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# Proposals for revised Asbestos Regulations and an Approved Code of Practice

This consultative document is issued by the Health and Safety Commission in compliance with its duty to consult under section 16(2) of the Health and Safety at Work etc Act 1974.

**Comments should be sent to:**

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to reach there no later than 31 January 2006

The Commission tries to make its consultation procedure as thorough and open as possible. Responses to this consultation document will be lodged in the Health and Safety Executive's Information Centres after the close of the consultation period where they can be inspected by members of the public or be copied to them on payment of the appropriate fees to cover costs.

Responses to this consultation document are invited on the basis that anyone submitting them agrees to their being dealt with in this way. Responses, or part of them, will be withheld from the Information Centres only at the express request of the person making them (Under Code of Practice on Access to Government Information; Environmental Information Regulations 1992 and the Data Protection Act 1998). In such cases a note will be put in the index to the responses identifying those who have commented as asked that their views, or part of them, be treated as confidential.

Many business e-mail systems now automatically append a paragraph stating the message is confidential. If you are responding to this CD by e-mail and you are content for your responses to be made publicly available, please make this clear in the body of your response that you do not wish any standard confidentiality statement to apply.

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## CONSULTATIVE DOCUMENT

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# Proposals for revised Asbestos Regulations and an Approved Code of Practice

## CONSULTATIVE DOCUMENT

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## **PREFACE**

The Health and Safety Commission (HSC) would like your comments on proposals for revised asbestos Regulations and a revised Approved Code of Practice. A form is included at annex F, at the back of this booklet to help you do this. It repeats the questions set out in the main text below. Please feel free to copy this consultative document more widely. Further copies are available from the address on the back cover and on the internet on the Health and Safety Executive (HSE) home page at:

**<http://www.hse.gov.uk/consult/live.htm>**

### **Acknowledgements:**

HSC wishes to thank all those who have assisted HSC and HSE with the development of these proposals.

### **Why are we consulting you?**

HSC seeks to inform its decision-making by consulting a wide range of interested bodies and individuals. HSC believes that this will enable an open and transparent approach to decision-making, which is essential if policies and decisions are to have widespread ownership and reflect the needs and aspirations of the people they will affect. HSC then decides on the best way forward based on an interpretation and analysis of the results of this exercise.

### **What we would like you to do:**

We would like you to comment on these proposals by 31 January 2006. Please send your comments to:

Thomas Slater  
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e-mail: [asbestos.consultation@hse.gsi.gov.uk](mailto:asbestos.consultation@hse.gsi.gov.uk)

If you reply to this consultative document in a personal capacity, rather than as a postholder of an organisation, you should be aware that information you provide may constitute “personal data” in the terms of the Data Protection Act 1998. For the purposes of this Act, HSE is the “data controller” and will process the data for health and safety and environmental purposes. HSE may disclose these data to any person or organisation for purposes for which it was collected, or where the Act allows disclosure. You have the right to ask for a copy of the data and to ask for inaccurate data to be corrected. Please note all replies will be made public unless you specifically state you wish yours to be made confidential.

Responses in electronic form are welcome. Many business e-mail systems now automatically append a paragraph stating that the message is confidential. If you are

sending your comments by e-mail please state clearly if you are not content for your response to be made public.

We have included a reply form at annex F summarising the areas where we would welcome your views; it will also help us to analyse responses. It is not intended to restrict the scope of the comments: we would welcome any comments you wish to make on the proposals.

**What happens next?**

We will acknowledge all responses and give full consideration to the substance of arguments in the development of proposals; we may also contact you again if, for example, we have a query.

Respondents should be aware that the UK is bound to implement EU Directives in full, and this is, in part, what these draft Regulations are intended to do. There is therefore limited scope to amend the draft Regulations where they directly transpose Directive requirements.

**Making responses public:**

To make our consultation process as transparent as possible we make the comments we receive available to the public at our information centre in Bootle. If you do not want your comments made publicly available please make this clear in your response. Copies will be made available at a small charge to cover costs, from the following address:

Health and Safety Executive  
Bootle Information centre  
Bootle  
Merseyside L20 3QZ

**Feedback, queries and complaints:**

The Health and Safety Commission/Executive would also like to know what you think about this consultation, both the content and layout. Your views may help to improve further consultations. If you are not satisfied with the way in which this consultation exercise has been conducted you can complain by contacting:

**Rachel Russell**  
**Health and Safety Executive**  
**Rose Court**  
**2 Southwark Bridge**  
**London**  
**SE1 9HS**

We aim to reply to all complaints within 10 working days. If you are not satisfied with the outcome, you can raise the matter with the Director-General of HSE at the Health and Safety Executive, Rose Court, 2 Southwark Bridge, London SE1 9HS. You can also write to your MP to take up the case with us. Your MP may refer the matter to the Parliamentary Commissioner for Administration (the Ombudsman) who will investigate your complaint.

## SUMMARY

1. This Consultative Document (CD) seeks views on draft Regulations and an Approved Code of Practice (ACoP) to implement amendments to the European Asbestos Worker Protection Directive (AWPD) and other changes to the existing asbestos regulatory framework.
2. There are currently three sets of regulations that control exposure to asbestos:
  - a) The Control of Asbestos at Work Regulations 2002 (CAW), which govern the way all work with asbestos is done, to ensure it is done safely<sup>1</sup>.
  - b) The Asbestos (Licensing) Regulations 1983 (ASLIC), as amended, which require work with all the more hazardous asbestos-containing materials to be done by a contractor licensed by HSE<sup>2</sup>.
  - c) The Asbestos (Prohibitions) Regulations 1992 (Prohibitions Regulations), as amended, which ban the importation, supply and use of raw asbestos and asbestos-containing materials<sup>3</sup>.
3. The proposals repeal and replace CAW, ASLIC and the Prohibitions Regulations. In arriving at this proposal, we have taken into account the findings from a regulatory impact assessment (RIA). The RIA examines the impact of implementing the amendments to the Directive and other proposed amendments to current asbestos legislation on the relevant industries and on worker exposure to asbestos fibres over the next 50 years. The RIA is provided at the end of this CD (Annex D).
4. Asbestos is a naturally occurring mineral and was used extensively for about 150 years. It is versatile, plentiful and ideal as a fireproofing and insulation material. Three types have been extensively used in Great Britain (GB):

Crocidolite	‘blue asbestos’	} These two are part of a group of types of asbestos called amphiboles
Amosite	‘brown asbestos’	
Chrysotile	‘white asbestos’	
5. All forms of asbestos are considered to be carcinogenic. Inhalation of asbestos fibres can cause three main fatal diseases: mesothelioma (a cancer of the lining of the lung), lung cancer and asbestosis. Asbestos currently causes around 3,500 deaths each year through these diseases.
6. In 2003 the European Union (EU) amended the AWPD to strengthen it and provide greater protection for maintenance workers, who are the group now most at risk. The final form of the amended AWPD is generally in line with the UK negotiating position.
7. The main proposals to implement the amendments to AWPD that require significant changes to legislation in GB are:
  - a) Currently certain requirements of CAW only apply if exposure to asbestos fibres is liable to exceed the Action Levels detailed in the Regulations. This system will be replaced by a new concept where the requirement to notify work to the enforcing authority (HSE or the Local Authority) and the requirement for medical surveillance of workers will not apply to certain specified types of work where (a) the worker

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<sup>1</sup> Control of Asbestos at Work Regulations 2002 SI N° 2675

<sup>2</sup> Asbestos (Licensing) Regulations 1983 SI N° 1649 as amended in 1998 SI N° 3233

<sup>3</sup> Asbestos (Prohibitions) Regulations 1992 SI N° 3068 as amended in 1999 SI N° 2373 and in 2003 SI N° 1889

exposure to asbestos fibres is sporadic and of low intensity and (b) it is clear from the risk assessment that the Control Limit will not be exceeded. There will be specific guidance in the ACoP to explain what kinds of work should be considered to be likely to produce only sporadic and low intensity worker exposure to asbestos.

- b) CAW regulation 10 requires employers to reduce exposure to as low as is reasonably practicable. The AWPD requirement is to minimise worker exposure to asbestos. We intend to amend the Regulations to better align with new wording included in the COSHH (Amendment) Regulations 2004<sup>4</sup>.
- c) A new, World Health Organisation (WHO) asbestos fibre counting method will be introduced to replace the current European Reference Method (ERM). Analytical laboratories that carry out air testing will transfer to this counting method. Under the ERM method, fibres are discounted if they touch particles greater than 3 microns wide, but under the WHO method, these fibres are not discounted.
- d) The Control Limit is a level of asbestos fibres in air that, so far as is reasonably practicable, should not be exceeded in workplace air and which no-one's personal exposure should ever go above, measured over a set period of time. At present this level is 0.2 f/ml for amphibole asbestos and 0.3 f/ml for chrysotile. These will be replaced by a single Control Limit for all types of asbestos of 0.1 f/cm<sup>3</sup> (equivalent to 0.1 f/ml). AWPD suggests that the measurement be averaged over 8 hours, but the proposal is to measure the fibres in air level over 4 hours, in line with current practice but which is equivalent to the directive's 0.1 f/ cm<sup>3</sup> if the shift is 8 hours.

8. Additional proposed changes to the asbestos regulatory framework:

- a) We propose to combine CAW, ASLIC and the Prohibitions Regulations into a single set of Regulations. Having three sets of Regulations is historical. Currently, in certain areas, the Regulations duplicate, for example in the notification requirement. Combining them will simplify the regulatory regime. We do not intend to make any amendments to the current requirements of the Prohibitions Regulations, other than to remove transitional derogations which have now expired and to introduce the AWPD amendment which specifically prohibits the extraction of asbestos and asbestos products.
- b) We propose to have a risk-based approach to define what comes within the definition of sporadic and low intensity worker exposure (see paragraph 6.1 above) and intend to define which work will be exempt from requiring a licence on the same basis, aligning when a licence is needed with the requirement to notify work. The requirement to have a licence would be based on whether or not the worker exposure is likely to be sporadic and low intensity. For most work with asbestos this will maintain the status quo. However new research suggests that the risks from work with asbestos-containing textured decorative coatings (TCs) are much lower than previously thought HSC therefore proposes that work with TCs that takes more than two hours no longer needs to be done by a licensed contractor. At present work with TCs that takes less than two hours doesn't require a licence. HSC consulted in 1998 on taking TCs out of the licensing regime. While the majority of respondents supported its proposal, HSC decided that it should remain licensible. Arguments at that time for retaining it have substantially been addressed by recent scientific evidence (see paras 37 to 45 and Annex Eii). The risks from asbestos in TCs are now estimated to be orders of magnitude below that for other licensed materials, and

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<sup>4</sup> The Control of Substances Hazardous to Health (Amendment) Regulations 2004 SI N<sup>o</sup> 3386

lower than that from work with asbestos cement which doesn't require a licence. This does not mean that work with TCs is safe: it still needs proper control measures, but not such stringent controls as those required for other licensed contract work. These are set out in the draft ACoP, and HSE is undertaking further research in this area during consultation. It is important that licensing regimes are risk-based, proportionate and reflect current evidence, which is why HSC is consulting again on TCs.

- c) We propose that employers using their own workers on their own premises will no longer be exempt from the licensing requirements. This exemption from the requirement to hold a licence originates from the time when there was still some manufacturing of asbestos-containing materials. It is no longer appropriate to maintain this exemption.
- d) We propose to introduce into Regulations the requirement that those issuing clearance certificates for reoccupation after asbestos removal work meet the relevant accreditation requirements of ISO 17025 and ISO 17020. Accreditation is already required for the air testing part of the clearance procedure and will be extended to apply to all the four stages of clearance certification.
- e) CAW also currently includes Short Term Exposure Limits (STELs) to reinforce and support high standards of control such as wearing respiratory protective equipment (RPE). We intend to maintain a limit for peak exposures, otherwise it could be argued that RPE is not legally required so long as exposure does not exceed 2.4 f/cm<sup>3</sup> over 10 minutes (the equivalent of the proposed Control Limit over 4 hours). The proposal is to maintain a maximum peak level of 0.6 f/cm<sup>3</sup> over 10 minutes for all types of asbestos (the current STEL for amphibole asbestos) with the assertion that it is always reasonably practicable to carry out work such that no personal exposure to asbestos fibres, however short, exceeds this peak. We intend to include this as ACoP material rather than in Regulations, as STELs are not a requirement of AWPD.

9. To support these changes, we intend to publish a single ACoP that will update and consolidate the two dealing with work with asbestos currently available for the CAW Regulations and incorporate some aspects of the Guidance to the ASLIC Regulations. The draft text of this ACoP is attached at Annex C. We do not intend to amend the ACoP 'The management of asbestos in non-domestic premises' which provides guidance on the duty to manage asbestos in regulation 4 of CAW.

10. HSC would particularly welcome your views on the main proposals listed above and questions on these follow each proposal. Questions on the issues are also included in the response form in Annex F.

11. Comments on other issues you consider important would also be welcomed, and space is available at the end of the form for this.

## BACKGROUND

### What Is Asbestos?

12. Use of asbestos has been known over 2000 years. Its natural form is found in rock and it is virtually indestructible, relatively cheap and plentiful. Because it can be used for sound and heat insulation and also to add strength to other materials, it lent itself readily to the manufacture of a wide range of products. Since commercial exploitation began in the 19<sup>th</sup> century there have been over 3000 different recorded uses. However, it has now been shown that exposure to asbestos fibres causes asbestos-related diseases, which are often fatal.

13. There are three types which were extensively used in GB:

Crocidolite	‘blue asbestos’	} These two are part of a group of types of asbestos called amphiboles
Amosite	‘brown asbestos’	
Chrysotile	‘white asbestos’	

14. Although these three most commonly used types are often referred to by their colours, these relate more to their raw state. In use, asbestos is usually mixed with other materials, which mask their colour. It is generally acknowledged that crocidolite and amosite are more hazardous than chrysotile, but all are designated carcinogens, as are the other regulated types of asbestos (see paragraph 28).

15. The importation, supply and use of blue and brown asbestos have been banned by law in the UK since 1985. In 1999 chrysotile was also banned with the exception of a very few specialised uses. However, asbestos materials have been put to many uses over the past century and many thousands of tonnes of asbestos used in buildings are still in place.

### What Are The Health Effects?

16. Asbestos is the single greatest cause of work related deaths in GB. There is no cure for the main asbestos-related diseases. However, asbestos is only a risk to health if asbestos fibres are released in to the air and breathed in. The fibres are long and fine and when inhaled can lodge in the tissue of the chest resulting in three main fatal diseases:

Mesothelioma	A cancer of the lining around the lungs or the stomach. It is always fatal
Lung cancer	Usually fatal
Asbestosis	A scarring of the lung leading to shortness of breath. It is very disabling and can be fatal

17. Exposure to asbestos can also cause pleural diseases which are non-cancerous including pleural plaques. Although they generally do not impair lung function, they are a clear marker of previous asbestos exposure and can cause considerable concern to people that they are at risk of getting other asbestos diseases.

18. Mesothelioma currently causes 1800 deaths each year, virtually all of which are associated with exposure to asbestos fibres. The number of people who die from lung cancer attributable to asbestos is unclear, but best estimates are that there are around one or two asbestos-related lung cancers for each mesothelioma. Approximately 160 people die from asbestosis annually. This brings the total number of people dying as a result of past exposure to asbestos to around 3,500 each year.

19. There is usually a long delay between first exposure to asbestos and the onset of disease. The vast majority of those dying now were exposed to asbestos between the 1950s and the

1970s, when asbestos was less well regulated than today and very widely used in industry. Only by preventing or minimising these exposures now will asbestos-related disease eventually be wiped out.

20. Many of those currently suffering from asbestos-related diseases will have been exposed to the fibres as a result of working in industries that used asbestos as a raw material, in docks when asbestos was imported, or by installing asbestos insulation in ships, railway carriages, industrial plant and buildings.

21. In 1995, research carried out by Professor Peto and HSE epidemiologists (The Lancet, Volume 345, 4<sup>th</sup> March 1995) indicated that at least a quarter of those people currently dying from asbestos have worked in construction and maintenance operations. As the other high-risk activities have now all ceased, the maintenance sector now constitutes the biggest group at risk.

### **What Is The Purpose Of This Consultation?**

22. In GB, responsibility for proposing Regulations on health and safety at work falls to HSC. HSC has a statutory duty to consult appropriate organisations before it submits proposals for new Regulations to the Government. Therefore, the aim of this CD is to seek the views of interested parties on the draft Regulations and the ACoP that explain what these will mean for employers, employees and others.

23. This CD contains HSC's proposals to introduce new Regulations to control the risks from exposure to asbestos at work. The draft Regulations have been developed in order to comply with the European Union (EU) Directive 2003/18/EC which amends Council Directive 83/477/EEC on the protection of workers from the risks related to exposure to asbestos at work – see Annex A for the text of the Directive. EU Member States have until 15 April 2006 to implement the Directive.

### **Regulatory Impact Assessment**

24. Before any new piece of legislation can be introduced HSC is obliged to carry out a regulatory impact assessment (RIA) of the costs it would impose on industry and the benefits it is expected to bring.

25. The RIA for these proposals and the ACoP is provided as Annex D of this CD. The RIA sets out the costs associated with full compliance with the proposed changes to the Regulations. For most of the amendments proposed there is expected to be no significant change of working methods required from industry. Where costs are likely to be incurred, the majority of these are as a result of calculating the costs of full compliance with requirements already existing in GB regulation. However, there are some amendments that are expected to incur costs, such as familiarisation with the new arrangements and the costs of additional controls for licensed workers. In total the RIA estimates the costs of these proposals to be between £1,170 million and £1,658 million over the next fifty years.

26. If you have any comments on the RIA we would also welcome these.

## **PROPOSALS FOR IMPLEMENTATION OF THE ASBESTOS WORKER PROTECTION DIRECTIVE**

### **Introduction**

27. It is proposed that GB will implement the amendments to AWPD through new Regulations called the Control of Asbestos Regulations 2006. The draft proposed Regulations and supporting ACoP are contained in Annexes B and C respectively. These Regulations would replace The Control of Asbestos at Work Regulations 2002, The Asbestos (Licensing) Regulations 1983 (as amended) and the Asbestos (Prohibitions) Regulations 1992 (as amended).

This section describes key issues and the proposals for how they will be implemented. We would like your views on how we propose to proceed. Specific questions are presented, but please do not hesitate to provide any other comments or raise other issues as you feel necessary. Please use the form at Annex F for your replies or use the form available on the internet at:

**<http://www.hse.gov.uk/consult/live.htm>**

### **Definition of Asbestos**

28. The amendment to AWPD redefines ‘asbestos’ to specify more exactly which minerals it covers. This amendment is not intended to change the materials the Regulations deal with. Asbestos is currently defined in regulation 2(1) of CAW and 2(1) of ASLIC. These definitions would be amended to:

- a) Asbestos actinolite, CAS No 77536-66-4(9)
- b) Asbestos grunerite (amosite) CAS No 12172-73-5(10)
- c) Asbestos anthophyllite, CAS No 77536-67-5(11)
- d) Chrysotile, CAS No 12001-29-5(12)
- e) Crocidolite, CAS No 12001-28-4(13)
- f) Asbestos tremolite, CAS No 77536-68-6(14)

### **Replacement of Action Levels with a new, three part concept for exemption from certain regulations for lower risk work.**

29. CAW 2002 limits the application of certain controls by using Action Levels. These are defined in the Regulations as limits of worker exposure to asbestos fibres in air, measured and averaged over 12 weeks. The Action levels are currently 48 fibre-hours per ml of air for amphiboles and mixtures of asbestos types, and 72 fibre-hours per ml of air for chrysotile.

30. The AWPD amendments replace the use of Action levels such that: “provided that worker exposure is sporadic and of low intensity, and when it is clear from the results of the risk assessment that the Control Limit will not be exceeded in the air of the working area, certain requirements of the AWPD may be waived (e.g. to notify and to have medical surveillance) where the work involves:

- a) short, non-continuous maintenance activities in which only non-friable materials are handled,

- b) removal without deterioration of non-degraded materials in which the asbestos fibres are firmly linked in a matrix
- c) encapsulation or sealing of asbestos-containing materials which are in good condition,
- d) air monitoring and control, and the collection of samples to ascertain whether a specific material contains asbestos.”

31. We propose to implement this change by using similar wording to that used in the AWPD amendments (see paragraph 30 above), in the Regulations. The proposed new regulation 3(2) reads:

“Regulations 8 (licensing), 9 (notification of work with asbestos), 15(1) (arrangements to deal with accidents, incidents and emergencies), 18(1)(a) (asbestos areas) and 22 (health records and medical surveillance) shall not apply where -

- a) the exposure of employees to asbestos fibres is sporadic and of low intensity;
- b) it is clear from the risk assessment that the Control Limit for asbestos will not be exceeded in the air of the working area; and
- c) the work involves—
  - (i) short, non-continuous maintenance activities,
  - (ii) removal of materials in which the asbestos fibres are firmly linked in a matrix,
  - (ii) encapsulation or sealing of asbestos-containing materials, or
  - (iv) air monitoring and control, and the collection of samples to ascertain whether a specific material contains asbestos.”

32. The proposal uses a simpler form of words than those in the AWPD amendments. We believe that given that; the worker exposure must be sporadic and low intensity, the risk assessment must make it clear that the Control Limit will not be exceeded and detailed guidance will be provided in the ACoP, the additional descriptors included in the Directive are unnecessary and will only make it more complicated to comply with the requirements.

33. The ACoP will explain what types of work, and with what materials, would be accepted as likely to fulfill the conditions for regulation 3(2) to apply (see paragraphs 38 to 47 in Annex C). This has been determined on the basis of risk to the worker.

34. In addition to exemption from the requirements of notification and medical surveillance, we intend to link exemption from the requirement to hold an HSE licence to this three part concept. This is intended to align and simplify the Regulations and is explained in detail in paragraphs 108 to 113.

35. In almost all cases the ACoP guidance on what would fulfil the conditions for regulation 3(2) to apply is designed to maintain the status quo so that where work is currently exempt from these requirements, this will continue to be the case. Where work requires licensing, notification and medical records at present this will still be the case except in specific circumstances.

36. Additionally, there are some ancillary and supervisory licence holders whose workers are not currently required to have medicals and who would need to do so under the proposals in paragraph 31 because they are exposed to asbestos and their work does not fit within the four listed types of work to which the exemption can be applied. However there are very few cases where workers only do this type of work and don't have regular medicals already.

37. The only major exception to this is the case of work with asbestos-containing textured decorative coatings (TCs). Work with these types of materials is currently specifically within the scope of licensing. Reviews and research undertaken by the Health and Safety Laboratory (HSL) have shown that exposure levels from work with TCs are of low intensity compared to other types of licensed ACMs and give rise to only sporadic and low intensity exposure to asbestos fibres. Such exposure levels are much lower than previously thought: orders of magnitude below that for other licensed materials, and lower than that from work with asbestos cement which doesn't require a licence. We propose therefore that, due to the much lower level of risk arising from work with TCs than previously indicated, work with TCs will no longer require a licensed contractor, to be notified, nor the maintenance of medical records. We also consider that removal of TCs prior to demolition or major refurbishment is unlikely to be reasonably practicable in most circumstances. At present work with TCs that takes less than two hours doesn't require a licence.

38. HSC consulted in 1998 on taking TCs out of the licensing regime. While the majority of respondents supported its proposal, HSC decided that it should remain licensible. Arguments at that time for retaining it have substantially been addressed by new scientific evidence. This evidence is set out in reports from the Health and Safety Laboratory (HSL) and in the risk analysis at Annex Eii. HSL's full risk assessment for the new Regulations is at annex D(A) of this document. The executive summary of the TC research is at annex E(i) of this document and the full report can be found on-line at: <http://www.hse.gov.uk/research/hsl/workenvn.htm>

39. Pulling together conclusions from these reports gives the following headline findings:

**(1) Risks from textured coatings compared to risks from other licensed materials**

40. The final column of Table 8 on page 62 of Annex D(A) shows the *relative risk* of death from work with various licensed asbestos containing materials. This is based on information about the amount and type of asbestos in the different materials, the frequency and duration of licensed work, the average exposure levels and the risk posed by the different types of asbestos. It illustrates that *if there were to be* 1000 deaths from asbestos disease, about 300 would be from work with asbestos insulation, 160 from asbestos coatings, 30 from asbestos insulating board and about 510 from working with various mixtures of these materials. There would be no expected deaths from work with asbestos containing textured coatings.

Relative risk of death from licensed asbestos containing materials

Licensed ACM	Relative risk of death by type of ACM	Proportion for one thousand deaths
Asbestos coating	16%	160
Asbestos insulation board	3%	30
Asbestos insulation	30%	300
Mixtures of the above	51%	510
Textured coatings	0.001%	0.01
<i>Total</i>	100%	1000

**(2) Risks from textured coatings compared to unlicensed materials**

41. The asbestos content of textured decorative coatings is lower than many unlicensed materials as the following table shows. Furthermore, the asbestos in textured coatings is encapsulated in a resilient semi-flexible matrix that does not readily release fibres.

Material	Typical asbestos content
Dry powdered mix for trade use Artex	3.8% (chrysotile)
Ready mixed DIY textured coating product	1.8% (chrysotile)
Asbestos cement	10%
Asbestos containing PVC floor tiles	7%
Asbestos containing thermoplastic floor tiles	Up to 25%
Roofing felt	8%
Brake and clutch linings	20-25%
Other reinforced plastics and composites	1-10%

42. Work with asbestos cement has never required a licence because the risks are relatively low, and below the level to attract a licence. The new research suggests that the risks from work with textured coatings are even lower than the risks from work with asbestos cement. This can be illustrated as follows:

Deaths predicted over 50 years for 500,000 general building workers working 0.5% of their time on asbestos containing materials for 10 years with RPE	Total
Asbestos cement removal/demolition	0.3
Textured decorative plaster and paint removal/demolition	0.1

### (3) Exposure levels for work with textured decorative coatings

43. The draft regulations will reduce the control limit for work with a range of asbestos containing materials, including textured coatings. HSL research suggests that, on conservative estimates, personal exposure levels for work with TCs under licensed conditions are below the new control limit as follows:

Current control limit for work with products containing chrysotile asbestos	0.3 f/ml
Proposed new control limit for all types of asbestos	0.1 f/ml
Levels of asbestos fibres in the air when removing TCs under licensed conditions (ie without RPE. The upper end of the range is a conservative estimate)	0.01-0.08 f/ml
Levels of asbestos fibres when removing TCs under licensed conditions with RPE (a conservative estimate)	0.002 f/ml

44. HSE believes that there will be little difference in terms of levels of asbestos fibres in the air from using the controls proposed in the ACOP rather than the full, licensed controls. The data available at the moment indicates that, even when dry scraping TCs, the new control limit of 0.1 f/ml is not exceeded. HSE is undertaking further research here.

45. This research and the proposal to take TCs out of the scope of licensing does not mean that work with TCs is safe: it still needs proper control measures, but not as onerous as those required for other licensed contract work. Proposed controls are set out in paragraphs 165 to 173 of the draft ACoP at annex C, and HSE is undertaking further research in this area during consultation. HSE is keen to work with stakeholders to ensure the right controls are specified.

