forgotten that the air sampling took place immediately after, or very soon after the silicone sealant had been applied, and therefore it would be at its most effective. Consequently the results of air sampling are likely to be at their lowest, for as time passes as the integrity of the seals breaks down then it is inevitable that the fibres will start seeping out again and levels will rise. Although most of the sealing appears to have prevented the immediate release of asbestos fibres, a significant minority did not, and HSE acknowledge this.
197. These air tests prove that the sealing does not always prevent the release of asbestos fibres into the rooms.
198. It is very relevant that the only way that it was discovered that the remedial measures had not worked was by air sampling.

¹⁵⁰ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos. HSL/2007/22 10 Apr 2007 para 3.1 p5

¹⁵¹ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos. HSL/2007/22 10 Apr 2007 Table 2 p12

¹⁵² 1st HSL report list of air sampling results.

¹⁵³ HSE 2006 CAR ACOP para 309 p68

HSL 2nd report. After Remediation

199. The recommendation of the 1st HSL report was somewhat at odds to their earlier conclusion that in some cases fibre are still released from the columns:

"Further high volume air sampling and analytical analysis in CLASP4 and 4b buildings is needed to confirm the findings in this report that the remediation was successful and leaves only background concentrations of airborne asbestos fibres in occupied school buildings.

*Further work to assess releases into ceiling voids and the personal exposures to workers who enter or disturb the ceiling voids for inspection and maintenance purposes is needed."*¹⁵⁴

200. Following the results of these 1st tests HSL was then commissioned to undertake further tests to confirm the effectiveness of the remedial measures. Many of the tests were carried out in local authorities other than the Rhondda, sampling was carried out both before and after partial or full remediation, the majority of the post remediation tests took place in CLASP schools "A-H." Most of the sampling was carried out while the schools were occupied, although it is not clear from the evidence whether the rooms were occupied or not. Large volumes of air were sampled and analysed by TEM, and yet only one asbestos fibre was counted, and again HSL pooled the results so that in effect they treated all the samples as one single large volume of air. On the strength of these tests, and their calculations the HSE Head of Asbestos Policy told the CLASP Working Group:

*What are the levels in occupied schools after remediation?
TEM results from 31 individual samples taken in 8 occupied schools that had been fully or partially remediated are available.*

Taken as a group representing CLASP schools which had undergone remediation (two had complete remediation), and overall analytical sensitivity of 0.000016 f/ml was achieved.

The average level in remediated schools was below the limit of detection <0.000048 f/ml.

An order of magnitude lower than the average previously found in UK asbestos containing buildings.

*Taking into account the earlier TEM samples reported in the first CLASP report the average asbestos concentration was 0.000014 f/ml..."*¹⁵⁵

201. The mathematical average of all the 31 results is <0.0011 f/ml, whereas in comparison the pooling gives an apparent result of < 000014f/ml, which is some 81 times less. HSL therefore concluded that the levels in all these schools was:

¹⁵⁴ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos. HSL/2007/22 10 Apr 2007 Recommendations pv

¹⁵⁵ HSE Powerpoint presentation HSE Head of Asbestos and Cancer Policy Dr K. Walkin to HSE CLASP Working Group meeting 16 July 2007.

" Some ten times lower than the average previously found in UK asbestos containing buildings." ¹⁵⁶

202. Although some might argue that pooling is acceptable when sampling is carried out in different rooms but in the same building, in this case the samples were taken in different rooms, rooms used for completely different purposes, different schools, at different dates and even different years. HSE guidance for analysts sets out when it is acceptable to pool the results of samples, they state:

*"It is permissible to achieve a measurement by pooling two or more simultaneous or consecutive samples....Samples that are pooled in this way should be taken within 1m of each other and are regarded as a single measurement."*¹⁵⁷

HSL have in effect set a precedence in these eight buildings that it is immaterial whether air samples are taken simultaneously or consecutively. For as far as they are concerned it is immaterial whether the pumps are near to each other sampling the same batch of air, indeed there is no need for them to even be in the same room, or the same type of room. There is no need for them to be in just classrooms, for they can also be in halls, corridors and cloakrooms, they don't even have to be in a room, for a sample from above the ceiling can be included. It actually does not matter if they are in the same building, the same school or even perhaps whether it is a school. The number of people occupying the room is immaterial, as is the activity going on. The samplers can be anywhere, running at any time with a whole range of different activities going on and yet it is fine to treat all the different batches of air as if it was one. It does not even matter whether the buildings contain the same type or quantity of asbestos, or even one must presume if they contain any at all.

Clearly in these circumstances the practice of pooling runs contrary to the whole logic of why pooling takes place. It has not enabled a better understanding of the asbestos concentrations in the air by improving the analytical sensitivity, it has purely mathematically reduced the result so that it appears that the air is ten times cleaner than has previously been found in UK buildings.

Eleven senior asbestos consultants and analysts were consulted over whether the pooling carried out in the 2nd series of tests was good practice. Eight said definitely it was not. Two said that it was, and one expressed a firm opinion but preferred not to be involved in the controversy. ¹⁵⁸

203. The HSL and HSE have stated very little about these buildings, about how they were selected, and by whom, or the type and condition of the asbestos. Certainly some of the samplers collected hardly any fibres at all despite the large volumes of air, therefore one must question whether the activity and cleanliness of the selected rooms were typical of a busy classroom full of boisterous children. Indeed despite the HSL stipulating that the samples should be taken in occupied

¹⁵⁶ HSL Further measurements of fibre concentrations in CLASP construction buildings. AS/2007/14 Sep 2007 Executive summary.

¹⁵⁷ HSE Asbestos: the analysts' guide for sampling and analysis and clearance procedures. para 5.19 p16

¹⁵⁸ Howie 29 May 2008

classrooms¹⁵⁹ some were taken in halls where almost no fibres were counted at all, just 2 PCM fibres in 1,560 litres in one case.¹⁶⁰ Other samples were taken in cloakrooms, above ceilings and in classrooms, in one supposedly occupied classroom there were very few fibres at all, just 2.5 PCM fibres in 2202 litres¹⁶¹, and in another 3 PCM fibres in 2880 litres.¹⁶² However all these results contributed towards HSE being able to claim that the recommended remedial measures work.

204. Extensive sampling in each school beforehand would have confirmed the success or otherwise of the sealing. This was not done in schools B-H where 29 samples were taken in a total volume of 55,000 litres of air and yet not a single asbestos fibre was found. If sampling had been carried out beforehand and the levels had been raised then these results would show that the release of asbestos fibres had been stopped, and hence this would be proof that the sealing had been completely successful and would be viable evidence to show that sealing works. If on the other hand the levels beforehand had shown clean air then the fact that the levels afterwards were the same proves nothing about the effectiveness of the sealing.

205. The reports give no indication whether the asbestos in these buildings was in good condition or not and therefore likely to be releasing asbestos fibres into the rooms. However the asbestos in other buildings in the series of tests apparently was in good condition and releasing almost no asbestos fibres all. With just one asbestos fibre being counted in five weeks of sampling in two offices and just one in a whole day's sampling in two occupied classrooms containing chrysotile. If these schools B-H had similarly low levels of airborne asbestos concentrations before remediation took place, the fact that they had equally low levels afterwards cannot be used as evidence that sealing works.

206. School "A" did have air sampling carried out both before and after remediation, however unfortunately the sampling was not carried out on the same columns and therefore the data cannot be used as proof of the effectiveness of the remedial measures. Before remediation asbestos fibres were released during disturbance, although the levels were beneath the Clearance level with a TEM asbestos fibre concentration of 0.0054 f/ml. Sampling after remediation was carried out elsewhere in the school in a corridor between two sets of swing doors which were in frequent use and caused movement to the structure. The doors were mounted on columns where the gaps in the casing had been taped over. One amosite fibre was counted in almost 5,000 litres. The results from these three samples were pooled, which in these circumstances is good practice. The 1st HSL report states:

" The combined pooled result from 3 samples found one amosite fibre, with dimensions large enough to be counted by PCM. This gave an analytical

¹⁵⁹ HSL. Further measurement of fibre concentrations in CLASP construction buildings. Apr 2008. Annex Sampling strategy for increasing the analytical sensitivity of air monitoring in schools and for TEM analysis. Para 6.1 p31

¹⁶⁰ HSL. Further measurement of fibre concentrations in CLASP construction buildings. Apr 2008. Table 7 p16

¹⁶¹ HSL. Further measurement of fibre concentrations in CLASP construction buildings. Apr 2008. Table 9 p17

¹⁶² HSL. Further measurement of fibre concentrations in CLASP construction buildings. Apr 2008. Table 9 p17

sensitivity of 0.0009 f/ml and was below the limit of detection, based on 95% confidence that the airborne concentration was <0.0004 f/ml.

*This result is below the average airborne concentration of PCM equivalent asbestos fibres that are commonly found in buildings containing asbestos products and represented a two orders of magnitude reduction in the airborne concentration of asbestos fibres after partial remediation.*¹⁶³

No data is given on fibre levels before remediation on these particular columns, therefore it appears that HSL are basing their statement on the general levels before remediation. Whether they were or not, these results show that following remediation very few asbestos fibres were being released from these columns.

207. The only school in the 2nd HSL report that did have sampling carried out in the same location both before and after remediation was the original school in the Rhondda. Two series of tests were carried out. On the first one a column was selected which just had minor gaps in the casing, with AIB cladding attached to it. The column was struck four to five times with a fist before remediation, releasing fibres at a level analysed by PCM of 0.07f/ml near to the column and 0.03f/ml at the end of the corridor. These show a significant release of fibres, being between three and seven times greater than the Clearance level. Partial remediation was then carried out and the column was struck again, although one PCME asbestos was counted the airborne asbestos concentration was less than the limit of detection of <0.008 f/ml. In this case the test showed that the sealing had been successful in reducing the release of asbestos fibres.¹⁶⁴

208. Further sampling was carried out in the same school both before and after full remediation. The tests involved different columns with sprayed asbestos applied to them. The following table shows the results.

Fibre levels before and after full remediation.

Position	PCM f/ml	TEM asbestos f/ml	TEM non asbestos f/ml	Before and After remediation
ROOM				
HM Corridor	0.005			Before
HM Corridor	0.008	0.007	0.008	After
Staff room	0.007	0.009	0.003	Before
Staff room	0.025	0.044	0.010	After
Staff room	0.031			After
Room opposite HM	0.012	0.007	0.017	Before
Room opposite HM	0.006	0.005	0.011	After
CEILING VOID				
HM office	.005			Before

¹⁶³ Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 para 3.6

¹⁶⁴ HSL. Further measurement of fibre concentrations in CLASP construction buildings. Apr 2008. Table 11 p19

HM office	0.013			After
Staff room	0.022			Before
Staff room	0.347	0.229	0.016	After
Room opposite HM	0.007			Before
Room opposite HM	0.024			After

209. Before remediation when the columns were struck four or five times the levels in the rooms were beneath the Clearance level on a TEM asbestos fibre count. However it should be noted that the PCM level in the ceiling void in the staff room was twice the Clearance level and was three times higher than in the room. The fact that a greater number of fibres are ejected from the top of a column than into the room was confirmed in later tests that were carried out in a school in Brent, where the level in the room was 0.5 f/ml and 0.7 f/ml next to the open top of the column.

210. Full remediation was then carried out. About an hour and a half to two hours after the remediation had finished the column was hit four to five times. The levels after remediation were even higher than before, being significantly higher than the Clearance level. The level in the staff room ceiling being five times greater than in the room. This either proves that the sealing of the top of the column had failed or the fibres were being ejected from elsewhere. HSE Wales and Scape highlighted the problem of asbestos fibre release from places other than the columns. For the same process took place with asbestos fibres being ejected from out of the wall voids :

*" During construction it also seems that off cuts of AIB and debris have in some cases been swept into the gap between the wall and plasterboard stud partitioning or wall cladding. Skirting boards then sealed this debris in. When the plasterboard was struck fibre was again released through the skirting board gaps."*¹⁶⁵

*Use expanded foam to fill tops of the columns and cavity walls where they are open to the ceiling void above the suspended ceiling."*¹⁶⁶

The guidance issued by HSE Wales referred to the schools in the Rhondda, and these latest HSL tests were carried out in one of the same schools. As it was probable that AIB off-cuts and debris were lying in the wall void, it is eminently possible that the raised fibre levels were being ejected from the top of the voids. These results tend to confirm the findings of HSE Wales.

211. However HSL put these raised levels down to the activity of actually carrying out the remedial actions and to other disturbance elsewhere. One cannot say whether that was the case or not, although what is indisputable is that the high fibre levels indicate that significant numbers of asbestos fibres had been released and were airborne in the ceiling void. These results are significant and when one considers that this test was carried out to determine whether the remedial actions had worked, the results show that they had not. If HSL felt that was not the case, then rather than making excuses they should have repeated the tests.

¹⁶⁵ Scape Formal Notice. HSE Guidance note 12 Oct 2006 para 8

¹⁶⁶ Scape Formal Notice. HSE Guidance note 12 Oct 2006 Methodology

212. However HSL did not repeat the test and instead they arbitrarily dismissed this significant data. It would appear that whenever the levels are raised then HSL/HSE and their Ministers dismiss the results. This happened earlier with the 2.37 f/ml found in the first series of HSL tests, although a similar level was found later in tests carried out by ITN. However HSE and the Minister rejected both that level and the other levels in the ITN tests, despite, or perhaps because of the fact that they provided even more evidence that significant levels of asbestos fibres are ejected into the rooms and the ceiling void.
213. This was the only sampling carried out in this second series of HSL tests to confirm the levels of asbestos fibres being ejected into the ceiling void from the tops of the column cladding and the wall voids. When one considers the disproportionate resources that were allocated to taking multiple samples in offices over the course of five weeks when there was no asbestos problem, it is unacceptable that these important tests were not repeated in a school where there was a problem.
214. This test proved that asbestos fibres can be ejected into the ceiling void before remediation. Once remediation had taken place high levels of asbestos fibres were found, which certainly did not prove that the sealing of the column prevented fibre release into either the rooms or the ceiling void, indeed the results showed precisely the opposite. In addition the tests showed that it is possible that fibres were also being ejected into the ceiling void from the open tops of the walls. If so this confirms the conclusion of HSE Wales that asbestos fibres can be released into the ceiling void from both the top of the column cladding and from the wall void. Later tests carried out by ITN certainly confirmed that significant asbestos fibres are ejected into the ceiling void from the open top of the columns. Therefore there is ample evidence that disturbance in the rooms causes contamination of the ceiling void.
215. These results show that it is essential to seal all the possible sources of asbestos fibre release into the void, including the tops of the columns, walls and window blind boxes. Then to ensure that any fibres in the void do not enter the rooms, any gaps between the ceiling tiles should also be sealed. After the remedial work has been completed then air sampling should be carried out to confirm whether the sealing has prevented the release of asbestos fibres into the rooms. Precisely as recommended by Scape, HSE, LGE and DfES in October 2006. And yet the CLASP Working Group failed to include much of this essential safety advice in their own guidance. HSE were asked why not. The reply of the HSE Head of Cancer and Asbestos Unit was as follows:

"Schools should follow the requirement of the more recent guidance (CLASP Working Group March 2007) which should achieve compliance, being evidence based."¹⁶⁷

216. The CLASP Working Group based their decision on the evidence of air tests which gave no grounds whatsoever for making their own guidance less rigorous. Although some schools are absolutely fine both before and after remediation, others are not, and without comprehensive air testing nobody can say which column, which room or which school is safe and which is not. Therefore unless there is definitive proof that asbestos fibres are not being released, it is vital to follow the earlier guidance. All the tops of the walls and columns should be

¹⁶⁷ Letter HSE Head of Cancer and Asbestos Unit. Walkin/ Lees 20 May 2008

sealed. All gaps in the columns, walls, skirting, window surrounds and the ceiling should also be sealed. Comprehensive air sampling should be carried out to confirm whether the sealing has been effective. Anything less than that cannot guarantee that the classrooms are safe.

Conclusion of Fibre Levels Before and after Remediation

217. Asbestos fibres in significant quantities are released into classrooms, halls and corridors in System built schools. The levels may vary, but indisputably in some schools those levels are completely unacceptable. People might argue over the precise level of risk to the staff and children, but on present knowledge it is highly likely that some, if not many people will develop mesothelioma because of their exposure in these schools, and because of their increased vulnerability children are more at risk.
218. The fibres have been released into the rooms because large amounts of asbestos have been used in these schools and much of it is hidden behind the walls, in the columns and in the ceilings. It has deteriorated over the years so that damaged asbestos material, friable debris, AIB off-cuts and accumulated amosite fibres lie in the voids so that every time they are disturbed the fibres seep surreptitiously through the smallest gaps or whenever a door is slammed or a child runs into a wall or column they are ejected forcibly into the rooms.
219. Remedial actions were advised that would have been a reasonable stop-gap measure until something more permanent could have been done to make the school safe. But instead of ensuring that every school in the country rigorously followed this guidance, the rules were relaxed so that now most of the gaps are not sealed. The tops of walls and columns are allowed to vent into the ceiling voids which are left wide open, fibres continue to seep through the suspended ceilings and under the skirting, and yet nobody will know that this is happening as on the advice of the HSE, school authorities no longer have to carry out air tests to confirm whether the remedial actions have worked.
220. Regardless of whether every gap in every school has been sealed with silicone, foam and sticky-tape, these remedial measures have only hidden the problem and have not solved it.
221. The ILEA tests showed that there was a considerable problem of asbestos fibre release in System built schools, twenty years later the problem was identified once again with significant levels of asbestos fibres being ejected into classrooms, later test carried out by ITN confirmed the results.
222. HSL were commissioned to carry out additional tests in schools. The results showed that both before and after remedial work the levels were lower than had been previously found in UK buildings. Those results are so at odds with the other series of tests that one has to question who selected these schools and why.
223. The buildings selected to assess the exposure of teachers and children were not representative of the problem in System schools. One contained chrysotile which predictably will release far less asbestos fibres, and the other were offices where the activity was clearly minimal. It would be completely wrong to treat these results as typical exposures when assessing the risk.

224. The tests carried out after remediation in occupied schools again showed levels of asbestos fibres less than had previously been identified in UK buildings. Very little information has been given about schools B-H other than that not a single asbestos fibre was found despite large volumes of air being sampled. There is no reference to air sampling before remediation in these tests, as there can be no comparison the results cannot be used as proof that the remedial measures are effective.
225. Tests carried out in the first series proved that remediation cannot be guaranteed to work, although in most cases it did, there was a significant minority where it did not. Tests were carried out in two schools in the second series of tests both before and after remediation. In one case the remediation worked, in the other case higher levels were sampled after the remediation and therefore this test did not prove that the sealing of gaps and column tops had been effective. Rather it indicated that significant levels of fibres were possibly being ejected from the wall voids.
226. These tests were carried out soon after the remedial measures had been completed and therefore the sealant would have been in good condition, however it will inevitably lose its effectiveness over time. In addition if a column is not releasing fibres now it will only take one child removing one strip of sealant and the fibres will enter the rooms again. Or a less than diligent caretaker not to notice that a seal behind a column has started to lift at the edge. Just one child losing his temper and lashing out at a wall that has not been sealed and the fibres will again be ejected unseen into the classroom and into the ceiling void to filter down through any gap in the tiles.
227. One can argue ad-infinitum over decimal points, analytical sensitivity and the degree of force used in disturbance testing, however this misses the main point which is being obscured by this smoke screen of scientific jargon.
228. There is a major asbestos problem in many System built schools.
229. The problem has been known about for decades, and yet nothing has been done, and now that they are once again confronted with the problem the Government's remedy is sticky plaster. It is rearranging the deck chairs on the Titanic and by doing so it avoids addressing the mammoth problem that this is. These schools are dangerous and until the Government publicly accepts that, our teachers and children will remain at risk.
230. This will cost billions to solve, but so far that expense has been avoided as successive Governments have hidden the problem from the public's gaze by a policy of secrecy. When an incident occurs they ensure that the truth is obscured by positive messaging supported by scientific and political spin. Crucial decisions have been taken behind closed doors, some have been based on dubious science and misleading statements. At times the decisions have been taken by the very people who have a vested interest in the outcome.
231. People have to be told the truth, they have to know the scale of the problem, for only then can they make informed decisions and decide on priorities. As a society we have to decide whether we are willing to spend these billions for our children to be safe, or whether we are willing to accept that an unknown number of them will eventually die because of their asbestos exposure in these schools.