**Question 1: Do you agree with the proposal to follow AWPD requirements such that there should be a new regime to exempt work that conforms to a new three part, risk based concept from the requirements of licensing, notification and medical surveillance?**

**Question 2: Which of the following most closely resembles your view of the proposal to remove work with asbestos-containing textured decorative coatings from the scope of licensing? Please give your reasons.**

- a) **Work with asbestos-containing textured decorative coatings should be removed from the scope of the licensing regime and the controls proposed in this consultation document should be required.**
- b) **Work with asbestos-containing textured decorative coatings should remain licensable and the current level of controls required to do the work should be maintained.**
- c) **Neither of the above, another option should be considered (please give details).**

#### **Extension of the information required in the notification form**

46. The AWPD amendments detail the information required in the notification of work with asbestos. All of the information is already required under CAW Regulations or within the plan of work as required by HSE's licence conditions. This is therefore only a technical change to include those items currently required in the licence conditions within scope of the Regulations themselves. We do not expect this to have any impact on businesses.

#### **Prohibition of extraction and manufacturing**

47. The AWPD amendments prohibit extraction and manufacturing of asbestos and asbestos products, and asbestos spraying. There is no asbestos extraction industry in GB and manufacturing and use have previously been banned by the Asbestos (Prohibitions) Regulations. Therefore, a technical change is required to the Regulations to comply with the Directive, but this is not expected to have an impact on GB industry.

#### **Minimising worker exposure**

48. Article 6 of the amended AWPD states that for all activities where workers may be exposed to asbestos, exposure must be reduced to a minimum and in any case below the Control Limit. CAW 2002, Regulation 10 already requires employers to reduce exposure to as low as is reasonably practicable but we intend to amend this regulation to align more closely with new wording included in the Control of Substances Hazardous to Health (Amendment) Regulations 2004 (COSHH).

49. COSHH Regulation 7 lays out a hierarchy of controls, in order of priority, which should be used to reduce exposure. This hierarchy is reflected in the Control of Asbestos Regulations 2006, regulation 11:

- a) the design and use of appropriate work processes, systems and engineering controls and the provision and use of suitable work equipment and materials in order to avoid or minimise the release of asbestos;

- b) the control of exposure at source, including adequate ventilation systems and appropriate organisational measures;

and so far as is reasonably practicable, the provision of suitable respiratory protective equipment in addition to these controls.

50. As COSHH already applies even if CAW does not, these amendments will simplify the regulatory regime and we don't expect them to impose any additional regulatory burden. In practice this change is unlikely to alter working practice, as it is designed to ensure that the current requirement for employers to continue to minimise exposure even after they have reached the Control Limit is fully implemented, rather than any new working methods adopted.

**Question 3: Do you agree with the proposal to align CAW requirements for minimising worker exposure more closely with the COSHH hierarchy of controls listed in order of priority?**

### **World Health Organisation (WHO) method of fibre counting**

51. AWPD requires that there is a change in the fibre counting method used by analytical laboratories to measure the level of asbestos fibres in the air.

52. Currently the method used is laid out in Annex 1 of Council Directive 83/477/EEC (the original version of the Asbestos Worker Protection Directive), and is called the European Reference Method (ERM).

53. The new required method is the WHO method for fibre counting (or the use of any other method producing similar results). This method is detailed in 'Determination of airborne fibre concentrations. A recommended method, by phase-contrast optical microscopy (membrane filter method)', WHO, Geneva 1997 (ISBN 92 4 154496 1).

54. This is a technical change, which most of the laboratories concerned are already preparing for. There are two main differences, when compared with the current method:

- a) Currently fibres are discounted if they touch particles that are greater than 3 microns in width, but under the WHO method, these fibres are not discounted.
- b) The current method, when used for regulatory assessment against the Control Limit does not allow discrimination of mineral fibre type. The WHO method allows discrimination of fibre type to ensure that only asbestos fibres are counted.

55. In most cases this is likely to slightly increase the number of asbestos fibres counted in any given sample, but in some cases (where there are also other mineral fibres in the sample) the count might be reduced considerably.

### **A single, lower Control Limit**

56. Article 8 of the amended AWPD introduces a single Control Limit (the maximum concentration of asbestos fibres in air to which a worker may be exposed) for all asbestos types and which is lower than the current limits.

57. This new Control Limit is  $0.1 \text{ f/cm}^3$  (equivalent to  $0.1 \text{ f/ml}$ ). This reduces the limit for amphibole asbestos from  $0.2 \text{ f/ml}$  and for chrysotile from  $0.3 \text{ f/ml}$ .

58. No distinction is made between the Control Limit for amphiboles and chrysotile and we intend to implement the requirements of the Directive substantially as adopted because:

- a) All forms of asbestos are classified as carcinogens and although the risk of contracting an asbestos-related disease from exposure to chrysotile is considered to be lower than that from other forms of asbestos, there is still a significant risk.
- b) We believe that this Control Limit is technically achievable and reasonably practicable for all forms of asbestos.
- c) In practice the asbestos removal industry rarely makes a distinction between types of asbestos and chrysotile is often contaminated (unknowingly) by amphiboles.
- d) We believe that the emphasis should be on reducing exposure to as low as reasonably practicable and the new limit maintains the policy of continuing to bear down on asbestos exposure.
- e) A single Control Limit simplifies matters, making planning and implementing the controls easier.

59. The AWPD amendments propose an 8-hour time frame over which to measure the exposure to asbestos. This means that the exposure is measured over eight hours and then averaged to get a level that can then be compared to the Control Limit to ensure it is not being exceeded.

60. In GB a 4-hour time frame is used to reflect normal working practice with asbestos in this country and we propose to require that measurements continue to use a 4-hour time-weighted average for the calculation of exposure levels. If an eight hour shift is worked, this will duplicate the requirement in the Directive of  $0.1 \text{ f/cm}^3$  over 8 hours but if a 4 hour shift is worked, then, whereas the Directive would allow exposure during those 4 hours of up to  $0.2 \text{ f/cm}^3$ , the GB proposed limit would be  $0.1 \text{ f/cm}^3$ .

61. Therefore we propose the new GB Control Limit will be  $0.1 \text{ f/cm}^3$  as a four-hour time weighted average (TWA).

**Question 4: Do you agree with the proposal to implement a single Control Limit of  $0.1 \text{ f/cm}^3$  as a 4-hour TWA as measured using the WHO method? If not, please give details.**

#### **Identification of the presence as well as the type of asbestos**

62. The amended AWPD Article 10a requires employers to take all necessary steps to identify asbestos-containing materials before beginning work.

63. We propose to introduce a requirement for employers to undertake a suitable and sufficient assessment of the presence and type of asbestos prior to commencement of work within CAW regulation 5. This regulation currently only requires the employer to identify the type of asbestos.

64. The proposal includes the requirement that, where there is doubt as to whether asbestos is present, the employer assumes that asbestos is present and that it is not chrysotile alone and observes all the applicable provisions of the Regulations.

**Question 5: Do you agree with the approach to the requirements for identification of asbestos? If not please give details.**

#### **Evidence of ability**

65. A new Article 12b of AWPD requires that, before asbestos demolition or removal work, companies must have evidence of their ability to do the work. Most demolition or removal

work must be carried out by licensed asbestos contractors and as such these companies must already prove to HSE their ability to undertake the work in order to be granted a licence.

66. In addition, the Regulations require that no work with asbestos be carried out without a written plan of work, which can be scrutinised by an HSE or Local Authority Inspector should they have any doubts concerning a firm's ability to carry out the work.

67. Therefore, we believe that this new requirement of the Directive has already been implemented into GB Regulations and no further change is needed.

**Question 6: Do you agree with the approach to requirements for the evidence of ability to do asbestos demolition and removal work? If not please give details.**

#### **Amendments to the Plan of Work**

68. In order to ensure compliance with the AWPD amendments, we propose two small changes to the requirements for inclusion in the Plan of Work.

69. In cases of final demolition or major refurbishment of premises, we propose that the plan of work specifies that asbestos shall be removed before any other major works begin unless removal would cause a greater risk to employees than if the asbestos had been left in place. This is already required in ACoP and the only change would be to bring it into regulation.

70. We propose that the plan of work shall also include the measures that the employer intends to take in order to comply with the requirements (already in regulation) to ensure that the premises, or those parts of the premises where the work was carried out, are thoroughly cleaned after the work is finished. This only re-emphasises the requirements of the current CAW Regulation 16 and ensures that clearance procedures are considered when the work is being planned.

71. We do not expect either of these amendments to have any impact on those already complying with CAW 2002.

#### **Training Requirements**

72. The amended AWPD introduces an explicit requirement that employers shall provide appropriate training for all workers who are likely to be exposed to asbestos. The training must enable workers to get the necessary knowledge and skills on a specified range of issues. These issues are:

- a) the properties of asbestos and its effects on health, including the effect of smoking;
- b) the types of materials likely to contain asbestos;
- c) the types of work that could result in asbestos exposure and the importance of controls to minimise exposure;
- d) safe work practices, controls and protective equipment;
- e) the appropriate role, choice, selection, limitations and proper use of respiratory equipment;
- f) emergency procedures
- g) decontamination procedures
- h) waste handling
- i) medical examination requirements

73. CAW currently includes a range of general training requirements aimed at safeguarding employees. However, this list falls significantly short of the detail listed within the Directive. This level of detail is currently contained within the supporting ACoPs.

74. We intend to augment the limited list of training requirements currently listed in the Regulations with the full list of training issues detailed above. As this was already included in ACoPs we do not expect these amendments to have any significant impact on those already complying with CAW 2002.

**Question 7: Do you agree with the proposed approach to training requirements? If not please give details.**

75. To supplement this, we want to ensure that only those competent to do so are permitted to enter areas where higher risk asbestos work is going on. We intend to require that the employers ensure that their employees are competent before they can go into a 'respirator zone' as detailed in the Regulations and include a definition of competence in such circumstances. We have defined a competent employee as one who has received information, instruction and training in compliance with regulation 10 and this makes explicit what is implicit in this regulation, as anyone who enters a respirator zone is likely to be exposed to asbestos and must be trained. This will mean that only those deemed competent will be able to work inside asbestos removal enclosures. Also the employer should not permit anyone to supervise an employee working in the 'respirator zone', who is not competent to do so.

76. The proposed definition of competency is that, considering the task they are required to perform and taking account of the size and/or hazards of the job, the person possesses sufficient training, experience and knowledge appropriate to the nature of the work to be undertaken.

**Question 8: Do you agree with the proposal that only those who are competent, as defined, to work inside an enclosure are allowed to do so? If not please give details.**

#### **Health records and medical surveillance**

77. Medical certificates will now only need to be kept for 4 years although health records will still need to be retained for 40 years.

78. There is practical guidance in Annex II of the AWPD amendments on the clinical assessment of workers. This guidance will be incorporated in the guidance for doctors issued by HSE.

#### **Summary of costs and benefits for the AWPD amendments**

79. Most of the amendments introduced as a result of AWPD have negligible costs attached to them. However, there are costs connected with specific changes.

80. There are 70 ancillary licence holders and 67 supervisory licence holders whose workers are not currently required to have medicals and will be outside the new 'sporadic and low intensity' exemption for notification and medicals. These companies employ relatively small numbers and the RIA estimated that this will cost up to £160,000 every two years. The fifty year present value is estimated to lie between £0.5 million and £2.0 million.

81. There is expected to be a cost saving related to the application of the 'sporadic and low intensity exposure' exemption to work with textured decorative coatings. Indicative estimates suggest that where the cost of removal of a decorative textured ceiling coating containing asbestos would currently be between £900 and £2,000, if our proposed amendments go ahead the comparative cost is estimated to be approximately £500 - £1,300. Given the number of these jobs taking place each year, the total fifty year present value of cost savings to the

economy is between £206 million and £365 million. The first year saving is a minimum of £8.6 million.

82. The costs associated with the move to the WHO method of fibre counting will be quite small and will only apply to the specialist laboratories concerned, training an estimated 1000 analysts in 200 laboratories. The total cost of converting to WHO method is estimated at approximately £425,000.

83. The costs associated with the new, single, lower Control Limit are difficult to estimate, as it cannot be addressed in isolation from other requirements to reduce worker exposure. Where employers are complying with best practice there is likely to be little additional burden to comply with the new Control Limit. However the RIA estimates that the total present value cost of moving from the broad spread of current work practices to achieving 100% compliance with the amended Limit is likely to be between £0.62 billion to £0.92 billion for non licensed workers and between £37 million and £59 million for licensed workers over 50 years. The costs in the first year are estimated to be £28 million to £43 million.

84. It is the norm for an RIA to assess the costs to business of 100% compliance with any new requirements. In the case of the changes to CAW Regulations dealing with training, this means that the RIA estimates costs of £871 million. However, it should be highlighted that these costs relate to increased compliance with existing requirements only, and do not arise because of stricter legal requirements.

#### **Issues for comment**

85. The questions asked in the body of this section are repeated below;

**Question 1: Do you agree with the proposal to follow AWPD requirements such that there should be a new regime to exempt work that produces only sporadic and low intensity exposure from the requirements of licensing, notification and medical surveillance?**

**Question 2: Which of the following most closely resembles your view of the proposal to remove work with asbestos-containing textured decorative coatings from the scope of licensing? Please give your reasons.**

- a) **Work with asbestos-containing textured decorative coatings should be removed from the scope of the licensing regime and the controls proposed in this consultation document should be required.**
- b) **Work with asbestos-containing textured decorative coatings should remain licensable and the current level of controls required to do the work should be maintained.**
- c) **Neither of the above, another option should be considered (please give details).**

**Question 3: Do you agree with the proposal to align CAW requirements for minimising worker exposure with the COSHH hierarchy of controls listed in order of priority?**

**Question 4: Do you agree with the proposal to implement a single Control Limit of 0.1 f/cm<sup>3</sup> as a 4-hour TWA as measured using the WHO method? If not, please give details.**

**Question 5: Do you agree with the approach to the requirements for identification of asbestos?**

**Question 6: Do you agree with the approach to requirements for the evidence of ability to do asbestos demolition and removal work?**

**Question 7: Do you agree with the proposed approach to training requirements?**

**Question 8: Do you agree with the proposal that only those who are competent (as defined) to work inside an enclosure are allowed to do so?**

86. Please feel free to include any additional issues, not addressed here on which you wish to comment in your response.

## **ADDITIONAL AMENDMENTS TO THE ASBESTOS REGULATIONS**

### **Introduction**

87. We are taking this opportunity to simplify and clarify the regulatory framework for asbestos. We propose to combine three sets of regulations and amend the licensing and notification regulations to create a consistent, risk-based system of control.

88. We also propose to bring accreditation requirements for analysts doing clearance certifications in line with earlier changes to ACoPs now that appropriate accreditation schemes have been developed.

### **Transfer of regulatory authority for sea transport**

89. Following a review of river safety since the 1989 “Marchioness” disaster, Lord Justice Clarke’s Report on the Thames Safety Inquiry called for the rationalisation of health and safety legislation in relation to non-sea-going ships. It recommended that merchant shipping health and safety legislation should apply to non-sea-going ships, and for this to be enforced by the Maritime and Coastguard Agency (MCA).

90. It was decided that it would be most consistent for MCA to become the regulatory authority concerning health and safety for all ships, including inland waterway vessels.

91. Under this proposal ships will not be subject to the Control of Asbestos Regulations 2006 (although work on ships in dock will be) and will instead be subject to requirements of marine legislation. The Control of Asbestos Regulations 2006 will continue to apply to ships of the Royal Navy because the Merchant Shipping Act does not apply to them.

### **Combining CAW, ASLIC and the prohibitions Regulations to create one set of asbestos Regulations**

92. We propose to combine the requirements of CAW, ASLIC and the Prohibitions Regulations to form a single set of Regulations. The asbestos licensing regime has been in existence since 1983; before the CAW Regulations came into force. Its separation from CAW is therefore historical. Now that virtually all supply and use of asbestos is banned, we believe it makes sense to consolidate all the requirements to make a single, cohesive set of Regulations.

93. Currently in certain areas CAW and ASLIC duplicate, for example in the requirement to notify. Combining the Regulations will simplify the current asbestos regulatory regime. The simplification will be particularly noticeable where it is currently not immediately clear whether a job requires licensing (ASLIC), notification (CAW and ASLIC) or in some cases neither of these. A single set of Regulations should make the legislation easier to understand and therefore easier to comply with. There will also be a single definition of asbestos.

94. We propose to call these new regulations the Control of Asbestos Regulations 2006. This is not intended, in itself, to change any regulatory requirements.

**Question 9: Do you agree with the proposal to clarify and simplify the asbestos Regulations by bringing the requirements of ASLIC and the Prohibitions Regulations into CAW and creating one combined set of Control of Asbestos Regulations?**

**Combining L27, L28 and L11 to form one Approved Code of Practice for asbestos work**

95. We propose to consolidate most of the asbestos ACoP material into one publication. This will detail guidance for both licensable and non-licensable work with asbestos. We are, however, not intending to amend the ACoP dealing with the management of asbestos in non-domestic premises (L127).

96. Currently there are three formal guidance documents dealing with licensing and work with asbestos, as follows:

- a) L27 – Work with asbestos which does not normally require a licence
- b) L28 – Work with asbestos insulation, asbestos coating and asbestos insulating board
- c) L11 – A guide to the Asbestos (Licensing) Regulations 1983 as amended

97. As detailed in paragraphs 92 to 94, above we are proposing to combine the sets of Regulations. In conjunction with this, we believe that combining L27 and L28 into a single ACoP for the Control of Asbestos Regulations and introducing some of the guidance in L11 into this ACoP would help clarify the requirements for undertaking work with asbestos.

98. L27 and L28 currently contain large amounts of duplicate information and research into sales data has revealed that the majority of purchasers buy both publications. It would therefore be cost efficient for most customers if information on both licensed and non-licensed work were included in one document.

**Question 10: Do you agree with the proposal to produce a single Approved Code of Practice to cover all Control of Asbestos Regulations including Licensing other than the management of asbestos in non-domestic premises?**

**Changes to the asbestos removal licence**

99. We want to clarify the terms under which an asbestos removal licence is issued.

100. The current wording on the limitations on issuing an asbestos licence is “with or without a time limit”. This allows for too much unnecessary flexibility. It is impractical to allow an indefinite time period and common practice is that licenses are issued *with* a time limit of one to three years. We propose to amend the regulations so that a licence may be granted by HSE for a maximum of three years.

101. Currently HSE may impose a time limit on a licence where none had been imposed previously and where there is a limit, HSE may vary or remove it. If the legislation is changed to allow a maximum time limit of three years for a licence there would be no need for this requirement and we propose to remove this option.

102. We propose that the exemption from holding a licence for employers using their own employees on their own premises should be removed. This exemption hails from the time when there was still some manufacturing and use of materials containing asbestos; it was not designed to apply to asbestos removal and maintenance work. This exemption is no longer appropriate as importation, supply and use of materials containing asbestos is now banned under the Prohibition Regulations.

103. HSE proposes to revise its revocation policy, as laid out in guidance, in order to provide more flexibility in revoking and re-applying for asbestos licences. Revocation is only an option in the most serious cases, but at present the system is unwieldy and time consuming and does not address the needs of HSE, licence-holders or those re-applying for licences.

**Question 11: Do you agree with the proposed changes to licensing such that**

- a) **licences have a maximum time limit of 3 years**
- b) **removal of the exemption from licensing for employers using their own staff in their own premises for licensable work**

#### **Accreditation for analysts undertaking four-stage clearance certifications**

104. We propose to introduce into Regulations the requirement that those issuing clearance certificates for reoccupation after asbestos removal work meet the relevant accreditation requirements of ISO 17025 and ISO 17020.

105. In 2002, significant changes to the role and function of laboratories carrying out clearance certification after asbestos removal were introduced into ACoP. The ACoP required that removal of asbestos material be followed where appropriate by a four-stage process of site clearance certification to ensure that the whole site is thoroughly clean. However, some parts of this 4-stage clearance certification procedure are not covered by current accreditation arrangements, and this could undermine the overall clearance process.

106. To address these problems, HSE worked with UKAS to develop a credible assessment and accreditation regime for the full four-stage process, which was completed in 2004. We therefore now propose to amend the Regulations to require that laboratories contracted to issue clearance certificates be accredited to the ISO standards for all four stages of the process.

107. Fairly recently, some 90 laboratories had applied for an extension of the scope of their present accreditation to include the full four-stage process and approximately 73 of them were going through the assessment process.

**Question 12: Do you agree with the proposal that accreditation be required for someone to undertake a four-stage clearance certificate procedure?**

#### **A risk-based approach to define what is exempt from licensing**

108. The current licensing regime requires that employers or self-employed persons hold an HSE licence if they intend to work with specific material types: asbestos insulation, asbestos coating or asbestos insulating board. There is an exemption for work of very short duration (not more than 1 hour for one worker and 2 hours for all employees on a job in any seven days). Work with other types of asbestos-containing materials does not need a licence.

109. As outlined in paragraph 31, we propose to introduce a risk-based approach to define what comes within the definition of what would fulfil the conditions for regulation 3(2) to apply. We intend to define work which will be exempt from requiring a licence on the same basis. The proposal is that there is a requirement to have a licence to do all work which exposes workers to asbestos fibres, unless the worker exposure will be sporadic and low intensity. The intention is that for most work with asbestos this will maintain the status quo.

110. This proposal aligns the requirements for notification and licensing so that work will either need to be undertaken by a licensed contractor AND be notified to the relevant authority, or will require neither of these. Which category the work falls into will be decided on the basis of the level risk to the workers from exposure to asbestos.

111. The draft ACoP lays out clear guidelines for what types of work would require a licensed contractor and in the vast majority of cases there would be no change from the current situation. The proposed new system was designed having given serious consideration to the risks of particular types of work with different material types and the small amount of change to what is and is not licensable confirms that the previous system was broadly reasonable in terms of when a licence was required.

112. A risk-based system in regulation allows for future developments in technology, or new scientific findings, to be taken into account without requiring changes to the Regulations. For example, if automated or remotely-controlled equipment were to be designed that could undertake (currently licensable) work without releasing asbestos fibres and could be shown to reduce worker exposure so far as to be considered sporadic and low intensity, the ACoP could be updated so that such work would no longer require a licensed contractor without changes to CAW being needed.

113. This proposal also allows work with TCs to be removed from the licensing regime, following new research undertaken by HSL, which concluded that work with TCs gives rise to very low intensity and sporadic release of asbestos fibres. See annex E for more details.

114. Questions 1 and 2, which address these issues, are repeated here for your convenience.

**Question 1: Do you agree with the proposal to follow AWPD requirements such that there should be a new regime to exempt work that produces only sporadic and low intensity exposure from the requirements of licensing, notification and medical surveillance?**

**Question 2: Which of the following most closely resembles your view of the proposal to remove work with TCs from the scope of licensing?**

- a) **Work with TCs should be removed from the scope of the licensing regime and the controls proposed in this consultation document should be required.**
- b) **Work with TCs should remain licensable and the current level of controls required to do the work should be maintained.**
- c) **Neither of the above, another option should be considered (please give details).**

### **The Removal of STELS from regulation**

115. CAW currently includes Short Term Exposure Limits (STELs), measured over ten minutes, to reinforce and support high standards of control such as wearing respiratory protective equipment (RPE). At present these STELS are 0.6 f/ml for amphiboles and 0.9 f/ml for chrysotile. We intend to maintain a limit for peak exposures, whilst removing the two STELS currently in regulation.

116. With no peak exposure limit, exposure could be allowed to reach 2.4 f/cm<sup>3</sup> as long as the worker is not exposed for more than 10 minutes (the equivalent of the proposed Control Limit over 4 hours).

117. The proposal is to require a maximum peak level of 0.6 f/cm<sup>3</sup> over 10 minutes (the current STEL for amphibole asbestos) for all types of asbestos with the assertion that it is always reasonably practicable to carry out work such that no personal exposure to asbestos fibres, however short, exceeds this peak. We intend to include this maximum peak level in ACoP rather than in the new Regulations, as AWPD does not include STELS.

**Question 13: Do you agree with the proposal to remove the two STELs from the Regulations and include a peak exposure limit of 0.6 f/cm<sup>3</sup> over 10 minutes in ACoP such that no worker exposure, however short in duration should exceed that peak? If not, please give details.**

**ACoP to require DCU maintenance record on site**

118. Where de-contamination units (DCUs) are used (mainly for licensed work) we propose to include a requirement in ACoP that the maintenance records for those DCUs (or copies of them) are kept on site so that they are available for inspection by the enforcing authority if required. This only formalises industry good practice and is not expected to impose any significant change on the asbestos removal industry.

**Summary of costs and benefits for additional amendments to CAW**

119. The changes proposed mainly clarify and simplify the regulatory system and are not expected to have any significant cost implications for the businesses concerned.

120. The only substantial change proposed is that accreditation will be required to undertake a four-stage clearance certification procedure. It is our view that there will be no significant cost directly attributed to this. Some 50% of those laboratories accredited to the 'two-stage' process have already applied to UKAS for extension of scope to all four stages. We anticipate that the majority of the remaining accredited laboratories will also seek extension before the new Control of Asbestos Regulations come into force.

121. The cost savings associated with the application of the 'sporadic and low intensity exposure' exemption to work with TCs are included in paragraph 81.

**Issues for comment**

122. The questions asked in the body of this section are repeated below

**Question 9: Do you agree with the proposal to clarify and simplify the asbestos Regulations by bringing the requirements of ASLIC and the Prohibitions Regulations into CAW and creating one combined set of Control of Asbestos Regulations?**

**Question 10: Do you agree with the proposal to produce a single Approved Code of Practice to cover all Control of Asbestos Regulations including Licensing?**

**Question 11: Do you agree with the proposed changes to licensing such that**

- a) licences have a maximum time limit of 3 years
- b) removal of the exemption from licensing for employers using their own staff in their own premises for licensable work

**Question 12: Do you agree with the proposal that accreditation be required for someone to undertake a four-stage clearance certificate procedure?**

**Question 13: Do you agree with the proposal to remove the two STELs from the Regulations and include a peak exposure limit of 0.6 f/cm<sup>3</sup> in ACoP such that no worker exposure, however short in duration should exceed that peak? If not, please give details.**

123. Please feel free to include any additional issues, not addressed here on which you wish to comment in your response.

## **INVITATION TO COMMENT**

The Health and Safety Commission would welcome comments on proposals set out in this CD. For convenience, all the questions are repeated in a form (Annex F) set out at the back of this document that you may find helpful to use for your reply. We will acknowledge receipt of all comments sent to us and will give careful consideration to all comments received in developing our proposal. We may contact you, for example, if we have a query.

If you reply to this CD in a personal capacity, rather than as a postholder of an organisation, you should be aware that information you provide may constitute “personal data” in the terms of the Data Protection Act 1998. For the purposes of this Act, HSE is the “data controller” and will process the data for health and safety and environmental purposes. HSE may disclose these data to any person or organisation for purposes for which it was collected, or where the Act allows disclosure. You have the right to ask for a copy of the data and to ask for inaccurate data to be corrected. Please note all replies will be made public unless you specifically state you wish yours to be made confidential.

**2003/18/EC amendment to the Asbestos Worker Protection Directive 83/477/EEC****Article 1**

1. This Directive has as its aim the protection of workers against risks to their health, including the prevention of such risks, arising or likely to arise from exposure to asbestos at work. It lays down limit values and other specific requirements.
2. Deleted
3. This Directive shall not prejudice the right of Member States to apply or introduce laws, regulations or administrative provisions ensuring greater protection for workers, in particular as regards the replacement of asbestos by less-dangerous substitutes.

**Article 2**

For the purposes of this Directive, 'asbestos' means the following fibrous silicates:

- Asbestos actinolite, CAS No 77536-66-4(9),
- Asbestos grunerite (amosite) CAS No 12172-73-5(10),
- Asbestos anthophyllite, CAS No 77536-67-5(11),
- Chrysotile, CAS No 12001-29-5(12),
- Crocidolite, CAS No 12001-28-4(13),
- Asbestos tremolite, CAS No 77536-68-6(14).