SELECTION OF SCHOOLS. COMMERCIAL INTERESTS

232. The selection of the schools for the second series of tests was absolutely crucial, as major decisions were to be made that would effect the policy and guidance for thousands of other System built schools. Therefore it was essential to select schools that were typical of other schools with a similar problem of asbestos fibre release. The evidence is that the buildings were not typical, and yet considerable resources were allocated for these tests. On the strength of the results presentations were given that emphasised that the fibre levels before remediation were less than the average that had previously been recorded in UK buildings, and hence there was no risk to the occupants. On the strength of this important decisions were taken and policy made. In addition the test results from seven schools after remediation equally raise many questions that have not been answered. As not a single asbestos fibre was counted, the results were used as proof that the recommended remedial measures were completely successful.

233. It is not known how, or by whom the schools and offices were selected. In order to establish this, six months ago HSL/HSE were asked whether any of the buildings were in the areas of responsibility of the six Local Authorities who are the shareholders of the commercial company Scape System Build Ltd. Despite reminders this question was not answered, finally on 10th June 2008 HSE replied that they would not disclose the information under the Freedom of Information Act, as it:

*"relates to confidential sources."*¹⁶⁸

234. If the schools are within the control of the Scape local authorities then the selection of schools and the resultant air sampling cannot be considered as impartial, as there are commercial and financial implications dependent on the results. No doubt Scape, the CLASP Consortium and the local authorities would be very pleased if tests indicated that the 3,134 CLASP buildings do not have an asbestos problem. A brief outline of the two organisations is as follows:

235. The CLASP Consortium was formed in 1957 by the Ministry of Education for the construction of schools:

*" CLASP was founded in 1957 at the instigation of the then Ministry of Education for the purpose of improving the construction and delivery of schools. The Consortium addressed issues of skill and material shortage together with a high demand. It turned to a systematic form of construction. One which relied on a high proportion of prefabricated elements and had the ability to be built on sites with poor ground conditions including mining subsidence."*¹⁶⁹

236. The CLASP Consortium is an unincorporated association made of Local Authorities with seven full members. In April 2006 six of the full time members formed a commercial company called Scape:

The CLASP Consortium is an unincorporated association made of public sector members bound together by a Constitution. Nottinghamshire County Council acts as the Trustee Authority.

¹⁶⁸ e-mail FOI request 2008060183 Non disclosure HSE FOI officer Newman/Lees 10 Jun 2008

¹⁶⁹ www.clasp.gov.uk History

Membership of the Consortium has two levels, full members and honorary members, the difference being that full members can vote at the Management Committee and in so doing take on the administrative responsibility for the Consortium.

...Six of the seven full members have formed a local authority controlled Trading Company through which the Consortium's intellectual property and services will be made available."¹⁷⁰

"In 2004 CLASP reviewed its technology again with the objective of making sustainability its key driver. As a result the technology has moved on and changed so significantly that it was renamed Scape."¹⁷¹

237. Scape System Build Ltd is a commercial company involved in the refurbishment of old and the construction of new System buildings:

"...CLASP Consortium has made some important changes. CLASP has:

*Reviewed and developed its system technology
Launched a trading company
Refreshed its corporate image*

The new technology will be known as Scape, the company as Scape System Build Limited.

...Scape System Build Limited will make the Consortium's system technology available to Local Authorities using their own in house team, work with their selected consultants or support contractors engaged on PFI or Building Schools of the Future projects. The services the company will provide have been widened to include structural engineering and architecture."¹⁷²

"Scape provide consultancy services for the refurbishment of CLASP and other Consortia System buildings."¹⁷³

238. There are six shareholders in Scape. Scape state:

"Scape System Build Ltd is the trading company of the CLASP Consortium and wholly owned by 6 Local Authorities."¹⁷⁴

Scape System Build Ltd is a Local Authority controlled company whose shareholders are:

- Derby City*
- Derbyshire County Council*
- Gateshead*
- Warwickshire County Council*
- Nottingham*
- Nottinghamshire County Council"¹⁷⁵*

¹⁷⁰ www.clasp.gov.uk Membership

¹⁷¹ www.clasp.gov.uk History

¹⁷² www.scapebuild.co.uk CLASP launches Scape 1 Apr 08

¹⁷³ www.scapebuild.co.uk About us . Refurbishment consultancy.

¹⁷⁴ www.scapebuild.co.uk About us . Refurbishment consultancy.

¹⁷⁵ www.scapebuild.co.uk About us . Refurbishment consultancy.

239. The Chief Executive of SCAPE and the surveyor for Nottinghamshire County Council were members of the CLASP Working Group.¹⁷⁶ Of course as the experts on CLASP schools it was essential that they attended the meetings as technical advisors, however it is unacceptable that the chief executive of a commercial company was an integral part of the decision making process. In addition Nottinghamshire is one of the six shareholders in Scape and therefore, although he was representing his County Council, the surveyor had split loyalties as his authority also had commercial interests in the outcome of the Working Group's deliberations. Nottinghamshire in its own right has about 728 CLASP buildings and hence any adverse criticism of CLASP schools would have a direct financial effect on their maintenance and property budget.
240. The initial recommendations of HSE, LGE, DfES and Scape advised on widespread sealing of all gaps in columns, walls and ceilings as well as capping the column and wall voids, followed by comprehensive air sampling to confirm the integrity of the seals. Much of which would have had to involved the use of professional contractors and analysts to carry out the work. All of which would be very expensive. The CLASP Working Group dismissed most of that advice, claiming that their decisions were evidence based. A major part of that evidence were the results of the air sampling. Instead of the earlier rigorous measures the Working Group only recommended that gaps were sealed on and around the columns, with no mention of the walls and ceiling. The guidance was also worded so that it would appear that there was very little need to cap the tops of the columns and no mention was made of the tops of the wall voids. The guidance advised that almost all of the work could be carried out by the school's maintenance staff, who were also told to visually check that their sealing had stopped the release of asbestos fibres. This relaxation in the guidance got rid of the need to employ expensive contractors to work in the ceiling void and expensive analysts to carry out air testing. It also meant that a large scale data bank of asbestos fibre levels in CLASP buildings has not been collated. These are most dubious decisions and in part were based on the results of air sampling carried out in schools and offices, which had been undertaken by local authorities and their contractors.
241. The decisions to relax the guidance were taken by members of the CLASP Working Group. Aspects of the guidance are seriously flawed so one can only conclude that the decisions and recommendations were not made on the grounds of safety they were, at the very least, made on the grounds of political and financial expediency.
242. It is unacceptable that there were members of the CLASP Working Group who represented a commercial organisation who have vested commercial and financial interests in the conclusions and recommendations of the group.
243. If it materialises that the tests were carried out in CLASP buildings which were in the areas of responsibility of any of the shareholders of Scape System Build Ltd, then the credibility of the tests is put into question as they cannot be considered as impartial or unbiased.

¹⁷⁶ Minutes CLASP Working Group 13 Dec 2006, 26 Feb 2007, 16 July 2007. HSL Summary of fibre concentrations in CLASP construction schools containing asbestos. HSL/2007/22 10 Apr 2007 Distribution CLASP Working Group Members

NUMBER OF ASBESTOS FIBRES INHALED

244. The preceding section gave the results from tests that showed the airborne asbestos fibre concentrations in schools. This section puts those concentrations into context so that a better idea can be gained of the numbers of fibres that are inhaled by the occupants of a classroom.
245. Because of the manner in which the results are presented it can appear that the levels are very low and that little harm can be done if there are decimal points followed by various noughts. This impression is not helped by the fact that the fibre concentrations are given as fibres in a millilitre of air, whereas with other airborne concentrations the levels are frequently given in units per litre of air or even units per cubic metre of air. The results in the latter cases being expressed as whole numbers, rather than fractions of numbers.
246. As an example the Clearance level is 0.01 fibres per millilitre, which if expressed as fibres in a litre of air would be 10 fibres per litre and if expressed as fibres in a cubic metre of air would be 10,000 fibres per cubic metre.
247. Therefore at the Clearance level there are about 10,000 asbestos fibres in every cubic metre of air. An average classroom is say 300 cubic metres, which means that about 3,000,000 asbestos fibres are floating around in the room just waiting to be breathed in by the occupants. Which gives a totally different impression and makes one realise why HSE state that the Clearance level is not an acceptable permanent level.
- These are asbestos fibres of standard dimensions, and yet sampling in a school has shown that there are many more asbestos fibres of a non-standard dimension,¹⁷⁷ many of which can also cause mesothelioma. Therefore the number of asbestos fibres in the air is considerably greater.
248. Any occupants of the rooms will breathe in the air and the asbestos fibres that are suspended in it. Although the majority of fibres are exhaled at the next breath some remain. Experiments have shown that about 1% of the fibres that were inhaled penetrated and were deposited in the lungs.¹⁷⁸ Having penetrated the lining of the lung amosite and crocidolite fibres remain there for a very long time, for many decades in some cases only gradually dispersing, estimates consider that their half life is about 7-8 years,¹⁷⁹ which doesn't mean that all the fibres are dispersed in that length of time, for only half are then another half 7-8 years later, the remaining ones being impaled in the pleura gradually allowing a tumour to develop.
249. Depending whether a person is a child or an adult, a male or a female they breathe at different rates and inhale different volumes of air. Also the kind of activity they are doing alters the amount of air inhaled. If a person runs into a classroom and slams the door they will inhale about three times more air than if they were sitting at a desk studying.

¹⁷⁷ Toxicological profile for Asbestos U.S Department of Health and Human Resources. Sep 2001 Table 6.3

¹⁷⁸ Observations on the exposure of gas mask workers at the Boots plant. Pooley p7

¹⁷⁹ Comparison of measurements of exposure to asbestos in former crocidolite workers from Wittenoom Gorge, W Australia. De Klerk et al Am J Ind Med 1996 Nov;30(5); 579-87

250. Levels and exposures vary enormously depending on the activity, the condition and type of asbestos and the duration of exposure. The following calculation is not meant to be a definitive example of the numbers of fibres inhaled by all children. It is designed purely to give a scale of the problem and the number of fibres that could be inhaled in a System built school where the asbestos is in poor to bad condition, no remediation has been carried out and amosite fibres are released when the classroom door is slammed.

251. I have intentionally looked at the fibres inhaled by a child because they are more at risk. I have taken the average airborne asbestos concentration from the 1st HSL report of 0.094 f/ml rather than the worst cases, or the 0.33f/ml recorded when a door was slammed five times, and have taken one episode of disturbance per day. I have taken a 5hour background exposure rather than a whole days exposure.

252. The following volumes were extracted from a report that measured the amount of air people breath in from a study of 160 people of all ages carrying out a variety of activities. These measurements are 10-20% lower than some other studies.

The following are for a child:

- A sitting child breaths 7 litres per minute,
- A standing child breaths 8 litres per minute.
- A child walking slowly breaths 14 litres per minute.
- A child walking quickly breaths 17 litres per minute.
- A running child breaths 32 litres per minute.¹⁸⁰

Say a child spends 5 hours inside at school a day
 $3^{1/2}$ hours sitting at 7 litres a minute
 $1/2$ hour standing at 8 litres a minute
 $1/2$ hour walking average 15 litres a minute
 $1/2$ hour other activity at say 20 litres a minute
 Therefore weighted average :

During the day the child breaths at about 9 litres a minute

253. The following table gives an idea of the numbers of fibres that a child could inhale in their school. The Clearance level, urban outdoor levels and the average level in a school with asbestos in good condition are included, as are a few of the levels from air sampling carried out in System built schools.

Table 20: Number of amosite fibres inhaled by a child

Fibres/MI	Fibres/litre	Number of litres inhaled Per Minute	Inhaled Fibres per Minute	Inhaled Fibres per Hour	Number of hours inhaled	Inhaled Fibres Per Day	Inhaled Fibres Per Week (5days)	Inhaled Fibres Per Year (40 weeks)
0.0001 urban outdoor	0.1 fibres	9 litres	0.9 fibres	54 fibres	24 hours	1,296 fibres	6,480 fibres	259,200 fibres
0.0005	0.5	9	4.5	270	5	1,350	6,750	270,000

¹⁸⁰ Californian Environmental Protection Agency. Air Resources Board. How much air do we breath? August 1994

school asbestos good condition	fibres	litres	fibres	fibres	hours	fibres	fibres	fibres
0.000007 HSL 2 nd report Pooled average	0.007	9 litres	0.063 fibres	3.78 fibres	5 hours	19	94 fibres	3,780 fibres
0.005 average level after sealing	5 fibres	9 litres	45 fibres	2,700 fibres	5 hours	13,500 fibres	67,500 fibres	2,700,000 fibres
0.01 clearance limit	10 fibres	9 litres	90 fibres	5,400 fibres	5 hours	27,000 fibres	135,500 fibres	5,400,000 fibres
0.094 Average 1 st HSL report slamming, hitting	94 fibres	9 litres	846 fibres	50,760 fibres	1 hour	50,760 fibres	253,800 fibres	10,152,000 fibres
0.44 1 st HSL report slamming, hitting	440 fibres	9 litres	3,960 fibres	237,600 fibres	1 hour	237,600 fibres	1,188,000 fibres	47,520,000 fibres
0.49 Brent Slamming hitting	490 fibres	9 litres	4,410 fibres	264,600 fibres	1 hour	264,600 fibres	1,323,000 fibres	52,920,000 fibres
0.33 ILEA slamming door 5 times	330	9 litres	2,970 fibres	178,200 fibres	1 hour	178,200 fibres	891,000 fibres	35,640,000 fibres

0.005f/ml average level in an occupied school after remediation 1st HSL report
0.094f/ml average level from disturbance before remediation 1st HSL report.
0.33 f/ml level when a door was slammed 5 times from the ILEA tests
0.44 f/ml level when a column was hit and door slammed from the 1st HSL report
0.49 f/ml level when the column was hit and door slammed independent test
0.0001 f/ml average urban outdoor level
0.0005 f/ml average school with asbestos in good condition
0.000007f/ml pooled level occupied offices 2nd HSL tests

254. Fibres inhaled in a CLASP school with asbestos in poor or bad condition with one episode of disturbance per day:

Table 21: Total fibres inhaled in a year

	Inhaled Fibres Per Hour	Inhaled Fibres Per Day	Inhaled Fibres Per Week (5days)	Inhaled Fibres Per Year (40 weeks)
0.005 f/ml Continuous background	2,700 fibres	13,500 fibres	67,500 fibres	2,700,000 fibres
0.094 f/ml One hour A day	50,760 fibres	50,760 fibres	253,800 fibres	10,152,000 fibres
TOTAL	53,460	64,260	321,300	12,852,000

Background level post remediation, classroom normal occupation for
5 hours a day (most children spend longer at school than this although sometime will
be outside)

= 0.005f/ml

Average level pre-remediation with disturbance,
the level averaged over 1 hour a day

= 0.094 f/ml

It should be noted that the 0.094 f/ml is the result of air sampling which is normally taken over about an hour. For the disturbance would have only taken place for a short time and it was the air sampling that lasted for an hour. Peak levels during the disturbance have been measured and are significantly higher, but if no further disturbance takes place the levels gradually subside, giving a lower reading when averaged over the hour, after the hour it is likely that they will still be higher than background levels as the fibre gradually settle.

255. Say a child spends 12 years at school
Therefore a child will breath in 12,852,000 x 12

= 154,224,000 fibres

**Total school career in a System school with asbestos in poor condition with
the door being slammed five times a day.**

A child will inhale about

154,000,000 asbestos fibres

That figure is a conservative estimate for schools with asbestos in poor or bad condition. It is known that children have kicked holes in walls and AIB window infill panels,¹⁸¹ teachers have used dustpans and brushes to sweep up asbestos debris,¹⁸² children and a caretaker have broken up AIB tiles,¹⁸³ children have kicked asbestos dust around like snow.¹⁸⁴ These cases are not exceptional there are many more where the exposure of the individuals would be very high. It is known that the simple act of slamming doors and vigorous kicking and hitting of a column in a classroom can release a level of 2.53 f/ml With that kind of activity a child would be breathing between 15 to 30 litres of air a minute.¹⁸⁵ Each litre of air would contain 2,530 amosite fibres. In just 10 minutes the child would inhale up to 750,000 asbestos fibres.

256. However Government policy is not based on schools and fibre levels where the asbestos is in poor or bad condition, neither does it take into consideration constant exposure from raised background levels with very high peak exposures from common every day activities. It is based on the assumption that asbestos is in good condition and the level is 0.0005 f/ml¹⁸⁶

257. A Department of the Environment document made an estimate of the numbers of asbestos fibres that people are likely to inhale in their lifetime. One of their calculations was the number of fibres a child would inhale during his school career:

¹⁸¹ Name of school available but withheld.

¹⁸² Silverhill Primary school Derby Feb-March 2004

¹⁸³ HSE Prosecutions details of case No: 2019231 1apr 2001

¹⁸⁴ Prosecution Fareham College 2002.

¹⁸⁵ Californian Environmental Protection Agency. Air Resources Board. How much air do we breath? Amount of air breathed by children. August 1994

¹⁸⁶ DETR Asbestos and man made mineral fibres in buildings. para 4.3.1 Schools p 11. Table 4 p14 Estimates of exposure to asbestos draft Aug 1998

Inhaling 8 l/min for both adults and children
 25 hours per week
 40 weeks per year
 12.5 years at school
 Background asbestos fibre level 0.0005 f/ml
 Total fibres in school life = 3,000,000 fibres¹⁸⁷

258. Therefore during their school career at a conservative estimate, a child in a System built school with an asbestos problem will inhale about 50 times more amosite fibres than Government statistics presume.

259. The DETR document also lists the following levels:

Rural background level	= 0.000001 f/ml
Urban background level	= 0.0001 f/ml
70 year life	
Total lifetime fibres rural background level	= 295,000 fibres
Total lifetime fibres urban background level	= 29,500,000 fibres ¹⁸⁸

Therefore during their time at school, on a conservative estimate, a child in a System built school with an asbestos problem will inhale between 5 and 520 times more amosite fibres than Government statistics presume for 70 years exposure at normal background levels.

(Note: the table of the number of fibres inhaled was in the draft DETR document but had been deleted from the published document)

Conclusion

260. The levels of exposure in System built schools with an asbestos problem are cumulatively significant. Regrettably they are capable of causing mesothelioma, particularly in children.

261. The following section is a risk assessment of how many people could develop mesothelioma from an asbestos exposure at school.

RISK ESTIMATE

262. Various air tests have shown that for at least twenty years there has been a significant release of amosite asbestos fibres into classrooms from common everyday activities such as slamming a door. It is inevitable that in some schools the release of asbestos fibre will have happened frequently, in others less often. An unknown number of staff and children have been exposed to significant levels of asbestos fibres, which in some cases has probably occurred over the course of many years. Regrettably exposure to asbestos at very low levels can cause mesothelioma, with each exposure a person experiences being cumulative so that each time asbestos fibres are inhaled the risk of developing the disease increases.

¹⁸⁷ DETR Asbestos and man made mineral fibres in buildings. Table 4 Estimates of exposure to asbestos draft Aug 1998

¹⁸⁸ DETR Asbestos and man made mineral fibres in buildings. Table 4 Estimates of exposure to asbestos draft Aug 1998

263. It is not known how many teachers and children have been exposed to asbestos at school or how often the exposures have taken place, and therefore assumptions have to be made when carrying out a risk estimate. By using the assumptions and known fibre levels a risk estimate can be made of how people will eventually develop mesothelioma from their exposures at school.
264. A senior occupational hygienist used the airborne fibre level determined in the ITN tests to estimate how many children are likely to eventually develop mesothelioma many years later from that exposure. The calculation has been based on the assumption that the fibre level experienced during the ITN test only happened once a year. It has intentionally not considered the likelihood that other incidents occurred during the year causing other raised fibre levels, and it has not taken into account the likelihood of continuous raised background levels. It has taken into consideration the increased risk for a child as they have longer for the disease to develop, but it has not factored in the increased risk because of their increased susceptibility to carcinogens, as the level is unknown. The following is the risk assessment:

Assumptions

I made the following assumptions:

That 2/3 of the c 9 million children currently at school would have been, or will be, taught in schools containing asbestos, i.e. about 6 million children could have been, still are, or will be, potentially exposed to asbestos at school;

That each school was likely to have contained amosite;

That all fibres counted in the ITN study were amosite;

That each of the relevant 6 million children is likely to have been, or will be, exposed to one or more exposures as generated during the ITN study;

That the Hodgson and Darnton (2000) risk model applies to the exposures of concern;

That the Doll and Peto (1985) risk model can be applied to the Hodgson and Darnton (2000) risk model to extend the latter model to exposures from age 5;

That the risk of concern is mesothelioma;

That the majority of children spend about 11 years at school.

Risk estimates

Mesothelioma risk depends on three main factors: the number of fibres inhaled; the type of fibres inhaled; the age at exposure.

The number of fibres inhaled is generally expressed in terms of the "cumulative exposure" which is given by the product of the average airborne fibre concentration and the duration of such exposure.

As noted above it is assumed that the counted fibres in the ITN study were amosite.

Mesothelioma risk increases as the time since exposure to the power 3 to 4. As children have a longer likely life expectancy than adults, they are at greater risk than equally and simultaneously exposed adults.

Estimate of exposure

The ITN study identified that the concentration inside the enclosure was about 0.5 fibres/ml over a 1 hour period. If it is assumed that air movement in a classroom is equivalent to about 1 air change per hour, the average concentration over the first hour would be 0.5 fibres/ml, over the next hour would be 0.25 fibres/ml, over the next again hour would be 0.125 fibres/ml etc. If a 3 hour exposure were assumed, the average fibre concentration over the 3 hours would be: $(0.5 + 0.25 + 0.125)/3$. The cumulative exposure would therefore be: $(0.5 + 0.25 + 0.125)/3$ fibres/ml x 3 hours = 0.875 fibres/ml.hours, i.e. 0.9 fibres/ml.hours. The above models apply to occupational exposures of about 1,920 working hours per working year. 0.9 fibres/ml.hours is $0.9/1920 = 0.00047$ fibres/ml.years.

From Hodgson and Darnton (2000) a cumulative exposure of 0.00047 fibres/ml.years at age 30 to 35 would give a mesothelioma risk of 3 per million exposed persons.

From Doll and Peto (1985) the mesothelioma risk from exposure to asbestos between the ages of 5 and 10 would be 5.3 times higher than an equal exposure ages 30 to 35. That is, a cumulative exposure of 0.00047 fibres/ml.years at age 5 to 10 would give a mesothelioma risk of $3 \times 5.3 = 16$ per million exposed persons. The corresponding risk from exposures at age 10 to 15 would be about 12 per million.

If each of 6 million schoolchildren had one annual exposure of 0.00047 fibres/ml.years of amosite throughout their 11 year school careers, the consequence of exposures as revealed by the ITN study are that about 600 of these children, with no future exposure to amphibole asbestos, will die from mesothelioma 40 or more years hence.

HSE's failure since May 2004 to properly enforce the duty to manage to date may therefore have caused somewhere in the region of 150-300 avoidable future deaths due to exposure to asbestos in schools.

If such avoidable exposures are permitted to continue, the risk from single event exposures as above could, depending on the age at which exposure occurs, cause in the region of about 70 to 100 mesothelioma deaths per year of further exposures in schools.

If we assume that there have been about 5 "generations" of post-war schoolchildren, total school-induced asbestos deaths could eventually number about $5 \times 600 = 3,000$.¹⁸⁹

265. The above risk estimate has understandably made a number of assumptions and therefore the number of deaths must not be treated as a definitive figure. What it is intended to show is that there is a considerable risk and that a significant number of people could develop mesothelioma from asbestos exposures at school.

¹⁸⁹ Risk Estimate. Robin Howie Associates. 6 Jan 2008

LACK OF OFFICIAL RISK ASSESSMENT

266. As has been seen it is possible to estimate how many people are likely to develop mesothelioma from their asbestos exposure in a school. However despite requests, the Government has refused to make an official estimate. To compound the problem over the years they have also refused requests from teaching union, MPs and others to carry out an audit throughout the country to determine the extent of asbestos in UK schools. If they assessed the extent of asbestos and the numbers of staff and children who are likely to die, then they would be able to allocate resources in proportion to risk.¹⁹⁰

15.1 In contrast more than twenty years ago in the USA they made an estimate of how many staff and pupils were likely to develop mesothelioma as a result of their asbestos exposure at school. In 1980 the American Environmental Protection Agency (EPA) wrote a report which estimated that the numbers of deaths from school exposures could be from 100 to 7,000 with a best estimate of 1,000 over the course of thirty years. 90% of these deaths they considered would be amongst the children.¹⁹¹ The estimate was based on the assumption of about 8,500 schools containing friable asbestos, with 3,000,000 pupils.¹⁹² However by law all schools were then required to identify the extent of their asbestos, and those results showed that 34,800 schools contained friable asbestos and 15,000,000 pupils were at risk. A five fold increase in the children at risk.¹⁹³

267. In December 2006 there was an Education Sector meeting at the HSE, part of which was a briefing on the deliberations and conclusions of the CLASP Working Group. The HSE Head of Asbestos and Cancer Policy was asked if HSE would carry out a risk assessment into the exposure of staff and pupils in System built schools. He declined the request and incorrectly stated that there was no evidence of high fibre levels in the past and that it was impossible to estimate what they were. The following is a record from contemporaneous notes taken at the meeting:

"He stated that no estimate had been made of the exposures of the teachers and children. When he was asked why not, he replied that it was impossible to estimate what the fibre levels would have been."¹⁹⁴

"HSE would not be making a risk estimate of the exposures of the staff and children. He stated that there was no evidence of high fibre levels in the past."¹⁹⁵

268. There is ample evidence of fibre levels from everyday activities in System built schools dating back 20 years, consequently a risk assessment can be made.

¹⁹⁰ A separate paper "Asbestos exposures in schools. Flawed Government Policies" gives a comprehensive list of the requests and refusals. The paper will hopefully be published later this year.

¹⁹¹ EPA report Health effects and magnitude of exposure of Asbestos containing materials in school buildings. 560/12-80-003

¹⁹² EPA report Health effects and magnitude of exposure of Asbestos containing materials in school buildings. 560/12-80-003

¹⁹³ EPA Fact sheet AHERA 1986 statement EPA Administrator 23 Oct 86

¹⁹⁴ HSE Education Sector Briefing. HSE Head of Asbestos and Cancer Policy unit. Dr K. Walkin. 13 Dec 2006 Contemporaneous notes Lees.

¹⁹⁵ HSE Education Sector Briefing. HSE Head of Asbestos and Cancer Policy unit. Dr K. Walkin. 13 Dec 2006 Contemporaneous notes Lees.

269. In December 2006 the Parliamentary Under Secretary of State for Work and Pensions replied to a letter. He stated in connection to the fibre release from System built schools:

*"There is no evidence that teachers and children have been exposed to dangerous levels of amosite fibre release in these schools."*¹⁹⁶

270. The statements of both the Under Secretary of State and the HSE Head of Asbestos Policy are wrong as the problems of fibre release from normal activities have been known about for twenty years, and normal boisterous activity that is common in a school, releases dangerous levels of asbestos fibres.

271. It is known that during normal everyday activities in the schools significant levels of asbestos fibres were ejected from out of the various cracks. All the levels are unacceptably high even for asbestos contractors, for whom the various control levels were designed. The contractors would by law wearing full protective overalls and breathing apparatus within a sealed negative pressure tent, which of course the teachers and children were not.

272. The activity in schools is such that doors are regularly banged and walls are knocked, each time this happened, the debris and fibres lying hidden behind the walls and in the columns drift out from under the skirting boards into the classroom. Every time the wind blows the windows flex and more fibres are ejected into the room. Fibres in the ceiling void filter down through the cracks in the tiles. It is inevitable that the high levels of fibre release have been a frequent occurrence over many years. There has therefore been a significant risk to the teachers and other staff. However what is of more concern is that when one considers the increased vulnerability of children, the risk to them has been significantly greater.

273. In February 2008 Parliamentary Under Secretary of State for Work and Pensions replied to a letter in connection to the risks from the high asbestos fibre levels that had been obtained during the independent air sampling in Brent. He made a remarkable statement:

"The independent air sampling tests carried out by the Independent Television News showed that the level of total fibres in the classroom was below the control level before they carried out their experiments, and therefore there has been no previous risk to staff and pupils."

*I can assure you that the history of testing at these premises show no evidence that staff or pupils had been exposed to asbestos at any time."*¹⁹⁷

The Minister totally dismisses any of the findings of the independent tests despite them being above the Control limit. His statement is flawed but very similar to his predecessor who a year before denied that there was any evidence of dangerous levels in System built schools despite HSE data from the schools in Wales that also showed levels above the Control limit.

¹⁹⁶ Lord Hunt of Kings Heath OBE /Lees 6 Dec 2006

¹⁹⁷ Letter Parliamentary Under Secretary of State for Work and Pensions Lord McKenzie/Lees 19 Feb 2008

The ITN tests clearly demonstrated a very real risk to the staff and children as significant levels of amosite fibres were ejected into the classroom and ceiling void, with all levels being significantly above the Control limit.

In addition the Minister's statement demonstrates a fundamental lack of knowledge of the risks from asbestos. It is apparent that he has been incorrectly briefed that there is no risk beneath the Control limit. Not only is that wrong but it runs contrary to HSE guidance that states that the Control limit does not represent a safe level, in addition there is a quantifiable risk at levels significantly beneath the Control limit, particularly to children.

274. In March 2008 The Department for Children Schools and Families again stated that they would not reinstate the asbestos in schools campaign, and as justification referred to the 1st HSL report :

*"Potential exposure to asbestos fibres in schools under normal circumstances is considered low. Measurements of asbestos fibres in air in schools simulating foreseeable disturbance in schools where asbestos is managed properly demonstrated low levels of fibre release (2007 HSL0722). The HSE does not propose to have an asbestos in schools campaign."*¹⁹⁸

The above statement is both misleading and incorrect as a significant number of the results were high and cannot be described as "low," unless of course DCSF are comparing them with industrial levels.

275. In April 2008 a follow up letter from the DCSF official with responsibility for asbestos in schools shows a lack of understanding of the data and indeed given the plethora of evidence, an unacceptable complacency. DCSF stated:

"We do not agree with you that asbestos is not well managed in schools...."

The asbestos in schools campaign had been initiated by HSE because they considered that *"a significant minority (of authorities) have still not established complete control of asbestos in their premises."*¹⁹⁹ The campaign to improve the asbestos management in schools had been scrapped not because the problem had been solved but because HSE's limited resources were reallocated to the building maintenance trades. Therefore DCSF's statement runs contrary to the evidence and to HSE's former statement. The DCSF letter continues:

*The evidence from HSL's measurements in schools under conditions of foreseeable disturbance demonstrated very low levels of asbestos fibre release and HSE advises that teachers and pupils are unlikely to be at risk in the course of their normal activities."*²⁰⁰

Again this statement is factually wrong, for these are schools occupied by children and not industrial workplaces full of adults, or places where asbestos contractors were carrying out work on asbestos under controlled conditions. The levels that were found from common every day activities cannot be described under these circumstances as "very low," particularly as some were above the Control limit which the HSE acknowledge is not a safe level for asbestos contractors. It is also ironic that HSE have refused to carry out a risk assessment

¹⁹⁸ Letter DCSF/R. 2008/0021951 Lees 27 Mar 2008

¹⁹⁹ HSE Head of Asbestos Policy Macdonald briefing LAF 23 Nov 2004

²⁰⁰ Letter DCSF /R.Lees 2008/0030026 24 Apr 2008

on the children in these schools, who after all the most vulnerable people in society, and yet, without a risk assessment they state that they are unlikely to be at risk in the course of their normal activities.

276. The airborne amosite fibre levels within these System built schools had, and still has the potential to endanger the health of the occupants.
277. There is ample evidence that asbestos fibres found in some schools were at a dangerous level that cumulatively can cause mesothelioma. It is wrong for the HSE Head of Cancer and Asbestos Policy, the Ministers and the Department for Schools to deny the fact.
278. It is unacceptable for HSE to refuse to carry out a risk assessment into the exposures that have occurred over many years to a large number of staff and pupils in the many thousands of System built schools throughout the country.

HSL REPORT. HSE, DfES, LGE and SCAPE GUIDANCE

HSE, Scape, DfES and LGE Guidance October 2006

279. In April 2006 a survey was carried out in a special school in the Rhondda Cynon Taf where AIB ceiling tiles discovered. The school was a System built CLASP school. Air tests were undertaken and the school was closed.²⁰¹
280. In July 2006 the investigation continued in the school in the Rhondda. Raised fibre levels were found when doors and windows were slammed and walls and columns hit. Levels were measured above the Control Limit.
281. In August 2006 the asbestos problem was found to exist in six other schools and a community centre in the Rhondda. The schools were also closed so that emergency work could be carried out.
282. In October 2006 warnings were sent out to the Welsh assembly, the Scottish Executive, DfES all local authorities, governing bodies and heads of foundation schools. HSE, DfES and the LGE issued guidance in the form of a "Joint Message" to all duty holders. At the same time Scape issued a Formal Notice in conjunction with HSE. Both circulars outlined the problem that had been found in the CLASP schools in the Rhondda. Those details are given in the first section of this paper. Advice was then given on a short term solution and a longer term solution of sealing the gaps in walls, ceilings and columns. An urgency was expressed that owners of CLASP buildings should check whether they had similar problems, and then carry out the suggested remedial measures. The HSE/LGE/DfES document stated:

"A potential problem for exposure to asbestos fibres has come to light in certain types of CLASP constructed schools, specifically type 4 and 4b...."

This is an opportunity for you to take appropriate action to ensure that children, teachers and others are not exposed to asbestos fibres.

²⁰¹ BBC News School closes after asbestos find. 7 April 2006

*Clearly the sooner the issue is dealt with the better. The upcoming half term (as well as out of school hours) should provide you with the opportunity to assess the situation in your schools.*²⁰²

(Half-term in the Autumn of 2006 was 23 Oct-27 Oct)

283. HSE and Scape recommended the following actions:

"Recommended Actions

Scape, in consultation with the HSE, recommend the following actions:

- *Ensure that best practise is followed in the applications of the Control of Asbestos at Work Regulations 2002 and in the selection of contractors and consultants for the carrying out the asbestos removal works. (Further information can be obtained from www.hse.gov.uk)*
- *Carry out a visual inspection of following items to ensure that there are no gaps in the elements of the internal lining to the external wall, pay particular attention to column casings and blind boxes.*
- *Priority for the visual inspection be given to:*
 - *Buildings constructed prior to 1974*
 - *Where refurbishment works have disturbed the column casings and the internal lining to the external wall.*
 - *Where ceilings have been accessed and tiles not replaced correctly*

To enable owners to gauge the implications of the RCT (Rhondda Cynon Taff) incident for their organisation they may chose to sample survey buildings.

*If gaps are found they need to be sealed with a silicone seal.*²⁰³

284. Guidance was then given by HSE, DfES, LGE and Scape on the practical methods of sealing any cracks and gaps:

Short-term Solution

All gaps to column cladding, skirtings, and walls to be sealed to enclose the AIB dust and debris. Also UPVC finishing strips can be used as finishing over the top of the gaps using the same sealant.

Following remedial works, air monitoring to be carried out to ensure enclosure/encapsulation of asbestos has been successful. Re-assurance air monitoring is then carried out on the basis of a risk assessment.

Asbestos re-inspection surveys will also be required as part of the Asbestos Safety Management Programme.

Longer-term Solution

²⁰² A Joint Message from the HSE/LGE/DFES Asbestos- Potential for exposure in "clasp" school buildings. Undated, likely to be October or November 2006

²⁰³ Scape formal Notice Release of asbestos fibres in CLASP buildings Potential for asbestos fibre release in CLASP buildings 12 Oct 2006 Recommended Actions p2

Use expanded foam to fill tops of the columns and cavity walls where they are open to the ceiling void above the suspended ceilings. This work should only be carried out by Licensed Asbestos Removal Contractors.

Asbestos monitoring should be carried out on a regular basis in accordance with regulation 4 of the Control of Asbestos at Work Regulations 2002, as part of an asbestos management programme.²⁰⁴

285. It is known that when silicone sealant is used to fill a gap if the surfaces and the location are other than ideal, then it is likely that the seal could break down in a relatively short time. Also serious questions have to be raised about whether it is feasible to seal every single gap, crack and hole throughout a whole school, let alone in every single System built school throughout the country. Even if such an operation was successful other questions have to be raised about whether such a solution could realistically be expected to work in a school, as inquisitive fingers will inevitably pull out strips of sealant. These questions were raised with the HSE Head of Services Sector and the HSE Head of Asbestos Policy. One question that was asked was how long is "short term". In a written reply HSE stated:

"Sealing the gaps is an effective way of preventing spread of fibres into the room.

It can be medium to long term solution (ie many years).²⁰⁵

286. Another question was asked about the effectiveness of the suggested solution of sealing every crack and gap. On 13th December 2006 the HSE Head of Services Sector chaired the first, and subsequently the other meetings, of the CLASP Working Group. Her committee recommended the solution of applying silicone sealant, and "strong" sticky tape to the gaps and cracks. When questioned about the viability of such a solution in a school, the HSE Head of Services Sector gave the reassurance that this solution was:

"The Rolls -Royce of Solutions."²⁰⁶

Members of the "Education Sector" disagreed.

287. The following photographs were taken in a school after remediation. The first photograph is of a free standing column in the middle of a school hall. The hall doubled up as a sports and assembly hall and dining room. It was clear that the column was frequently knocked as it was badly scuffed. Sliding concertina doors divide the room into two and when pulled shut are fastened to the column. A plank of wood is fastened onto each side of the metal casing with screws through the casing. The door fittings and fixtures had been screwed onto the wood. There were significant gaps in the metal casing which would have allowed any asbestos fibres to be released.