**Article 3**

1. This Directive shall apply to activities in which workers are or may be exposed in the course of their work to dust arising from asbestos or materials containing asbestos.
2. In the case of any activity likely to involve a risk of exposure to dust arising from asbestos or materials containing asbestos, this risk must be assessed in such a way as to determine the nature and degree of the workers' exposure to dust arising from asbestos or materials containing asbestos.
3. Provided that worker exposure is sporadic and of low intensity, and when it is clear from the results of the risk assessment referred to in paragraph 2 that the exposure limit for asbestos will not be exceeded in the air of the working area, Articles 4, 15 and 16 may be waived where work involves:
  - (a) short, non-continuous maintenance activities in which only non-friable materials are handled,
  - (b) removal without deterioration of non-degraded materials in which the asbestos fibres are firmly linked in a matrix,
  - (c) encapsulation or sealing of asbestos-containing materials which are in good condition,
  - (d) air monitoring and control, and the collection of samples to ascertain whether a specific material contains asbestos.

3a. Member States shall, following consultation with social partners in accordance with national law and practice, lay down practical guidelines for the determination of sporadic and low-intensity exposure, as provided for in paragraph 3.

4. The assessment provided for in paragraph 2 shall be the subject of consultation with the workers and/or their representatives within the undertaking or establishment and shall be revised where there is reason to believe that it is incorrect or there is a material change in the work.

**Article 4**

Subject to Article 3(3), the following measures shall be taken:

1. The activities referred to in Article 3 (1) must be covered by a notification system administered by the responsible authority of the Member State.
2. The notification shall be submitted by the employer to the responsible authority of the Member States, before the work commences, in accordance with national laws, regulations and administrative provisions.

The notification must include at least a brief description of:

- (a) the location of the work site,
  - (b) the type and quantities of asbestos used or handled,
  - (c) the activities and processes involved,
  - (d) the number of workers involved,
  - (e) the starting date and duration of the work,
  - (f) measures taken to limit the exposure of workers to asbestos.
3. Workers and/or their representatives in undertakings or establishments shall have access to the documents which are the subject of notification concerning their own undertaking or establishment in accordance with national laws.
  4. Each time a change in working conditions is likely to result in a significant increase in exposure to dust from asbestos or materials containing asbestos, a new notification must be submitted.

**Article 5**

The application of asbestos by means of the spraying process and working procedures that involve using low-density (less than 1g/cm<sup>3</sup>) insulating or soundproofing materials which contain asbestos shall be prohibited.

Without prejudice to the application of other Community provisions on marketing and use of asbestos, activities which expose workers to asbestos fibres during the extraction of asbestos or the manufacture and processing of asbestos products or the manufacture and processing of products containing intentionally added asbestos shall be prohibited, with the exception of the treatment and disposal of products resulting from demolition and asbestos removal.

**Article 6**

For all activities referred to in Article 3(1), the exposure of workers to dust arising from asbestos or materials containing asbestos at the place of work must be reduced to a minimum and in any case below the limit value laid down in Article 8, in particular through the following measures:

1. the number of workers exposed or likely to be exposed to dust arising from asbestos or materials containing asbestos must be limited to the lowest possible figure;
2. work processes must be designed so as not to produce asbestos dust or, if that proves impossible, to avoid the release of asbestos dust into the air;
3. all premises and equipment involved in the treatment of asbestos must be capable of being regularly and effectively cleaned and maintained;
4. asbestos or dust-generating asbestos-containing material must be stored and transported in suitable sealed packing;
5. waste must be collected and removed from the place of work as soon as possible in suitable sealed packing with labels indicating that it contains asbestos. This measure shall not

apply to mining activities. Such waste shall then be dealt with in accordance with Council Directive 91/689/EEC of 12 December 1991 on hazardous waste.

#### **Article 7**

1. Depending on the results of the initial risk assessment, and in order to ensure compliance with the limit value laid down in Article 8, measurement of asbestos fibres in the air at the workplace shall be carried out regularly.
  2. Sampling must be representative of the personal exposure of the worker to dust arising from asbestos or materials containing asbestos.
  3. Sampling shall be carried out after consultation of the workers and/or their representatives in undertakings.
  4. Sampling shall be carried out by suitably qualified personnel. The samples taken shall be subsequently analysed, in accordance with paragraph 6, in laboratories equipped for fibre counting.
  5. The duration of sampling must be such that representative exposure can be established for an eight-hour reference period (one shift) by means of measurements or time-weighted calculations.
  6. Fibre counting shall be carried out wherever possible by PCM (phase-contrast microscope) in accordance with the 1997 WHO (World Health Organisation) recommended method(16) or any other method giving equivalent results.
- For the purpose of measuring asbestos in the air, as referred to in the first subparagraph, only fibres with a length of more than five micrometres, a breadth of less than three micrometres and a length/breadth ratio greater than 3:1 shall be taken into consideration.

#### **Article 8**

Employers shall ensure that no worker is exposed to an airborne concentration of asbestos in excess of 0,1 fibres per cm<sup>3</sup> as an eight-hour time-weighted average (TWA).

#### **Article 9**

1. Deleted.
2. The amendments necessary to adapt the Annexes to this Directive to technical progress shall be adopted in accordance with the procedure laid down in Article 17 of Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at the workplace (OJ L 183, 29. 6. 1989, p. 1).

#### **Article 10**

1. Where the limit value laid down in Article 8 is exceeded, the reasons for the limit being exceeded must be identified and appropriate measures to remedy the situation must be taken as soon as possible.  
Work may not be continued in the affected area until adequate measures have been taken for the protection of the workers concerned.
2. In order to check the effectiveness of the measures mentioned in the first subparagraph of paragraph 1, a further determination of the asbestos-in-air concentrations shall be carried out immediately.
3. Where exposure cannot be reduced by other means and where compliance with the limit value makes necessary the wearing of individual protective breathing equipment, this may not be permanent and shall be kept to the strict minimum necessary for each worker. During periods of work which require the use of such equipment, provision shall be made for breaks appropriate to the physical and climatological conditions and, where relevant, in

consultation with the workers and/or their representatives, in accordance with national laws and practice.

### **Article 10a**

Before beginning demolition or maintenance work, employers shall take, if appropriate by obtaining information from the owners of the premises, all necessary steps to identify presumed asbestos-containing materials.

If there is any doubt about the presence of asbestos in a material or construction, the applicable provisions of this Directive shall be observed.

### **Article 11**

1. In the case of certain activities such as demolition, removal, repairing and maintenance in respect of which it is foreseeable that the limit value set out in Article 8 will be exceeded despite the use of technical preventive measures for limiting asbestos in air concentrations, the employer shall determine the measures intended to ensure protection of the workers while they are engaged in such activities, in particular the following:

- (a) workers shall be issued with suitable respiratory and other personal protective equipment, which must be worn; and
- (b) warning signs shall be put up indicating that it is foreseeable that the limit value laid down in Article 8 will be exceeded; and
- (c) the spread of dust arising from asbestos or materials containing asbestos outside the premises or site of action shall be prevented.

2. The workers and/or their representatives in the undertaking or establishment shall be consulted on these measures before the activities concerned are carried out.

### **Article 12**

1. A plan of work shall be drawn up before demolition work or work on removing asbestos and/or asbestos-containing products from buildings, structures, plant or installations or from ships is started.

2. The plan referred to in paragraph 1 must prescribe the measures necessary to ensure the safety and health of workers at the place of work.

The plan must in particular specify that:

- asbestos and/or asbestos-containing products are to be removed before demolition techniques are applied, except where this would cause a greater risk to workers than if the asbestos and/or asbestos-containing products had been left in place;
- the personal protective equipment referred to in Article 11(1)(a) shall be provided, where necessary;
- when the asbestos demolition or removal work has been completed, the absence of asbestos exposure risks in the workplace shall be verified in compliance with national legislation and practices.

At the request of the competent authorities, the plan shall include information on the following:

- the nature and probable duration of the work,
- the place where the work is carried out,
- the methods applied where the work involves the handling of asbestos or of materials containing asbestos,

- the characteristics of the equipment used for:
- protection and decontamination of those carrying out the work,
- protection of other persons present on or near the worksite.

3. At the request of the competent authorities, the plan referred to in paragraph 1 must be notified to them before the start of the projected work.

#### **Article 12a**

1. Employers shall provide appropriate training for all workers who are, or are likely to be, exposed to asbestos-containing dust. Such training must be provided at regular intervals and at no cost to the workers.

2. The content of the training must be easily understandable for workers. It must enable them to acquire the necessary knowledge and skills in terms of prevention and safety, particularly as regards:

- (a) the properties of asbestos and its effects on health, including the synergistic effect of smoking;
- (b) the types of products or materials likely to contain asbestos;
- (c) the operations that could result in asbestos exposure and the importance of preventive controls to minimise exposure;
- (d) safe work practices, controls and protective equipment;
- (e) the appropriate role, choice, selection, limitations and proper use of respiratory equipment;
- (f) emergency procedures;
- (g) decontamination procedures;
- (h) waste disposal;
- (i) medical examination requirements.

3. Practical guidelines for the training of asbestos removal workers shall be developed at Community level.

#### **Article 12b**

Before carrying out asbestos demolition or removal work, firms must provide evidence of their ability in this field. The evidence shall be established in accordance with national laws and/or practice.

#### **Article 13**

1. In the case of all activities referred to in Article 3 (1), and subject to Article 3 (3), appropriate measures shall be taken to ensure that:

- (a) the places in which the above activities take place shall:
  - (i) be clearly demarcated and indicated by warning signs;
  - (ii) not be accessible to workers other than those who by reason of their work or duties are required to enter them;
  - (iii) constitute areas where there should be no smoking;
- (b) areas are set aside where workers can eat and drink without risking contamination by asbestos dust;
- (c) (i) workers are provided with appropriate working or protective clothing;

- (ii) this working or protective clothing remains within the undertaking. It may, however, be laundered in establishments outside the undertaking which are equipped for this sort of work if the undertaking does not carry out the cleaning itself; in that event the clothing shall be transported in closed containers;
- (iii) separate storage places are provided for working or protective clothing and for street clothes;
- (iv) workers are provided with appropriate and adequate washing and toilet facilities, including showers in the case of dusty operations;
- (v) protective equipment shall be placed in a well-defined place and shall be checked and cleaned after each use; appropriate measures shall be taken to repair or replace defective equipment before further use.

2. Workers may not be charged with the cost of measures taken pursuant to paragraph 1.

#### **Article 14**

1. In the case of all activities referred to in Article 3 (1), appropriate measures shall be taken to ensure that workers and their representatives in the undertaking or establishment receive adequate information concerning:

- the potential risks to health from exposure to dust arising from asbestos or materials containing asbestos,
- the existence of statutory limit values and the need for the atmosphere to be monitored,
- hygiene requirements, including the need to refrain from smoking,
- the precautions to be taken as regards the wearing and use of protective equipment and clothing,
- special precautions designed to minimize exposure to asbestos.

2. In addition to the measures referred to in paragraph 1, and subject to Article 3(3), appropriate measures shall be taken to ensure that:

- (a) workers and/or their representatives in the undertaking or establishment have access to the results of asbestos-in-air concentration measurements and can be given explanations of the significance of those results;
- (b) if the results exceed the limit value laid down in Article 8 the workers concerned and their representatives in the undertaking or establishment are informed as quickly as possible of the fact and the reasons for it and the workers and/or their representatives in the undertaking or establishment are consulted on the measures to be taken or, in an emergency, are informed of the measures which have been taken.

#### **Article 15**

Subject to Article 3 (3) the following measures shall be taken:

1. An assessment of each worker's state of health must be available prior to the beginning of exposure to dust arising from asbestos or materials containing asbestos at the place of work.

This assessment must include a specific examination of the chest. Annex II gives practical recommendations to which the Member States may refer for the clinical surveillance of workers; these recommendations shall be adapted to technical progress 'in accordance with the procedure laid down in Article 17 of Directive 89/391/EEC'.

A new assessment must be available at least once every three years for as long as exposure continues.

An individual health record shall be established in accordance with national laws and practices for each worker referred to in the first subparagraph.

2. Following the clinical surveillance referred to in point 1, the doctor or authority responsible for the medical surveillance of the workers should, in accordance with national laws, advise on or determine any individual protective or preventive measures to be taken; these may include, where appropriate, the withdrawal of the worker concerned from all exposure to asbestos.

3. Information and advice must be given to workers regarding any assessment of their health which they may undergo following the end of exposure.

The doctor or authority responsible for the medical surveillance of workers may indicate that medical surveillance must continue after the end of exposure for as long as they consider it necessary to safeguard the health of the person concerned.

Such continuing surveillance shall be carried out in accordance with the laws and practices of the individual Member States.

4. The worker concerned or the employer may request a review of the assessments referred to in point 2, in accordance with national laws.

#### **Article 16**

Subject to Article 3 (3) the following measures shall be taken:

1. The employer must enter the workers responsible for carrying out the activities referred to in Article 3 (1) in a register, indicating the nature and duration of the activity and the exposure to which they have been subjected. The doctor and/or the authority responsible for medical surveillance shall have access to this register. Each worker shall have access to the results in the register which relate to him personally. The workers and/or their representatives shall have access to anonymous, collective information in the register.

2. The register referred to in point 1 and the medical records referred to in Article 15(1) shall be kept for at least 40 years following the end of exposure, in accordance with national laws and/or practice.

3. The documents referred to in point 2 shall be made available to the responsible authority in cases where the undertaking ceases trading, in accordance with national laws and/or practice.

#### **Article 16a**

Member States shall provide for adequate sanctions to be applicable in the event of infringement of national legislation adopted pursuant to this Directive. These sanctions must be effective, proportionate and dissuasive.

#### **Article 17**

Member States shall keep a register of recognized cases of asbestosis and

#### **Article 18**

1. Member States shall adopt the laws, regulations and administrative provisions necessary to comply with this Directive before 1 January 1987. They shall forthwith inform the Commission thereof. The date 1 January 1987 is, however, postponed until 1 January 1990 in the case of asbestos-mining activities.

2. Member States shall communicate to the Commission the provisions of national law which they adopt in the field covered by this Directive.

**Article 19**

This Directive is addressed to the Member States.

Done at Brussels, 19 September 1983.

For the Council

The President

G. VARFIS

- (1) OJ No C 262, 9. 10. 1980, p. 7 and OJ No C 301, 18. 11. 1982, p. 6.
- (2) OJ No C 310, 30. 11. 1981, p. 43.
- (3) OJ No C 125, 17. 5. 1982, p. 155.
- (4) OJ No C 165, 11. 7. 1978, p. 1.
- (5) OJ No L 327, 3. 12. 1980, p. 8.

(1) Number in the register of the Chemical Abstract Service (CAS).

(1) OJ No L 84, 31. 3. 1978, p. 43.

**ANNEX I**

Deleted

**ANNEX II**

Practical recommendations for the clinical assessment of workers, as referred to in Article 15

(1)

1. Current knowledge indicates that exposure to free asbestos fibres can give rise to the following diseases:

- asbestosis,
- mesothelioma,
- bronchial carcinoma,
- gastro-intestinal carcinoma.

2. The doctor and/or authority responsible for the medical surveillance of workers exposed to asbestos must be familiar with the exposure conditions or circumstances of each worker.

3. Health examination of workers should be carried out in accordance with the principles and practices of occupational medicine. It should include at least the following measures:

- keeping records of a worker's medical and occupational history,
- a personal interview,
- a general clinical examination, with particular reference to the chest,
- lung function tests (respiratory flow volumes and rates).

The doctor and/or authority responsible for the health surveillance should decide on further examinations, such as sputum cytology tests or a chest X-ray or a tomodensitometry, in the light of the latest occupational health knowledge available.

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DRAFT STATUTORY INSTRUMENTS

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**2006 No. 00**

**HEALTH AND SAFETY**

**Control of Asbestos Regulations 2006**

*Made* - - - - *Day Month 2006*  
*Laid before Parliament* *Day Month 2006*  
*Coming into force* - - *6th April 2006*

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**AMENDMENTS**

The Secretary of State being the Minister designated, for the purpose of section 2(2) of the European Communities Act 1972(a) in relation to the regulation and control of classification, packaging and labelling of dangerous substances and preparations(b), the control of the import and export of goods(c), and measures relating to restrictions on the marketing and use of certain dangerous substances and preparations(d), in exercise of the powers conferred upon him by the said section 2(2) and sections 15(1), (2), (3), (4), (5), (6)(b), (9), 18(2) and (5), 80(1) and 82(3) of, and paragraphs 1(1) to (4), 2, 3(2), 4, 6, 8 to 11, 13(1) and (3), 14, 15(1), 16 and 20 to, of the Health and Safety at Work etc. Act 1974(e) ("the 1974 Act") and of all other powers enabling him in that behalf and for the purpose of giving effect without modifications to proposals submitted to

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(a) 1972 c. 68.

(b) S.I. 1976/897.

(c) S.I. 1983/1706.

(d) S.I. 1992/1711.

(e) 1974 c.37

him by the Health and Safety Commission under section 11(2)(d) of the 1974 Act after the carrying out by the said Commission of consultations in accordance with section 50(3) of that Act, and it appearing expedient to him after consulting such bodies as appear to him to be appropriate in accordance with section 80(4) of that Act, hereby makes the following Regulations:

## PART 1 PRELIMINARY

### Citation and Commencement

1. These Regulations may be cited as the Control of Asbestos Regulations 2006 and shall come into force on 6th April 2006. [accreditation (see reg. 20) may need separate commencement dates]

### Interpretation

2.—(1) In these Regulations—

“adequate” means adequate having regard only to the nature and degree of exposure to asbestos, and “adequately” shall be construed accordingly;

“appointed doctor” means a registered medical practitioner appointed for the time being in writing by the Executive for the purpose of these Regulations;

“approved” means approved for the time being in writing by the Health and Safety Commission or the Executive as the case may be;

“asbestos” means the following fibrous silicates—

- (a) asbestos actinolite, CAS No 77536-66-4(9);
- (b) asbestos grunerite (amosite) CAS No 12172-73-5(10);
- (c) asbestos anthophyllite, CAS No 77536-67-5(11);
- (d) chrysotile, CAS No 12001-29-5(12);
- (e) crocidolite, CAS NO 12001-28-4(13); and
- (f) asbestos tremolite, CAS No 77536-68-6(14),

and references to “CAS” followed by a numerical sequence are references to CAS Registry Numbers assigned to chemicals by the Chemical Abstracts Service, a division of the American Chemical Society;

“the control limit” means a concentration of asbestos in the atmosphere when measured in accordance with the 1997 WHO recommended method, or by a method giving equivalent results to that method approved by the Health and Safety Commission, of 0.1 fibres per cubic centimetre of air averaged over a continuous period of 4 hours;

“control measure” means a measure taken to prevent or reduce exposure to asbestos (including the provision of systems of work and supervision, the cleaning of workplaces, premises, plant and equipment, and the provision and use of engineering controls and personal protective equipment);

“employment medical adviser” means an employment medical adviser appointed under section 56 of the Health and Safety at Work etc. Act 1974;

“enforcing authority” means the Executive or local authority, determined in accordance with the provisions of the Health and Safety (Enforcing Authority) Regulations 1998(a);

“the Executive” means the Health and Safety Executive;

“ISO 17020” means European Standard EN ISO/IEC 17020, “General criteria for the operation of various types of bodies performing inspection” accepted by the Comité Européen

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(a) S.I. 1998/494, as amended by S.I. 1999/2024, S.I. 1999/3232, S.I. 2002/2675, and S.I. 2004/3168.

de Normalisation Electrotechnique (CEN/CENELEC) on INSERT DATE(a) as revised or reissued from time to time

“ISO 17025” means European Standard EN ISO/IEC 17025, “General requirements for the competence of testing and calibration laboratories” accepted by the Comité Européen de Normalisation Electrotechnique (CEN/CENELEC) on 6<sup>th</sup> December 1999(b) as revised or reissued from time to time;

“medical examination” includes any laboratory tests and X-rays that a relevant doctor may require;

“personal protective equipment” means all equipment (including clothing) which is intended to be worn or held by a person at work and which protects that person against one or more risks to his health, and any addition or accessory designed to meet that objective;

“relevant doctor” means an appointed doctor or an employment medical adviser;

“risk assessment” means the assessment of risk required by regulation 6(1)(a);

“the 1997 WHO recommended method” means the publication “Determination of airborne fibre concentrations. A recommended method, by phase-contrast optical microscopy (membrane filter method), WHO (World Health Organisation), Geneva 1997(c);

(2) For the purposes of these Regulations, except as specified in regulation 11(3) and (5), in determining whether an employee is exposed to asbestos or whether the extent of such exposure exceeds the control limit, no account shall be taken of respiratory protective equipment which, for the time being, is being worn by that employee.

(3) A reference to work with asbestos in these Regulations shall include—

- (a) work which consists of the removal, repair or disturbance of asbestos;
- (b) work which is ancillary to such work; and
- (c) supervision of such work and such ancillary work

(4) A reference to asbestos in these Regulations shall include materials containing asbestos.

### Application of these Regulations

**3.—**(1) These Regulations shall apply to a self-employed person as they apply to an employer and an employee and as if that self-employed person were both an employer and an employee.

(2) Regulations 8 (licensing), 9 (notification of work with asbestos), 15(1) (arrangements to deal with accidents, incidents and emergencies), 18(1)(a) (asbestos areas) and 22 (health records and medical surveillance) shall not apply where—

- (a) the exposure of employees to asbestos fibres is sporadic and of low intensity;
- (b) it is clear from the risk assessment that the exposure of any employee to asbestos will not exceed the control limit; and
- (c) the work involves—
  - (i) short, non-continuous maintenance activities,
  - (ii) removal of materials in which the asbestos fibres are firmly linked in a matrix,
  - (iii) encapsulation or sealing of asbestos-containing materials which are in good condition, or
  - (iv) air monitoring and control, and the collection of samples to ascertain whether a specific material contains asbestos.

(3) Where a duty is placed by these Regulations on an employer in respect of his employees, he shall, so far as is reasonably practicable, be under a like duty in respect of any other person,

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(a) Reference number EN ISO/IEC 17020: 1998.

(b) Reference number EN ISO/IEC 17025: 2000.

(c) ISBN 92 4 154496 1.

whether at work or not, who may be affected by the work activity carried out by the employer except that the duties of the employer—

- (a) under regulation 10 (information, instruction and training) shall not extend to persons who are not his employees unless those persons are on the premises where the work is being carried out; and
- (b) under regulation 22 (health records and medical surveillance) shall not extend to persons who are not his employees.

(4) Regulation 17, insofar as it requires an employer to ensure that premises are thoroughly cleaned, shall not apply to—

- (a) in England and Wales a fire and rescue authority within the meaning of the Fire and Rescue Services Act 2004(a), or in Scotland a relevant authority within the meaning of section 6 of the Fire (Scotland) Act 2005(b), in respect of premises attended by its employees for the purpose of fighting a fire or in an emergency; or
- (b) the employer of persons who attend a ship in dock premises for the purpose of fighting a fire or in an emergency, in respect of any ship so attended,

and for the purposes of this paragraph “ship” includes all vessels and hovercraft which operate on water or land and water, and “dock premises” means a dock, wharf, quay, jetty or other place at which ships load or unload goods or embark or disembark passengers, together with neighbouring land or water which is used or occupied, or intended to be used or occupied, for those or incidental activities, and any part of a ship when used for those or incidental activities.

(5) These Regulations shall not apply to the master or crew of a ship or to the employer of such persons in respect of the normal shipboard activities of a ship’s crew which are carried out solely by the crew under the direction of the master, and for the purposes of this paragraph “ship” includes every description of vessel used in navigation, other than a ship forming part of Her Majesty’s Navy.

## PART 2

### GENERAL REQUIREMENTS

#### **Duty to manage asbestos in non-domestic premises**

4.—(1) In this regulation “the dutyholder” means—

- (a) every person who has, by virtue of a contract or tenancy, an obligation of any extent in relation to the maintenance or repair of non-domestic premises or any means of access thereto or egress therefrom; or
- (b) in relation to any part of non-domestic premises where there is no such contract or tenancy, every person who has, to any extent, control of that part of those non-domestic premises or any means of access thereto or egress therefrom,

and where there is more than one such dutyholder, the relative contribution to be made by each such person in complying with the requirements of this regulation will be determined by the nature and extent of the maintenance and repair obligation owed by that person.

(2) Every person shall cooperate with the dutyholder so far as is necessary to enable the dutyholder to comply with his duties under this regulation.

(3) In order to enable him to manage the risk from asbestos in non-domestic premises, the dutyholder shall ensure that a suitable and sufficient assessment is carried out as to whether asbestos is or is liable to be present in the premises.

(4) In making the assessment—

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(a) 2004 c.21.  
(b) 2005 asp 5.

- (a) such steps as are reasonable in the circumstances shall be taken; and
  - (b) the condition of any asbestos which is, or has been assumed to be, present in the premises shall be considered.
- (5) Without prejudice to the generality of paragraph (4), the dutyholder shall ensure that—
- (a) account is taken of building plans or other relevant information and of the age of the premises; and
  - (b) an inspection is made of those parts of the premises which are reasonably accessible.
- (6) The dutyholder shall ensure that the assessment is reviewed forthwith if—
- (a) there is reason to suspect that the assessment is no longer valid; or
  - (b) there has been a significant change in the premises to which the assessment relates.
- (7) The dutyholder shall ensure that the conclusions of the assessment and every review are recorded.
- (8) Where the assessment shows that asbestos is or is liable to be present in any part of the premises the dutyholder shall ensure that—
- (a) a determination of the risk from that asbestos is made;
  - (b) a written plan identifying those parts of the premises concerned is prepared; and
  - (c) the measures which are to be taken for managing the risk are specified in the written plan.
- (9) The measures to be specified in the plan for managing the risk shall include adequate measures for—
- (a) monitoring the condition of any asbestos or any substance containing or suspected of containing asbestos;
  - (b) ensuring any asbestos or any such substance is properly maintained or where necessary safely removed; and
  - (c) ensuring that information about the location and condition of any asbestos or any such substance is—
    - (i) provided to every person liable to disturb it, and
    - (ii) made available to the emergency services.
- (10) The dutyholder shall ensure that—
- (a) the plan is reviewed and revised at regular intervals, and forthwith if—
    - (i) there is reason to suspect that the plan is no longer valid, or
    - (ii) there has been a significant change in the premises to which the plan relates;
  - (b) the measures specified in the plan are implemented; and
  - (c) the measures taken to implement the plan are recorded.
- (11) In this regulation, a reference to—
- (a) “the assessment” is a reference to the assessment required by paragraph (3);
  - (b) “the premises” is a reference to the non-domestic premises referred to in paragraph (1); and
  - (c) “the plan” is a reference to the plan required by paragraph (8).

### **Identification of the presence of asbestos**

**5.** An employer shall not undertake work in demolition, maintenance, or any other work which exposes or is liable to expose his employees to asbestos in respect of any premises unless either—

- (a) he has carried out a suitable and sufficient assessment as to whether asbestos, and what type of asbestos, is present or is liable to be present in those premises; or
- (b) if there is doubt as to whether asbestos is present in those premises he—
  - (i) assumes that asbestos is present, and that it is not chrysotile alone, and

- (ii) observes the applicable provisions of these Regulations.

### **Assessment of work which exposes employees to asbestos**

**6.—**(1) An employer shall not carry out work which is liable to expose his employees to asbestos unless he has—

- (a) made a suitable and sufficient assessment of the risk created by that exposure to the health of those employees and of the steps that need to be taken to meet the requirements of these Regulations;
- (b) recorded the significant findings of that risk assessment as soon as is practicable after the risk assessment is made; and
- (c) implemented the steps referred to in sub-paragraph (a).

(2) Without prejudice to the generality of paragraph (1), the risk assessment shall—

- (a) subject to regulation 5, identify the type of asbestos to which employees are liable to be exposed;
- (b) determine the nature and degree of exposure which may occur in the course of the work;
- (c) consider the effects of control measures which have been or will be taken in accordance with regulation 11;
- (d) consider the results of monitoring of exposure in accordance with regulation 19;
- (e) set out the steps to be taken to prevent that exposure or reduce it to the lowest level reasonably practicable;
- (f) consider the results of relevant medical surveillance; and
- (g) include such additional information as the employer may need in order to complete the risk assessment.

(3) The risk assessment shall be reviewed regularly and forthwith if—

- (a) there is reason to suspect that the existing risk assessment is no longer valid;
- (b) there is a significant change in the work to which the risk assessment relates; or
- (c) the results of any monitoring carried out pursuant to regulation 19 show it to be necessary,

and where, as a result of the review, changes to the risk assessment are required, those changes shall be made and, where they relate to the significant findings of the risk assessment or are themselves significant, recorded.

(4) Where, in accordance with the requirement in paragraph (2)(a), the risk assessment has determined that the exposure of his employees to asbestos may exceed the control limit, the employer shall keep a copy of the significant findings of the risk assessment at those premises at which, and for such time as, the work to which that risk assessment relates is being carried out.

### **Plans of work**

**7.—**(1) An employer shall not undertake any work with asbestos unless he has prepared a suitable written plan of work (hereinafter referred to in this regulation as “the plan of work”) detailing how that work is to be carried out.

(2) The employer shall keep a copy of the plan of work—

- (a) at those premises at which, and
- (b) for such time as,  
the work to which the plan relates is being carried out.

(3) In cases of final demolition or major refurbishment of premises, the plan of work shall, so far as is reasonably practicable, and unless it would cause a greater risk to employees than if the asbestos had been left in place, specify that asbestos shall be removed before any other major works begin.

- (4) The plan of work shall include in particular details of—
- (a) the nature and probable duration of the work;
  - (b) the location of the place where the work is to be carried out;
  - (c) the methods to be applied where the work involves the handling of asbestos or materials containing asbestos;
  - (d) the characteristics of the equipment to be used for—
    - (i) protection and decontamination of those carrying out the work, and
    - (ii) protection of other persons on or near the worksite;
  - (e) the measures which the employer intends to take in order to comply with the requirements of regulation 11; and
  - (f) the measures which the employer intends to take in order to comply with the requirements of regulation 17.
- (5) The employer shall ensure, so far as is reasonably practicable, that the work to which the plan of work relates is carried out in accordance with that plan and any subsequent written changes to it.

### **Licensing of work with asbestos**

**8.**—(1) Subject to regulation 3(2), an employer shall not undertake any work with asbestos unless he holds a licence granted under paragraph (2) of this regulation.

(2) The Executive may grant a licence for work with asbestos if it considers it appropriate to do so and—

- (a) the person who wishes the licence to be granted to him has made application for it on a form approved for the time being for the purposes of this regulation by the Executive; and
- (b) the application was made at least 28 days before the date from which the licence is to run, or such shorter period as the Executive may allow.

(3) A licence under this regulation—

- (a) shall come into operation on the date specified in the licence, and shall be valid for any period up to a maximum of three years that the Executive may specify in it; and
- (b) may be granted subject to such conditions as the Executive may consider appropriate.

(4) The Executive may vary the terms of a licence under this regulation if it considers it appropriate to do so and in particular may—

- (a) add further conditions and vary or omit existing ones; and
- (b) reduce the period for which the licence is valid or extend that period up to a maximum of three years from the date on which the licence first came into operation.

(5) The Executive may revoke a licence under this regulation if it considers it appropriate to do.

(6) The holder of a licence under this regulation shall return the licence to the Executive—

- (a) when required by the Executive for any amendment; or
- (b) following revocation.

### **Notification of work with asbestos**

**9.**—(1) Subject to regulation 3(2), an employer shall not undertake any work with asbestos unless he has notified the appropriate office of the enforcing authority (the Executive?) in writing of the particulars specified in Schedule 1 at least 14 days before commencing that work or such shorter time before as the enforcing authority may agree.

(2) Where an employer has notified work in accordance with paragraph (1) and there is a material change in that work which might affect the particulars so notified (including the cessation of the work), the employer shall forthwith notify the appropriate office of the enforcing authority (the Executive?) in writing of that change.

### Information, instruction and training

**10.**—(1) Every employer shall ensure that adequate information, instruction and training is given to those of his employees—

- (a) who are or who are liable to be exposed to asbestos, or who supervise such employees, so that they are aware of—
  - (i) the properties of asbestos and its effects on health, including its interaction with smoking,
  - (ii) the types of products or materials likely to contain asbestos,
  - (iii) the operations which could result in asbestos exposure and the importance of preventive controls to minimise exposure,
  - (iv) safe work practices, control measures, and protective equipment;
  - (v) the appropriate purpose, choice, selection, limitations and proper use of respiratory protective equipment,
  - (vi) emergency procedures,
  - (vii) hygiene requirements,
  - (viii) decontamination procedures,
  - (ix) waste handling procedures,
  - (x) medical examination requirements, and
  - (xi) the control limit and the need for air monitoring,
 in order to safeguard themselves and other employees; and
- (b) who carry out work in connection with the employer's duties under these Regulations, so that they can carry out that work effectively.

(2) The information, instruction and training required by paragraph (1) shall be—

- (a) given at regular intervals;
- (b) adapted to take account of significant changes in the type of work carried out or methods of work used by the employer; and
- (c) provided in a manner appropriate to the nature and degree of exposure identified by the risk assessment, and so that the employees are aware of
  - (i) the significant findings of the risk assessment, and
  - (ii) the results of any air monitoring carried out with an explanation of the findings.

### Prevention or reduction of exposure to asbestos

**11.**—(1) Every employer shall—

- (a) prevent the exposure of his employees to asbestos so far as is reasonably practicable;
- (b) where it is not reasonably practicable to prevent such exposure—
  - (i) take the measures necessary to reduce the exposure of his employees to asbestos to the lowest level reasonably practicable by measures other than the use of respiratory protective equipment, and
  - (ii) ensure that the number of his employees who are exposed to asbestos at any one time is as low as is reasonably practicable.

(2) Where it is not reasonably practicable for the employer to prevent the exposure of his employees to asbestos in accordance with paragraph (1)(a), the measures referred to in paragraph (1)(b)(i) shall include, in order of priority—

- (a) the design and use of appropriate work processes, systems and engineering controls and the provision and use of suitable work equipment and materials in order to avoid or minimise the release of asbestos; and

- (b) the control of exposure at source, including adequate ventilation systems and appropriate organisational measures,

and the employer shall so far as is reasonably practicable provide the employees concerned with suitable respiratory protective equipment in addition to the measures required by sub-paragraphs (a) and (b).

(3) Where it is not reasonably practicable to reduce the exposure of an employee to asbestos to below the control limit by the measures referred to in paragraph (1)(b)(i), then, in addition to taking those measures, the employer shall provide that employee with suitable respiratory protective equipment which will reduce the concentration of asbestos in the air inhaled by the employee (after taking account of the effect of that respiratory protective equipment) to a concentration which is below the control limit and is as low as is reasonably practicable.

(4) Personal protective equipment provided by an employer in accordance with this regulation or with regulation 14(1) shall be suitable for its purpose and shall—

- (a) comply with any provision of the Personal Protective Equipment Regulations 2002(a) which is applicable to that item of personal protective equipment; or
- (b) in the case of respiratory protective equipment, where no provision referred to in sub-paragraph (a) applies, be of a type approved or shall conform to a standard approved, in either case, by the Executive.

(5) The employer shall—

- (a) ensure that no employee is exposed to asbestos in a concentration in the air inhaled by that worker which exceeds the control limit; or
- (b) if the control limit is exceeded, he shall—
  - (i) forthwith inform any employees concerned and their representatives and ensure that work does not continue in the affected area until adequate measures have been taken to reduce employees' exposure to asbestos to below the control limit,
  - (ii) as soon as is reasonably practicable identify the reasons for the control limit being exceeded and take the appropriate measures to prevent it being exceeded again, and
  - (iii) check the effectiveness of the measures taken pursuant to sub-paragraph (ii) by carrying out immediate air monitoring.

#### **Use of control measures etc.**

**12.—**(1) Every employer who provides any control measure, other thing or facility pursuant to these Regulations shall ensure so far as is reasonably practicable that it is properly used or applied as the case may be.

(2) Every employee shall make full and proper use of any control measure, other thing or facility provided pursuant to these Regulations and, where relevant, shall—

- (a) take all reasonable steps to ensure that it is returned after use to any accommodation provided for it; and
- (b) if he discovers a defect therein report it forthwith to his employer.

#### **Maintenance of control measures etc.**

**13.—**(1) Every employer who provides any control measure to meet the requirements of these Regulations shall ensure that—

- (a) in the case of plant and equipment, including engineering controls and personal protective equipment, it is maintained in an efficient state, in efficient working order, in good repair and in a clean condition; and

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(a) S.I. 2002/1144

- (b) in the case of provision of systems of work and supervision and of any other measure, it is reviewed at suitable intervals and revised if necessary.

(2) Where exhaust ventilation equipment or respiratory protective equipment (except disposable respiratory protective equipment) is provided to meet the requirements of these Regulations, the employer shall ensure that thorough examinations and tests of that equipment are carried out at suitable intervals by a competent person.

(3) Every employer shall keep a suitable record of the examinations and tests carried out in accordance with paragraph (2) and of repairs carried out as a result of those examinations and tests, and that record or a suitable summary thereof shall be kept available for at least 5 years from the date on which it was made.

### **Provision and cleaning of protective clothing**

**14.**—(1) Every employer shall provide adequate and suitable protective clothing for such of his employees as are exposed or are liable to be exposed to asbestos, unless no significant quantity of asbestos is liable to be deposited on the clothes of the employee while he is at work.

(2) The employer shall ensure that protective clothing provided in pursuance of paragraph (1) is either disposed of as asbestos waste or adequately cleaned at suitable intervals.

(3) The cleaning required by paragraph (2) shall be carried out either on the premises where the exposure to asbestos has occurred, where those premises are suitably equipped for such cleaning, or in a suitably equipped laundry.

(4) The employer shall ensure that protective clothing which has been used and is to be removed from the premises referred to in paragraph (3) (whether for cleaning, further use or disposal) is packed, before being removed, in a suitable container which shall be labelled in accordance with the provisions of Schedule 2 as if it were a product containing asbestos or, in the case of protective clothing intended for disposal as waste, in accordance with regulation 24(3).

(5) Where, as a result of the failure or improper use of the protective clothing provided in pursuance of paragraph (1), a significant quantity of asbestos is deposited on the personal clothing of an employee, then for the purposes of paragraphs (2), (3) and (4) that personal clothing shall be treated as if it were protective clothing.

### **Arrangements to deal with accidents, incidents and emergencies**

**15.**—(1) Subject to regulation 3(2) and to paragraph (3) of this regulation, and without prejudice to the relevant provisions of the Management of Health and Safety at Work Regulations 1999(a), in order to protect the health of his employees from an accident, incident or emergency related to the use of asbestos in a work process or to the removal or repair of asbestos-containing materials at the workplace, the employer shall ensure that—

- (a) procedures, including the provision of relevant safety drills (which shall be tested at regular intervals), have been prepared which can be put into effect when such an event occurs;
- (b) information on emergency arrangements, including—
  - (i) details of relevant work hazards and hazard identification arrangements, and
  - (ii) specific hazards likely to arise at the time of an accident, incident or emergency, is available; and
- (c) suitable warning and other communication systems are established to enable an appropriate response, including remedial actions and rescue operations, to be made immediately when such an event occurs.

(2) The employer shall ensure that information on the procedure and systems required by paragraph (1)(a) and (c) and the information required by paragraph (1)(b) is—

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(a) S.I. 1999/3242, as amended by S.I. 2003/2457.

- (a) made available to the relevant accident and emergency services to enable those services, whether internal or external to the workplace, to prepare their own response procedures and precautionary measures; and
  - (b) displayed at the workplace, if this is appropriate.
- (3) Paragraph (1) shall not apply where—
- (a) the results of the risk assessment show that, because of the quantity of asbestos present at the workplace, there is only a slight risk to the health of employees; and
  - (b) the measures taken by the employer to comply with the duty under regulation 11(1) are sufficient to control that risk.
- (4) In the event of an accident, incident or emergency related to the unplanned release of asbestos at the workplace, the employer shall ensure that—
- (a) immediate steps are taken to—
    - (i) mitigate the effects of the event,
    - (ii) restore the situation to normal, and
    - (iii) inform any person who may be affected; and
  - (b) only those persons who are responsible for the carrying out of repairs and other necessary work are permitted in the affected area and they are provided with—
    - (i) appropriate respiratory protective equipment and protective clothing, and
    - (ii) any necessary specialised safety equipment and plant,
 which shall be used until the situation is restored to normal.

#### **Duty to prevent or reduce the spread of asbestos**

**16.** Every employer shall prevent or, where this is not reasonably practicable, reduce to the lowest level reasonably practicable the spread of asbestos from any place where work under his control is carried out.

#### **Cleanliness of premises and plant**

**17.** Every employer who undertakes work which exposes or is liable to expose his employees to asbestos shall ensure that—

- (a) the premises, or those parts of the premises where that work is carried out, and the plant used in connection with that work are kept in a clean state; and
- (b) where such work has been completed, the premises, or those parts of the premises where the work was carried out, are thoroughly cleaned.

#### **Designated Areas**

**18.—(1)** Every employer shall ensure that any area in which work under his control is carried out is designated as—

- (a) an asbestos area, subject to regulation 3(2), where any employee would be liable to be exposed to asbestos in that area;
- (b) a respirator zone where the concentration of asbestos fibres in the air in that area would exceed or would be liable to exceed the control limit.

(2) Asbestos areas and respirator zones shall be clearly and separately demarcated and identified by notices indicating—

- (a) that the area is an asbestos area or a respirator zone or both, as the case may be; and
- (b) in the case of a respirator zone, that the exposure of an employee who enters it is liable to exceed the control limit and that respiratory protective equipment must be worn.

(3) The employer shall not permit any employee, other than an employee who by reason of his work is required to be in an area designated as an asbestos area or a respirator zone, to enter or remain in any such area and only employees who are so permitted shall enter or remain in any such area.

(4) Every employer shall ensure that only competent employees shall—

- (a) enter a respirator zone; and
- (b) supervise any employees who enter a respirator zone,

and for the purposes of this paragraph a competent employee means an employee who has received adequate information, instruction and training in compliance with regulation 10.

(5) Every employer shall ensure that—

- (a) his employees do not eat, drink or smoke in an area designated as an asbestos area or a respirator zone; and
- (b) arrangements are made for such employees to eat or drink in some other place.

### **Air Monitoring**

**19.—**(1) Subject to paragraph (2), every employer shall monitor the exposure of his employees to asbestos by measurement of asbestos fibres present in the air—

- (a) at regular intervals; and
- (b) when a change occurs which may affect that exposure.

(2) Paragraph (1) shall not apply where—

- (a) the exposure of an employee is not liable to exceed the control limit; or
- (b) the employer is able to demonstrate by another method of evaluation that the requirements of regulation 11(1) and (5) have been complied with.

(3) The employer shall keep a suitable record of—

- (a) monitoring carried out in accordance with paragraph (1); or
- (b) where he decides that monitoring is not required because paragraph 2(b) applies, the reason for that decision.

(4) The record required by paragraph (3), or a suitable summary thereof, shall be kept—

- (a) in a case where exposure is such that a health record is required to be kept under regulation 22 for at least 40 years; or
- (b) in any other case, for at least 5 years,

from the date of the last entry made in it.

(5) In relation to the record required by paragraph (3), the employer shall—

- (a) on reasonable notice being given, allow an employee access to his personal monitoring record;
- (b) provide the Executive with copies of such monitoring records as the Executive may require; and
- (c) if he ceases to trade, notify the Executive forthwith in writing and make available to the Executive all monitoring records kept by him.

### **Standards for air testing and site clearance certification**

**20.—**(1) In this regulation “site clearance certificate for reoccupation” means a certificate issued to confirm that premises or parts of premises where work with asbestos has been carried out have been thoroughly cleaned upon completion of that work in accordance with regulation 17(b).

(2) Every employer who carries out any measurement of the concentration of asbestos fibres present in the air shall ensure that he meets criteria equivalent to those set out in the paragraphs of ISO 17025 which cover organisation, quality systems, control of records, personnel,

accommodation and environmental conditions, test and calibration methods, method validation, equipment, handling of test and calibration items, and reporting results.

(3) Every employer who requests a person to carry out any measurement of the concentration of asbestos fibres present in the air shall ensure that that person is accredited by an appropriate body as complying with ISO 17025.

(4) Every employer who requests a person to assess whether premises or parts of premises where work with asbestos has been carried out have been thoroughly cleaned upon completion of that work and are suitable for reoccupation such that a site clearance certificate for reoccupation can be issued shall ensure that that person is accredited by an appropriate body as complying with the paragraphs of ISO 17020 and ISO 17025 which cover organisation, quality systems, control of records, personnel, accommodation and environmental conditions, test and calibration methods, method validation, equipment, handling of test and calibration items, and reporting results.

(5) Paragraphs (2) and (3) shall not apply to work carried out in a laboratory for the purposes only of research.

### **Standards for analysis**

**21.**—(1) Every employer who analyses a sample of any material to determine whether it contains asbestos shall ensure that he meets criteria equivalent to those set out in the paragraphs of ISO 17025 which cover organisation, quality systems, control of records, personnel, accommodation and environmental conditions, test and calibration methods, method validation, equipment, handling of test and calibration items, and reporting results.

(2) Every employer who requests a person to analyse a sample of any material taken to determine whether it contains asbestos shall ensure that that person is accredited by an appropriate body as complying with ISO 17025.

(3) Paragraphs (1) and (2) shall not apply to work carried out in a laboratory for the purposes only of research.

### **Health records and medical surveillance**

**22.**—(1) Subject to regulation 3(2), every employer shall ensure that—

- (a) a health record, containing particulars approved by the Executive, relating to each of his employees who is exposed to asbestos is maintained; and
- (b) that record or a copy thereof is kept available in a suitable form for at least 40 years from the date of the last entry made in it.

(2) Subject to regulation 3(2), every employer shall ensure that each of his employees who is exposed to asbestos is under adequate medical surveillance by a relevant doctor.

(3) The medical surveillance required by paragraph (2) shall include—

- (a) a medical examination not more than 2 years before the beginning of such exposure; and
- (b) periodic medical examinations at intervals of not more than 2 years or such shorter time as the relevant doctor may require while such exposure continues,

and each such medical examination shall include a specific examination of the chest.

(4) Where an employee has been examined in accordance with paragraph (3), the relevant doctor shall issue a certificate to the employer and employee stating—

- (a) that the employee has been so examined; and
- (b) the date of the examination,

and the employer shall keep that certificate or a copy thereof for at least 4 years from the date on which it was issued.

(5) An employee to whom this regulation applies shall, when required by his employer and at the cost of the employer, present himself during his working hours for such examination and tests as may be required for the purposes of paragraph (3) and shall furnish the relevant doctor with such information concerning his health as the relevant doctor may reasonably require.

(6) Where, for the purpose of carrying out his functions under these Regulations, a relevant doctor requires to inspect any record kept for the purposes of these Regulations, the employer shall permit him to do so.

(7) Where medical surveillance is carried out on the premises of the employer, the employer shall ensure that suitable facilities are made available for the purpose.

(8) The employer shall—

- (a) on reasonable notice being given, allow an employee access to his personal health record;
- (b) provide the Executive with copies of such personal health records as the Executive may require; and
- (c) if he ceases to trade, notify the Executive forthwith in writing and make available to the Executive all personal health records kept by him.

(9) Where, as a result of medical surveillance, an employee is found to have an identifiable disease or adverse health effect which is considered by a relevant doctor to be the result of exposure to asbestos at work the employer of that employee shall—

- (a) ensure that a suitable person informs the employee accordingly and provides the employee with information and advice regarding further medical surveillance;
- (b) review the risk assessment;
- (c) review any measure taken to comply with regulation 11 taking into account any advice given by a relevant doctor or by the Executive;
- (d) consider assigning the employee to alternative work where there is no risk of further exposure to asbestos, taking into account any advice given by a relevant doctor; and
- (e) provide for a review of the health of every other employee who has been similarly exposed, including a medical examination (which shall include a specific examination of the chest) where such an examination is recommended by a relevant doctor or by the Executive.

### **Washing and changing facilities**

**23.**—(1) Every employer shall ensure that, for any of his employees who is exposed or liable to be exposed to asbestos, there be provided—

- (a) adequate washing and changing facilities;
- (b) where he is required to provide protective clothing, adequate facilities for the storage of—
  - (i) that protective clothing, and
  - (ii) personal clothing not worn during working hours; and
- (c) where he is required to provide respiratory protective equipment, adequate facilities for the storage of that equipment.

(2) The facilities provided under paragraph (1) for the storage of—

- (a) personal protective clothing;
- (b) personal clothing not worn during working hours; and
- (c) respiratory protective equipment,

shall be separate from each other.

### **Storage, distribution and labelling of raw asbestos and asbestos waste**

**24.**—(1) Every employer who undertakes work with asbestos shall ensure that raw asbestos or waste which contains asbestos is not—

- (a) stored;
- (b) received into or despatched from any place of work; or

(c) distributed within any place of work, except in a totally enclosed distribution system, unless it is in a sealed container clearly marked in accordance with paragraphs (2) and (3) showing that it contains asbestos.

(2) Raw asbestos shall be labelled in accordance with the provision of Schedule 2.

(3) Waste containing asbestos shall be labelled—

(a) where the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004<sup>(a)</sup> apply, in accordance with those Regulations; and

(b) in any other case in accordance with the provisions of Schedule 2.

## PART 3

### PROHIBITIONS AND RELATED PROVISIONS

#### Interpretation of prohibitions

25.—(1) In this Part —

“asbestos cement” means a material which is predominantly a mixture of cement and chrysotile and which when in a dry state absorbs less than 30% water by weight;

“asbestos spraying” means the application by spraying of any material containing asbestos to form a continuous surface coating;

“extraction of asbestos” means the extraction by mining or otherwise of asbestos as the primary product of such extraction, but shall not include extraction which produces asbestos as a by-product of the primary activity of extraction; and

“supply” means supply by way of sale, lease, hire, hire-purchase, loan, gift or exchange for a consideration other than money, whether (in all cases) as principal or as agent for another.

(2) Any prohibition imposed on any person by this Part shall apply only to acts done in the course of a trade, business or other undertaking (whether for profit or not) carried on by him.

(3) Any prohibition imposed by this Part on the importation into the United Kingdom, or on the supply or use of asbestos shall not apply to the importation, supply or use of asbestos solely for the purposes of research, development or analysis.

(4) Where in this Part it is stated that asbestos has intentionally been added to a product or is intentionally added, it will be presumed where—

(a) asbestos is present in any product; and

(b) asbestos is not a naturally occurring impurity of that product, or of any component or constituent thereof,

that the asbestos has intentionally been added or is intentionally added, as the case may be, subject to evidence to the contrary being adduced in any proceedings.

#### Prohibitions of exposure to asbestos

26.—(1) No person shall undertake asbestos spraying or working procedures that involve using low-density (less than 1g/c<sup>3</sup>) insulating or soundproofing materials which contain asbestos.

(2) Every employer shall ensure that no employees are exposed to asbestos during the extraction of asbestos.

(3) Every employer shall ensure that no employees are exposed to asbestos during the manufacture and processing of asbestos products or of products containing intentionally added asbestos, except during the treatment and disposal of products resulting from demolition and asbestos removal.

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(a)S.I. 2004/568.

(4) In the case of chrysotile only, the prohibition in paragraph (3) is subject to the exception in paragraph 2 of Schedule 3.

#### **Prohibition of the importation of asbestos**

**27.**—(1) Subject to paragraph (2), the importation into the United Kingdom of asbestos or of any product to which asbestos has intentionally been added is prohibited and any contravention of this paragraph shall be punishable under the Customs and Excise Management Act 1979(a) and not as a contravention of a health and safety regulation.

(2) In the case of chrysotile only, the prohibition in paragraph (1) is subject to the exceptions in paragraphs 1, 2 and 3 of Schedule 3.

#### **Prohibition of the supply of asbestos**

**28.**—(1) Subject to paragraphs (2) and (3), no person shall supply, other than solely for the purpose of disposal, asbestos or any product to which asbestos has intentionally been added.

(2) In the case of chrysotile only, the prohibition in paragraph (1) shall not apply where the asbestos or the product was in use before 24th November 1999, except in the case of a product to which asbestos has intentionally been added of which the supply was prohibited by regulation 7 of the Asbestos (Prohibitions) Regulations 1992(b) as in force immediately before 24th November 1999.

(3) In the case of chrysotile only, the prohibition in paragraph (1) is subject to the exceptions in paragraphs 1 and 2 of Schedule 3.

#### **Prohibition of the use of asbestos**

**29.**—(1) Subject to paragraphs (2) to (6), no person shall use, except in the course of any activity in connection with its disposal, asbestos or any product to which asbestos has intentionally been added.

(2) In the case of products containing crocidolite or asbestos grunerite (amosite), the prohibition in paragraph (1) shall not apply where the product was in use before 1st January 1986.

(3) In the case of products containing any other form of asbestos than crocidolite or asbestos grunerite (amosite), but excepting chrysotile, the prohibition in paragraph (1) shall not apply where the product was in use before 1st January 1993.

(4) In the case of chrysotile only, the prohibition in paragraph (1) shall not apply where the asbestos or product was in use before 24th November 1999, except in the case of a product containing chrysotile of which the supply was prohibited by regulation 7 of the Asbestos (Prohibitions) Regulations 1992 as in force immediately before 24th November 1999.

(5) Notwithstanding paragraph (4), no person shall use, except in the course of any activity in connection with its disposal,—

- (a) asbestos cement;
- (b) any board, panel or tile, all or part of which has been painted with paint containing chrysotile; or
- (c) any board, panel or tile, all or part of which has been covered in a textured finishing plaster used for decorative purposes and containing chrysotile,

unless it is installed in or forms part of any premises or plant and, before 24th November 1999, it was installed in or formed part of those same premises or plant.

(6) In the case of chrysotile only, the prohibition in paragraph (1) is subject to the exceptions in paragraphs 1 and 2 of Schedule 3.

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(a) 1979 c.2.

(b) S.I. 1992/3067.

### Labelling of products containing asbestos

**30.**—(1) Subject to paragraph (2), a person shall not supply under an exception in Schedule 3 or an exemption granted pursuant to regulation 32 or regulation 33 a product which contains asbestos unless that product is labelled in accordance with the provisions of Schedule 2.

(2) Where a component of a product contains asbestos, it shall be sufficient compliance with this regulation if that component is labelled in accordance with the provisions of Schedule 2 except that where the size of that component makes it impossible for a label to be fixed to it neither that component nor the product need be labelled.

### Additional provisions in the case of exceptions and exemptions

**31.**—(1) Where under an exception in Schedule 3 or an exemption granted pursuant to regulation 32 or regulation 33 asbestos is used in a work process or is produced by a work process, the employer shall ensure that the quantity of asbestos and materials containing asbestos at the premises where the work is carried out is reduced to as low a level as is reasonably practicable.