²⁰⁴ A Joint Message from the HSE/LGE/DFES Asbestos- Potential for exposure in "clasp" school buildings. Undated, likely to be October or November 2006 Appendix 1 Methodology. Scape Formal Notice Release of asbestos fibres in CLASP buildings Potential for asbestos fibre release in CLASP buildings 12 Oct 2006 Appendix 1 Methodology

²⁰⁵ HSE Response to questions not covered by the Freedom Of Information act Q38 FOI 2007010226 15 Jan 2007

²⁰⁶ Contemporaneous notes HSE Education Sector briefing. 13 December 2006. Lees

288. The CLASP working Group guidance has been followed as the fittings have been identified, but as the guidance gave no further instructions, they have been left in situ with silicone sealant being squirted around the edges where they are fixed to the column. These photographs were taken a week after the work had been completed and a strip of sealant has already been removed from the base of the skirting and the floor. It was presumably easily removed as the wooden block floor is polished and no attempt had been made by the contractor to prepare the surface to ensure that the silicone sealant adhered to the floor. According to HSE Head of Services Sector this is the Rolls-Royce of solutions, a medium to long term solution, lasting many years. She was wrong.

Plate 14: Hall. Column after remediation.

Note: Within a week of being applied silicone sealant has been removed from the skirting.



Plate 15: After remediation. All the fittings remain in place with silicone sealant liberally applied around the edges.

Note: The fastenings are for concertina doors. The light switch, window pulleys and a wooden plank have been screwed to the casing.



Plate 16: After remediation. The cracks in the columns have been sealed. However the ceiling tiles are ill fitting.



HSL 1st and 2nd reports guidance

289. The HSL report of April 2007 examines the problem of asbestos fibre release in the schools in the Rhondda and includes a summary of the various airborne fibre tests undertaken in 20 CLASP schools. The report gives advice on how to identify the presence of damaged AIB and debris and gives results of air sampling that were carried out to assess the effectiveness of remedial measures. Extracts from the HSL report state:

"In late July 2006, after asbestos contractors had carried out some asbestos removal work at a school...as part of deliberate disturbance, they struck parts of the steel clad columns in the room.

The measured concentrations inside the enclosure suggested a significant release of airborne fibres was present.

The highest concentrations found under these simulation conditions in a sealed area was 0.42 f/ml on a personal sample and 0.44 f/ml on a static sample close by the source.

(Note The HSL report also includes a result of 2.37 f/ml which is not mentioned in the summary. Later independent tests found a similar level in a school)

This means that there is a potential for significant exposure to persons in the room from some (damaged or poorly sealed) columns...

and that predominately amosite asbestos fibres were being released, advisory notes were prepared and circulated in mid-October.

The recommended initial action to seal any gaps at room level in the metal casing, which enclosed the structural steel columns and the AM, was a simple, cheap and fast way to improve the integrity of the enclosure in the occupied areas.

However, the tops of the enclosure are open and can potentially release fibres into the suspended ceiling void and perhaps indirectly into the classroom.

There is a significant amount of data that shows that amosite fibres can be released into the classroom air when some of the casings are struck or adjacent windows and doors are banged.

Unless the casing is removed, it is difficult to assess what amount of damage has taken place...

the top of the column is unsealed and provides a possible route for airborne fibres to be released into the roof space / ceiling void.

In many schools the level of interconnectivity and air change between these spaces is likely to be limited although it is possible that some

ceiling voids are used as a return air plenum to ducted warm air heating systems...

It is recommended that an endoscope or small video camera is used to look down into the column to assess what materials have been used and if possible the amount of damage..."

"View of base of column from which the casing was removed. A large amount of friable AIB debris can be seen."²⁰⁷ (See plate 7)

"It also seemed that some columns contained a lot of asbestos debris, possibly left inside or even swept up and deposited inside during the initial construction or dislodged from friable coatings due to impact."²⁰⁸

"Some columns were found to contain considerable AIB debris."²⁰⁹

290. Much of the damaged asbestos lies concealed, hidden behind partition walls and behind column casings. Air sampling identified that there was a problem, however only a type 3 destructive survey found the extent of the asbestos debris shown in Plate 7. HSE state that:

" Unless the casing is removed, it is difficult to assess what amount of damage has taken place..."

They therefore advise sending endoscopes down the columns. One has to assume that to carry out the task effectively this has to apply to every column, and every wall void, in every system/modular build school in the country.

If the condition is not assessed then there must be a presumption that asbestos debris and off cuts lie in the voids. Consequently all voids would have to be sealed by specialist contractors under controlled conditions to prevent the release of any fibres.

291. HSL assessed the results of air sampling carried out before and after sealing had taken place so that they could determine the effectiveness of the methods recommended by HSE, LGE, DfES and Scape. HSL concluded

"The recommended initial action to seal any gaps at room level in the metal casing, which enclosed the structural steel columns and the AM, (Asbestos material) was a simple, cheap and fast way to improve the integrity of the enclosure in the occupied areas."²¹⁰

292. HSL also considered the problem of asbestos contamination in the ceiling void, which could potentially allow asbestos fibres to enter the rooms beneath. They concluded:

²⁰⁷ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos. HSL/2007/22 10 Apr 2007

²⁰⁸ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 para 4.1 p 14

²⁰⁹ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 para 4.3 p 18

²¹⁰ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 Introduction p1

"However, the tops of the enclosure are open and can potentially release fibres into the suspended ceiling void and perhaps indirectly into the classroom.

A full sealing of the column would also entail using a polyurethane foam or similar to seal the tops of the column casings.

It is not known how much release would occur from the tops of the column and more data was needed to assess this".²¹¹

293. The independent tests found that when the columns were kicked, hit and squeezed an air sampler placed next to the open top of the column casing before remediation found a level of 0.72f/ml. This proved that fibres are ejected forcibly out of the tops of the columns into the ceiling void. The HSL 2nd tests found levels of ranging from 0.005 f/ml to 0.022f/ml before remediation to 0.347f/ml and 0.229f/ml after remediation, which proves significant contamination of the ceiling void. It is highly likely that fibres were present because they had been ejected out of the tops of columns and wall voids. The latter tests were carried out to determine whether the remediation had worked, and on the result it would appear that it had not.

294. Further investigations were carried out in the ceiling voids in other CLASP buildings which found that it was not unusual to find AIB off-cuts lying in the void. Following these investigations the 2nd HSL report gave a warning to anyone attempting to enter the ceiling void. They stated:

"...Caution is necessary as it is not unusual for asbestos debris to be left in areas around the tops of the columns (e.g. off cuts of asbestos insulating board and asbestos cement sheets) from the original installation. Therefore the situation and amount of asbestos debris may vary between buildings and appropriate precautions should be taken by workers disturbing areas in the ceiling void."²¹²

295. The 2nd HSL report summarises their guidance as follows:

Recommendations

Inspection of the column casing for gaps and holes, which will reduce the effectiveness of the enclosure around the asbestos, appears to be an effective way of determining the likelihood that a significant peak release will occur, if the column is mechanically disturbed or struck.

Release of airborne asbestos fibres into the room is effectively controlled and minimised if the column casings are sealed at room level and maintained in good condition.

The principles and guidance established for managing asbestos in buildings, if applied, will minimise airborne asbestos exposures and risks to occupants in CLASP buildings.

The occurrence of pieces of asbestos debris above some ceilings (either from the original construction or later disturbances) means that person working in, or accessing the ceiling void, will need to be aware of the potential of encountering

²¹¹ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 Introduction p1

²¹² HSL. Further measurement of fibre concentrations in CLASP construction buildings. Apr 2008 para 4.4 p29

ACM debris and should take appropriate precautions to minimise the disturbance and spread of asbestos.

A type 1 or 2 survey as described in MDHS 100, requires that the ceiling void of suspended ceilings are accessed to check for ACMs and asbestos debris, so where surveys have been carried out, the presence of ACM debris should have been found and noted.²¹³

296. HSL's advice is that if the survey has not inspected the void then it should be marked and presumed to contain asbestos. Restrictions should then be placed on entry to the ceiling void until a full and proper survey is carried out. This is most valid advice and as will be seen runs contrary to the guidance given by the CLASP Working Group who advise the school's caretaker or maintenance staff to look in the void to inspect the top of every single column casing. In addition the Working Group advise that the maintenance staff should look in the ceiling void to see if they can see any asbestos contamination or debris. Both these tasks would involve the lifting of hundreds of potentially contaminated ceiling tiles The 2nd HSL report states:

"Asbestos management

A type 1 or 2 survey as described in MDHS 100, requires that the ceiling void of suspended ceilings are accessed to check for ACMs and asbestos debris.

Therefore if a building survey has been carried out in accordance with HSE guidance the presence of asbestos debris from the installation or subsequent alterations should have been detected and located.

If for some reason the surveyor did not access the suspended ceiling, as they should have done, the area should still have been marked as presumed to contain asbestos and work in the ceiling void should be subject to the restriction and controls in CAR, 2006, unless further assessment has been carried out by a competent person.²¹⁴

297. There is no doubt from the HSL report that it is not unusual for the ceiling voids to be contaminated with asbestos, because of this they emphasise that caution must be taken. That caution does not just apply when a person climbs into the void, it also includes implementing strict controls when lifting or moving a ceiling tile for any contamination on the upper surface will enter the room when a tile is lifted. Regrettably these warnings were not heeded by the CLASP Working Group who's guidance implies that the only risk of contamination is when the area is accessed or work is specifically carried out on the asbestos. The guidance states that:

"Although there is little evidence to date to suggest contamination of ceiling void

where the column AIB has been damaged there may have been spread of asbestos material in the void.

"There is minimal risk unless people enter the area²¹⁵

²¹³ HSL. Further measurement of fibre concentrations in CLASP construction buildings. Dated Sep 2007. Circulated Jan 2008. Recommendations Executive summary p5

²¹⁴ HSL. Further measurement of fibre concentrations in CLASP construction buildings. Dated Sep 2007. Circulated Jan 2008. Asbestos management para 3.5 p 26

²¹⁵ HSE CLASP Working Group guidance para18 p5 Mar 2007

The Working Group guidance is examined in the next section.

HSL acknowledge insufficient data to assess fibre release from tops of columns and walls and from ceiling void.

298. Although HSL carried out tests to assess the effectiveness of gap sealing in the column cladding they did not address the problem of fibres filtering out from the base of the walls, or the open tops of the wall voids. A limited number of tests showed contamination in the ceiling voids but they acknowledged that further work had to take place to assess the release of asbestos fibres into the ceiling void. They acknowledged that any asbestos contamination in the ceiling void could allow asbestos fibres to filter into the rooms beneath. HSL state:

" Often the casing may not extend directly to the roof space or the floor above and may finish above the suspended ceiling, leaving the board applied to the column projecting above the casing.

Although this board is unlikely to be directly disturbed, except by infrequent maintenance, the top of the column is unsealed and provides a possible route for airborne fibres to be released into the roof space / ceiling void.

In many schools the level of interconnectivity and air change between these spaces is likely to be limited although it is possible that some ceiling voids are used as a return air plenum to ducted warm air heating systems.

*At present, the direct release into the room through gaps in the casing, appears to be the main release route but further work is needed to assess potential indirect releases via the ceiling void.*²¹⁶

It has been proved that fibres are released into the rooms in significant quantities through gaps in the column cladding. The recommended remedial measures reduce the levels but do not stop the release. HSL acknowledge that there are various means that asbestos contamination can occur in the ceiling void and they and others have proved from air sampling that significant contamination exists in the void. Asbestos will pass through a gap as readily as air can, it is therefore imperative that rigorous measures are taken to seal the ceiling void. In some schools this will be a major undertaking.

299. The 2nd HSL report reiterated the likelihood of fibres entering the ceiling void from the tops of the columns, however they concluded that the suspended ceiling would limit the release of asbestos fibres into the rooms below. HSL stated :

*"As the tops of the columns are open, the more likely pathway for fibres to become airborne is from the open top of the column into the ceiling void. In many situations the ceiling void is separated from the occupied area by a false / suspended ceiling which would limit the amount of fibres reaching the room below..."*²¹⁷

²¹⁶ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 Release mechanism from the CLASP structure para 4.1p14

²¹⁷ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 para 3.3.2 p23

On the evidence available this is misleading guidance unless the suspended ceiling is hermetically sealed as any asbestos fibres in the voids will potentially enter the rooms beneath. In addition the limited number of tests that were carried out to assess whether the asbestos contamination in the ceiling voids entered the rooms tended to prove that they did. The CLASP Working Group recommends school authorities to seal the visible gaps in the columns and ignores the fact that the suspended ceiling tiles are ill-fitting, damaged and missing. Regardless of whether the release of asbestos fibres have been prevented, local authorities are covered as they are able to say that they have followed the CLASP Working Group Guidance. Proof is shown at plates 16 and 12, which were both taken after the contractors declared that the remediation was complete and the school safe for re-occupation, despite large holes in the ceiling tiles with other tiles damaged or ill fitting. An HSE inspection was carried out which agreed that all remedial measures had been carried out and declared the school safe for reoccupation.²¹⁸

300. The CLASP Working Group have failed to emphasise the need to have a hermetically sealed suspended ceiling. This is despite the evidence and the guidance of the HSE and Scape in October 2006, who stated:

Priority for the visual inspection be given to:

...Where ceilings have been accessed and tiles not replaced correctly...

If gaps are found they need to be sealed with a silicone seal.²¹⁹

The following section examines the guidance issued by the CLASP Working Group. It questions why certain critical measures recommended in the earlier guidance and reports were not included in the CLASP Working Group guidance.

CLASP WORKING GROUP GUIDANCE

Summary

301. Following discovery of the problem in July 2006 in the schools in the Rhondda, remedial measures were carried out. Those measures were subsequently recommended by HSE, LGE, DfES and Scape in their guidance issued in October 2006. Five months after the raised fibre levels were uncovered HSE established the "CLASP" Working Group to investigate the problem and to provide advice and guidance on remedial measures. It held its first meeting in December 2006 the next meeting was held in February 2007, guidance was issued in March 2007 and a final meeting took place in July 2007.
302. HSL collated the results of air sampling before and after remediation to assess the effectiveness of the recommended remedial measures. As has been seen these recommendations were in the main based on the results of air sampling of offices and schools during the 2nd series of tests many of which were taken at the end of 2006 and the early part of 2007 and were available to the February CLASP Working Group meeting. The report was approved by the HSL

²¹⁸ Letter HSE London Division Field Operations Directorate Bhunnoo 30 Jan 2008

²¹⁹ HSE, Scape Formal Notice Release of asbestos fibres in CLASP buildings October 2006
p2

Director of Health Improvement Group in September 2007²²⁰ circulated to the CLASP Working Group in January 2008, but not released for public scrutiny until late April 2008. Most of the results were remarkably low which raises serious questions about the veracity of the tests and the selection of the schools and offices.

303. On the strength of the 1st tests HSL had stated that the sealing did not always work, by stating:

*"..suggesting that a few columns are giving a small releases even after sealing has taken place."*²²¹

Despite this, on the strength of the 2nd tests a presentation given by HSE Head of Cancer and Asbestos Unit stated:

*"The average level in remediated schools was below the limit of detection <0.000048f/ml, an order of magnitude lower than the average previously found in UK asbestos containing buildings."*²²²

Certainly the levels after remediation in some schools showed that the remedial measures had stopped the release of asbestos fibres, but in a significant minority the levels after remediation were higher than the legal limit for a certificate of reoccupation to be issued. Despite this it appears that it was the low level results both before and after remediation that were used as a basis for the CLASP Working Group to draft their guidance for local authorities and schools.

304. The Working Group issued guidance to all duty holders in March 2007, some eleven months after the first school in the Rhondda had been closed because of raised fibre levels and eight months after the release had been identified as emanating from the walls, ceilings and columns. In light of discussions at the July meeting it was decided that the guidance was to be amended by September 2007 reflecting their findings and discussions. As at 3rd June 2008 the guidance has not been amended. The following therefore examines the March 2007 guidance and the discussions and decisions of the Working Group.

305. The HSE, LGE, DfES and Scape guidance of October 2006 gave details of the problem that had been identified in the CLASP schools in the Rhondda. It explained the remedial actions that had been carried out in those schools and recommended that other CLASP owners should inspect their buildings to identify if they had similar problems, and then it recommended that they carried out similar methods of remediation. The guidance offered a short term solution which would rapidly enable schools to reduce the release of asbestos fibres by simply sealing all the visible cracks and gaps in the columns, walls and ceilings. Once that had been achieved a longer term solution was recommended that would seal the tops of the columns and wall voids. The short term solution would normally require limited resources, in comparison the long term solution would require considerable resources and expense as specialist asbestos contractors would

²²⁰ HSL. Further measurement of fibre concentrations in CLASP construction buildings. Dated Sep 2007. HSL report approval Curran September 2007

²²¹ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 para 3.1 p5

²²² HSE CLASP Working Group minutes para 3.1 presentation HSE Head of Asbestos Policy 16 Jul 2008

have to be employed with all of the measures being carried out under stringent control measures.

306. The 1st HSL report of April 2007 collated all the results from the air tests that had been carried out in twenty schools in the Rhondda. Summaries were given of the results before any remediation had taken place, during remediation and after remediation. HSL assessed the effectiveness of the remedial measures. They also attempted to assess the extent of damaged asbestos materials debris and fibres hidden in particular within the column voids by the use of cameras and air testing. The success or otherwise of the remedial measures was then checked with air sampling. Although the sealing of the columns reduced the release of fibres it could not be guaranteed to stop it. Some levels after sealing were almost six times higher than the Clearance level.

307. Given a very difficult situation, the HSE, HSL, LGE, DfES and Scape guidance gives good advice how the hidden damaged asbestos can be identified, how as a temporary expedient the release of asbestos fibres can be prevented or at least reduced, and how the effectiveness of the work can be confirmed. However even if the guidance was meticulously followed, it is inevitable that there will be areas within the voids that even then cannot be examined, and crack, gaps and holes that cannot be sealed. In addition the sealant will gradually lose its effectiveness. The guidance therefore does not provide a permanent solution, or even a solution that can be guaranteed to work, but it does suggest best practice in achieving a stop-gap solution.

308. According to Scape about half of the schools in the country are System built, many of which contain asbestos, therefore amongst the thousands of school buildings there are many, many thousands of columns, walls and ceiling voids. The sealing of the columns, and walls is a relatively simple matter that in itself would not need expert contractors, however any extensive investigation in the ceiling void, or extensive sealing of the void, any air sampling, any capping of the columns and wall voids would require expert asbestos consultants and contractors. As would the air sampling that is recommended to determine whether asbestos fibres were still being released once the work had been completed. The employment of the specialist contractors is the only way that the much of the work could be carried out safely with a reasonable guarantee that asbestos fibres were contained in the voids and not released into the rooms. But employing the experts for extensive remediation and analysis would be very expensive, and therefore one must presume that this had a considerable influence on the decisions and recommendations of the CLASP Working Group.

309. In comparison to the earlier guidance the Working Group guidance omits the stringent measures advised by HSL to identify the extent of the problem. It also omits critical parts of the advice given by HSE, DfES, LGE and Scape. Instead the Working Group guidance is superficial and flawed on many accounts, as part of that they do not address the problem of identifying the presence of damaged asbestos and asbestos debris. It encourages unqualified people to carry out the inspection and sealing and makes no mention of the problem of fibres seeping from the base and tops of walls and through gaps in the suspended ceilings. It concentrates almost entirely on sealing visible gaps in the column casings, to the exclusion of preventing asbestos fibres entering the rooms from any other means.