(2) Subject to paragraph (3), where under an exception in Schedule 3 or an exemption granted pursuant to regulation 32 or regulation 33 a manufacturing process which gives rise to asbestos dust is carried out in a building, the employer shall ensure that any part of the building in which the process is carried out is—

- (a) so designed and constructed as to facilitate cleaning; and
- (b) is equipped with an adequate and suitable vacuum cleaning system which shall, where reasonably practicable, be a fixed system.

(3) Paragraph 2(a) shall not apply to a building in which, prior to 1st March 1988, there was carried out a process to which either—

- (a) as then in force, regulation 13 of the Asbestos Regulations 1969<sup>(a)</sup> applied and the process was carried out in compliance with that regulation; or
- (b) that regulation did not apply.

## PART 4

### MISCELLANEOUS

#### Exemption certificates

**32.**—(1) Subject to paragraph (2), the Executive may, by a certificate in writing, exempt any person or class of persons or any product containing asbestos or class of such products from all or any of the requirements or prohibitions imposed by regulations 4, 8, 12, 13, 21, 22(5) to (7), 27, 28 and 29 of these Regulations and any such exemption may be granted subject to conditions and to a limit of time and may be revoked by a further certificate in writing at any time.

(2) The Executive shall not grant any exemption under paragraph (1) unless having regard to the circumstances of the case and in particular to—

- (a) the conditions, if any, which it proposes to attach to the exemption; and
- (b) any other requirements imposed by or under any enactments which apply to the case,

it is satisfied that the health or safety of persons who are likely to be affected by the exemption will not be prejudiced in consequence of it.

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(a) S.I. 1969/690—revoked by S.I. 1987/2115.

### Exemptions relating to the Ministry of Defence

**33.**—(1) The Secretary of State for Defence may, in the interests of national security, exempt any person or class of persons from all or any of the prohibitions imposed by Part 3 of these Regulations by a certificate in writing, and any such exemption may be granted subject to conditions and to a limit of time and may be varied or revoked by a further certificate in writing at any time.

### Extension outside Great Britain

**34.** These Regulations shall apply to any work outside Great Britain to which sections 1 to 59 and 80 to 82 of the Health and Safety at Work etc. Act 1974 apply by virtue of the Health and Safety at Work etc. Act 1974 (Application Outside Great Britain) Order 2001(a) as they apply to work in Great Britain.

### Revocations, amendments and savings

**35.**—(1) The revocations listed in Schedule 4 shall have effect.

(2) The amendments listed in Schedule 5 shall have effect.

(3) Any record or register required to be kept under any Regulations revoked either by paragraph (1) or by regulation 27(1) of the Control of Asbestos at Work Regulations 2002(b) shall, notwithstanding that revocation, be kept in the same manner and for the same period as specified in those Regulations as if these Regulations had not been made, except that the Executive may approve the keeping of records at a place or in a form other than at the place where, or in the form which, records were required to be kept under the Regulations so revoked.

### Defence

**36.** Subject to regulation 21 of the Management of Health and Safety at Work Regulations 1999(c), in any proceedings for an offence consisting of a contravention of Part 2 of these Regulations it shall be a defence for any person to prove that he took all reasonable precautions and exercised all due diligence to avoid the commission of that offence.

Signed by authority of the Secretary of State

Day Month 200X

*Name*  
Minister of State  
Department for Work and Pensions

---

(a) S.I. 2001/2127.

(b) S.I. 2002/2675.

(c) S.I. 1999/3242, amended by S.I. 2003/2457.

## SCHEDULE 1

Regulation 9(1)

## PARTICULARS TO BE INCLUDED IN A NOTIFICATION

The following particulars are to be included in a notification made in accordance with regulation 9(1), namely—

- (a) the name and address of the notifier and the address and telephone number of his usual place of business;
- (b) a brief description of—
  - (i) the location of the work site,
  - (ii) the type(s) of asbestos to be used or handled (classified in accordance with regulation (2),
  - (iii) the maximum quantity of asbestos of each type to be held at any one time on the premises at which the work is to take place,
  - (iv) the activities and processes involved,
  - (v) the number of workers involved, and
  - (vi) the measures taken to limit the exposure of employees to asbestos, and
- (c) the date of the commencement of the work and its expected duration.

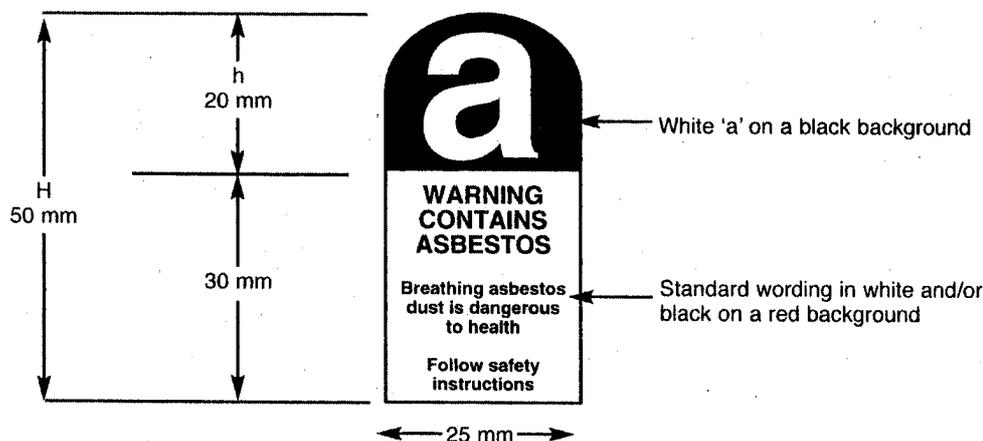
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**SCHEDULE 2**      Regulations 14(4), 24(2) and (3) and 30(2)

**THE LABELLING OF RAW ASBESTOS, ASBESTOS WASTE AND  
PRODUCTS CONTAINING ASBESTOS**

- 1.—(1) Subject to sub-paragraphs (2) and (3) of this paragraph, the label to be used on—
- (a) raw asbestos (together with the labelling required under the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002(a) and the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004(b);
  - (b) asbestos waste, when required to be so labelled by regulation 24(3); and
  - (c) products containing asbestos, including used protective clothing to which regulation 14(2) applies,

shall be in the form and in the colours of the following diagram and shall comply with the specifications set out in paragraphs 2 and 3.



(2) In the case of a product containing crocidolite, the words “contains asbestos” shown in the diagram shall be replaced by the words “contains crocidolite/blue asbestos”.

(3) Where the label is printed directly onto a product, a single colour contrasting with the background colour may be used.

2. The dimensions in millimetres of the label referred to in paragraph 1(1) shall be those shown on the diagram in that paragraph, except that larger measurements may be used, but in that case the dimension indicated as  $h$  on the diagram shall be 40% of the dimension indicated as  $H$ .

3. The label shall be clearly and indelibly printed so that the words in the lower half of the label can be easily read, and those words shall be printed in black or white.

4.—(1) Where a product containing asbestos may undergo processing or finishing it shall bear a label containing safety instructions appropriate to the particular product and in particular the following instructions—

“operate if possible out of doors in a well-ventilated place”;

“preferably use hand tools or low speed tools equipped, if necessary, with an appropriate dust extraction facility. If high speed tools are used, they should always be so equipped”;

(a) S.I. 2002/1689, as amended by S.I. 2004/568.

(b) S.I. 2004/568.

“if possible, dampen before cutting or drilling”; and

“dampen dust, place it in a properly closed receptacle and dispose of it safely”.

(2) Additional safety information given on a label shall not detract from or contradict the safety information given in accordance with sub-paragraph (1).

**5.**—(1) Labelling of packaged and unpackaged products containing asbestos in accordance with the foregoing paragraphs shall be effected by means of—

- (a) an adhesive label firmly affixed to the product or its packaging, as the case may be;
- (b) a tie-on label firmly attached to the product or its packaging, as the case may be; or
- (c) direct printing onto the product or its packaging, as the case may be.

(2) Where, in the case of an unpackaged product containing asbestos, it is not reasonably practicable to comply with the provisions of sub-paragraph (1) the label shall be printed on a suitable sheet accompanying the product.

(3) Labelling of raw asbestos and asbestos waste shall be effected in accordance with sub-paragraph (1)(a) or (c).

(4) For the purposes of this Schedule but subject to sub-paragraph (5), a product supplied in loose plastic or other similar wrapping (including plastic and paper bags) but no other packaging, shall be treated as being supplied in a package whether the product is placed in such wrapping at the time of its supply or was already so wrapped previously.

(5) No wrapping in which a product is placed at the time of its supply shall be regarded as packaging if any product contained in it is labelled in accordance with the requirements of this Schedule or any other packaging in which that product is contained is so labelled.

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**SCHEDULE 3** Regulations 26(3), 27(2), 28(3) and 29(6)

**EXCEPTIONS TO THE PROHIBITIONS ON THE IMPORTATION,  
SUPPLY AND USE OF CHRYSOTILE**

- 1.** Regulations 27(1), 28(1) and 29(1) shall not apply to the products described in paragraph 4 of this Schedule,
- 2.** Where it is not practicable for an employer to substitute for chrysotile a substance which, under the conditions of its use, does not create a risk to the health of his employees or creates a lesser risk than that created by chrysotile, regulations 26(3), 27(1), 28(1) and 29(1) shall not apply to—
  - (a) the products described in paragraph 5 of this Schedule,
  - (b) chrysotile, or products to which chrysotile has intentionally been added, required solely for the manufacture of the products described in paragraph 5 of this Schedule.
- 3.** Regulation 27(1) shall not apply to the products described in paragraph 6 of this Schedule.
- 4.** Brake linings within the meaning of the Road Vehicles (Brake Linings Safety) Regulations 1999<sup>(a)</sup>.
- 5.** Diaphragms for use in electrolytic cells in existing electrolysis plants for chlor-alkali manufacture.
- 6.** Receptacles used for the storage of acetylene gas under pressure and in use before 24th November 1999.

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<sup>(a)</sup> S.I. 1999/2978, as amended by S.I. 2003/3314.

## SCHEDULE 4

Regulation 35(1)

## REVOCATIONS

<i>Instruments revoked</i>	<i>References</i>	<i>Extent of revocation</i>
The Asbestos (Licensing) Regulations 1983	S.I. 1983/1649	The whole Regulations
The Personal Protective Equipment at Work Regulations 1992	S.I. 1992/2966	Schedule 2 Part VII
The Asbestos (Prohibitions) Regulations 1992	S.I. 1992/3067	The whole Regulations
The Asbestos (Licensing) (Amendment) Regulations 1998	S.I. 1998/3233	The whole Regulations
The Asbestos (Prohibitions) (Amendment) Regulations 1999	S.I. 1999/2373	The whole Regulations
The Asbestos (Prohibitions) (Amendment) (No. 2) Regulations 1999	S.I. 1999/2977	The whole Regulations
The Asbestos (Prohibitions) (Amendment) Regulations 2003	S.I. 2003/1889	The whole Regulations
The Control of Asbestos at Work Regulations 2002	S.I. 2002/2675	The whole Regulations
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004	S.I. 2004/568	Schedule 13 paragraph 12(2)
The Fire and Rescue Services Act 2004 (Consequential Amendments) (England) Order 2004	S.I. 2004/3163	Article 63
The Fire (Scotland) Act 2005 (Consequential Modifications and Amendments) (No 2) Order 2005	S.S.I. 2005/344	In Schedule 1 Part 1 the heading "The Control of Asbestos at Work Regulations 2002" and paragraph 26

## SCHEDULE 5

Regulation 35(2)

## AMENDMENTS

<i>Instruments amended</i>	<i>References</i>	<i>Amendments to have effect</i>
The Personal Protective Equipment at Work Regulations 1992	S.I. 1992/2966	In regulation 3(3)(c) for the reference to the Control of Asbestos at Work Regulations 1987 substitute a reference to these Regulations
The Health and Safety (Enforcing Authority) Regulations 1998	S.I. 1998/494	After paragraph 4 of Schedule 2 insert the following paragraph— “4A. The reference in paragraph 4(a)(iii) to a physically segregated area does not include an area segregated only in order to prevent the escape of asbestos; and in this paragraph “asbestos” has the meaning assigned to it by regulation 2(1) of the Control of Asbestos Regulations 2006”
The Provision and Use of Work Equipment Regulations 1998	S.I. 1998/2306	In regulation 12(5)(b) for the reference to the Control of Asbestos at Work Regulations 1987 substitute a reference to these Regulations
The Control of Substances Hazardous to Health Regulations 2002	S.I. 2002/2677	In regulation 5(1)(a)(iii) for the reference to the Control of Asbestos at Work Regulations 2002 substitute a reference to these Regulations
The Fur Farming (Compensation Scheme) (England) Order 2004	S.I. 2004/1964	In Schedule 6 Part 6 paragraph 14(a)(i) and (ii) after the words “the Control of Asbestos at Work Regulations 2002” insert in each case the words “or, from 6th April 2006, by Part 3 of the Control of Asbestos Regulations 2006
The Health and Safety (Fees) Regulations 2005	S.I. 2005/676	In the heading to regulation 5 for the reference to the Asbestos (Licensing) Regulations 1983 substitute a reference to regulation 8 of these Regulations.  In regulation 5(1) for the words “the Asbestos (Licensing) Regulations 1983 (“the 1983 Regulations”)” substitute the words “the Control of Asbestos Regulations 2006 (“the 2006 Regulations”)” and for each subsequent reference in regulation 5 to “the 1983 Regulations” substitute a reference to “the 2006 Regulations”  In the heading to Schedule 4 for the reference to the Asbestos (Licensing) Regulations 1983 substitute a reference to these Regulations.  In Schedule 4 Table 1 column 1 after the words “work with asbestos” delete the words “insulation or asbestos coating or asbestos insulating board”  In regulation 6(3) and in Schedule 5 columns 1 and 2 row (b) for the references to the Control of Asbestos at Work Regulations 2002 substitute in each case a reference to these Regulations

**EXPLANATORY NOTE**

*(This note is not part of the Regulations)*

1. These Regulations revoke and replace the Control of Asbestos at Work Regulations 2002 (S.I. 2002/2675), the Asbestos (Licensing) Regulations 1983 (S.I. 1983/1649) as amended, and revoke and re-enact, with modifications, the Asbestos (Prohibitions) Regulations 1992 (S.I. 1992/3067) as amended.

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**Draft Control of Asbestos  
Regulations 2006**

**DRAFT**  
**Draft Approved Code of  
Practice and Guidance**

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# Draft Control of Asbestos Regulations 2006

## Draft Approved Code of Practice and Guidance

### **Preface**

1 This publication contains the draft Control of Asbestos Regulations 2006 (the Asbestos Regulations)<sup>1</sup> together with an Approved Code of Practice (ACOP) and additional guidance.

2 For convenience, the text of the draft Regulations is included in italic type, with the accompanying guidance in normal type and the ACOP in bold type.

### **Application**

3 This ACOP applies to all work with asbestos. It applies in particular to work on or which disturbs building materials containing asbestos, asbestos sampling and laboratory analysis with the exception of clearing asbestos-contaminated land which is not specifically covered by this ACOP. An additional ACOP entitled *The management of asbestos in non-domestic premises*<sup>2</sup> is aimed at those who have repair and maintenance responsibilities for non-domestic premises.

4 Although only a court can give an authoritative interpretation of the law, in considering the application of this ACOP and guidance to people under your control and direction who are self-employed for tax and/or National Insurance purposes, they are likely to be treated as your employees for health and safety purposes. You may therefore need to take appropriate action to protect them. If you are in any doubt about who is responsible for the health and safety of a person working for you, this could be clarified and included in the terms of a contract. However, remember you cannot pass on a legal duty that falls to you under the Health and Safety at Work etc Act 1974 (HSW Act)<sup>3</sup> by means of a contract and you will still retain duties towards others by virtue of section 3 of the HSW Act. If you intend to employ such workers on the basis that you are not responsible for their health and safety, you should seek legal advice before doing so.

### **Meaning of 'reasonably practicable'**

5 The term 'so far as is reasonably practicable' appears often in this guidance. Where dutyholders must control risks 'so far as is reasonably practicable', they must take account of the degree of risk on the one hand, and on the other the sacrifice, whether in money, time or trouble, involved in the measures necessary to avert the risk. Unless it can be shown that there is a gross disproportion between these factors and that the risk is insignificant in relation to the time, trouble and expense, the dutyholder must take measures and incur cost to reduce the risk.

<sup>1</sup> Control of Asbestos Regulations 2006

<sup>2</sup> The management of asbestos in non-domestic premises. Control of Asbestos at Work Regulations Approved Code of Practice L127, HSE Books 2002, ISBN 0 7176 2382 3

<sup>3</sup> The Health and Safety at Work Act 1974. The Stationery Office 1974, ISBN 0 10 543774 3

### ***Consulting employees and/or safety representatives***

6 Proper consultation with those who do the work is crucial in helping to raise awareness of the importance of health and safety. It can make a significant contribution to creating and maintaining a safe and healthy working environment and an effective health and safety culture. In turn, this can benefit the business in making it more efficient by reducing the number of accidents and incidents of work related ill health.

7 Employers must consult safety representatives appointed by recognised trade unions under the *Safety Representatives and Safety Committee Regulations 1977*.<sup>4</sup> Employees who are not covered by such representatives must be consulted, either directly, or indirectly through elected representatives of employee safety under the *Health and Safety (Consultation with Employees) Regulations 1996*.<sup>5</sup> More information on an employer's duties under these Regulations is contained in a free leaflet *Consulting employees on health and safety: a guide to the law*.<sup>6</sup> Such consultations allow employees or their representatives to help employers develop training and control measures.

### ***General advice on complying with the control of asbestos regulations***

8 Most of the duties in the Asbestos Regulations are placed upon 'an employer', that is, the person who employs the workers who are liable to be exposed to asbestos in the course of their work. Although the Regulations always refer to an employer, regulation 3(1) makes it clear that self-employed people have the same duties towards themselves and others as an employer has towards his or her employees and others.

9 There is an exemption from certain regulatory requirements for particular, specified types of work with asbestos where any worker exposure will only be sporadic and of low intensity and the exposure level is below the control limit (regulation 3(2)). Such work will not require a licence. All other work with asbestos will require a licence (regulation 8); must be notified to the relevant enforcing authority (regulation 9); must have emergency arrangements in place (regulation 15(1)); must have designated asbestos areas (regulation 18); and those working with the asbestos must be subject to medical surveillance and have health records (regulation 22). Some of the guidance in this ACoP is specifically aimed at this more hazardous work and, for convenience, this work will be referred to as licensable work throughout the ACoP.

10 If the control limit for asbestos is exceeded in the working area, this triggers particular requirements including:

- a) immediately informing employees and their representatives (regulation 11(5)(b)(i));

<sup>4</sup> Safety Representative and Safety Committee Regulations. SI 1977/500, The Stationery Office 1977, ISBN 0 11 070500 9

<sup>5</sup> Health and Safety (Consultation with Employees) Regulations 1996. SI 1996/1513, The Stationery Office 1996, ISBN 0 11 054839 6

<sup>6</sup> Consulting employees on health and safety: a guide to the law. Leaflet INDG 232, HSE Books 1996 (single copy free or priced packs of 15) ISBN 0 7176 1615 0

- b) identification of the reasons for the control limit being exceeded and the introduction of appropriate measures to prevent it is being exceeded again (regulation 11(5)(b)(ii));
- c) stop work until adequate measures have been taken to reduce employees exposure to below the control limit (regulation 11(5)(b)(iii));
- d) a check of the effectiveness of the measures taken to reduce the levels of asbestos in the air by carrying out immediate air monitoring (regulation 11(5)(b)(iv));
- e) the designation of respirator zones; and
- f) the mandatory provision of respiratory protective equipment (regulation 11(3), although such equipment should always be provided if it is reasonably practicable to do so (regulation 11(2)).

11 Where work with asbestos forms part of a larger project there will be a particular need to co-operate with other employers, and there may be other Regulations which must be taken into account. However, the responsibility to ensure compliance with the provisions of the Asbestos Regulations remains with the employer or self-employed person described in paragraph 8.

*Regulation 1**Citation and Commencement*

**1** These Regulations may be cited as the Control of Asbestos Regulations 2006 and shall come into force on 6th April 2006.

*Regulation 2**Interpretation*

**2—(1)** In these Regulations—

“adequate” means adequate having regard only to the nature and degree of exposure to asbestos, and “adequately” shall be construed accordingly;

“appointed doctor” means a registered medical practitioner appointed for the time being in writing by the Executive for the purpose of these Regulations;

“approved” means approved for the time being in writing by the Health and Safety Commission or the Executive as the case may be;

“asbestos” means the following fibrous silicates—

- a) asbestos actinolite, CAS No 77536-66-4(9);
- b) asbestos gruenerite (amosite) CAS No 12172-73-5(10);
- c) asbestos anthophyllite, CAS No 77536-67-5(11);
- d) chrysotile, CAS No 12001-29-5(12);
- e) crocidolite, CAS NO 12001-28-4(13); and
- f) asbestos tremolite, CAS No 77536-68-6(14),

and references to “CAS” followed by a numerical sequence are references to CAS Registry Numbers assigned to chemicals by the Chemical Abstracts Service, a division of the American Chemical Society;

“the control limit” means a concentration of asbestos in the atmosphere when measured in accordance with the 1997 WHO recommended method, or by a method giving equivalent results to that method approved by the Health and Safety Commission, of 0.1 fibres per cubic centimetre of air averaged over a continuous period of 4 hours;

“control measure” means a measure taken to prevent or reduce exposure to asbestos (including the provision of systems of work and supervision, the cleaning of workplaces, premises, plant and equipment, and the provision and use of engineering controls and personal protective equipment);

“employment medical adviser” means an employment medical adviser appointed under section 56 of the Health and Safety at Work etc. Act 1974;

*“enforcing authority” means the Executive or local authority, determined in accordance with the provisions of the Health and Safety (Enforcing Authority) Regulations 1998<sup>(7)</sup>;*

*“the Executive” means the Health and Safety Executive;*

*“ISO 17025” means European Standard EN ISO/IEC 17025, “General requirements for the competence of testing and calibration laboratories” accepted by the Comité Européen de Normalisation Electrotechnique (CEN/CENELEC) on 6<sup>th</sup> December 1999<sup>(8)</sup> as revised or reissued from time to time;*

*“medical examination” includes any laboratory tests and X-rays that a relevant doctor may require;*

*“personal protective equipment” means all equipment (including clothing) which is intended to be worn or held by a person at work and which protects that person against one or more risks to his health, and any addition or accessory designed to meet that objective;*

*“relevant doctor” means an appointed doctor or an employment medical adviser;*

*“risk assessment” means the assessment of risk required by regulation 6(1)(a);*

*“the 1997 WHO recommended method” means the publication “Determination of airborne fibre concentrations. A recommended method, by phase-contrast optical microscopy (membrane filter method), WHO (World Health Organisation), Geneva 1997<sup>(9)</sup>;*

*(2) For the purposes of these Regulations, except as specified in regulation 11(3) and (5), in determining whether an employee is exposed to asbestos or whether the extent of such exposure exceeds the control limit, no account shall be taken of respiratory protective equipment which, for the time being, is being worn by that employee.*

*(3) Work with asbestos shall include—*

- a) work which consists of the removal, repair or disturbance of asbestos;*
- b) work which is ancillary to such work; and*
- c) supervision of such work and such ancillary work.*

*(4) A reference to asbestos in these Regulations shall include materials containing asbestos.*

<sup>(7)</sup> S.I. 1998/494, as amended by S.I. 1999/2024, S.I. 1999/3232, S.I. 2002/2675, and S.I. 2004/3168.

<sup>(8)</sup> Reference number EN ISO/IEC 17025: 2000.

<sup>(9)</sup> ISBN 92 4 154496 1.

***Asbestos definition***

12 Asbestos is the general term for the fibrous silicates listed in the definition. Any mixture which contains one or more of these fibrous silicates, no matter how small the quantity, is within the definition. For any work covered by these regulations "asbestos" also includes materials containing any of these fibrous silicates or mixtures of these fibrous silicates.

13 Debris containing asbestos is also covered by these Regulations. If it can be determined that the debris contains raw asbestos, asbestos insulation, asbestos coating or asbestos insulating board then, even though it may not be fulfilling its original purpose, ie the asbestos materials may no longer be coating or insulating anything, a licensed asbestos contractor will be required to carry out the work; only if the exceptional circumstances given in paragraph 42 apply will it not be necessary to use a licensed contractor.

***Materials containing asbestos***

**14 "Asbestos cement" means a material which is predominantly a mixture of cement and asbestos and which when in a dry state absorbs less than 30% water by the method prescribed in the following guidance paragraphs.**

15 Asbestos cement is mainly a mixture of chrysotile and cement, which is moulded and compressed to produce a range of asbestos products such as profiled roofing sheets and sidings, flat sheet, gutters, drainpipes, pressure pipes and flues. It is moulded to a high density and will absorb less water than asbestos insulation or asbestos insulating board. If you are in doubt about whether a flat board or sheet material is an asbestos cement or an asbestos insulating board, you will need a water absorption measurement using the technique outlined below. Asbestos analysis laboratories can do this work and a list of such laboratories can be obtained from the United Kingdom Accreditation Service (UKAS, 21-47 High Street, Feltham, Middlesex TW13 4UN – [www.UKAS.com](http://www.UKAS.com))

16 Place a sample in an oven overnight at a temperature of 50°C or until the difference between two consecutive weighings made at an interval of not less than 2 hours is less than 1%, taking a mean of two measurements.

17 Place the dry sample in a sealable plastic bag and weigh it. Measure the mass of the sample by subtracting the mass of the plastic bag, taking a mean of two measurements.

18 Immerse the sample in a beaker of water for a minimum of 15 minutes or until saturated with water (i.e. no visible signs of bubbles being released into the water).

19 Remove the sample from the beaker of water and place it on paper towel to remove any excess water, 1 minute per side (upper and lower surfaces).

20 Place the sample in a sealable plastic bag and weigh it. Measure the mass of the sample by subtracting the mass of the plastic bag, taking a mean of two measurements.

21 Calculate the percentage water absorbed by the material:  $((\text{wet weight} - \text{dry weight}) / \text{dry weight}) \times 100$ .

22 Work with asbestos cement does not pose the same risks as work with asbestos insulation, asbestos insulating board and asbestos coatings. Work with asbestos cement is less likely to create high concentrations of asbestos fibres in the air because the asbestos fibres are firmly bound into the cement. Therefore work with asbestos cement will normally fulfil the conditions for regulation 3(2) to apply. In such circumstances, work with asbestos cement does not require a licence or notification to the relevant enforcing authority.

**23 Asbestos-containing textured decorative coating means thin decorative and textured finishes such as paints and ceiling plasters used to produce visual effects. These coatings are designed to be decorative and any thermal or acoustic properties are incidental to their purpose. The proportion of asbestos in such coatings is normally less than 4%.**

24 Work with textured decorative coatings will not normally need to be carried out by person licensed to work with asbestos, as work with this material will usually fulfil the conditions for regulation 3(2) to apply.

25 The term 'coating' does not apply to the base material to which a coating has been applied, even if that base material contains asbestos. (The base material may, however, fall within the definition of asbestos insulation or asbestos insulating board).

**26 "Asbestos insulating board" (AIB) means any flat sheet, tile or building board consisting of a mixture of asbestos and other material except –**

**a) asbestos cement; or**

**b) any article of bitumen, plastic, resin or rubber which contains asbestos, and the thermal or acoustic properties of which are incidental to its main purpose;**

27 AIB is a lightly compressed board made from asbestos fibre and hydrated Portland cement or calcium silicate with other filler materials. Asbestos insulating board is covered by the Regulations whether or not the board is used for insulation. For instance the Regulations will still apply to asbestos insulating board when its main purpose is structural, eg as a wall partition. Asbestos wallboard (a more compressed variety of AIB) and millboards will also fall into this category.

**28 “Asbestos insulation” means any material containing asbestos and used for thermal, acoustic or other insulation purposes (including fire protection) except –**

- a) asbestos cement or asbestos insulating board, or**
- b) any article of bitumen, plastic, resin or rubber which contains asbestos and the thermal and acoustic properties of which are incidental to its main purpose;**

29 The term 'asbestos insulation' describes asbestos-containing products, which were not in practice applied as coatings: those used for heat, sound, fire protection and other insulation purposes. This includes preformed sections of pipe insulation, asbestos lagging and asbestos infill (asbestos used to fill the spaces between voids, applied between floors and packed around cables where they pass between floors). Millboards are also included in this definition. They have been used for insulation of electrical equipment and for thermal insulation

**30 "Asbestos coating" means a surface coating which contains asbestos for fire protection purposes or as both heat and sound insulation.**

31 'Asbestos coating' describes the various mixtures containing asbestos, which were widely used as surface coatings for fire protection purposes or as both heat and sound insulation. Most of these coatings were applied by spray but some were applied by hand.

32 'Asbestos coating' does not apply to the base material to which a coating has been applied, even if that base material contains asbestos. (The base material may, however, fall within the definition of asbestos insulation or asbestos insulating board.)

### ***Work with asbestos***

**33 “Work with asbestos” includes -**

- a) work which consists of the removal, repair or disturbance of asbestos;**
- b) work which is ancillary to such work (ancillary work); and**
- c) supervising work referred to in sub-paragraphs (a) or (b) above (supervisory work);**

**34 'Ancillary work' means work associated with the main work of repair, removal or disturbance of asbestos. Work carried out in an ancillary capacity requires a licence unless the main work (ie the removal, repair, disturbance activity) would result in worker exposure which fulfills the conditions for regulation 3(2) to apply.**

**35** ‘Supervisory work’ means work involving direct supervisory control over those removing, repairing or disturbing asbestos. Work carried out in a supervisory capacity requires a licence to work with asbestos unless the work being supervised would result in worker exposure which fulfills the conditions for regulation 3(2) to apply.

### **Competence**

**36** Any reference in this ACoP to competence, competent persons or competent employees is a reference to a person or employee who has received adequate information, instruction and training for the task being undertaken and can demonstrate an adequate understanding of the work, required control measures and appropriate regulations. In addition they must be able to apply this knowledge.

### *Regulation 3*

#### *Application of these Regulations*

**3**—(1) *These Regulations shall apply to a self-employed person as they apply to an employer and an employee and as if that self-employed person were both an employer and an employee.*

(2) *Regulations 8 (licensing), 9 (notification of work with asbestos), 15(1) (arrangements to deal with accidents, incidents and emergencies), 18(1)(a) (asbestos areas) and 22 (health records and medical surveillance) shall not apply where—*

- a) *the exposure of employees to asbestos fibres is sporadic and of low intensity;*
- b) *it is clear from the risk assessment that the exposure of any employee to asbestos will not exceed the control limit; and*
- c) *the work involves—*
  - i) *short, non-continuous maintenance activities,*
  - ii) *removal of materials in which the asbestos fibres are firmly linked in a matrix,*
  - iii) *encapsulation or sealing of asbestos-containing materials which are in good condition, or*
  - iv) *air monitoring and control, and the collection of samples to ascertain whether a specific material contains asbestos.*

(3) *Where a duty is placed by these Regulations on an employer in respect of his employees, he shall, so far as is reasonably practicable, be under a like duty in respect of any other person, whether at work or not, who may be affected by the work activity carried out by the employer except that the duties of the employer—*

- a) *under regulation 10 (information, instruction and training) shall not extend to persons who are not his employees unless those persons are on the premises where the work is being carried out; and*
- b) *under regulation 22 (health records and medical surveillance) shall not extend to persons who are not his employees.*

*(4) Regulation 17, insofar as it requires an employer to ensure that premises are thoroughly cleaned, shall not apply to—*

- a) *in England and Wales a fire and rescue authority within the meaning of the Fire and Rescue Services Act 2004<sup>(10)</sup>, or in Scotland a relevant authority within the meaning of section 6 of the Fire (Scotland) Act 2005<sup>(11)</sup>, in respect of premises attended by its employees for the purpose of fighting a fire or in an emergency; or*
- b) *the employer of persons who attend a ship in dock premises for the purpose of fighting a fire or in an emergency, in respect of any ship so attended,*

*and for the purposes of this paragraph “ship” includes all vessels and hovercraft which operate on water or land and water, and “dock premises” means a dock, wharf, quay, jetty or other place at which ships load or unload goods or embark or disembark passengers, together with neighbouring land or water which is used or occupied, or intended to be used or occupied, for those or incidental activities, and any part of a ship when used for those or incidental activities.*

*(5) These Regulations shall not apply to the master or crew of a ship or to the employer of such persons in respect of the normal shipboard activities of a ship’s crew which are carried out solely by the crew under the direction of the master, and for the purposes of this paragraph “ship” includes every description of vessel used in navigation, other than a ship forming part of Her Majesty’s Navy.*

### **Exceptions from some requirements**

37 Where regulation 3(2) applies (ie non-licensable work):

- a) the work will not need to be notified to the relevant Enforcing Authority,
- b) the work will not need to be carried out by holders of a licence to work with asbestos,
- c) the workers will not need to have a current medical and a current health record,
- d) the employer will not need to prepare specific asbestos emergency procedures,

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<sup>(10)</sup> 2004 c.21.  
<sup>(11)</sup> 2005 asp 5.

- e) the area around work does not need to be identified as an asbestos area.

**38 Work with the following materials is likely only to produce sporadic and low intensity worker exposure and can be categorised as complying with regulation 3(2) as long as 3(2)(b) is fulfilled, i.e. it is clear from the risk assessment that the control limit will not be exceeded:**

- a) asbestos cement,
- b) textured decorative coating which contains asbestos,
- c) any article of bitumen, plastic, resin or rubber which contains asbestos where its thermal or acoustic properties are incidental to its main purpose (e.g. vinyl floor tiles, electric cables, roofing felt), and
- d) asbestos materials such as paper linings, cardboards, felt , textiles, gaskets, washers, and rope where the products have no insulation purposes.

**39 Therefore, compliance with regulations 8 (licence), 9 (notification), 15(1) (emergency arrangements), 18(1)(a) (designated areas) and 22 (health records and medical surveillance) is not required in such circumstance. Those other regulations which apply to all work with asbestos must be observed**

40 Short non-continuous maintenance activities fulfilling the conditions for regulation 3(2) to apply (ie not requiring a licence) include the following type of tasks:

- a) Removal of asbestos paper linings using dust suppression techniques.
- b) Removal of asbestos friction linings using dust suppression techniques.
- c) Removal of asbestos fire blankets using dust suppression techniques.
- d) Removal of asbestos-containing bituminous products using either enclosure or dust suppression techniques.
- e) Removal of metal cladding lined with asbestos-containing bitumen by systematic removal and wrapping.
- f) Removal of asbestos containing floor tiles.

**41 Work, including supervisory and ancillary activities, with all other types of asbestos materials cannot be considered to comply with regulation 3(2) other than in exceptional circumstances such as those listed in paragraph 42, below. Except for these exceptional circumstances, this work is licensable work and must be notified to the relevant Enforcing Authority and be carried out by the holder of a licence to work with asbestos.**

### ***Exceptional circumstances***

**42** Short duration work such as picking up debris, removal of very small amounts of residual asbestos material left from previous asbestos removal work can be considered to conform to regulation 3(2)(c)(i) if the work conforms to the principles of good practice laid out in this document. In such circumstances, the worker exposure can be considered as sporadic and low intensity and the work is non-licensable.

### ***Asbestos Insulating Board***

**43** Work with asbestos insulating board that is short, non-continuous maintenance activity (but see following paragraph) can be considered to conform to regulation 3(2)(c)(i) if the work conforms to the principles of good practice laid out in this ACoP. In such circumstances, the work is non-licensable. For the work to be non-continuous any one person should not carry out work with these materials for longer than 1 hour in a seven-day period. As a general rule, for work with this material to be considered short, the total time spent on it for all workers should not exceed a total of two hours. This work includes anything ancillary to work with the material, including setting up enclosures and clearing any potentially affected area.

**44** Examples of short non-continuous maintenance activities include the following type of tasks when working with asbestos insulating board (for which there is greater detail in HSE guidance – Asbestos Essentials):

- a) Drilling between 1 to 20 holes, up to 20mm in diameter in asbestos insulation board up to 6mm thick when using a plastic enclosure over the drill, which is connected to a Type H vacuum cleaner.
- b) Drilling between 1 to 5 holes, up to 20mm in diameter in asbestos insulation board up to 6mm thick when drilling through paste.
- c) Drilling any hole in board greater than 6mm thick in asbestos insulating board when using a plastic enclosure over the drill, which is connected to Type H vacuum cleaner.
- d) Drilling any hole greater than 20 mm in diameter in asbestos insulating board when using a plastic enclosure over the drill, which is connected to Type H vacuum cleaner.
- e) The removal of a single asbestos insulating board ceiling tile, less than 0.36 m<sup>2</sup> using 500 gauge polythene sheeting and duct tape to cover surfaces which could become contaminated.
- f) The removal of a single asbestos insulating board ceiling tile, more than 0.36m<sup>2</sup> within a mini-enclosure.

- g) The removal of a door with asbestos insulating board, in good condition, by controlled removal and wrapping it intact in polythene sheeting.
- h) The removal of a single screwed-in asbestos insulating board, in good condition, less than 1 m<sup>2</sup> by using shadow vacuuming.
- i) Cleaning light fittings attached to asbestos insulating board, which are in a good condition and not liable to further damage, and by using a Type H vacuum cleaner.
- j) Repairing minor damage, e.g. a broken corner or scratches, to asbestos insulating board while using dust suppression techniques.
- k) Painting undamaged asbestos insulating board.
- l) Enclosing undamaged asbestos material to prevent impact damage.

### ***Asbestos-containing Textured Decorative Coatings and Asbestos Cement***

45 Materials in which the asbestos fibres are firmly linked in a matrix (see Regulation 3(2)(c)(ii)) include asbestos cement and asbestos-containing textured decorative coatings and so the exceptions listed in paragraph 37, above can be applied to most work with these materials. In all cases it must be clear from the risk assessment that the control limit will not be exceeded.

**46 In general, therefore, regulation 3(2) will apply to work with asbestos-containing textured decorative coatings and asbestos cement. However the risk assessment may identify factors that lead to the conclusion that the control limit would be exceeded and in this case the exemptions would not apply and the work would be licensable.**

47 Such factors might be a significantly higher proportion of asbestos in the material than normal, the material being more friable than normal, etc.

### ***Employers duties***

48 These Regulations place specific duties on employers, self-employed people and employees (see regulation 12(2) / paragraph 197 and regulation 22(5) / paragraph 332). Table 1 summarises the scope of the employer's (and self-employed people's) duties in respect of employees and other people.

**49 Employers must take into account people other than their own employees in the assessment required by regulation 6 and in the action taken to prevent or control exposure required by regulation 11.**

**50 Whenever two or more employers work with asbestos or are likely to come into contact with asbestos at the same time at the same workplace they should co-operate in order to meet their separate responsibilities towards their own and each other's employees as well as other people who may be affected by the work, and should also consult relevant safety representatives.**

Table 1 Summary of employer's (and self-employed people's) duties in respect of employees and others  
SFAIRP = so far as is reasonably practicable

Duty of employer relating to:	Duty for the protection of:		
	Employees	Other people on the premises	Other people likely to be affected by work
Regulations 5–9, 11, 13–15, 17–19 and 23	Yes	SFAIRP	SFAIRP
Regulation 10 – provision of information, instruction and training	Yes	SFAIRP	No
Regulation 22 – health records and medical surveillance	Yes	No	No

### ***Duties under other Regulations***

51 There are other people associated with the work covered by this ACOP who do not have direct duties under the Asbestos Regulations but may well have duties under other legislation. This may include analysts, clients (apart from regulation 4 of the Asbestos Regulations), planning supervisors, designers and principal contractors as defined by the Construction (Design and Management) Regulations (CDM).<sup>12</sup> People carrying out site clearance certification (e.g. analysts) have general duties under sections 3 and 36 of the HSW Act.

#### *Regulation 4*

##### *Duty to manage asbestos in non-domestic premises*

**4—(1)** *In this regulation “the dutyholder” means—*

- a) every person who has, by virtue of a contract or tenancy, an obligation of any extent in relation to the maintenance or repair of non-domestic premises or any means of access thereto or egress therefrom; or*
- b) in relation to any part of non-domestic premises where there is no such contract or tenancy, every person who has, to any extent, control of that part of those non-domestic premises or any means of access thereto or egress therefrom,*

*and where there is more than one such dutyholder, the relative contribution to be made by each such person in complying with the requirements of this regulation will be determined by the nature and extent of the maintenance and repair obligation owed by that person.*

<sup>12</sup> Construction (Design and Management) Regulations 1994. SI 1994/3140, The Stationery Office 1994, ISBN 0 11 085625 2

(2) *Every person shall cooperate with the dutyholder so far as is necessary to enable the dutyholder to comply with his duties under this regulation.*

(3) *In order to enable him to manage the risk from asbestos in non-domestic premises, the dutyholder shall ensure that a suitable and sufficient assessment is carried out as to whether asbestos is or is liable to be present in the premises.*

(4) *In making the assessment—*

- a) such steps as are reasonable in the circumstances shall be taken; and*
- b) the condition of any asbestos which is, or has been assumed to be, present in the premises shall be considered.*

(5) *Without prejudice to the generality of paragraph (4), the dutyholder shall ensure that—*

- a) account is taken of building plans or other relevant information and of the age of the premises; and*
- b) an inspection is made of those parts of the premises which are reasonably accessible.*

(6) *The dutyholder shall ensure that the assessment is reviewed forthwith if—*

- a) there is reason to suspect that the assessment is no longer valid; or*
- b) there has been a significant change in the premises to which the assessment relates.*

(7) *The dutyholder shall ensure that the conclusions of the assessment and every review are recorded.*

(8) *Where the assessment shows that asbestos is or is liable to be present in any part of the premises the dutyholder shall ensure that—*

- a) a determination of the risk from that asbestos is made;*
- b) a written plan identifying those parts of the premises concerned is prepared; and*
- c) the measures which are to be taken for managing the risk are specified in the written plan.*

(9) *The measures to be specified in the plan for managing the risk shall include adequate measures for—*

- a) monitoring the condition of any asbestos or any substance containing or suspected of containing asbestos;*

- b) *ensuring any asbestos or any such substance is properly maintained or where necessary safely removed; and*
- c) *ensuring that information about the location and condition of any asbestos or any such substance is—*
  - i) *provided to every person liable to disturb it, and*
  - ii) *made available to the emergency services.*

(10) *The dutyholder shall ensure that—*

- a) *the plan is reviewed and revised at regular intervals, and forthwith if—*
  - i) *there is reason to suspect that the plan is no longer valid, or*
  - ii) *there has been a significant change in the premises to which the plan relates;*
- b) *the measures specified in the plan are implemented; and*
- c) *the measures taken to implement the plan are recorded.*

(11) *In this regulation, a reference to—*

- a) *“the assessment” is a reference to the assessment required by paragraph (3);*
- b) *“the premises” is a reference to the non-domestic premises referred to in paragraph (1); and*
- c) *“the plan” is a reference to the plan required by paragraph (8).*

**52 Owners and occupiers of premises, who have maintenance and repair responsibilities for those premises, have a duty to assess them for the presence of asbestos and the condition of that asbestos. Where asbestos is present the dutyholder must ensure that the risk from the asbestos is assessed, that a written plan identifying where that asbestos is located is prepared and that measures to manage the risk from the asbestos are set out in that plan and are implemented. Other parties have a legal duty to co-operate with the dutyholder.**

53 This ACoP does not deal with regulation 4 which has its own ACoP entitled, ‘*The management of asbestos in non-domestic premises*’

#### *Regulation 5*

##### *Identification of the presence of asbestos*

**5 - An employer shall not undertake work in demolition, maintenance, or any other work which exposes or is liable to expose his employees to asbestos in respect of any premises unless either—**

- a) *he has carried out a suitable and sufficient assessment as to whether asbestos, and what type of asbestos, is present or is liable to be present in those premises; or*
- b) *if there is doubt as to whether asbestos is present in those premises he—*
  - i) *assumes that asbestos is present, and that it is not chrysotile alone, and*
  - ii) *observes the applicable provisions of these Regulations.*

### **Identification of asbestos**

54 As part of the management plan required by regulation 4 of the Asbestos Regulations, occupiers or owners of premises have an obligation to inform any person liable to disturb asbestos-containing materials, including maintenance workers, about the presence and condition of such materials.

55 If work to be carried out is part of a larger project which attracts the requirements of the Construction (Design and Management) Regulations (CDM)1994 (Note: The 94 CDM Regs are being revised), the health and safety plan prepared by the planning supervisor should contain information on whether the materials contain asbestos and what type they are.

56 The employer should not rely on the information of the other dutyholders if they cannot produce reasonable evidence regarding the nature of suspect material (eg survey details or analytical reports).

**57 If appropriate information is not available or is not in a reliable form, then before carrying out any work involving the potential disturbance of the fabric of a building the employer should:**

- a) **check themselves whether the material does contain asbestos, and if so the type, by having it analysed; or**
- b) **assume that the material contains the most hazardous types of asbestos, crocidolite (commonly known as blue asbestos) or amosite (commonly known as brown asbestos) and take the precautions outlined in the regulations and this ACOP for licensable work.**

#### *Regulation 6*

##### *Assessment of work which exposes employees to asbestos*

**6—(1) An employer shall not carry out work which is liable to expose his employees to asbestos unless he has—**

- a) *made a suitable and sufficient assessment of the risk created by that exposure to the health of those employees and of the steps that need to be taken to meet the requirements of these Regulations;*

- b) recorded the significant findings of that risk assessment as soon as is practicable after the risk assessment is made; and*
- c) implemented the steps referred to in sub-paragraph (a).*

*(2) Without prejudice to the generality of paragraph (1), the risk assessment shall—*

- a) subject to regulation 5, identify the type of asbestos to which employees are liable to be exposed;*
- b) determine the nature and degree of exposure which may occur in the course of the work;*
- c) consider the effects of control measures which have been or will be taken in accordance with regulation 11;*
- d) consider the results of monitoring of exposure in accordance with regulation 19;*
- e) set out the steps to be taken to prevent that exposure or reduce it to the lowest level reasonably practicable;*
- f) consider the results of relevant medical surveillance; and*
- g) include such additional information as the employer may need in order to complete the risk assessment.*

*(3) The risk assessment shall be reviewed regularly and forthwith if—*

- a) there is reason to suspect that the existing risk assessment is no longer valid;*
- b) there is a significant change in the work to which the risk assessment relates; or*
- c) the results of any monitoring carried out pursuant to regulation 19 show it to be necessary,*

*and where, as a result of the review, changes to the risk assessment are required, those changes shall be made and, where they relate to the significant findings of the risk assessment or are themselves significant, recorded.*

*(4) Where, in accordance with the requirement in paragraph (2)(a), the risk assessment has determined that the exposure of his employees to asbestos may exceed the control limit, the employer shall keep a copy of the significant findings of the risk assessment at those premises at which, and for such time as, the work to which that risk assessment relates is being carried out.*

### **General requirements for risk assessments**

58 Employers must decide whether it is practicable to avoid exposure to asbestos altogether. This can be difficult in building work, for example, but employers should consider whether it is possible to do the work in some way that avoids contact with asbestos, for example, routing cables so that ACMs are not disturbed. The decision to do work differently may be largely outside the control of the employer or contractor and lie in the hands of the client. In such cases consultation between the parties will be particularly appropriate to ensure that there is no overall increase in risk.

**59 If work which is liable to expose employees to asbestos is unavoidable, then before starting the work, employers must make a suitable and sufficient assessment of the risk created by the likely exposure to asbestos of employees and others who may be affected by the work and identify the steps required to be taken by the Asbestos Regulations.**

60 The purpose of the assessment is to ensure that people properly consider the scope of the works proposed to establish the extent of the potential risk in order to identify which legal provisions apply (including whether the work is licensable) and to determine the most appropriate work methods. This is to ensure that exposure to asbestos is adequately controlled so that the health of employees and other people is not put at risk.

61 For non-licensable work it is not always necessary to make an assessment before each individual job. Where an employer carries out work which involves very similar jobs on a number of sites on the same type of asbestos material, for example, electrical and plumbing jobs, only one assessment for that work may be needed, although the plan of work should always be job specific.

**62 However, for licensable work or where the degree and nature of the work varies significantly from site to site, for example in demolition or refurbishment, or where the type of asbestos material varies, a new assessment and plan of work (see regulation 7) will be necessary.**

**63 The assessment should be done in sufficient time to ensure compliance with the requirements of the Regulations and to enable the appropriate precautions to be undertaken before work commences. The significant findings of the assessment should be in writing, and should form the basis of the plan of work (regulation 7).**

64 Employers may also have duties under other Regulations to carry out a separate risk assessment; for instance, if employees are likely to be exposed to other risks such as falls from height, confined spaces or hot conditions, assessments will be required under the Management of Health and Safety at Work Regulations 1999 (MHSW).<sup>13</sup>

<sup>13</sup> Management of Health and Safety at Work Regulations 1999. SI 1999/3242, The Stationery Office 1999, ISBN 0 11 085625  
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65 If the risk assessment indicates that employee exposure may exceed the control limit, a copy of the assessment must be kept at the premises where the work is being undertaken.

**66 To decide whether or not the control limit is likely to be exceeded, it is first necessary to know what concentration of asbestos fibres are likely to be present in the air. This can be estimated using available data or past experience of the work in question, but where there is doubt it will be necessary to confirm the estimated exposures by measurement, using a method approved by the Health and Safety Commission (HSC). Guidance on methods approved by HSC may be found in the HSE publication entitled “Asbestos: The analysts’ guide for sampling, analysis and clearance procedures”<sup>14</sup>.**

**67 Employers must ensure that whoever carries out the assessment and provides advice on the prevention and control of exposure is competent to do so in accordance with regulation 10. This does not necessarily mean that particular qualifications are required. However, whoever carries out the assessment should:**

- a) have adequate knowledge, training and expertise in understanding the risks from asbestos and be able to make informed decisions about the risks and precautions that are needed;**
- b) know how the work activity may disturb asbestos;**
- c) be familiar with and understand the requirements of CAW and this ACOP;**
- d) have the ability and the authority to collate all the necessary, relevant information; and**
- e) be able to assess other non-asbestos risks on site.**

**68 To be suitable and sufficient, the assessment should include:**

- a) for non-licensed work, a statement of the reasons why the work with asbestos will fulfil the conditions for regulation 3(2) to apply and will not therefore be work which requires a licence;**
- b) a description of the work (eg repair, removal, encapsulation of ACM, maintenance and testing of plant and equipment contaminated with ACMs), and the expected scale and duration;**
- c) a description of the type(s) of asbestos present and the results of any analysis or a statement that the asbestos is not chrysotile alone;**

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<sup>14</sup> Asbestos: The analyst’s guide for sampling, analysis and clearance procedures. HSG 248, HSE Books 2005, ISBN 0 7176 2875 2

- d) a description of the quantity, extent and condition of any ACMs present ( see paragraph xx);
- e) details of expected exposures, noting:
  - i) whether they are liable to exceed the control limit and the number of people likely to be affected;
  - ii) the level of the expected exposure, so that suitable respiratory protective equipment (RPE) can be assessed and selected;
  - iii) whether anyone other than employees may be exposed, and their expected exposures;
  - iv) whether intermittent higher exposures may arise and their expected frequency and duration; and
  - v) results already available from air monitoring in similar circumstances;
- f) the steps to be taken to control exposure to the lowest level reasonably practicable, for example for licensable work, the type of controlled wetting and method of application, the use of local exhaust ventilation (LEV) (eg shadow vacuuming), glovebag and wrap and cut and for non-licensable building work the use of low dust methods, shadow vacuuming, wetting etc (see paragraphs 155 to 182);
- g) the steps taken to control the release of asbestos into the environment, for example 'mini-enclosures' in building work. Further guidance on 'mini-enclosures' can be found in the *Introduction to asbestos essentials* and in the *Asbestos essentials task manual*. For licensable work this will include decontamination procedures and use of hygiene units, enclosures and negative pressure; where an enclosure is not planned, including when wrap-and-cut and glove bags are being proposed, a full justification is required on how the potential spread of asbestos is to be prevented and should take into account accidental releases which may occur;
- h) procedures for the selection, provision, use and decontamination of personal protective equipment (PPE) which includes Respiratory Protective Equipment (RPE);
- i) procedures for the removal of waste and contaminated tools and equipment from the work area and the site;
- j) procedures for dealing with emergencies, including, for example, those associated with working in confined spaces; and

- k) any other information relevant to safe working practices such as other significant non-asbestos hazards like working at heights or in confined spaces.**

**69 The findings of the assessment covering paragraphs 67 and 68 are all deemed to be ‘significant’ and must be recorded as required by regulation 6(1)(b).**

70 Knowing the type of ACM (eg asbestos insulating board (AIB), asbestos insulation, asbestos coating, asbestos cement, asbestos-containing textured decorative coatings) is necessary to estimate the potential fibre release for assessment purposes; to select the most appropriate handling and removal techniques, as appropriate or combinations of techniques; and to determine whether the work will be licensable. It is essential, for example, to be able to distinguish between asbestos cement and AIB. Where there is doubt employers should err on the side of caution and assume the material is insulating board and take precautions accordingly. For ancillary work involving the testing and maintenance of plant and equipment the asbestos is most likely to be in the form of dust and the type of ACM may not be relevant. The condition of the material can have a significant effect on the assessment. Knowing the extent of the material (eg its length and span, whether it extends into other rooms and work areas) is also important so that the number of enclosures required, and the necessary arrangements for the transfer of waste, can be properly assessed. This will avoid any confusion over what work is being done and which ACMs will remain in place.

### ***Further risk assessment requirements for licensable work***

**71 For licensable work, to be suitable and sufficient the assessment should also include:**

- a) the reasons for the chosen work method. Except under exceptional circumstances it is not justifiable to work with licensable materials when the material is dry or the environment hot or with the use of power tools (see paragraph 73).**
- b) the arrangements required to ensure that the premises or parts of premises where the work has taken place are left clean and safe for reoccupation. These should include:
  - i) detail of the areas where clearance certification will be sought;**
  - ii) consideration of potential problems for clearance certification eg earth floors, limpet spray ingrained in concrete or tar like layers, wet areas which cannot be dried out and the presence of ACMs which are intended to remain in the areas after the work is complete;**
  - iii) consideration of the need for pre cleaning (often required before the setting up of any enclosure).****

**72 The elements listed in paragraph 71 are all deemed to be 'significant' and must be recorded as required by regulation 6(1)(b).**

**73** Hot work with asbestos is to be avoided. It will only be permissible in exceptional and fully justifiable circumstances. There are fundamental issues which make asbestos and hot working extremely difficult to manage and control. In particular, the various precautions necessary to protect workers from exposure to asbestos dust and to prevent its spread can result in a greatly increased thermal health risk. In addition to the heat stress issues, hot work can also lead to deterioration in asbestos control. All avenues should be explored to remove the heat source. Wherever possible hot plant should be shut down or turned off and allowed to cool before asbestos removal work commences. Work should be scheduled to be done during plant shutdown or annual holiday or in the evening or overnight when hot conditions are due to the climate. Where work arises at short notice through incidents or emergencies, then short term remedial action should be taken as far as possible (e.g. by making temporary repairs or encapsulation) until the work can be incorporated into a programmed plant shut down and carried out with the plant cold.