310. There are aspects of the Working Group guidance that inevitably have, and will lead to the release of asbestos fibres, contamination of the rooms, possible

exposure of the person carrying out the work and the subsequent exposure of the occupants of the rooms. What is of equal concern is that the guidance fails to offer a practical solution for checking the effectiveness of any remediation. No mention is made of a third party inspecting the work or of the necessity of air testing.

311. If a school follows the CLASP Working Group guidance and does no more, then the process that has caused the build up of fibres will continue unabated. Every time a child runs into a wall, hits a column or a door is slammed asbestos fibres will be released into the voids. Unless the seals remain totally effective the asbestos fibres will enter the rooms, or asbestos fibres will filter down past an ill-fitting ceiling tile into the classrooms beneath. However none of this will be known as the Working Group fail to recommend a viable means of testing to determine whether this is happening.
312. The tenor of the Working Group guidance, the minutes of their meetings and the statements made by the Chairwoman of the committee, is that they consider that it is of paramount importance that parents and staff are assured that their schools are completely safe. No measures are therefore taken to assess the true extent of the problem, and their remedial measures provide little more than a visible reassurance that all is well.
313. It is unacceptable that many of the measures recommended in the earlier guidance have been dropped by the CLASP Working Group.
314. If the HSE CLASP Working Group guidance is followed, and no more, it just puts a tick in a box, and no doubt parents and staff will be assured that their school is safe. What it does not do is prevent the release of asbestos fibres from the ceilings, window surrounds and walls. It is also a temporary, not a permanent measure. It cannot be guaranteed to prevent the release of asbestos fibres into the classrooms, halls and corridors, in many cases it reduces it but no more than that. It does not stop the process of asbestos fibre release which continues unabated. It does not ensure that the occupants of the schools are safe from the dangers of asbestos exposure.

Flaws in the CLASP Working Group guidance

315. Following the March 2007 meeting HSE's CLASP Working Group issued guidance to duty holders of System built buildings, with special emphasis on schools. This guidance is considerably less rigorous than earlier guidance. Indeed when it is compared with the meticulous control measures recommended in the HSE's Asbestos Essentials manual, then its use of language and recommendations appear irresponsible in comparison. The following highlights the flaws in the CLASP Working Group guidance, it shows how the guidance is at times misleading and how it allows, and at times encourages bad practice:

Working Group misleading statement about Control Limits and Clearance Levels

316. HSE, LGE, DfES and Scape all give details of the various methods that asbestos fibres can be released and all state that when the problem was uncovered in the Rhonnda that there were some levels that were very low but others were above the Control Limit. They state:

"It has been found that when the cladding is struck, asbestos fibre can escape into the room. The degree of escape varies. In some cases levels in the general atmosphere of the room were very low.

*But in others levels have been found that exceed the **Control Limit**.*

*The striking was three or four sudden blows and is the kind of disturbance that is foreseeable in a school environment.*²²³

317. In comparison the CLASP Working Group's guidance gives a background to the problem, and states:

*"Following window replacement and associated asbestos removal work... contractors failed to obtain levels of fibre in air below "**Clearance Levels**" when as part of a deliberate disturbance they struck parts of the metal casing around the columns in the room.*²²⁴

By their use of words the Working Group gives a misleading impression. They are pedantically correct that the levels were not below the Clearance Level, but what they fail to mention is that they were significantly above it, at times above the Control limit.

Working Group incorrectly state "Rare occasions release above Clearance Levels"

318. HSL summarised the air sampling that had taken place, and are unambiguous that there is a significant amount of data that shows asbestos fibre release. They state:

*"There is a significant amount of data that shows that amosite fibres can be released into the classroom air when some of the casings are struck or adjacent windows and doors are banged."*²²⁵

"The highest concentrations found under these simulation conditions in a sealed area was 0.42 f/ml on a personal sample and 0.44 f/ml on a static sample close by the source.

*This means that there is a potential for significant exposure to persons in the room from some (damaged or poorly sealed) columns, should the scale of mechanical disturbance to the columns be reproduced.*²²⁶

319. HSL then summarise the results of air sampling that was carried out in a number of schools in the Rhondda. HSE specifically noted that the raised levels

²²³ A joint message from HSE/LGE/DfES Asbestos- potential for exposure in "clasp" school buildings Potential for asbestos fibre release in CLASP buildings. para 4. Oct 2006. Scape formal Notice Release of asbestos fibres in CLASP buildings Potential for asbestos fibre release in CLASP buildings 12 Oct 2006 para 4

²²⁴ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. Background para 26. HSL presentation to BOHS risks from low level asbestos exposure 17 Oct 2007.

²²⁵ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 para 4.1 Release mechanism from the CLASP structure

²²⁶ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Introduction p1

were caused by the "*kind of disturbance that is foreseeable in a school environment*" and HSL noted that there was the "*potential for potential exposure to persons in the room .*" 38 samples were taken, all but seven were above the Clearance Level. The average was more than nine times above the Clearance Level with some samples being more than forty four times greater and one in a "*non school*" being two hundred and thirty seven times greater.²²⁷ When independent tests were carried out a very similar result was found in a school where the level was 2.53 f/ml which is two hundred and fifty three times greater than the Clearance Level, other levels in the rooms were 49 times above it. All of these confirmed the ILEA test which also showed levels consistently above the Clearance level with every single test being above the level when the doors were slammed. At 0.33f/ml on slamming a door and 0.87f/ml on slamming a door and kicking a wall. Graphs 1 and 2 show that many of the levels were above the Clearance Level.

320. It is therefore extraordinary that the July 2007 HSE CLASP Working Group minutes should state:

"The general advice on HSE's website should be followed for those rare occasions where release was above the Clearance Levels, and consequent exposure to individuals has occurred." ²²⁸

It is most misleading, and indeed dangerously misleading

Working Group fail to advise rigorous controls despite the probability of asbestos debris. No longer recommend sealing gaps in walls

321. The 1st HSL report recommended that the extent of asbestos debris, off-cuts and fibres should be identified in the voids, and it includes graphic photographs of large quantities of asbestos debris and fibres lying behind the casings. (plate 7) HSL state:

*"It also seemed that some columns contained a lot of asbestos debris, possibly left inside or even swept up and deposited inside during the initial construction or dislodged from friable coatings due to impact."*²²⁹

*"Some columns were found to contain considerable AIB debris."*²³⁰

*"View of base of column from which the casing was removed. A large amount of friable AIB debris can be seen."*²³¹

322. HSL recommend in their first report that an endoscope or small camera is sent down the columns so that the type of material and the amount of damage can be assessed. HSL state:

²²⁷ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 April 2007. Table 1 p10 para 4.5 p 19

²²⁸ CLASP Working Group minutes 16 July 2007 para 4.2

²²⁹ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 para 4.1 p 14

²³⁰ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 para 4.3 p 18

²³¹ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 fig 11 p 15

"Looking down the gap between the column and the casing from the open tops in the ceiling and roof voids may be the most practical way to assess the construction of the columns / casings with minimal disturbance.

It is recommended that an endoscope or small video camera is used to look down into the column to assess what materials have been used and if possible the amount of damage.

Often the board material applied top the column extends above the casing but other insulation applied to the casing itself will not be visible without looking down into the column."²³²

323. The October 2006 HSE and Scape Formal notice highlights the problem of fibres escaping from the walls, it states :

*"During construction it also seems that off cuts of AIB and debris have in some cases been swept into the gap **between the wall and plasterboard stud partitioning or wall cladding.***

*Skirting boards then sealed this debris in. **When the plasterboard was struck fibre was again released through the skirting board gaps.**"²³³*

*" Further investigations carried out by the Council and the HSE showed that asbestos insulating board fitted during the original construction had been disturbed and fibres been released into the building through gaps in column casings and **internal lining to the external wall.** The asbestos had been disturbed as the result of a number of events:*

- *During the construction waste material, including asbestos insulation board and asbestos cement sheet, had been discarded **within the external wall cavities** and roof space.*
- *Works, mainly the fitting of cables had been undertaken post the original construction.*
- *Windows had been replaced fixing the new by means which required the disturbance of the column casings and other elements. The window replacement was not carried out using a CLASP/Scape nominated installer.*
- *Debris from previous asbestos removal works."²³⁴*

324. The guidance then recommends identifying any gaps and sealing them:

Recommended Actions

Scape, in consultation with the HSE, recommend the following actions:

- *...Carry out a visual inspection of following items to ensure that there are **no gaps in the elements of the internal lining to the external wall**, pay particular attention to column casings and blind boxes.*
- *Priority for the visual inspection be given to:*

²³² HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 para 4.2 p 14

²³³ Scape Formal notice Release of asbestos fibres in CLASP buildings 12Oct 2006 Potential for asbestos fibre release in CLASP buildings para 8

²³⁴ Scape Formal notice Release of asbestos fibres in CLASP buildings 12Oct 2006

- Buildings constructed prior to 1974
- Where refurbishment works have disturbed the column casings **and the internal lining to the external wall.**
- Where ceilings have been accessed and tiles not replaced correctly....

If gaps are found they need to be sealed with a silicone seal.

325. In comparison The Working Group guidance states:

"Seal all gaps in the joints between:

- column casing to casing
- column casing to skirting
- column casing to walls

*using a silicone based sealant to enclose dust and debris within the casing. UPVC strips can be used as finishing over the top of the sealed gaps using the same sealant.*²³⁵

No mention is made of the need to identify whether the casings or wall voids contain debris and off-cuts. No longer is any mention made of sealing the walls or the skirting along the walls.

Working Group guidance deletes caption referring to large amounts of friable AIB debris

326. HSL's photograph in their report shows the base of the column with the caption "*a large amount of friable AIB debris can be seen.*"²³⁶ (see plate 7) The Working Group use the same photograph in their guidance,²³⁷ but the caption has been altered so that there is no longer any mention of "*large amounts of friable AIB debris.*" At the very least this is misleading, and indeed when taken in conjunction with the inadequate guidance given by the Working Group it could result in the exposure of the person carrying out their recommended measures. For the guidance advises that loose cladding behind the skirting board is refastened, however because it is no longer highlighted that large amounts of friable asbestos debris might be present, the person carrying out the work is less likely to take the necessary precautions to prevent a dangerous release of asbestos fibres.

Working Group misleading statement about contamination of ceiling voids

327. The ceilings in System built schools are invariably suspended ceilings, so that there is a void above the ceiling tiles, intentionally this was a large open space normally unimpeded by walls. This is a design feature that enables electrical cables, telephone cables, computer cables, water pipes, heating pipes, heating and ventilation ducts, extractor fans and gas pipes to be laid in the void. White

²³⁵ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. para15iii p4

²³⁶ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 Fig 11 p15

²³⁷ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. Fig 3 p9

board projectors are suspended from the ceilings with their cables running along the tops of the tiles. As many system schools have flat roofs they deteriorate over time and leak, the schools caretaker or maintenance staff therefore remove the tiles to access the area to investigate and seal the leaks, in addition upstairs cloakrooms leak into the suspended ceilings beneath them. Gas men are known to have accessed the void to mend gas leaks, heating engineers access the voids to maintain the heating systems. Over the years there has therefore been considerable disturbance of the ceiling tiles and the voids.

328. The ceiling voids frequently contain large amounts of asbestos. The ceiling tiles are sometimes AIB, in some schools all of the tiles are AIB, in others just the vulnerable rooms such as kitchens, cookery rooms, toilet, storerooms and boiler houses. The window heads are frequently AIB and as there are large areas of windows much of the perimeter of the ceiling along the top of the windows will be AIB, even if the other tiles are not. The open tops of the column casings enter the ceiling void and they contain AIB, sprayed asbestos or at times asbestos cement. As there are many columns in a school then that in itself represents a large area of unsealed asbestos material. Pipe lagging can be asbestos which in the earlier System buildings can contain crocidolite. Although one of the problems with System buildings is the fire risk posed by huge open voids without firebreaks, some do have asbestos firewalls which can be asbestos cloth which contains 100% asbestos of all types. Ventilation shafts and heating ducts are frequently constructed out of AIB as are the linings of skylights. The undersides of roofs can be sprayed with asbestos. When the schools were constructed asbestos materials were liberally used as a standard building material, where necessary AIB was sawn on site and the resulting off-cuts and debris were all too often either left where they fell or were swept into the column or wall voids.

329. The Working Group guidance states, incorrectly, that there is little evidence of contamination of the ceiling void, and are misleading about the potential contamination of the voids. The Working Group guidance states:

"Action may also be required in the ceiling void. The tops of columns in the ceiling void are usually open or unsealed.

Although there is little evidence to date to suggest contamination of ceiling voids,

where the column AIB has been damaged there may have been spread of asbestos material into the void.

There is minimal risk unless people enter the area.

If maintenance or other work requires staff to access the area they should be aware of the potential for contamination and be suitably protected see paras...

"Duty holders may wish to inspect these areas sooner rather than wait until entry is required.

A visual inspection can be carried out to determine if there is any asbestos contamination,

*which again maintenance personnel can undertake provided they have been trained and equipped as described in paras*²³⁸

330. In comparison the HSE and Scape guidance highlights that problems of asbestos contamination in the ceiling void, and specifically states that asbestos materials had been discarded in the wall cavities and the ceiling void. HSE and Scape state:

"The asbestos had been disturbed as the result of a number of events:

*"During the construction waste material, including asbestos insulation board and asbestos cement sheet, had been discarded within the external wall cavities **and roof space.**"*²³⁹

Whereas in comparison the Working Group guidance blatantly deletes the important reference to the roof space, by stating:

"Further investigations showed that there were a number of other factors that would have contributed to the incident:

During the original construction of the school, waste material, including AIB and asbestos cement sheet, had been discarded within the external wall cavities.

*This was particularly poor practice and could occur in other system-buildings.*²⁴⁰

331. Further proof was given in December 2007 when independent air tests were carried out in a System built school which found significant contamination of the ceiling void. With levels between three and six times greater than the Clearance Level. The report states:

*"A personal monitoring pump was put on ... as he lifted the ceiling tiles. The calculated result of the test was 0.034 f/ml."*²⁴¹

*"As the enclosure was being erected into the ceiling void and the polythene sheeting being applied between the suspended ceiling and the first floor, a personal monitoring pump was put on.... The calculated result of the test was 0.062 f/ml"*²⁴²

332. HSL highlighted the fact that asbestos fibres could be ejected out of the open top of the column casing into the ceiling void. They stated:

"Often the casing may not extend directly to the roof space or the floor above and may finish above the suspended ceiling, leaving the board applied to the column

²³⁸ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. Action to be taken in the long run para 18 p5

²³⁹ Scape formal Notice Release of asbestos fibres in CLASP buildings Potential for asbestos fibre release in CLASP buildings 12 Oct 2006 p2

²⁴⁰ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. Para 28 p7

²⁴¹ Details available but withheld. Asbestos investigation 15th and 16th December 2007 para 4.3.1

²⁴² Details available but withheld. Asbestos investigation 15th and 16th December 2007 para 4.3.2

projecting above the casing. Although this board is unlikely to be directly disturbed, except by infrequent maintenance,

*the top of the column is unsealed and provides a possible route for airborne fibres to be released into the roof space / ceiling void.*¹²⁴³

333. Proof was given that asbestos fibres are ejected out of the tops of the column cladding when independent air sampling was carried out in the ceiling void next to the open top of a single column, when it was kicked and hit. The fibre level was 0.72 f/ml measured over an hour, which was actually higher than the level measured at the same time at the base of the column where a level of 0.49 f/ml was measured. Both levels are above the four hour Control limit, the level in the ceiling void is 72 times greater than the Clearance Level.

334. This was one column on one occasion, it is inevitable that over the years various columns would periodically be knocked, hit, lent on and kicked. Although perhaps the levels would not always be as high, asbestos fibres would non-the-less be ejected into the ceiling voids probably with some regularity, particularly in those schools with boisterous occupants. The asbestos fibres would gradually build up in the void and permeate through any gap or crack to filter down into the rooms beneath.

335. As well as asbestos fibres being ejected into the ceiling voids HSE, LGE, DfES and Scape all stress that asbestos off cuts and debris can contaminate the ceiling void, much of it left over since the schools were built, perhaps forty or fifty years ago. They state in their guidance:

*"The standard of clean up after construction at the schools visited was poor with off cuts of **AIB being left in ceiling voids** etc..."*²⁴⁴

*During the construction waste material, including **asbestos insulating board** and **asbestos cement sheet** have been discarded within the external wall cavities and **roof space**.*¹²⁴⁵

336. The discarded AIB off-cuts could be from a number of sources as, amongst other uses, it was used for cladding the columns, wall linings, ceiling tiles, packing pieces and window heads.²⁴⁶

337. The HSL report of April 2007 contained details of two air tests that had been carried out in CLASP buildings simulating maintenance activities. Both showed contamination of the void with one level four times greater than the Clearance Level, and the other five times greater. HSL state:

*"Only two samples for simulated maintenance work above the ceiling are available to date (0.04 f/ml and 0.05 f/ml) and showed that there were measurable releases of PCM fibres."*¹²⁴⁷

²⁴³ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 April 2007. para 4.1 p 14

²⁴⁴ Scape formal Notice Release of asbestos fibres in CLASP buildings Potential for asbestos fibre release in CLASP buildings 12 Oct 2006

²⁴⁵ Scape formal Notice Release of asbestos fibres in CLASP buildings Potential for asbestos fibre release in CLASP buildings 12 Oct 2006 p2

²⁴⁶ CLASP Asbestos Awareness Handbook Asbestos in CLASP Standard Details Mar 2003

338. A year later more System built schools had been inspected which found that the presence of asbestos contamination in the ceiling void was "*not unusual*." The CLASP Working Group minutes of July 2007 emphasise the fact that:

*"Caution is necessary for assessing the results of maintenance **above ceilings, as it is not unusual for asbestos debris** to be left in areas around the tops of columns.*

*Situations and amounts of asbestos debris may vary and precautions- such as wearing PPE- should be taken.*²⁴⁸

339. The July Working Group minutes then give the results of tests when common maintenance activities were carried out in the ceiling voids. All the results gave levels that consistently show the presence of contamination. All the results are above the Clearance limit, with one being eight times greater and another eighteen times greater. When one considers that unless the whole ceiling void is hermetically sealed, these asbestos fibres will enter the rooms beneath. The minutes state:

*"Simulated maintenance activity was carried out in schools to assess potential exposure of personnel. Lifting 14 tiles resulted in 0.01 f/ml- 0.02 f/ml; shaking cables resulted in 0.02 f/ml; lifting tiles and shaking cables resulted in 0.01 -0.02 f/ml; and brushing dust in the ceiling void resulted in 0.18 f/ml in one school, and 0.08 f/ml in another.*²⁴⁹

340. Despite a plethora of data and evidence that shows probable contamination and significant contamination of the ceiling void, with the potential to enter the rooms beneath, the CLASP Working Group incorrectly claim that there is little evidence to suggest contamination of the voids by stating:

"Although there is little evidence to date to suggest contamination of ceiling voids...

*There is minimal risk unless people enter the area...."*²⁵⁰

341. Once again the Working Group have played down the extent of contamination and hence the consequential likelihood of asbestos exposure. In addition they encourage the school's maintenance staff to carry out the inspection, which is not good advice considering the scale of the operation when the whole void has to be inspected, and the rigorous controls that are required to prevent the release of fibres into the rooms beneath. Indeed if the tiles are AIB or are likely to be contaminated with asbestos then lifting more than one tile is likely to mean that the task has to be carried out by a licensed contractor, and cannot be carried out by the school's caretaker of maintenance staff.

It is certainly agreed that there will be risk if someone enters the area. However the fact that they state that there is minimal risk unless people enter the area

²⁴⁷ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos. HSL/2007/22 10 Apr 2007 PCM results for inspection and maintenance work para 3.4

²⁴⁸ HSE Asbestos in schools CLASP Working Group minutes 16 Jul 2007 para 3.2

²⁴⁹ HSE Asbestos in schools CLASP Working Group minutes 16 Jul 2007 para 3.2

²⁵⁰ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007.

shows either a fundamental misunderstanding of the properties of asbestos fibres or a misplaced belief that all schools have ceiling voids that are hermetically sealed - which is invariably not the case. Despite all the evidence that consistently shows contamination of the ceiling void, the CLASP Working Group guidance gives precisely the opposite impression. They give duty holders the option of inspecting the void and allow them to carry out a visual inspection, no mention is made of the inadequacies of such an inspection, and no mention is made of specialist air sampling.

342. All the evidence shows that in some schools the ceiling voids are contaminated with asbestos fibres, debris or AIB off cuts, and in other schools there is a strong possibility that they are. It is therefore misleading and irresponsible of the CLASP Working Group to claim that:

"There is little evidence to suggest the contamination of the ceiling voids."

343. The Working Group guidance does not advise that all the gaps, cracks and holes in the suspended ceiling have to be sealed to prevent asbestos fibres entering the rooms beneath. Their justification being that the voids are not contaminated, despite comprehensive evidence to the contrary. The result is shown in the photograph at plate 16 where the visible gaps have been sealed in the column casing and yet the ceiling tiles are askew with gaps that will allow any asbestos fibres to filter down into the rooms beneath. In the same school following remediation there were missing, damaged and many ill fitting ceiling tiles. Plates 11 and 12 in Part 1 show a damaged AIB ceiling tile with a corner missing and a large hole punched in a ceiling, both these were like this when the schools was passed safe for re-occupation by the asbestos consultants and the HSE. The contractors stated that they had followed the CLASP Working Group guidance, and that there was no need to seal the tiles in the suspended ceiling.²⁵¹

344. It had been proved that the ceiling void was contaminated with amosite, and it was patently clear that the tiles were damaged. Ill fitting or missing and yet an HSE inspector carried out an inspection once the asbestos contractors had declared the school safe for re-occupation. He stated:

"Licensed contractors have been at the school earlier this month in regards to issues relating to CLASP buildings. All remedial measures were identified and carried out including reassurance testing."²⁵²

...As such the building was safe for use."²⁵³

When it was suggested that the school had not been safe because until January 2008 nothing had been done to follow the guidance, and that even after remediation the ceilings tiles were damaged, missing and ill fitting, and therefore the school remained unsafe, the HSE inspector stated:

"The school was perfectly safe and the school is perfectly safe."²⁵⁴

The HSE inspector had ample evidence that the asbestos management in this schools was inadequate, and that the ITN tests had shown that high asbestos

²⁵¹ Environmental Evaluation summary of works at Special school 5th/6th January 2008

²⁵² Letter HSE London Division Inspector Bhunnoo 30 Jan 2008

²⁵³ Letter HSE London Division Inspector Bhunnoo/Brent Council 10 Jan 2008

²⁵⁴ Telephone conversation HSE London Division Inspector Bhunnoo/Lees 7Jan 2008

fibre levels were released both in the rooms and in the ceiling void. His attitude and statements in the face of overwhelming evidence to the contrary are unbelievable, but no doubt explain how Brent council had failed to implement essential safety guidance and yet pass uncensored by the HSE for more than a year. It also demonstrates how the council, the asbestos consultants and HSE inspectors had blindly followed the CLASP Working Group guidance without thinking, and taking into account the implications of leaving the ceiling voids free to vent asbestos contamination into the rooms.

No doubt this school is not unique and many other schools will have contaminated ceiling voids, but because of the flawed CLASP Working Group guidance will have made no attempt to seal them.

345. HSE/HSL were asked why the Working Group guidance failed to recommend the sealing of the ceiling void. The question was as follows:

" The guidance of 12 October 2006 requires a priority visual inspection to identify gaps in ceiling tiles and then seal them with silicone sealant, and yet the CLASP Working Group guidance makes no mention of either identifying or sealing these gaps. As contamination of the ceiling voids has been proved, please should the gaps in ceiling tiles be identified and sealed?"²⁵⁵

HSE Head of Cancer and Asbestos Unit's answer was as follows:

"Schools should follow the requirements of the more recent guidance (CLASP Working Group March 2007) which should achieve compliance, being evidence based."²⁵⁶

The evidence shows that many ceiling voids are contaminated with asbestos fibres, friable AIB off-cuts and asbestos debris. Asbestos ceiling tiles and window heads have been used in many schools, asbestos lagged pipes and asbestos fire curtains exist in some ceiling voids. All are liable to release asbestos fibres. Air sampling has proved that the column and wall voids can eject significant levels of amosite fibres into the void. Air sampling has shown that ceiling voids are contaminated with asbestos fibres. In some schools there are missing ceiling tiles, damaged ceiling tiles and ill fitting ceiling tiles. Asbestos fibres can filter down through the smallest gap.

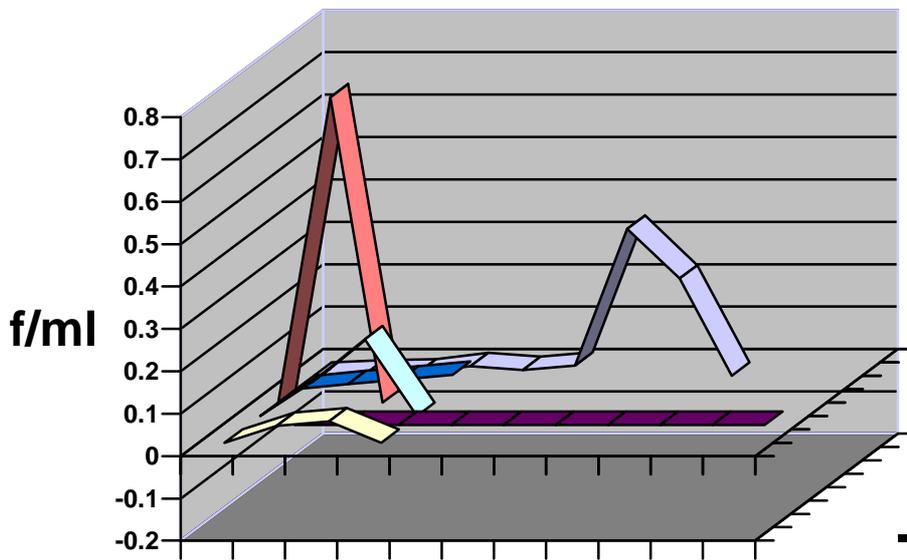
That is the evidence.

346. The following graph shows the results from air sampling in the ceiling void which demonstrates the extent of contamination.

²⁵⁵ Letter Lees/ HSL Burdett 19 Mar 2008

²⁵⁶ Letter HSE Head of Cancer and Asbestos Unit Walkin/Lees 20 May 2008

Ceiling void fibre levels



■ - ■ Maintenance 1st tests ■ Clearance level ■ Brushing ■ Independent column ■ Lifting tiles ■ HSL column ■ -

- All the tests show contamination of the ceiling voids. HSL TEM analysis shows fibres are 93% amosite.
- If air can pass through a gap, crack or hole, then so can asbestos fibres.

Working Group recommend that a visual inspection by the maintenance staff will identify asbestos contamination

347. The Working Group allow the maintenance staff or school caretaker to carry out the visual inspection of the ceiling void to determine if the area is contaminated with asbestos debris. If ACM debris is seen then, and only then, do they advise that licensed asbestos contractors should be used to clean the area and seal the tops of the columns. The Working Group guidance states:

Action to be taken in the longer term.

"Action may also be required in the ceiling void. ...A visual inspection can be carried out to determine if there is any asbestos contamination, which again maintenance personnel can undertake provided they have been trained and equipped as described in paras 21-23.

"If the initial visual inspection reveals contamination of the ceiling void with ACM debris, licensed asbestos contractors should be used to clean the area and seal the tops of the columns using polyurethane foam or similar."²⁵⁷

348. This is not only bad advice it also defies logic. First of all one must question how the caretaker, a non-specialist, is going to be able to visually identify debris from asbestos containing materials, when even experienced surveyors are not necessarily able to do so, which is why they have to take bulk samples and have them analysed.

349. It is also known that asbestos fibres are ejected into the ceiling void out of the tops of columns and wall voids. In addition if there are any other asbestos materials in the void then they could easily have deteriorated over the years and released asbestos fibres into the void. The whole area will therefore be contaminated by fine asbestos fibres, many invisible to the naked eye. Quite how the CLASP Working Group envisage that the school's caretaker is going to visually identify the presence of such contamination they fail to explain. The only way that the presence of the asbestos fibres can be identified is by dust and air sampling carried out by a licensed specialist analyst under carefully controlled conditions. Not by the caretaker looking around to see if he can recognise bits of asbestos debris.

350. If a thorough inspection is carried out throughout the whole of the ceiling void above every room and column in the whole school it is inevitable that many dozens of ceiling tiles will have to be lifted. By definition it has been assumed that the ceiling void is contaminated by ACM debris. Consequently the lifting of each and every tile has to be treated as if the top surface is contaminated with asbestos. Therefore whether or not the tiles are AIB tiles, they must be treated as such and the removal has to be carried out under strictly controlled conditions. If more than one asbestos contaminated, or AIB tile, above 2ft x 2ft is removed the task has to be carried out by a licensed asbestos contractor. Not the school caretaker or maintenance man.

351. By inference if the caretaker fails to identify bits of asbestos debris then, according to the Working Group guidance, he is able to declare the ceiling void clear of asbestos contamination. The supposition is not only crass, it is dangerously crass.

²⁵⁷ CLASP Working Group guidance paras 18-19

Working Group recommend maintenance staff to work on significantly contaminated areas

352. The Working Group recommend non specialist to carry out a visual inspection of the tops of the columns and the ceiling void.

"Immediate action

- o *Where the building is a CLASP or other system design, visually inspect*
- o *.....the top and bottom of the column casings*"²⁵⁸

There are hundreds of columns in a typical System built school which would all require a ceiling tile to be lifted and moved to one side. If the advice was followed there would be widespread contamination of the whole school and significant asbestos exposure of the person carrying out the operation.

353. Not only do they suggest that the inspection can be done by the schools maintenance staff they also recommend that he refastens loose cladding. No mention being made of the fact that as the cladding is loose it is highly likely that significant levels of fibres will be released from the gaps, skirting and ceiling void when any disturbance takes place. The Working Group guidance states:

" If the casings are loose they should be resecured. The fixings are normally at high (above ceiling) and low (behind skirting board) level and may be fixed with either a locking rod or screwed/nailed in.

Any work undertaken to resecure loose casings should be carried out in line with the procedures given in the Asbestos Essentials Task Sheets for minor drilling work...."²⁵⁹

*As the above action does not involve contact with ACMS (in most cases) it can be considered routine maintenance work and can be carried out by maintenance personnel e.g. joiner, rather than a licensed asbestos contractor."*²⁶⁰

354. All the other previous guidance on this subject is that any work carried out in the ceiling void should be carried out by licensed contractors, and yet the Working Group guidance encourages the school's maintenance staff to refasten potentially asbestos contaminated fastenings in the ceiling void. As the fastenings are loose it is highly likely that the void will be contaminated with fine asbestos fibres, many of which are not visible to the naked eye. In addition some of these fastenings are liable to have damaged the AIB and hence any work on them will release more asbestos fibres. When the cladding was loose in the 1st series of tests a level of 2.37 f/ml was obtained, which really underlines the fact that large numbers of asbestos fibres can be released and the refastening is not a job for a non-professional.

²⁵⁸ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. Para 15ii

²⁵⁹ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. Para 15 v

²⁶⁰ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. Para 17

355. The Working Group does give advice on the controls that should be used and advise that Asbestos essentials guidance is followed "*for minor drilling work.*" That perhaps will apply in a few cases, but it overlooks the problem that if the casing is loose it is highly likely that large numbers of amosite fibres will be disturbed and cause widespread contamination. Whereas the controls for drilling into AIB anticipate only localised release of asbestos fibres and therefore advise using either paste over the hole or a small plastic cup enclosure,²⁶¹ neither of which are remotely suitable for the task of refastening the tops and bottoms of loose casings.

356. The guidance issued by HSE, LGE, DfES and Scape is very specific that any work in the ceiling void should be carried out by Licensed contractors. It states:

*"Work above ceiling level, in the ceiling/roof voids should only be carried out by asbestos licensed contractors because there is a risk of contamination in these areas."*²⁶²

357. HSL reinforce this guidance by stating:

"However, caution is necessary as it is not unusual for asbestos debris to be left in areas around the tops of the columns (e.g. off cuts of asbestos insulating board and asbestos cement sheets) from the original installation.

*Therefore the situation and amount of asbestos debris may vary between buildings and appropriate precautions should be taken by workers disturbing areas in the ceiling void"*²⁶³.

358. HSL emphasis that the ceiling void should have been surveyed in a type 1 and 2 survey, and any asbestos debris located, but if it has not then it has to be considered as contaminated and any assessment or access should only be by a "competent person". HSL state:

"A type 1 or 2 survey as described in MDHS 100, requires that the ceiling void of suspended ceilings are accessed to check for ACMs and asbestos debris.

Therefore if a building survey has been carried out in accordance with HSE guidance the presence of asbestos debris from the installation or subsequent alterations should have been detected and located.

*If for some reason the surveyor did not access the suspended ceiling, as they should have done, the area should still have been marked as presumed to contain asbestos **and work in the ceiling void should be subject to the restriction and controls in CAR, 2006**, unless further assessment has been carried out by a competent person."*²⁶⁴

²⁶¹ HSE Asbestos Essentials Drilling holes in asbestos insulating board Task A1 p26

²⁶² A joint message from the HSE/LGE/DfES Asbestos - Action Required par a14 Scape formal Notice Release of asbestos fibres in CLASP buildings Potential for asbestos fibre release in CLASP buildings 12 Oct 2006

²⁶³ HSL Further measurements of fibre concentrations in CLASP construction buildings AS/2007/14 Sep 2007 FOI 24 Jan 2008 para4.4 p29

²⁶⁴ HSL Further measurements of fibre concentrations in CLASP construction buildings AS/2007/14 Sep 2007 FOI 24 Jan 2008 para 3.5 p26

359. Despite this the Working Group guidance allows the school caretaker to refasten the loose cladding.
360. In addition it appears that the Working Group have based their guidance on the assumption that the maintenance staff will only refasten one column, and hence the work can be considered as "minor" and the guidance under the Asbestos Essential applies. What they appear to ignore is that in any System built school there are many columns, in one small school there are 221 columns of which 212 needed sealing.
361. If HSE guidance is to be followed then it is probable that refastening just one column at the top or bottom will lie outside the definition of minor or unlicensed work. Just the removal of an AIB ceiling tile greater than 60cmx 60cm to access the column is no longer minor work. It is therefore most ill advised for the school caretaker or maintenance staff to carry out the work as it is inevitable that they will not have sufficient training, equipment or skills to carry out the task safely.
362. However if work is carried out on more than one column then inevitably by law it will have to be carried out by licensed contractors. HSE give a decision tree for determining whether the work can be legally carried out by non licensed people. Any work on AIB can only be carried out by a non licensed person if the work is considered "*Sporadic and low intensity*," which in this case is defined as taking less than an hour in seven consecutive days, and that includes the time spent setting up, carrying out the task, cleaning and clearing up. If two or more people are carrying out the task then the total time spent by all workers must not exceed two hours.²⁶⁵ The following table gives HSE's questions on the left and the likely answers on the right:

HSE questions	Refastening cladding	Inspecting ceiling
Can the work be carried out without disturbing the asbestos material?	No. It is probable that asbestos contamination is at the top and bottom of the cladding Particularly as the cladding is loose	No. It is probable that the ceiling void will be contaminated from AIB off cuts, asbestos debris and fibres from columns and walls . The tiles could be AIB
Does the work involve disturbance of asbestos insulating, coating or board?	Yes. The column cladding is known to contain AIB	Yes. The tiles could be AIB. The survey assumes asbestos in the void Contamination on the top surface of the tile will be disturbed when the tile is lifted whether it is AIB or not.
Will the work result in a person working for more than 1 hour in 7 consecutive days or will the time spent by all people on the work be	Yes Checking, setting up controls, preparing, refastening the cladding, cleaning and clearing up on one column could take	Yes Lifting more than one tile requires a licensed contractor. Lifting one tile more than 2ft x2ft with potential

²⁶⁵ HSE AO Asbestos Essentials Non Licensed tasks Advice to managers and sole traders on "asbestos essentials" Sporadic and Low intensity exposures p5

over two hours?	an hour. Work on more than one column is most likely to take more than an hour	contamination, or AIB, requires a mini enclosure. The tile has to be cleaned with a HEPA vacuum as it is lowered and the area around the column in the ceiling void has to be cleaned. The cladding has to be re-fastened. Replace tile, ensure complete seal, cleaning, dismantle enclosure. Decontaminate, One column will take more than an hour
Is the work to be carried out on your own site by your own specially trained employees?	No The caretaker or school maintenance staff will not be sufficiently trained, qualified or licensed	No The caretaker or school maintenance staff will not be sufficiently trained, qualified or licensed
	A specialist contractor licensed by HSE must be used	A specialist contractor licensed by HSE must be used

363. There was debate amongst senior asbestos consultants and the HSE over whether the work on sealing the tops of a large number of columns should be notified to the HSE before the work started. The consultants considered that it should be. The reason being that by the very nature of the work it had to be assumed that damaged AIB, AIB off-cuts, sprayed asbestos and amosite contamination could be present in the void. Sealing the tops of many columns involves contact with a large quantity of exposed AIB, both protruding from the top of the casings and also in many cases the window heads which abut the casings were AIB.²⁶⁶ Inevitably it also involved the removal of a large number of ceiling tiles potentially contaminated with amosite, it would involve cleaning of the tiles and the area around each column. If carried out correctly the whole task of sealing many columns would take days, which in itself would qualify the work as notifiable. Continual amosite exposure of the person carrying out the work over a number of days was likely, contamination of the surrounding area was possible. All of this would make the work notifiable. If the ceiling tiles were AIB then without question this qualified it as notifiable work.²⁶⁷

In comparison the HSE considered that regardless of the numbers, or whether the ceiling tiles were contaminated, they were not AIB and therefore the contamination in itself did not qualify the work as notifiable. However it would be at the contractors discretion whether he notified the work depending on the degree of contamination. If the tiles were carefully slid to one side and vacuumed then in their opinion that would not be notifiable. Sealing the tops of the exposed AIB column cladding with expanding foam did not disturb the AIB and therefore regardless of the numbers, it was not notifiable. If the tiles were AIB then it was less certain and the contractor would again have to make a continual

²⁶⁶ CLASP Asbestos Awareness Handbook Asbestos in CLASP Standard Details Mar 2003
²⁶⁷ Blackburn 29 Jan 2008. Howie 27 January 2008

assessment. However if the tiles were not being taken out completely or modified then it could still be classed as minor work and would not need to be notified, regardless of the numbers. Even if the tiles were AIB an enclosure was not necessary when they were being removed and put back in the same place, however if the intention was to remove them completely, then an enclosure was necessary as per Asbestos Essentials.²⁶⁸

It is relevant that the HSE official who gave this opinion was a member of the CLASP Working Group and was therefore in part responsible for the drafting of their guidance on remedial actions in System buildings.