### ***Reviewing assessments***

**74 Employers should review risk assessments and, as appropriate, plans of work as part of the ongoing management of their health and safety systems and to ensure that the principles of good practice have been applied. A specific review should also take place if:**

- a) fibre control methods change;
- b) there is doubt about the efficiency of control measures;
- c) there is a significant change in the type of work, amount of asbestos or method of work; or
- d) the results of any air monitoring indicate the exposure levels to be higher than previously assessed.

**75** Where monitoring of exposure levels, or other information gathered during the course of work, indicates that the initial assessment was wrong in respect of either the duration of the task or the nature of the materials concerned, consideration should be given to reviewing the assessment and control measures and indeed whether the nature and extent of the exposure means that the work should be undertaken using different methods and equipment. Where work has been deemed not to require a licensed contractor that decision may need to be reviewed. Any changes subsequently made to the assessment and hence plans of work (regulation 7) must be recorded in writing.

*Regulation 7**Plans of work*

**7—(1)** *An employer shall not undertake any work with asbestos unless he has prepared a suitable written plan of work (hereinafter referred to in this regulation as “the plan of work”) detailing how that work is to be carried out.*

*(2) The employer shall keep a copy of the plan of work—*

- a) at those premises at which, and*
- b) for such time as,*

*the work to which the plan relates is being carried out.*

*(3) In cases of final demolition or major refurbishment of premises, the plan of work shall, so far as is reasonably practicable, and unless it would cause a greater risk to employees than if the asbestos had been left in place, specify that asbestos shall be removed before any other major works begin.*

*(4) The plan of work shall include in particular details of—*

- a) the nature and probable duration of the work;*
- b) the location of the place where the work is to be carried out;*
- c) the methods to be applied where the work involves the handling of asbestos or materials containing asbestos;*
- d) the characteristics of the equipment to be used for—*
  - i) protection and decontamination of those carrying out the work, and*
  - ii) protection of other persons on or near the worksite;*
- e) the measures which the employer intends to take in order to comply with the requirements of regulation 11; and*
- f) the measures which the employer intends to take in order to comply with the requirements of regulation 17.*

*(5) The employer shall ensure, so far as is reasonably practicable, that the work to which the plan of work relates is carried out in accordance with that plan and any subsequent written changes to it.*

***Plan of work***

**76** **For any work involving asbestos, including maintenance work that may disturb it, the employer of the workers involved must draw up a written plan of how the work is to be carried out before work starts. Employers must make sure their employees follow the plan of work (sometimes called a method statement) so far as it is reasonably**

**practicable to do so. Where unacceptable risks to health and/or safety are discovered while work is in progress, for example disturbance of hidden, missed or incorrectly identified ACMs, any work affecting the asbestos should be stopped except for that necessary to render suitable control and prevent further spread (see paragraphs 241 - 245 for further guidance). Where there is extensive damage to ACMs which causes contamination of the premises, or part of the premises, then the area should be immediately evacuated. Work should not restart until a new plan of work is drawn up or until the existing plan is amended. Some measures, for example, should only be carried out by licensed contractors.**

**77 For licensable work in particular, the plan of work should identify procedures to adopt in emergencies and indicate clearly what remedial measures can be undertaken by staff.**

78 In the case of demolition or refurbishment, the plan of work must specify that asbestos is removed before any other major work begins where this is reasonably practicable and does not cause a greater risk to employees than if the asbestos had been left in place. Where removal of ACMs is time consuming and resource intensive and involves a low hazard material such as asbestos-containing textured decorative coatings, then removal prior to demolition or major refurbishment is unlikely to be reasonably practicable.

79 The plan of work must include the following information:

- a) the nature and probable duration of the work;
- b) the number of persons involved in the work;
- c) the address and location where the work is to be carried out;
- d) the methods to be used to prevent or reduce exposure to asbestos, for example, the prevention and control measures, the arrangements for keeping premises and plant clean and the arrangements for the handling and disposing of asbestos waste; and
- e) the type of equipment, including PPE, used for:
  - i) the protection and decontamination of those carrying out the work; and
  - ii) the protection of other people present at or near the worksite.

80 It will usually be necessary for the plan to include the site layout and a description of the location and nature of the asbestos present and which ACMs will be disturbed by the work.

**81 Work should not take place unless a copy of the plan of work is readily available on site. Employees should be told what the plan contains and instructed on the work methods and controls to be used. The plan of work should also be brought to the attention of anyone who**

needs to see it, including those carrying out the visual inspection and/or air clearance monitoring once the work or section of work has come to an end. Employers should make a copy of the plan of work available on request to employees, safety representatives and elected representatives of employee safety.

***Further information to be included for licensable work***

**82** In addition to the information specified above, when licensable work is being carried out, the plan of work should be site specific and cover in sufficient detail the following information:

- a) the scope of the work as identified by the assessment (see subparagraphs 68(a – d))
- b) details of the hygiene facilities, transit route and decontamination arrangements, vacuum cleaners, air monitoring, protective clothing and RPE, communication between the inside and outside of the enclosure; and
- c) details of the use of barriers and signs, location of enclosures and airlocks, location of skips, negative pressure units, air monitoring, cleaning and clearance certification, emergency procedures.

83 As good practice, other items could be included in the plan such as details of checks undertaken for other hazards, the name(s) of the supervisor(s), the name of organisation that will undertake site clearance certification (see paragraphs 277 - 299), and details of any nearby ACMs and their extent so that there is no confusion over what work is being done and which ACMs will remain in place.

84 Generic assessments may form a useful starting point for plans of work/method statements but they need to be developed into documents that identify and address site-specific issues.

85 For the majority of licensed contractors it is a condition of their licence to notify the appropriate enforcing authority 14 days in advance of each job with specified information which is also contained in the plan of work.

*Regulation 8*

*Licensing of work with asbestos*

**8—(1)** *Subject to regulation 3(2), an employer shall not undertake any work with asbestos unless he holds a licence granted under paragraph (3) of this regulation.*

**(2)** *The Executive may grant a licence for work with asbestos if it considers it appropriate to do so and—*

- a) *the person who wishes the licence to be granted to him has made application for it on a form approved for the time being for the purposes of this regulation by the Executive; and*
- b) *the application was made at least 28 days before the date from which the licence is to run, or such shorter period as the Executive may allow.*

*(3) A licence under this regulation—*

- a) *shall come into operation on the date specified in the licence, and shall be valid for any period up to a maximum of three years that the Executive may specify in it; and*
- b) *may be granted subject to such conditions as the Executive may consider appropriate.*

*(4) The Executive may vary the terms of a licence under this regulation if it considers it appropriate to do so and in particular may—*

- a) *add further conditions and vary or omit existing ones; and*
- b) *reduce the period for which the license is valid or extend that period up to a maximum of three years from the date on which the licence first came into operation.*

*(5) The Executive may revoke a licence under this regulation if it considers it appropriate to do.*

*(6) The holder of a licence under this regulation shall return the licence to the Executive—*

- a) *when required by the Executive for any amendment; or*
- b) *following revocation.*

### ***Licensing of work with asbestos***

**86 This regulation means that you must not carry out work with asbestos (other than that fulfilling the conditions for regulation 3(2)) to apply, including supervisory and ancillary work and work with asbestos in your own premises with your own employees, unless you hold a licence issued under this Regulation and comply with its terms and conditions. This includes work with asbestos insulation, asbestos coatings (excluding asbestos-containing textured decorative coatings) and asbestos insulating board.**

**87 For supervisory work you need a licence when directly supervising licensable work but not if you are:**

- a) **the client who has engaged a licensed contractor to do the licensable work;**

- b) the principal or main contractor on a construction or demolition site if the licensable work is being done by a subcontractor holding an asbestos licence;
- c) an analyst checking that the area is clear of asbestos at the end of a job;
- d) carrying out quality control work such as:
  - i) atmospheric monitoring outside enclosures while asbestos removal work is in progress; or
  - ii) checking that work has been carried out to a standard which meets the terms of the contract;
- e) a consultant or other preparing the method statement; and
- f) a consultant or other reviewing tender submissions on behalf of the client

**88 For ancillary work, you will need a licence for:**

- a) setting up and taking down enclosures for the asbestos work;
- b) putting up and taking down scaffolding to provide access for licensable work where it is foreseeable that the scaffolding activity is likely to disturb the asbestos;
- c) maintaining negative pressure units;
- d) work done within an asbestos enclosure, such as sealing an electric motor in polythene and installing ducting to the motor to provide cooling air from outside the enclosure; and
- e) cleaning the structure, plant and equipment inside the enclosure.

**89 As a licence holder, you will be required:**

- a) to notify the work to the appropriate enforcing authority (regulation 9);
- b) to ensure medical surveillance is carried out for your employees/yourself (regulation 22);
- c) to maintain health records for employees/yourself (regulation 22);
- d) to prepare procedures in case of emergencies (regulation 15(1)); and
- e) demarcate the work areas appropriately (regulation 18(1)(a)).

90 All licences issued for work with asbestos are granted by HSE under the terms of this Regulation. Fees are payable for issuing licences,

reassessments and changes to licences. These fees are periodically updated by the Health and Safety (Fees) Regulations.

### ***Applications for licences***

91 You need to make applications for licences and for the renewal of licences on the approved form (FOD ASB1) (a specimen of which is reproduced at Annex 1). The form is available from:

The Health and Safety Executive  
Asbestos Licensing Unit  
Belford House  
59 Belford Road  
Edinburgh EH4 3UE  
Tel: 0131 247 2135

**92 The Regulations allow you to apply for a licence to do work with asbestos. Before the licence can be granted you will have to:**

- a) show adequate knowledge of the Health and Safety at Work etc Act 1974, the Control of Asbestos Regulations 2006, this Approved Codes of Practice, and other guidance on work with asbestos materials;**
- b) demonstrate competence;**
- c) intend to carry out work for which a licence is required within the licence period.**

93 However, you may wish to work with only one type of material, e.g. asbestos insulation. In this case, the licence, if issued, may only allow you to work with this material alone.

94 Your application will need to reach the Asbestos Licensing Unit at least 28 days before the date from which you wish the licence to run. In some circumstances, HSE may be prepared to issue a licence in a shorter period. Renewal applicants should note that it is not possible to extend an existing licence beyond its expiry date.

**95 The person(s) signing the application form will be required to declare that:**

- a) the information provided by the Asbestos Licensing Unit has been read and understood by [one of] the signatory, directors, partners, person responsible within the organisation for asbestos operations;**
- b) they have the appropriate authority within the organisation to represent and bind the company;**

- c) **the organisation intends to carry out work with asbestos-containing materials for which a licence is required under the Control of Asbestos Regulations 2006;**
- d) **to the best of their knowledge the answers given in the application are correct;**
- e) **they understand it is an offence to make a false declaration, which may result in an asbestos licence being revoked and or prosecution;**
- f) **they have informed their employees of the application.**

96 HSE issues all licences, even if licence holders carry out all their work with asbestos within premises that are inspected by local authority (LA) inspectors (these premises are listed in Table 2). Only HSE can amend the terms or conditions of, or revoke, a licence. HSE's Asbestos Licensing Unit works closely with all HSE Inspectorates and LA inspectors to keep records of the activities and performance of licence holders and to consider whether any changes need to be made to the conditions imposed on a licence holder.

### ***The Licence***

97 The licence will specify the terms and conditions laid down by HSE. The conditions imposed on you will depend upon HSE's assessment of your application. This includes a check on the information you give in the application form as well as an examination of your current performance record if you already hold a licence. HSE may refuse to issue a licence to you:

- a) If you have been convicted of a criminal offence involving work with asbestos;
- b) where a pattern of poor performance has emerged over several site visits, demonstrating evidence of poor working conditions and control. This will normally have resulted in enforcement action (e.g. conviction(s) for asbestos related offences, enforcement notices for asbestos related deficiencies, warning letters etc);
- c) if you cannot demonstrate that you have adequate knowledge or arrangements in place to protect the health of your employees and others during work with the relevant asbestos-containing materials;
- d) if you have been found guilty of health and safety offences;
- e) if you have had two enforcement notices issued against you within a 2-year period;
- f) if you have previously failed to comply with the conditions and limitations of a licence to work with asbestos;

- g) where Directors or Senior Managers have had a significant involvement in circumstances that have been considered suitable for licence refusal or revocation; or
- h) if you have breached non-HSE legislation which brings into doubt your reputation to be a licence holder

### ***Period of issue***

98 All licences are issued for a limited period of time so that HSE can regularly review your performance. New applicants are issued with an initial licence for a shorter period (usually for one year). When this is put forward for renewal the period is generally for three years unless you have a record of poor performance or you have not undertaken any work under the terms of your licence. In this case the period may be reduced, or the licence may not be renewed. The maximum period for a licence is 3 years.

99 If you have little previous experience of work with asbestos, or the relevant enforcing authority (HSE/LA) has not inspected your work, the terms of the licence may be more restrictive than if you are an experienced contractor who is well known to HSE/LA.

100 HSE may impose a shorter licence period on you if they want to check that you are taking adequate health and safety precautions during your work. This includes work with asbestos and any other work you carry out where you have failed to take adequate health and safety precautions. You may be informed by HSE that they may refuse to renew the licence when it is due to end if you do not improve your standard of protection for employees.

### ***Conditions that may be included in the licence form***

101 Regulation 8(4)(a) allows HSE to impose whatever conditions on the licence it considers appropriate.

**102 As a condition of your licence, you will normally also be required to submit additional documentation as part of the notification process, including a copy of your plan of work.**

**103 In the case of particularly difficult jobs, for example where the work may need extra precautions to those set out in published guidance, HSE may impose special conditions on you. These should be reflected in the plan of work (method statement) you send to the enforcing authority.**

104 HSE may also impose other conditions on you if inspectors have identified problems during inspection or if the work carries particular risks.

105 However, HSE will use the conditions of licensing to monitor closely the work of certain licence holders without placing unnecessary limitations or conditions on the work of competent employers and self-employed contractors.

### **Revocation of licences**

106 HSE has the power, under this regulation, to revoke licences where it considers it appropriate to do so. HSE will consider revocation if, for example:

- a) you breach any of the conditions or restrictions attached to your licence (e.g. if there is clear evidence that you have tried to avoid notification; you have worked with asbestos materials for which you are not licensed; etc);
- b) where a pattern of poor performance has emerged over several site visits, demonstrating evidence of poor working conditions and control. This will normally have resulted in enforcement action (e.g. conviction(s) for asbestos related offences, enforcement notices for asbestos related deficiencies, warning letters etc);
- c) there has been an extremely serious incident where significant breach(es) of asbestos related legislation have occurred. The failures that led to the breaches may be so significant that it is considered necessary to initiate revocation proceedings irrespective of whether or not enforcement action has occurred;
- d) if you have been convicted for a breach of health and safety legislation (not necessarily involving asbestos-related matters) that indicate you have a poor health and safety track record;
- e) if a false declaration is made when applying for a licence, which comes to light after a licence was granted;
- f) breaches of non-HSE legislation which brings into doubt the reputation of the licence holder.

107 Revocation is a very serious step, which could affect the livelihood of you and your employees. HSE therefore considers each case (and may, depending on the circumstances, go through a number of stages such as warning letters, enforcement notices, formal interviews, review board meetings, etc) before revoking a licence. HSE will take into consideration the performance history of your company and the particular circumstances before deciding whether or not to revoke your licence.

108 HSE's revocation policy is available on the HSE website.

### ***“Modified” revocation***

109 HSE will not consider a new licence application from an applicant who has previously had their licence revoked until they can demonstrate they can achieve and consistently maintain the required standards. Applications received in these circumstances will be subject to the full licence application process. It is generally accepted that the required improvement in standards are unlikely to be achieved in the short to medium term (approximately 2 years).

110 However there may be rare situations when it is possible for the applicant to bring about the required improvements within a shorter period of time. In these exceptional circumstances, if the applicant can demonstrate the required improvements and can give a commitment to continued compliance, within a four month period they may be assessed on the same basis as if their original application had been conditionally refused. HSE provides guidance on a conditional refusal.

### **Appeals**

111 You can make informal representations, in writing, against a decision to either revoke or not to renew your licence to the senior HSE manager directly responsible for the Asbestos Licensing Unit to be sent to the address at paragraph 91. If the matter is still not resolved, you can appeal to the Secretary of State for the Work and Pensions under section 44 of the Health and Safety at Work etc Act 1974. Normally the Secretary of State will appoint a person with relevant legal and/or practical experience to hear the appeal. The appeal may be decided on the basis of written submissions, but if either you or HSE want to be heard, that opportunity will be given

112 If you appeal against a decision you should include:

- a) your name and address;
- b) a photocopy of your current licence;
- c) the grounds for your appeal.

113 You should address your appeal to:

The Secretary of State for Work and Pensions  
Department for Work and Pensions (DWP),  
79 Whitehall,  
London, SW1A 2NS.

You can get more guidance on the appeals system from the enforcing authority.

### **Penalties**

114 If you are convicted in the Crown Court/High Court for carrying out work for which you do not hold a licence or for breaching a term or condition attached to your licence, you can be fined an unlimited amount, imprisoned for a term of up to two years, or both.

115 If the case is heard in a Magistrates or Sheriff Court the maximum penalty is £5000.

## Regulation 9

### Notification of work with asbestos

**9—(1)** *Subject to regulation 3(2), an employer shall not undertake any work with asbestos unless he has notified the appropriate office of the enforcing authority in writing of the particulars specified in Schedule 1 at least 14 days before commencing that work or such shorter time before as the enforcing authority may agree.*

*(2) Where an employer has notified work in accordance with paragraph (1) and there is a material change in that work which might affect the particulars so notified (including the cessation of the work), the employer shall forthwith notify the appropriate office of the enforcing authority in writing of that change.*

### **Notification of licensable work**

116 If you undertake licensable work you have to notify the appropriate enforcing authority with details of the proposed work. This gives the enforcing authorities the opportunity to assess your proposals for carrying out work with asbestos and to inspect the site either before or during the work.

117 You will normally be required to notify the relevant enforcing authority office 14 days before work begins, but the enforcing authority may allow a shorter period, e.g. in an emergency where there is a serious risk to the health and safety of any person. This shorter period is known as a 'waiver' or dispensation. You must normally notify each individual job to the enforcing authority (see Table 2 for information about which enforcing authority you should send the notification to).

118 You can use form FOD ASB5 for notification (see an example at Annex 2) available from the HSE website, local HSE offices or from the Asbestos Licensing Unit.

119 You are required to inform the enforcing authority in writing if there are changes to the work that might affect the particulars of the notification.

120 Your notification will need to include:

- a) your name and address and the address and telephone number of your usual place of business;
- b) a brief description of—
  - i) the location of the work site,
  - ii) the type(s) of asbestos to be used or handled (classified in accordance with regulation (2)),
  - iii) the maximum quantity of asbestos of each type to be held at any one time on the premises at which the work is to take place,
  - iv) the activities and processes involved,

- v) the number of workers involved,
- vi) the measures taken to limit the exposure of employees to asbestos, and
- vii) the date of the commencement of the work and its duration.

121 Table 2 tells you which enforcing authority to notify.

Table 2: How to identify the appropriate enforcing authority

<i>Type of premises</i>	<i>Authority to notify</i>
(a) Shops, offices, separate catering services including: <ul style="list-style-type: none"> <li>(i) Restaurants and cafes</li> <li>(ii) Coin-operated launderettes</li> <li>(iii) Sportsgrounds</li> <li>(iv) Entertainment, recreational and leisure activities, gyms, health clubs and therapeutic services including solaria</li> <li>(v) Exhibitions</li> <li>(vi) Church or religious meetings</li> <li>(vii) Hotels and boarding houses and residential accommodation including residential homes for the elderly, other than domestic premises</li> <li>(viii) Camping and caravan sites</li> <li>(ix) Wholesale and retail storage</li> <li>(x) Animal boarding and care establishments and zoos</li> <li>(xi) Tyre and exhaust replacement/repair premises</li> <li>(xii) Garden centres</li> <li>(xiii) Child care, playgroups, nurseries</li> <li>(xiv) Undertakers</li> </ul>	Unitary authority, district council (or equivalent)
(b) (i) Domestic premises <ul style="list-style-type: none"> <li>(ii) Factories and factory offices</li> <li>(iii) Civil engineering, construction and demolition sites</li> <li>(iv) Hospitals</li> <li>(v) Research and development establishments</li> <li>(vi) Local government services and educational establishments</li> <li>(vii) Fairgrounds</li> <li>(viii) Radio, television and film broadcasting</li> <li>(ix) Sea-going ships</li> <li>(x) Docks</li> <li>(xi) Transport undertakings</li> <li>(xii) Farms (and associated activities)</li> <li>(xiii) Horticultural premises and forestries</li> <li>(xiv) Quarries</li> </ul>	HM Inspector of the Health and Safety Executive
(c) Mines	HM Inspector of Mines, Health and Safety Executive
(d) Railways	HM Railway Inspector, Health and Safety Executive
(e) Operating Licence Nuclear Sites	HM Inspector of Nuclear Installations, Health and Safety Executive
(f) Offshore Installations	Offshore Safety Division, Section, Health and Safety Executive

122 You can notify work by telephone to the enforcing authority especially if you are not sure which authority to notify. But you must follow this up by confirmation in writing or on form FOD ASB5 to the relevant enforcing authority at least 14 days prior to the commencement of the work.

123 You may be allowed to submit a single notification of licensable asbestos work to the enforcing authority for work which is likely to be regularly repeated on your premises. (Note: if you have several premises, you will need a separate notification for each premises.) You will also need to notify separately any other work you plan to carry out which is not covered in the original notification.

*Regulation 10*

*Information, instruction and training*

**10—(1)** *Every employer shall ensure that adequate information, instruction and training is given to those of his employees—*

- a) *who are or who are liable to be exposed to asbestos, or who supervise such employees, so that they are aware of—*
    - i) *the properties of asbestos and its effects on health, including its interaction with smoking,*
    - ii) *the types of products or materials likely to contain asbestos,*
    - iii) *the operations which could result in asbestos exposure and the importance of preventive controls to minimise exposure,*
    - iv) *safe work practices, control measures, and protective equipment,*
    - v) *the appropriate purpose, choice, selection, limitations and proper use of respiratory protective equipment,*
    - vi) *emergency procedures,*
    - vii) *hygiene requirements,*
    - viii) *decontamination procedures,*
    - ix) *waste handling procedures,*
    - x) *medical examination requirements, and*
    - xi) *the control limit and the need for air monitoring,*
- in order to safeguard themselves and other employees; and*
- b) *who carry out work in connection with the employer's duties under these Regulations, so that they can carry out that work effectively.*

(2) *The information, instruction and training required by paragraph (1) shall be—*

- a) given at regular intervals;*
- b) adapted to take account of significant changes in the type of work carried out or methods of work used by the employer; and*
- c) provided in a manner appropriate to the nature and degree of exposure identified by the risk assessment, and so that the employees are aware of*
  - i) the significant findings of the risk assessment, and*
  - ii) the results of any air monitoring carried out with an explanation of the findings.*

**124 There are three main types of information, instruction and training (simply referred to as training from now on). These are:**

- a) Asbestos awareness training. This is for those persons who are liable to be exposed to asbestos while carrying out their normal everyday work such as:**
  - i) general maintenance staff;**
  - ii) electricians;**
  - iii) plumbers;**
  - iv) gas fitters;**
  - v) painters and decorators;**
  - vi) joiners;**
  - vii) plasterers;**
  - viii) demolition workers;**
  - ix) construction workers**
  - x) roofers;**
  - xi) heating and ventilation engineers;**
  - xii) telecommunications engineers;**
  - xiii) fire and burglar alarm installers;**
  - xiv) computer installers;**
  - xv) building surveyors;**

xvi)shop fitters.

- b) Training for non-licensable asbestos work. This is for those who undertake work with asbestos which is not licensable such as a roofer removing a whole asbestos cement sheet in good condition.
- c) Training for licensable work with asbestos – for those working with asbestos which is licensable such as removing asbestos lagging or insulating board.

### ***Asbestos awareness training***

125 Asbestos awareness training is required to be given to employees whose work could foreseeably expose them to asbestos. In particular, it should be given to all demolition workers and those workers in the refurbishment, maintenance and allied trades where it is foreseeable that their work will disturb the fabric of the building. Exemption from this requirement would apply only where the employer can demonstrate that work will only be carried out in or on buildings free of ACMs.

126 This training should cover the following topics in appropriate detail, by means of both written and oral presentation, and by demonstration as necessary:

- a) the properties of asbestos and its effects on health, including the increased risk of lung cancer for asbestos workers who smoke;
- b) the types, uses and likely occurrence of asbestos and ACMs in buildings and plant;
- c) the general procedures to be followed to deal with an emergency, for example an uncontrolled release of asbestos dust into the workplace; and
- d) how to avoid the risks from asbestos, for example for building work, no employee should carry out work which disturbs the fabric of a building unless the employer has confirmed that ACMs are not present;

### ***Training for non-licensable asbestos work***

127 Persons requiring this type of training would include those whose work will knowingly disturb ACMs, such as maintenance workers and their supervisors; and those who carry out asbestos sampling and analysis. It should be given in addition to the asbestos awareness training outlined in paragraph 126.

128 This training should cover the following topics in appropriate detail, by means of both written and oral presentation, and by demonstration:

- a) the operations which could result in asbestos exposure and the importance of preventive controls to minimise exposure;
- b) how to make suitable and sufficient assessments of the risk of exposure to asbestos;
- c) the control limit, and the purpose of air monitoring;
- d) safe work practices, control measures, and protective equipment including an explanation of how the correct use of control measures, protective equipment and work methods can reduce the risks from asbestos, limit exposure to workers and limit the spread of asbestos fibres outside the work area;
- e) the maintenance of control measures, including where relevant the maintenance of enclosures;
- f) procedures for recording, reporting and correcting defects;
- g) the appropriate purpose, choice and correct selection from a range of suitable RPE including any limitations;
- h) the correct use, and where relevant, cleaning, maintenance and safe storage of RPE and PPE, in accordance with the manufacturer's instructions and information;
- i) the importance of achieving and maintaining a good seal between face and RPE, the relevance of fit tests, and the importance of being clean-shaven;
- j) hygiene requirements;
- k) decontamination procedures;
- l) waste handling procedures;
- m) emergency procedures;
- n) which work requires an HSE licence;
- o) an introduction to the relevant Regulations, Approved Codes of Practice and guidance that apply to asbestos work and other Regulations that deal with the carriage and disposal of asbestos;
- p) for analysts, personal sampling and leak and clearance sampling techniques; and
- q) other work hazards including working at height, electrical, slips, trips and falls;

**129** Where any employees are required to use the following plant and equipment or carry out the following work activities then practical

training (ie giving someone the opportunity to try and practice something for themselves rather than having it explained or demonstrated to them) should be given:

- a) use of decontamination facilities;
- b) use of PPE, particularly RPE;
- c) construction of mini-enclosures where necessary; and
- d) use of control techniques, such as Type H vacuum cleaners (*BS 5415: 1985*).

**130** The procedures for providing information, instruction and training should be clearly defined and set out in a written document. This should be reviewed regularly, particularly when work methods change. Records should be kept of the training undertaken by each individual.

131 Employers should consult safety representatives and elected representatives of employee safety in good time about the information, instruction and training which they intend to provide.