The fact that there is such a difference in opinion highlights that there is considerable discretion in whether work should be notifiable or not. No doubt, particularly as these are schools, the more conscientious contractors will take a precautionary principle and use their discretion to follow the best practice, whereas the less conscientious will take any opportunity to cut corners and will invariably opt for the easy option.

Working Group imply, incorrectly, that only serious damage to a column should cause concern

364. As well as the Working Group guidance recommending that the schools maintenance staff inspect the top and bottoms of the columns and then refasten them if they are loose, they also recommend that they inspect the front and back of the casings for gaps, and then seal the gaps. They do add a caveat:

"However, if there is serious damage to a column and suspected exposed asbestos material then assistance should be sought from a licensed asbestos contractor."²⁶⁹

The problem is that significant levels of asbestos fibres can be released when there is no evidence of "serious damage" to the column, the casing or its AIB cladding.

365. If the cladding is loose then it is highly likely that the AIB will be damaged, and therefore refastening either top or bottom should only be carried out by a licensed contractor.

366. The independent tests found very high levels of asbestos fibres when air sampling was carried out next to a column, and yet other than a gap in the front of the casing there was no other evidence of any damage, indeed the column appeared to be in good condition. In another instance it was only when the casing was removed in the 1st HSL report, that large amounts of AIB debris was found in the column. (See plate7) Therefore the Working Group's caveat about assistance being sought from licensed contractors "*if there is serious damage to a column and suspected exposed asbestos material*" is somewhat nebulous. For if the column appears to be in reasonable condition the maintenance personnel advocated by the Working Group will in most cases have no idea whether or not a column contains damaged AIB and large quantities of asbestos debris and fibres.

²⁶⁸ HSE Specialist Group Edinburgh Gibson 28 Apr 2008

²⁶⁹ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. Para 17

367. During the air sampling of the columns in the Rhonnda, HSL state that initially the columns with the most visibly damaged casings were selected. However they admit that the condition of the casing was not always recorded, which indeed is true, for out of the 38 samples 17 have no record of the condition of the casing. In the one case where the condition is recorded as "good" the two samples both gave levels above the Clearance Level, one being four times above the level.²⁷⁰ There was uncertainty over whether or not it is the visibly damaged cladding that releases the most fibres, HSL therefore took care to stress that no definite conclusions could be drawn on the relationship between the level of fibre release and the visible condition of the casing. HSL state:

"The descriptions of the exact disturbance and the condition of the casing were not always recorded and the inner construction of the columns was unknown,

*so it is only possible to draw a tentative relationship between visible damage to the casing and the degree of containment it provided (i.e. the presence of gaps along seams, movement when hit, drill holes etc.)."*²⁷¹

368. Therefore once again the Working Group have made statements that cannot be substantiated by the facts. Once again they have given the impression that there is no risk unless serious damage can be seen, which frankly is not true.

Working Group advise identifying fittings attached to column casings and cables running down inside casings, then give no further guidance

369. The HSE and Scape guidance describes how asbestos fibres are released, which includes damage from screwing fixtures through the metal cladding into the AIB. The guidance states:

*"The condition of cladding has deteriorated over the years and **sockets and other fixtures have in some cases been screwed through the metal cladding** and probably into the AIB. Window replacement was also carried out to a poor standard with frames screwed into the asbestos. All of these are likely to be 'risk factors'*

*The mechanism of release is not clear. But in the worst cases it may be associated with the screws moving in the AIB abrading it, the striking of the cladding acting like a 'bellows' to disperse fibre. A number of factors are likely to be relevant to the degree of fibre release **including damage to the AIB**, overall maintenance of the building, gaps in cladding etc."*²⁷²

370. The 1st HSL report reiterates that asbestos fibres can be released into the classrooms when the casings are struck or adjacent windows and doors are banged. It concludes that this was due to damaged AIB or sprayed asbestos

²⁷⁰ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 Table 1 p10,11

²⁷¹ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 para 4.3 p18

²⁷² Scape Formal notice. Potential for asbestos fibre release in CLASP buildings. paras 6, 7. 12 Oct 2006

within the columns, some of the damage being caused by items being fixed to the casings. The report states:

*"An assessment of the cause of the release was undertaken and found to be due to **damaged asbestos insulating board (AIB)** and debris within the columns. This was exacerbated by a poor seal in some of the metal column casings, which was meant to enclose the AIB. **Maintenance work on the columns to attach various items** and in particular improper window replacement had all resulted in further breaches of the enclosing casing. After further field sampling work had confirmed the probable mechanisms for release (**damaged** and /or poor sealing) and that predominately amosite asbestos fibres were being released"²⁷³*

Plate 17: Central column with concertina door fittings and window pulleys screwed into casing

Note: The reverse face had a light fitting and cable channel screwed to it. Although not shown in this photograph, there are gaps in the column casing. See Plate 15 for other fittings screwed into casing



²⁷³ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos
HSL/2007/22 Apr 2007 para 1 Introduction p1

Plate 18: Socket screwed onto column casing.

Note: The column contains AIB cladding and the socket has been screwed through the casing into the AIB. It is not known how the cable duct had been fixed to the column although it is probably screwed in place. Although the duct would restrict the release of asbestos fibres from the front face, any gap in the back of the casing would freely release asbestos fibres.



371. The Working Group guidance advises that a visual inspection should identify any cables running down inside the column casings and any fittings and fixtures fastened to the casings:

*"Where the building is a CLASP or other system design, visually inspect
Check also for signs of maintenance work, after installation e.g fixtures
attached to casing, holes drilled or improper installation."²⁷⁴*

"Priority for the visual inspection should be given to:

- o Where cables or wires have been threaded inside the column casings possibly disturbing the ACM.*
- o Where items have been fixed to the column casings e.g. fire extinguishers hanging brackets."²⁷⁵*

372. Having recommended that a visual inspection is carried out the Working Group fail to give any further recommendations. Consequently it is inevitable that

²⁷⁴ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. Para 15

²⁷⁵ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. Para 16

fitting and fixtures will be left in place and cables will remain in the casings. Evidence of this is given in plate 18 where a socket has been screwed into the casing, it is probable that the cable duct had also been screwed into place. The screws will have damaged the AIB and any disturbance of the socket or casing will in all probability releases asbestos fibres into the casing. Although in this case the release of fibres will be restricted by the ducting secured over the join in the casing, fibres will be freely released from any gap at the back of the column casing. Plate 8 shows a telephone socket that has been removed from one side of the casing and replaced on the front face leaving open screw holes with the asbestos cladding visible through the holes. Any fibres can freely vent out of the screw holes and the bottom of the column as the skirting board was missing.

373. A further example of fitting and fixtures being fastened onto the casing is given at Plates 15 and 17 where a central column in a school hall/gym/dining room has been used as a convenient hanging post. Concertina doors slide shut and are fastened onto the column with the fittings being screwed into a plank of wood which in turn had been screwed onto the casing, so that every time the doors are slammed shut the column is hit. In addition two window pulleys had been fastened directly to the casings as had light fittings and a cable run. (Plate 15) There were gaps in the casing which were only sealed in January 2008 after the ITN investigation. The contractors who carried out the sealing left all of the fittings in place and just squirted silicone sealant liberally around them, so that any process of damage to the AIB continued every time the doors were slammed shut or a window opened, the silicone just sealed the problem in. In this particular case the column was badly scuffed partially because it was constantly knocked and had balls kicked into it when the hall was used as a gym. Within a week of sealing the column, sealant at the base of the column had been peeled off thus allowing the free passage of any fibres that may have been released. (Plate 14)
374. Sealing a fixture in place might prevent fibre release if the fixture is never disturbed, however when the fitting or fixture or the column are disturbed the screws can potentially abrade the AIB and release fibres. This would take place when plugs are inserted and pulled out of electrical sockets, particularly as the retaining screws are unlikely to have been sealed, it would also take place each time the doors are slammed shut or a ball is kicked into the column. Unless the integrity of sealant around every single fitting and every gap in the column and skirting is very regularly checked and can be guaranteed to remain effective, then it is inevitable that fibres will be released. The missing sealant in Plate 14 proves that such guarantees cannot be given.

Working Group fail to advise that the tops of the wall voids and wall skirting should be sealed

375. HSE, LGE, DfES, Scape and the CLASP Working Group all highlight the fact that asbestos materials may have been deposited in the wall voids. It is known that AIB has been used in partition walls, linings to walls and internally inside walls. Despite this the Working Group do not specifically state that asbestos fibres can be released from the walls, whereas in comparison HSE, LGE, DfES and Scape do acknowledge that they can. They state:

*"During construction it also seems that off cuts of AIB and debris have in some cases been swept into the **gap between the wall and the plasterboard stud partitioning or wall cladding**. Skirting board then sealed this debris in.*

When the **plasterboard** was struck fibre was again released through the skirting board gaps.²⁷⁶

376. HSE and Scape also state;

*" Further investigations carried out by the Council and the HSE showed that asbestos insulating board fitted during the original construction had been disturbed and fibres been released into the building through gaps in column casings and **internal lining to the external wall.**"²⁷⁷*

Plate 19: After remediation. Hole in school library wall.

Note: This hole was made by a pupil. In the same school holes had been kicked in the walls on previous occasions. The asbestos surveys "presume" asbestos to be present in the wall voids.



377. Having identified the problem HSE, LGE, DfES and Scape all recommend that the gaps in the skirting boards and walls should be sealed as well as the open tops of the wall voids:

*" All gaps to column cladding, **skirtings, and walls** to be sealed to enclose the AIB dust and debris."²⁷⁸*

*" Use expanded foam to fill tops of the columns **and cavity walls** where they are open to the ceiling void above the suspended ceilings. This work should only be carried out by Licensed Asbestos Removal Contractors."²⁷⁹*

²⁷⁶ A joint message from the HSE/LGE/DfES Asbestos - Action Required Potential for asbestos fibre release in CLASP buildings para 8 . Scape formal Notice Release of asbestos fibres in CLASP buildings Potential for asbestos fibre release in CLASP buildings 12 Oct 2006 para 8

²⁷⁷ Scape formal Notice Release of asbestos fibres in CLASP buildings 12 Oct 2006 p 2

²⁷⁸ A joint message from the HSE/LGE/DfES Asbestos - Action Required appendix 1 . Scape formal Notice Release of asbestos fibres in CLASP buildings 12 Oct 2006 Appendix 1

²⁷⁹ A joint message from the HSE/LGE/DfES Asbestos - Action Required appendix 1 . Scape formal Notice Release of asbestos fibres in CLASP buildings 12 Oct 2006 Appendix 1

378. Whereas in comparison The CLASP Working Group guidance avoids mentioning any problems with the tops of the wall voids or gaps in the walls and makes no mention that either should be sealed. The Working Group guidance states:

"Seal all gaps in the joints between:

- *column casing to casing*
- *column casing to skirting*
- *column casing to walls*

*using a silicone based sealant to enclose dust and debris within the casing.*¹²⁸⁰

*"Action may also be required in the ceiling void. The tops of columns in the ceiling void are usually open or unsealed.*¹²⁸¹

*" If the initial visual inspection reveals contamination of the ceiling void with ACM debris, licensed asbestos contractors should be used to clean the area and seal the tops of the columns using polyurethane foam or similar"*¹²⁸²

Working Group's misleading statement implies that fibres may not be asbestos

379. The Working Group guidance gives a description of the release of fibres when the column casings were struck, and then they make a point of highlighting the fact that the type of counting used will not differentiate between asbestos and non-asbestos fibres. Which tends to make a reader question whether the airborne fibres actually were asbestos. The Working Group state:

"The measured concentrations within the tented enclosure suggested there was release of fibres from within the columns.

*The standard method used to count the fibres (phase contrast microscopy PCM) did not discriminate between asbestos and non-asbestos materials.*¹²⁸³

380. It is perfectly true that standard counting rules using phase contrast microscopy does not allow discrimination between asbestos fibres and non-asbestos fibres on the initial count. However the Working Group fail to mention that in this particular case HSL took great care to stress in their report that when the columns were struck they had confirmed the PCM results by also examining the samples with electron microscopes which showed that predominantly amosite fibres were being released. HSL also stress that "significant" fibres were released, whereas in the above quote the Working Group do not include that most relevant word. In comparison to the Working Group, HSL state:

²⁸⁰ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. Immediate action para 15 iii p4

²⁸¹ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. Action to be taken in the long run para 18 p5

²⁸² Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. para 19 p6

²⁸³ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. Background para 26 p7

*"The measured concentrations inside the enclosure suggested a **significant release of airborne fibres** was present.*

*After further field sampling work had confirmed the probable mechanisms for release (damaged and /or poor sealing) and that **predominately amosite** asbestos fibres were being released,²⁸⁴*

*Only a few electron microscopy results were available for this report. These were primarily taken to check whether the releases of the fibres from columns when disturbed were amosite fibres. These have generally confirmed that a high percentage of the fibres released when the columns were struck were **amosite**.²⁸⁵*

AIB panels adjacent to doors. Doors are fixed to columns containing AIB. No guidance on how to assess whether asbestos fibres are being released.

381. The Working Group guidance highlights the fact that asbestos fibres can be released when doors and windows are closed:

An assessment of the cause of the release found that a particular set of circumstances was needed for there to be a release of fibres. These were:

damaged asbestos insulating board and debris lying within the columns, for example, if the AIB has been damaged by earlier maintenance or installation work such as window replacement that has broken into the columns (this method of work is contrary to advice from SCAPE System Build Ltd, which is the trading company for CLASP)

*significant impact on the casings, i.e. casings being forcibly struck by furniture or people causing fibres to come off the exposed edges of the damaged AIB, and **vibration caused by closure of windows and doors.***

a poor seal in some of the metal column casings that are meant to enclose the AIB, causing gaps through which fibres can escape into the room...²⁸⁶

382. The Working Group guidance also advises that priority for visual inspection should be given to:

"Where items have been fixed to the column casings e.g fire extinguishers, hanging brackets."²⁸⁷

However although other fittings can be removed and the holes plugged this clearly cannot be done in the case of doors that are fastened to columns containing AIB or sprayed asbestos. No real solution is given to the problem other than sealing any gaps in the casing. However even if this is done it does stop the process of asbestos fibres being released every time a door is slammed

²⁸⁴ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Introduction p1

²⁸⁵ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 para 3.6 p 12

²⁸⁶ CLASP Working Group guidance Background Mar 2007 para27

²⁸⁷ CLASP Working Group Guidance para 16 p 5

it only covers up the problem. Various air tests have been carried out in System built schools where samplers have been placed near doors to assess whether fibres were being released, in some cases they were in significant numbers and in other cases very few or no fibres were released, but the only way that the release or otherwise was determined was by air sampling. As this is potentially a major source of fibre release and there is no other means of assessing whether fibres are being released, it would seem eminently sensible to carry out air sampling next to any door that is fastened to a column containing either AIB or sprayed asbestos. Regrettably though the Working Group guidance does not recommend air sampling in this or any other situation. The problem is potentially significant as demonstrated in various tests that have taken place over the years:

383. Doors are hung and fastened to columns that contain AIB. AIB panels are also located next to doors. An asbestos survey from a CLASP Mk4 school states:

"Classroom insulating board. Presume throughout. Within void to side of door. Amosite chrysotile "
Classroom /library Insulating board panels. Internal voids beside doors. Amosite chrysotile"
*Classroom Insulating board panels. Presume throughout. To vertical void of side of door. Presume to all vertical voids & within vertical RSJ encasements. Amosite chrysotile.*²⁸⁸

384. As has been seen in the section on airborne fibre levels in the 1987 ILEA tests it was shown that slamming a door five times released asbestos fibres into the classroom at levels up to thirty three times greater than the Clearance level.

*"Slamming a door five times resulted in measurements averaging 330 fibres per litre of air: That is 33 times higher than the safety limit set by the Health and Safety Executive."*²⁸⁹

385. The first tests were in a System built secondary school, but not a CLASP building, where tests were carried out to assess the asbestos fibre release from slamming doors. The report states:

"Asbestos panels containing amosite (15-30%) are situated around door frames at floor and ceiling level in a boys Secondary School in South West London.

"The panels are situated around the doorways on three floors of North Block and are painted and seem to be in good condition.

*The school was occupied at the time and it was noticed that **when pupils passed through the doorway, slamming of the doors shook the frame containing the panels.** This vibration was considered to be another possible fibre release mechanism. Door closing springs appear to be missing or have been disconnected from some doors."*²⁹⁰

²⁸⁸ Asbestos survey Brent Council. Environmental Evaluation MM/19595 p21,23 25 Jul 2006

²⁸⁹ Dust to Dust Eddie Rowe Trade unions technical advisor ILEA Asbestos Joint Working Party 27 Nov 1987

²⁹⁰ ILEA report LSS/AP/52 (1987) Investigation into fibre release from low level asbestos panels - Ernest Bevin school May 1987

386. All of the samples showed a significant level of amosite fibre release when a door was slammed five times, the levels being between 0.16 f/ml to 0.33f/ml. This show that the appearance of the asbestos panels can be deceptive as the reverse face had presumably been releasing significant numbers of asbestos fibres into the wall void every time a door was slammed and vibrated the wall. As pupils had been observed slamming the doors, it must be presumed that similar releases of amosite fibres were a common occurrence. The fact that significant levels of asbestos fibres were being released was only determined by air sampling as the visual appearance of the door surrounds and panel gave no clue that this was occurring.
387. An interval of 90 minutes then passed before the next test took place where the wall was kicked for 10 minutes. It is relevant that the five samples gave results very much on par with the less aggressive disturbance of slamming the door five times. This clearly demonstrates that the disturbance created by slamming a door is on par with that of kicking a wall for ten minutes.
388. Further tests were carried out in a Primary school. The air tests were carried out in the infant toilets where there were stud walls with asbestos panels in good condition. The panels contained chrysotile, amosite and a trace amount of crocidolite.
389. The two cubicle doors were then slammed every half minute with a total of 10 slams. All the air samples gave levels above the Clearance level with an SEM analysis showing the majority of the fibres were asbestos.²⁹¹ The results from these tests show a significant asbestos fibre release from slamming an infant toilet cubicle door 10 times. They are lower than the similar tests carried out at the previous school, but then one must presume that any asbestos panels adjoining a door at the top of the stairs in a boys' secondary school will over time have been subjected to considerable disturbance from being bashed and vibrated by pupils barging the walls and slamming the doors, far more than panels adjacent to a door of a toilet cubicle used by infants.
390. A further test was carried out in the same couple of toilet cubicles. The doors were closed ten times once again but in this case instead of slamming them they were closed "*more gently*" with "*a force estimated to be that of a teacher or infant school child.*" All the results were beneath 0.01f/ml. No doubt this was comforting that the infants were not being regularly subjected to high levels of asbestos fibres every time they went to the loo. However what the series of tests prove is that in a school where it is likely that the asbestos was in good condition if care is taken to gently close doors then asbestos fibre release will be within the accepted limits for the rooms to be occupied. However if boisterous behaviour such as slamming doors takes place then significant release of asbestos fibres can be released.
391. Every single test in both schools gave fibre releases above the Clearance level when doors were slammed. The tests prove conclusively that asbestos fibres are released when doors are slammed. In all cases the asbestos panels appeared to be in good condition, however in the secondary school in a busy corridor the levels from slamming a door were consistently high. When the tests were replicated in a school where it is likely that the asbestos was in good condition the levels were lower, but once again they were above accepted limits

²⁹¹ ILEA report LSS/AP/78 (1987) Investigation into fibre release from low level asbestos panels at Roehampton Gate Primary September 1987

for the rooms to be occupied. As the lessons were not learnt no remedial actions were taken in most other System built schools throughout the country, so the asbestos fibres continued to be released every time a child ran into a wall or a door was slammed. Twenty years later further tests were carried out in System schools that again demonstrated significant fibre release when doors were slammed.

392. The HSE Scape Formal Notice from October 2006 explains the mechanism of asbestos fibre release which includes:

*"The degree of escape of fibre varies. In some cases levels in the general atmosphere of the room are very low. But in others levels have been found that exceed the control limit. The striking was three or four sudden blows and is the kind of disturbance that is foreseeable in a school environment. **Disturbance is also foreseeable when doors are slammed where the doors are adjacent to damaged AIB / loose cladding**"²⁹²*

393. The 1st HSL report explains that the high levels of fibre release was because testing was intentionally carried out where it was presumed that the AIB was damaged, including where doors were hung from the columns. The report states:

The columns selected for testing were generally chosen to represent a worst-case situation where there was visible damage to the casing (e.g. from installation of fire alarms) and /or obvious gaps were present.

*Columns adjacent to improperly or poorly replaced windows **and with attached doors were also preferentially chosen to test, as the AIB would have been subject to greater damage.** To induce movement and vibration, the columns were either banged directly with a fist a number of times or the **attached / adjacent doors and windows were repeatedly slammed.**"²⁹³*

394. In most cases in the 1st series of HSL tests there are insufficient details to specifically state which results involved sampling when doors were slammed. However in the six air tests before remediation where it is specifically stated "banging doors," three of the samples are above the Clearance level with one TEM analysis giving twice the level, 0.02f/ml, and those were all asbestos fibres.²⁹⁴ Therefore these results confirm the results from twenty years before and clearly show that the slamming of some doors release significant levels of asbestos fibres into the rooms.

395. In contrast tests were carried out by HSL in school "A" in a corridor between two sets of swing doors which caused "*movement and vibration to the building structure.*" However the tests were carried out after the gaps in the columns had been sealed and the fibre levels were very low with only one asbestos fibre being sampled with the pooled results giving a concentration below the limit of

²⁹² Scape HSE FORMAL NOTICE Release of Asbestos Fibres in CLASP Buildings Potential for asbestos fibre release in CLASP buildings 12 Oct 2006 para 4

²⁹³ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 para3.3 p 9,10

²⁹⁴ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 Table 1 p10

detection.²⁹⁵ Perhaps a reason is that the doors were "swing" doors which by definition do not slam, but that is no more than supposition. Further tests were carried out before remediation also in school "A" and reported in the 2nd HSL report where a kitchen door, and a storeroom door were reported to have been "slammed" five times once again giving a result beneath the level of detection.²⁹⁶ Further sampling was carried out in a CLASP office "*Close to a set of doors , which vibrated the column when opened and closed.*" The sampling was over a five week period and only one asbestos fibre was detected. No mention is made of the doors being slammed so once again the veracity of these tests must be questioned, for as was proved in the ILEA primary school closing a door releases very few fibres. Almost all the results from the 2nd HSL report were very low in the buildings where the swinging/slamming/closing tests took place, and therefore one must question which is more representative, as there is a significant contrast between the results in these buildings and the far higher results from ILEA and the schools in the Rhondda.

396. Once again having highlighted the fact that doors vibrate the columns and potentially release fibres the Working Group offer no solution to solving the problem, rather they give the general advice of sealing gaps in columns. Perhaps once again they have looked at the 2nd HSL report in isolation and have failed to heed the results of the sampling from the schools in the Rhondda, and indeed the most significant levels shown in the ILEA schools when the doors were slammed five times. A suggested way forward is to undertake air sampling next to every door that is fastened to a column containing AIB or sprayed asbestos and next to every door that has AIB panels in the walls surrounding the frame. If raised fibre levels are found then as an interim measure the gaps and column tops have to be sealed. But a long term solution is far more problematic and no doubt the only measure guaranteed to ensure the safety of the occupants of the rooms would be to remove all the asbestos in walls where there is a door, and from the columns to which door frames are attached.

Working Group recommend sealing asbestos debris and fibres into columns

397. The Working Group guidance does not advise that the presence or asbestos debris and fibres is identified. Instead it recommends that gaps in and around the column casings are identified and then any dust and debris is sealed into the column casings. the guidance states:

" Seal all gaps in the joints between:

- *column casing to casing*
- *column casing to skirting*
- *column casing to walls*

*using a silicone based sealant to enclose dust and debris within the casing.*¹²⁹⁷

²⁹⁵ HSL Summary of fibre concentrations in CLASP construction schools containing asbestos HSL/2007/22 Apr 2007 para3.6 p 12. HSL Further measurements of fibre concentrations in CLASP construction buildings. AS/2007/14 Sep 2007 para3.2 p13

²⁹⁶ HSL Further measurements of fibre concentrations in CLASP construction buildings. AS/2007/14 Sep 2007 Table 14 p22

²⁹⁷ Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. Action required by duty holders.

398. The Working Group's solution of sealing the gaps encloses the damaged asbestos materials, dust and debris in the column and wall voids, and relies totally on the integrity of all the seals remaining intact. This runs contrary to guidance on the management of damaged asbestos, which states that this is only a good option if the asbestos is in a reasonable condition. If the Working Group guidance is followed nobody will know whether it is in reasonable condition or not, it therefore should be assumed that it is not.

Current HSE guidance on managing asbestos states that before the Asbestos Containing Material (ACM) is sealed, it should be repaired. However in System buildings as this material is difficult to access that is a major task without dismantling every column casing, wall and ceiling. The guidance states:

"Enclosing the ACM is a good option if it is in reasonable condition, but it may still be vulnerable to damage. Potential problems for the future should be borne in mind when choosing this option..."²⁹⁸

The fact that the material should be repaired is further emphasised by Department of the Environment guidance, which states:

"Asbestos material which is damaged and is to be left in place, with or without sealing, must be repaired."²⁹⁹

399. There is strong evidence that there is potentially damaged asbestos materials, large amounts of friable asbestos debris, asbestos off cuts and asbestos fibres in the column, wall and ceiling voids. The Working Group ignores the walls and ceilings but advises that the maintenance staff seal any gaps in the columns to prevent any of the asbestos fibres seeping into the rooms. It then relies entirely on the integrity of silicone sealant remaining intact. For if a single strip of sealant comes loose then asbestos fibres will freely enter the classrooms once again. Indeed the HSE Comprehensive Guide is correct, that by following this path "*potential problems for the future should be borne in mind.*"

Working Group fail to recommend viable method of determining effectiveness of sealing.

400. HSE, DfES, LGE and Scape all state that air sampling should be carried out to determine whether the sealing has been successful or not. Indeed after the sealing took place in the schools in the Rhondda it was only air sampling that proved that fibres were still being released, in some cases at significant levels. although no doubt someone had already visually checked and declared that the sealing appeared to be effective. For a visual inspection on its own cannot determine if the sealing is effective and whether asbestos fibres are being released into the rooms. HSE, DfES, LGE and Scape guidance states:

"Following remedial works, air monitoring to be carried out to ensure enclosure/encapsulation of asbestos has been successful.

Re-assurance air monitoring is then carried out on the basis of a risk assessment."³⁰⁰

²⁹⁸ HSE A comprehensive guide to managing asbestos in premises. p83 Feb 2004

²⁹⁹ DETR Asbestos materials in buildings para 5.5 Third edition 1991

"Initially this sealing/encapsulation work should be carried out below ceiling level. The work should be undertaken as a priority to mitigate any potential fibre release.

*Following this, monitoring for fibre release should be undertaken as reassurance.*³⁰¹

401. In comparison the CLASP Working Group recommend that the initial inspection is carried out by the school's maintenance staff to identify any cracks, gaps, loose cladding and asbestos debris. They then recommend that the school's maintenance man seals all the gaps and refastens any loose cladding. Once the maintenance staff have completed all of that the Working Group recommend:

*"Visually check to ensure that the sealing is effective"*³⁰²

Quite how they envisage anyone will be able to see whether asbestos fibres are being released, they do not say. They also allow the person who has carried out the task to inspect his own work, which is bad advice, for if he has missed a gap when he was carrying out the sealing, it is likely that he will miss the same gap when he carries out his inspection. Also, in critical circumstances such as these, the practice of inspecting one's own work is contrary to good practice.

402. HSE were asked the following question about their guidance that the schools maintenance staff can seal the gaps and identify his own work:

"The guidance for CLASP owners advises that the assessment of whether cracks need sealing, the actual sealing and the visual assessment following the work can be carried out by "maintenance personnel eg joiner, rather than a licensed contractor."

- a. *A non-specialist is unlikely to be skilled in assessing and sealing/enclosing damaged asbestos. Once the work is completed, do you agree that it should be inspected by a qualified specialist who is independent of the person who carried out the sealing?*³⁰³

HSE's reply was as follows:

a. HSE does not believe that a licensed contractor or other qualified specialist would have any more expertise in applying or visually inspecting seal integrity than any experienced and suitably instructed tradesperson. The guidance requires training to be given. It is for the dutyholder to decide what, if any, quality controls they wish to apply.

They were then asked the following:

³⁰⁰ A joint message from the HSE/LGE/DfES Asbestos - Action Required appendix 1 . Scape formal Notice Release of asbestos fibres in CLASP buildings 12 Oct 2006 appendix Methodology

³⁰¹ A joint message from the HSE/LGE/DfES Asbestos - Action Required para 12 . Scape formal Notice Release of asbestos fibres in CLASP buildings 12 Oct 2006 Action Required para 12

³⁰² Guidance for duty holders produced by the HSE Asbestos in schools "CLASP" Working Group - March 2007. Background para 15 iv p5

³⁰³ Letter Lees/ HSL Principal Scientist, Analytical Science 3 Dec 2007

- b. *Please what system has HSE put in place to ensure that the sealing in each school has been effective, and that asbestos fibres are no longer being released?*

Their reply was:

- b. *You will be aware that HSE has no maintenance responsibilities in schools. The responsibility to ensure sealing is effective and maintained is placed on those who have the duty to manage asbestos under the Regulations.*³⁰⁴

403. HSE were also asked why they had dropped the critical guidance that instructed air tests should be carried out to confirm whether the sealing had been successful. The question was as follows:

The guidance, issued in October 2006 by HSE as part of the Scape Formal Notice, advises that "Following remedial works, air monitoring to be carried out to ensure enclosure/encapsulation of asbestos has been successful. Reassurance air monitoring is then carried out on the basis of a risk assessment." However the HSE CLASP Working Group guidance instructs "visually check to ensure that the sealing is effective," and there is no mention of air monitoring being carried out .

- a. *Why has this advice been removed from the final guidance?*

HSE replied:

Question 5a concerns the advice on CLASP schools published by HSE in October 2006. You must remember that this was an early alert, and HSE published later advice after the CLASP working group had examined the issue in more detail. It is not unusual for an early precautionary alert to be issued using wording which is later revised after further assessment of the effect of remedial measures. I do not agree that refinement of the advice can be characterised as inconsistent. Having established the effectiveness of sealing of columns, HSE issued its updated guidance.

The second part of the question was as follows:

- b. *In the absence of air tests how are people expected to determine whether the sealing has been effective?*

HSE's reply was as follows:

Question 5b. The sealing of any gaps or holes in the column casing has been shown to be effective in maintaining the integrity of the enclosure and in preventing any direct ingress of asbestos into the room. Visual assessment that the gaps are properly sealed is a direct check of the completeness of the sealing and identifies where further work is required. There is no evidence that a properly sealed casing would give rise to a significant risk to occupants in the room. In these circumstances air monitoring would serve little additional purpose. The air monitoring suggestion was qualified from the start by being subject to a risk assessment. The results referred to in the HSL report (Summary of fibre

³⁰⁴ HSE Head of Cancer and Asbestos Unit, Walkin/ Lees 20 May 2008

*concentrations in CLASP construction schools containing asbestos (HSL/2007/22) are relevant and have already been drawn to your attention.)*³⁰⁵

404. A visual inspection can never fully determine whether the sealing is effective only comprehensive air sampling with disturbance under controlled conditions can achieve that. Once again the CLASP Working Group guidance is ill-conceived and can give people an unjustified sense of security. It is unacceptable that once again the CLASP Working Group has replaced the earlier good practice with one that compromises the safety of the occupants of the rooms.

Working Group consider whether inspection and sealing can be carried out while schools occupied.

405. Schools are not normal workplaces because they are full of children, who are the most vulnerable people in society. Therefore if a task is about to be undertaken that might release asbestos fibres, a precautionary approach should always be taken and the work carried out when the school is not occupied. This applies to asbestos surveys, inspections in voids and any remedial work. It is therefore disturbing that the CLASP Working Group have not reinforced this premise, rather they have given the impression that it does not really matter. The final minutes of the Working Group refer to the results of the 2nd HSL air tests and the presentation given by the HSE Head of Cancer and Asbestos Unit, and state:

"The following points were made in discussion:

... The default position of schools is that they should close when remedial work is being carried out,

however the report suggests this should not necessarily be the case."³⁰⁶

This is despite instructions being given over the decades that a precautionary approach should be taken particularly with children, and if any work is likely to release fibres then it should only be undertaken when the rooms or building are empty. 1983 guidance from the Department of the Environment states:

*"If the action taken is likely to lead to an increase in airborne asbestos dust the work area should be sealed off or the building emptied while the work is carried out, and after completion, the airborne asbestos concentrations should be measured before the area is reoccupied."*³⁰⁷

Once again the Working Group appear to have accepted the 2nd HSL findings and conclusions without question, despite the fact that much of it runs contrary to previous evidence. By relaxing the rules they are encouraging sloppy and bad practice which without doubt will be readily adopted by some school authorities who will grasp the opportunity to cut costs and achieve a tick on the board with the least hassle and disruption. What such comments also do is set back the very real advances that have been made over the years to persuade school authorities of the very real risks from asbestos, and how a precautionary approach should always be taken.

³⁰⁵ HSE Head of Cancer and Asbestos Unit, Walkin/ Lees 20 May 2008

³⁰⁶ CLASP Working Group minutes 16 July 2007 para3.2

³⁰⁷ Department of the Environment Asbestos materials in Buildings 1983 para 5.15 p21

Conclusion to Flaws in CLASP Working Group guidance

406. Evidence given in this paper shows that the CLASP Working Group guidance is seriously flawed. Practices that they recommend are unprofessional, ill-conceived, misleading and in many cases are dangerous. It appears that the safety of the staff and children has not been paramount in formulating the guidance, rather financial and commercial considerations have been given priority. The Chairwoman's instruction that the committee should adopt a policy of positive messaging has pervaded the proceedings, and keeping the true scale of the problem from the public appears to have driven decisions and policy. A veneer that all is well has been a priority and the guidance has been written with the intention of providing staff, parents and children with a visible assurance that measures have been taken and that they are safe. When the very opposite is true.

The CLASP Working Group guidance relies heavily on the training, skills and integrity of non-professionals when it is inevitable that some, if not many, will not be adequately equipped for the task. Many of the tasks that they expect them to do involve a very real risk both to the person carrying out the task and to the occupants of the rooms. Most of the tasks should only be carried out by professional specialists, not the school caretaker or the maintenance man.

The initial guidance acknowledged that asbestos fibres were released from the tops and bottoms of the columns and also from gaps in the casing. They also advised that the gaps in the walls, the skirting along the bottom of the walls, the tops of the columns and the ceiling tiles should all be sealed. The CLASP Working Group guidance concentrated exclusively on the columns and no longer recommended sealing all of the other potential means of fibre release. Because of this relaxation in the guidance it is known that wall voids, skirting and ceiling voids have been left unsealed so that it is highly likely that asbestos fibres continue to be released.

The guidance relies entirely on the maintenance staff to visually identify gaps in column casings, seal them and then visually check that asbestos fibres are no longer being released, when in reality only air sampling can determine that. It also recommends that the maintenance staff will be able to declare the ceiling void clear of asbestos contamination from just a visual inspection. Once again only air sampling carried out by specialists can confirm whether there is contamination.

From all the evidence one can only conclude that the CLASP Working Group guidance has put, and continues to put staff and pupils' safety at risk.

It is considered that by drafting and issuing the guidance the HSE CLASP Working Group have been negligent. They have failed in their duty of care.

CONCLUSION

407. There is a profound problem of asbestos fibre release in System built schools. The problem has been known about for at least twenty years, for in 1987 it was shown that in a System built schools normal, common everyday activities release dangerous levels of asbestos fibres. Despite this nothing was done to prevent the release of asbestos fibres in the many thousands of other System built schools throughout the country.
408. Twenty years passed before the problem was re-identified and similar high levels of asbestos fibres were shown to be released from slamming doors, hitting walls and columns and by just sitting on window sills.
409. In schools where the asbestos is in a poor condition, it is likely that staff and pupils have been exposed to significant levels of asbestos fibres over a prolonged period of time. Asbestos exposure is cumulative, therefore many staff and children have been exposed to dangerous levels of asbestos fibres. For those still at school and for those about to start their school careers, every measure must now be taken to ensure that no further release of asbestos fibres is allowed to happen.
410. The initial remedial measures recommended by HSE, DfES, LGE and Scape significantly reduce the asbestos fibre release but they cannot be guaranteed to eliminate it completely. In some schools where the asbestos is in poor condition the levels remain unacceptably high even after remediation. As a stop gap the measures did provide a level of protection by employing good practice. But those rigorous measures were put to one side by the CLASP Working Group.
411. Their decisions were mainly based on the data and conclusions of the 2nd HSL report where most of the levels both before and after remediation were exceptionally low. The selection of the offices and schools must be seriously questioned as many of the buildings cannot be considered representative of System built schools. If any of the tests were carried out in buildings under the control of the six shareholders of Scape System Build Ltd then their veracity has to be questioned, for there are commercial and financial vested interests that would invalidate the neutrality of any result.
412. The HSE CLASP Working Group guidance is ill-conceived, misleading and at times encourages dangerous practice. Much of the advice is superficial and fails to include critical recommendations from the earlier guidance. If followed then it is inevitable that at times widespread asbestos exposure will occur.
413. Even if the most stringent remedial measures are taken, meticulously carried out and rigorously monitored, it cannot be guaranteed that asbestos fibres will not enter the classrooms, halls and corridors of our schools. Those measures have to be taken, but they can only be considered as temporary measures. The problem remains so long as damaged, deteriorating asbestos lies hidden in the fabric of the schools.
414. Twenty years have passed since the authorities became aware that dangerous levels of asbestos fibres were being released in System built schools. Despite this because of financial and political expediencies nothing has been done, so that over the years the schools and the asbestos they contain have deteriorated. Because successive Governments have failed to address the

problem it has drifted inexorably into one that is now of almost unmanageable proportions. Yet the measures that they are finally taking are totally inadequate, they are just a sticking plaster over a lethal wound. The only solution for these System built schools is the complete removal of all asbestos. If that is impossible then the schools must be replaced.

415. It will take billions to make our schools safe, and because successive Governments have been fully aware of this they have hidden behind a policy of secrecy, and when an asbestos incident has occurred in a school they have obscured the facts behind political and scientific spin. No longer can decisions be made behind closed doors by a few people, some of whom have a vested interest in the outcome. This is a problem of mammoth proportions that cannot be kept secret any longer, people have to know the facts, and once they do they can decide on their priorities. As a society we have to decide whether we are willing to spend these billions for our children to be safe, or whether we are willing to accept that an unknown number of them will eventually die because of their asbestos exposure in these schools.

Michael Lees
12th June 2008

Web-site for further information:
www.asbestosexposureschools.co.uk

Contact Email:
ml@asbestosexposureschools.co.uk