### ***Training for licensable asbestos work***

132 Chapter 4 of the Licensed Contractors' Guide<sup>15</sup> sets out the detailed content of the asbestos training modules for operatives, supervisors, managers, directors, supervisory licence holders and licensed scaffolders that are involved in licensable work.

133 All information, instruction and training given should include an appropriate level of detail, suitable to the job, and should use written materials, oral presentation and demonstration as necessary.

**134** The following is a list of the information, instruction and training that should be given to all employees, including operatives, supervisors, managers, directors and supervisory license holders in addition to the asbestos awareness training outlined in paragraph 126.

- a) the health risks to employees' families and others which could result from taking home contaminated equipment and clothing, its interaction with smoking and the increased risk of lung cancer for asbestos workers who smoke,
- b) the assessment of risk and the purpose of the plan of work;
- c) the operations which could result in asbestos exposure and the importance of preventive controls to minimise exposure;
- d) the control limit, the assessment of exposure and the purpose and importance of air monitoring to check compliance with the limit , including the purpose of personal sampling;

<sup>15</sup> Asbestos: The Licensed Contractors' Guide – to be published during 2005

- e) **safe work practices, control measures, and protective equipment including an explanation of how the correct use of control measures, protective equipment and work methods can reduce the risks from asbestos, limit exposure to workers and limit the spread of asbestos fibres outside the work area;**
- f) **the importance of following (and for managers and supervisors ensuring the workforce follow) the procedures, controls and preventative measures set out in the plan of work and risk assessment;**
- g) **the maintenance of control measures, including where relevant the maintenance of enclosures and negative pressure equipment;**
- h) **procedures for recording, reporting and correcting defects;**
- i) **the appropriate purpose, choice and correct selection from a range of suitable RPE including any limitations;**
- j) **the correct use, cleaning, maintenance and safe storage of RPE, with specific attention to ensuring that the RPE is working correctly in accordance with the manufacturer's instructions and information;**
- k) **the importance of achieving and maintaining a good seal between face and RPE, the relevance of fit tests, and the importance of being clean-shaven;**
- l) **the suitability, correct use, storage and maintenance of protective clothing, including clothing used for transit;**
- m) **hygiene requirements;**
- n) **decontamination procedures, particularly within enclosures, airlocks (including bag locks) and hygiene units;**
- o) **site set-up: marking out the work area, setting up barriers, transit routes and waste storage area, pre-cleaning, sealing sources of potential leaks, construction and layout of the enclosure including negative pressure units, viewing panels and airlocks, positioning of decontamination units, air management and leak testing;**
- p) **controlled removal techniques and how they work including types of wet surfactant injection of sprayed asbestos and lagging, spray wetting of AIB and asbestos cement, wrap-and-cut, and (if relevant) use of glovebags;**
- q) **waste handling procedures including bagging, storage and disposal;**
- r) **site clean-up and clearance procedures, including the certificate of reoccupation arrangements;**

- s) emergency procedures including general procedures such as the uncontrolled release of asbestos fibres into the workplace or outbreak of fire;
- t) medical examination requirements;
- u) the results of any air monitoring carried out with an explanation of the findings;
- v) for analysts, personal sampling and leak and clearance sampling techniques;
- w) other work hazards including working at height, electrical, slips, trips and falls; and
- x) an introduction to the relevant Regulations, Approved Codes of Practice and guidance that apply to asbestos work and other Regulations that deal with the carriage and disposal of asbestos;

**135 To assist the employer to comply with his or her legal duties under these Regulations, the following additional training should be given to supervisors, managers, directors and supervisory licence holders, at an appropriate level, so that they can effectively carry out their role on site. This should include:**

- a) their responsibilities for directing, supervising and monitoring all aspects of work on site, including people's health and safety;
- b) the importance of the supervisor being on site at all key stages of the work (witnessing the smoke test, ensuring that the hygiene facilities are fully operational before work starts, ensuring signs and barriers are correctly erected, carrying out daily checks) to ensure that it is done safely;
- c) how to produce and apply plans of work that set out the appropriate procedures, controls and preventative measures based on the assessment, including how and when to update plans;
- d) how and when to notify the enforcing authorities that work is taking place and situations where re-notification is necessary;
- e) how to deal with situations where the methods set out in the plan of work cannot be followed due to a change in circumstances and a revision to the plan is required;
- f) the application of suitable contingency procedures in the event of a failure of controls;
- g) the importance of monitoring and auditing the work activities;

- h) the importance of having effective arrangements in place to communicate with and monitor workers inside the enclosure and hygiene unit;**
- i) a need to provide additional training, information and instruction to workers as necessary such as the use of a particular piece of equipment or work method for which training has not previously been given;**
- j) how to assess the competence of employees and identify their training needs;**
- k) when and how air monitoring should be undertaken, how the results are interpreted and to whom they should be communicated;**
- l) how the results and records of personal air sampling, fit tests and medicals should be kept and maintained and to whom they should be communicated;**
- m) how to apply the procedures for dealing with accidents, incidents and emergencies;**
- n) keeping the work area clean and free of asbestos;**
- o) the importance of ensuring that the correct procedures are followed at the end of the job to allow a certificate of reoccupation to be issued; and**
- p) an understanding of what the laboratory analyst will require before clearance sampling is undertaken and the certificate of reoccupation can be issued.**

**136 Practical training is essential for those entering enclosures such as operatives, supervisors and supervisory licence holders. Practical training is also required where people are required to use the following plant and equipment or carry out the following work activities or procedures:**

- a) decontamination procedures and use of hygiene facilities;**
- b) use of PPE, particularly RPE;**
- c) construction of enclosures, airlocks and achieving sufficient numbers of air changes within the enclosure;**
- d) controlled removal techniques, including the use of multiple and single needle injection systems, glove bags and wrap-and-cut; and**
- e) waste removal procedures on site including double bagging and removal through the bag lock.**

**137** Anyone who carries out any examination, testing (including clearance inspection, air monitoring and exposure monitoring) or maintenance of plant or equipment (eg LEV systems and RPE) should have had sufficient training and experience in inspection methods and techniques to ensure that they are competent.

### ***Safety representatives***

**138** Training for safety representatives and elected representatives of employee safety will need to be appropriate to their role.

**139** Employers should consult safety representatives and elected representatives of employee safety in good time about the information, instruction and training which they intend to provide.

### ***Competence of those providing training***

**140** All training should be provided by someone who is competent to do so, who has had adequate personal practical experience and who has a theoretical knowledge of all relevant aspects of the work being carried out by the employer.

### ***Provision of information***

**141** All training certificates issued by such people or organisations should be traceable and have a validity of no more than one year. The employer should carry out checks as may be necessary to establish the authenticity of training certificates. More information on training can be found in the Licensed Contractors' Guide.

**142** For licensable work, copies of the respective training records should be provided to each individual. The original of the records should be kept centrally and be reviewed annually to help inform what refresher training is required or earlier if concerns are raised about an individual's competence.

**143** Employers should make the following information available to employees and safety representatives:

- a) a copy of the current assessment for the work;
- b) a copy of the plan of work;
- c) details of any air monitoring strategy and results;
- d) maintenance records for control measures;
- e) any anonymous collective information from the health record;
- f) personal information from health records (only relating to the individual employee concerned).
- g) A copy of the individual's training record (only relating to the individual employee concerned).

**h) The results of any face-fit test for asbestos RPE.**

**144 For licensable work, this information should also include:**

- a) a copy of the licence;**
- b) details of notification under regulation 9 made to the enforcing authority;**

145 Where the results of air monitoring show that the relevant control limit has been unexpectedly exceeded, employers should tell employees, safety representatives and elected representatives of employee safety about this as quickly as possible and give details of the reasons for what happened and the action taken or proposed.

### ***Duration of training***

**146 The duration of training should be appropriate to the type of training (initial training or refresher training), the role for which the person is being trained (operative, supervisor or manager) and the nature of the work being trained for (non-licensable work, asbestos removal, work ancillary to asbestos removal eg scaffold work, maintenance of plant and equipment etc).**

147 Further guidance on course durations for licensable work can be found in the Licensed Contractors' Guide.

### ***Refresher training***

**148 Refresher training should be given at least every year and should be appropriate to the role undertaken. Employers should identify the specific training needs of their employees so that the refresher training can be appropriately tailored. It should not be a repeat of the initial training. Where training needs dictate, refresher training should include an appropriate element of practical training, particularly covering decontamination procedures, use of RPE, and controlled removal techniques. Refresher training will be required more frequently than annually if:**

- a) work methods change;**
- b) the type of equipment used to control exposure changes; or**
- c) the type of work carried out changes significantly.**

149 Refresher training should be appropriate to the role eg licensable work or non-licensable work. Supervisors of licensable work, for example, should receive supervisory refresher training, not operative refresher training and it should be appropriately tailored. Refresher training should include reviewing where things have gone wrong and sharing good practice.

### ***Training of non-employees***

**150** Employers have a duty under regulation 3(3)(a) of the Asbestos Regulations to ensure, so far as is reasonably practicable, that adequate information, instruction and training is given to non-employees who are on the premises and could be affected by the work, as well as to their own employees.

**151** This will need to take account of any possible risks resulting from rearrangement of thoroughfares and fire exits as well as of the risks arising from disturbance of ACMs.

### ***Procedures for providing information, instruction and training***

**152** The procedures for providing information, instruction and training for licensable work should be clearly defined and set out in a written document. This should be reviewed regularly, particularly when work methods change. Records should be kept of the training undertaken by each individual.

**153** For licensable work, copies of the respective training records should be provided to each individual. The originals of the records should be kept centrally, and be reviewed annually to help inform what refresher training is required, or earlier if concerns are raised about an individual's competence after an inspection or incident.

**154** Employers should consult safety representatives and elected representatives of employee safety in good time about the information, instruction and training which they intend to provide.

### *Regulation 11*

#### *Prevention or reduction of exposure to asbestos*

**11—(1)** Every employer shall—

- a) *prevent the exposure of his employees to asbestos so far as is reasonably practicable;*
- b) *where it is not reasonably practicable to prevent such exposure—*
  - i) *take the measures necessary to reduce the exposure of his employees to asbestos to the lowest level reasonably practicable by measures other than the use of respiratory protective equipment, and*
  - ii) *ensure that the number of his employees who are exposed to asbestos at any one time is as low as is reasonably practicable.*

*(2) Where it is not reasonably practicable for the employer to prevent the exposure of his employees to asbestos in accordance with paragraph (1)(a), the measures referred to in paragraph (1)(b)(i) shall include, in order of priority—*

- a) *the design and use of appropriate work processes, systems and engineering controls and the provision and use of suitable work equipment and materials in order to avoid or minimise the release of asbestos; and*
- b) *the control of exposure at source, including adequate ventilation systems and appropriate organisational measures,*

*and the employer shall so far as is reasonably practicable provide the employees concerned with suitable respiratory protective equipment in addition to the measures required by sub-paragraphs (a) and (b).*

*(3) Where it is not reasonably practicable to reduce the exposure of an employee to asbestos to below the control limit by the measures referred to in paragraph (1) (b) (i), then, in addition to taking those measures, the employer shall provide that employee with suitable respiratory protective equipment which will reduce the concentration of asbestos in the air inhaled by the employee (after taking account of the effect of that respiratory protective equipment) to a concentration which is below the control limit and is as low as is reasonably practicable.*

*(4) Personal protective equipment provided by an employer in accordance with this regulation or with regulation 14(1) shall be suitable for its purpose and shall—*

- a) *comply with any provision of the Personal Protective Equipment Regulations 2002<sup>(16)</sup> which is applicable to that item of personal protective equipment; or*
- b) *in the case of respiratory protective equipment, where no provision referred to in sub-paragraph (a) applies, be of a type approved or shall conform to a standard approved, in either case, by the Executive.*

*(5) The employer shall—*

- a) *ensure that no employee is exposed to asbestos in a concentration in the air inhaled by that worker which exceeds the control limit; or*
- b) *if the control limit is exceeded, he shall—*
  - i) *forthwith inform any employees concerned and their representatives and ensure that work does not continue in the affected area until adequate measures have been taken to reduce employees' exposure to asbestos to below the control limit,*
  - ii) *as soon as is reasonably practicable identify the reasons for the control limit being exceeded and take the appropriate measures to prevent it being exceeded again, and*

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<sup>(16)</sup> S.I. 2002/1144

- iii) check the effectiveness of the measures taken pursuant to subparagraph (ii) by carrying out immediate air monitoring.*

**155 Work which disturbs ACMs should only be carried out when there is no other reasonably practicable way of doing the work or the alternative method creates a more significant risk. Employers must therefore first decide whether they can prevent the exposure to asbestos so far as is reasonably practicable, before considering how they will reduce the exposure to as low as reasonably practicable.**

156 It may be that the work which disturbs the asbestos or ACM is not necessary or that a method can be chosen which does not involve disturbing the asbestos such as:

- a) removal of a whole door instead of the AIB panel attached to it;
- b) wrap and cut the whole pipe rather than disturb the insulation material;  
or
- c) re-routing cables away from ACM or covering up materials rather than working on them.

**157 Where it is not reasonably practicable to prevent exposure, it must first be reduced to the lowest level reasonably practicable by means other than the use of RPE.**

**158 Airborne levels should be reduced as low a level as reasonably practicable and exposure should be controlled so that any peak exposure is less than 0.6 f/cm<sup>3</sup> averaged over a maximum continuous period of 10 minutes by the use of appropriate respiratory protective equipment if exposure can not be reduced sufficiently by other means.**

**159 Employers must ensure that the numbers of employees exposed to asbestos is kept as low as reasonably practicable. All unnecessary personnel should be excluded from the working areas if asbestos is being disturbed.**

**160 The provision of a sufficient number of suitable viewing panels in enclosures will allow managers to monitor the work of their employees without being unnecessarily exposed.**

**161 When it is not reasonably practicable to prevent exposure to asbestos the employer must choose the most effective method or combination of methods which minimises fibre release and thereby reduces the exposure to the lowest levels reasonably practicable and document this in the written risk assessment/plan of work. Such work methods could include the following:**

- a) removing materials containing asbestos before any other major work (such as demolition or refurbishment) begins using the most effective method that minimise fibre release e.g. controlled wet stripping techniques;

- b) choosing methods that do not involve dry working and avoiding abrasion, sanding, machining or cutting etc. of ACMs;
- c) choosing work methods which present the least overall risk;
- d) where necessary carrying out a pre-clean of the work area before removal work takes place; and
- e) keeping the work area clean by clearing up at regular intervals, using methods which do not spread asbestos dust, so that waste debris and dust do not accumulate and by not allowing waste to be kept on site for longer than necessary. Vacuum-cleaning equipment of type H (*BS 5415: 1985*) should be used to clean up any dust and debris which may contain asbestos.

### ***Non-licensable asbestos removal work***

162 Companies should have in place a policy always to check whether ACMs are present before carrying out work which disturbs the fabric of a building which may contain asbestos and ensuring that work which does disturb ACMs is restricted to authorised people who are given the necessary information, instruction and training. Some examples of work methods which avoid creating dust are by:

- a) removing sheets whole or using a wrap-and-cut method;
- b) avoiding the use of power tools;
- c) keeping materials thoroughly wet; and
- d) utilising LEV systems such as cowls on drills and by shadow vacuuming.

163 For further guidance on methods of working with asbestos cement refer to *Working with asbestos cement*.<sup>18</sup> For further guidance on minor works with building materials containing asbestos and on work with asbestos-containing textured decorative coatings, refer to *Introduction to asbestos essentials*<sup>4</sup> and *Asbestos essentials task manual*.<sup>5</sup>

### ***Removal of asbestos-containing textured decorative coatings***

164 Textured decorative coatings can be worked on or disturbed for a number of reasons, including maintenance and repair, replacement of lights and other fittings, removal as part of room or building refurbishment and removal or repair following damage due to water, fire or other accidental or deliberate acts.

**165 As indicated in paragraph 38, most work with textured decorative coatings is likely only to produce sporadic and low intensity worker exposure and can be categorised as complying with regulation 3(2) as long as 3(2)(b) is fulfilled, i.e. it is clear from the risk assessment that the control limit will not be exceeded. However the nature of the removal process (often including scraping) usually produces significant amounts**

of other waste such as paint flakes and plaster debris. The following measures should be employed to help contain and prevent the spread of asbestos fibres and other materials.

166 The work area should be segregated and enclosed using the existing room or a purpose built enclosure. Access to the enclosure should be regulated through a 2-stage airlock. Workers should decontaminate in the airlock system prior to leaving the work area. This will involve vacuuming down using a type H vacuum cleaner and washing footwear and wiping the RPE in the inner stage. PPE and RPE should be removed in the outer stage of the airlock.

167 Any portable items liable to become contaminated with dust and debris from textured decorative coatings should be removed prior to work starting. Remaining items should be protected with plastic sheeting.

168 RPE should be suitable and adequate for the work. As worker exposure is unlikely to exceed the control limit, therefore in line with expected asbestos airborne dust levels, disposable (FFP3) or half-mask respirators (with P3 filters) should be adequate.

169 Once the work is complete, the area should be thoroughly cleaned before being returned to the client. All visible traces of dust and debris should be removed. A thorough visual inspection should then be carried out. Air sampling will not be expected as part of the clearance procedures.

170 In addition to the above measures which cover mainly containment and prevention of spread, the control regime should include control at source/dust suppression and good work practices which minimise dust generation and spread (avoiding power tools etc). The primary controls will consist of one or more of the following:

- a) remove whole underlying plasterboard if possible with textured decorative coatings attached;
- b) steam to loosen (there are proprietary machines/equipment available) although it may be possible simply to boil off water and scrape;
- c) apply a hydrating gel to loosen and scrape;
- d) apply solvent free chemical and scrape.

171 Wet blasting techniques may also be necessary for residual sections or very difficult material. They should not be employed in other circumstances.

172 In situations where the work on textured decorative coatings is necessary due to water, fire or other accidental or deliberate damage, the area is likely to be contaminated (although the occupier may already

have taken steps to clean the room(s)). The affected area(s) should be inspected to identify the extent of contamination. If there is any evidence of ACM debris or dust then a preclean should be undertaken. The enclosure and protective sheeting should be installed as far as possible before the preclean is started. The preclean should be undertaken using appropriate dust suppression and control measures including vacuuming with a type H vacuum cleaner, surface wiping, temporary encapsulation with PVA, tape or cling film, spray wetting and bagging. Once all the contamination has been removed, the enclosure and protective sheeting installation should be completed and the main work can then start.

**173** There are certain practical difficulties in removing textured decorative coatings from damaged ceilings. The “usual” practice is to “pull-down” or “drop” the ceiling which can be a dusty process (the dust is predominantly calcium sulphate or calcium silicate). In these situations there should be greater attention paid to reducing general dust levels (a requirement under COSHH Regulations<sup>17</sup>). The ceiling (boards or lathe and plaster) should be thoroughly dampened down (using an effective wetting system eg airless spray such as a Greko spray) before work starts and during the work. Material, debris and dust on the floor should also be dampened down.

#### ***Licensable asbestos removal work***

**174** Employers must choose the most effective method(s) that will reduce fibre release created at source.

#### ***Removal of insulation and coating***

**175** For work with asbestos insulation and coating, this usually means controlled wet stripping and avoiding the use of abrasive power tools. Further information on controlled wetting of ACMs is available in PAS 60/1.<sup>18</sup>

**176** There may, however, be situations where other techniques such as wrap and cut may be more efficient at preventing or reducing exposure (eg for the removal of redundant pipework).

**177** Wet injection techniques should uniformly wet the asbestos material before its removal. Oversaturation should be avoided since this will lead to the formation of pools of liquid and may turn the material into unmanageable slurry. It is essential that employers check the degree of saturation, eg with dyes or moisture meters, before attempting removal. The treated insulation should be of a dough-like consistency.

**178** Where the ACM is being removed from its substrate, employers must not use dry stripping methods unless there is no reasonably practicable alternative. (Stripping using a glovebag without any form of wetting is a dry method.) Where there is absolutely no alternative to dry

<sup>17</sup> Control of substances hazardous to health SI 2004/3386.

<sup>18</sup> Controlled wetting of asbestos containing materials – specification. BSI Publicly Available Specification 60, Part 1

stripping methods, this should be justified by the risk assessment and clearly detailed in the plan of work. Employers must make sure that effective measures are used to control fibre release in the work area (eg glovebags within the enclosure, vacuum transfer).

179 Before agreeing to a client's request for the work to be carried out dry, contractors should discuss the request with the enforcing authority.

**180 Occupiers and owners of buildings and plant should co-operate with contractors undertaking the work, releasing plant wherever practicable so that it can be isolated and worked on cold and free from electrical and chemical risks.**

### ***Work with asbestos insulating board (AIB)***

**181 As indicated in paragraph 43, certain work with AIB that is short, non-continuous maintenance activity and which conforms to the principles of good practice can be considered to conform to regulation 3(2) and will be non-licensable. For any work with AIB, employers must use work methods which reduce the level of fibres released at source, preferably by removing boards whole without breaking them and, wherever practicable, by controlled stripping techniques using type "H" vacuum cleaners (*BS 5415: 1986*) and water sprays.**

182 More guidance on reduced dust methods of working can be found in the Licensed Contractors' Guide and for non-licensable work with AIB can be found in Asbestos Essentials.

### ***Work maintaining plant and equipment contaminated with asbestos***

**183 All maintenance of equipment contaminated with asbestos and where there is a risk of fibre release must be done under controlled conditions, for example when the item of plant needs to be stripped down it should be carried out within a permanently set aside work area which is under negative pressure connected to the hygiene facilities by an airlock system. Where this work is done on site then it must be done within an enclosure.**

**184 LEV and controlled wetting by airless, low-pressure spraying are suitable low-dust methods when the equipment is being maintained. Care not to overwater should be taken when working on or near electrical equipment. Those who carry out such maintenance work either on site or on the maintenance company's own premises will require a licence for ancillary work.**

### ***Respiratory protective equipment***

**185 If, despite the use of other control measures, it is not possible to prevent employees being exposed to asbestos, employers must, so far as it is reasonably practicable to do so, provide suitable RPE and make sure that it is used correctly by those carrying out the work.**

**186 In any case, if from the assessment of the work, it is concluded that the exposure of an employee is liable to exceed the control limit or exceed 0.6 f/cm<sup>3</sup> peak level measured over 10 minutes as detailed in paragraph 158, the employer must provide suitable respiratory protective equipment (see regulation 11(3)) to reduce exposure to a level as low as is reasonably practicable and which must be below the control limit. The control limit also triggers the need for immediate steps to be taken under regulation 11(5) and for respirator zones which are required under regulation 18.**

186 Employers must choose RPE which is designed to protect against exposures well above those expected, in order to allow for unexpected high exposures and to provide an adequate margin of safety. If there is doubt about the level of protection, employers must always select higher performance equipment, provided that it is suitable for the work being carried out. Employers must make sure that RPE is used correctly by those carrying out the work.

**187 To be suitable, RPE must be matched to the job, the environment, the anticipated maximum exposure, and the wearer, and take into account such issues as facial hair and spectacles. It should be compatible with any other personal protective equipment (PPE). In particular, any PPE which protects the head or eyes of employees should not affect the fit of the RPE.**

188 For licensable work, the use of full face masks is likely to be more appropriate than disposable or half-masks.

### ***Fit-testing of facepieces***

189 The performance of RPE with a tight-fitting facepiece (ie filtering facepieces, half and full face masks) depends on a good contact between the wearer's skin and the face seal of the mask. A good face seal can only be achieved if the wearer is clean-shaven in the region of the seal and the facepiece is of the correct size and shape to fit the wearer's face. If spectacles with side arms are worn together with PPE, they should not interfere with the correct fitting of the facepiece or the face seal. The performance of RPE with a loose fitting facepiece (eg visors, helmets, hoods) is less dependent on a tight fit on the face, but nevertheless requires the correct size to ensure the wearer achieves an adequate fit and protection.

**190 Employers should ensure that the selected facepiece (tight-and-loose fitting types) is of the right size and can correctly fit each wearer. For a tight-fitting facepiece (ie filtering facepieces usually known as disposable masks, half and full face masks) the initial selection should include fit-testing to ensure the wearer has the correct device. The test will assess the fit by determining the degree of face seal leakage of a test agent while the RPE user is wearing the facepiece under test. For full face masks, a suitable quantitative fit-test should be used and the pass level fit factor is 2000. For devices such as filtering facepieces and half masks, the pass level fit factor is 100. For these lower performance**

facepieces, a suitable and validated qualitative method (often called a semi quantitative test) or the quantitative fit test can be used. Employers must ensure that whoever carries out the fit-testing is competent to do so.

**191 Repeat fit-testing will be needed when changing to a different model of RPE or a different sized facepiece or if there have been significant changes to the facial characteristics of the individual wearer, eg as a result of significant weight gain or weight loss or due to dentistry.**

192 It is good practice however to have a system in place for repeat fit testing of RPE to be carried out on a regular basis.

193 If an employee changes jobs, employers should carry out such checks as may be necessary to establish the authenticity of fit certificates provided by employees.

194 The quantitative fit testing may be carried out using:

- a) a test chamber which uses a salt aerosol or sulphur hexafluoride gas to assess the face seal leakage;
- b) a portable device at the workplace which measures particulates in air to assess the face seal leakage; or
- c) a portable device at the workplace which measures pressure variations inside the facepiece to assess face seal leakage.

195 Qualitative test methods use bitter or sweet-tasting aerosols. When the tests are carried out the facepiece wearer will perform simple exercises as indicated by the competent person carrying out the test. More information on the selection, including information on assigned protection factors, use and fit-testing of RPE is contained in Selection of suitable respiratory protective equipment for work with asbestos,<sup>17</sup> Fit testing of respiratory protective equipment facepieces.<sup>18</sup> and in the Licensed Contractors' Guide.

### *Regulation 12*

#### *Use of control measures etc.*

**12—(1) Every employer who provides any control measure, other thing or facility pursuant to these Regulations shall ensure so far as is reasonably practicable that it is properly used or applied as the case may be.**

**(2) Every employee shall make full and proper use of any control measure, other thing or facility provided pursuant to these Regulations and, where relevant, shall—**

- a) *take all reasonable steps to ensure that it is returned after use to any accommodation provided for it; and*

b) if he discovers a defect therein report it forthwith to his employer.

### **Control measures**

196 Employers should have procedures in place to make sure that control measures are properly used or applied and are not made less effective by other work practices or other machinery. These procedures should include:

- a) checks at the start of every shift and at the end of each day; and
- b) prompt action when a problem is identified.

### **General duties on employees**

197 Within the general duties imposed by regulation 12(2), employees should, in particular:

- a) use any control measures, including RPE, and protective clothing properly and keep it in the places provided;
- b) follow carefully all the procedures set out in the employer's assessment and plan of work, including those for changing and decontamination, and comply with the use of control measures;
- c) keep the workplace clean;
- d) eat, drink and smoke only in the places provided; and
- e) report any defects concerning control measures to their supervisor/manager immediately.

198 RPE should never be taken off and put down in a contaminated area, except in the case of a medical emergency. When not in use, RPE should not be hung around the neck or in any other way be allowed to come into contact with contaminated clothing. It should not be stored in a contaminated area. RPE and protective clothing should be removed at the end of the working period, cleaned (see paragraph 215 for RPE and paragraphs 229 to 237 for PPE) and then placed in storage provided specifically for that purpose which is clean and will protect it from damage. Disposable RPE and protective clothing once used should be treated as asbestos waste. Before it is used, disposable RPE should be kept in a suitable container in order to keep it free from contamination.

### *Regulation 13*

#### *Maintenance of control measures etc.*

**13—(1)** Every employer who provides any control measure to meet the requirements of these Regulations shall ensure that,

- a) *in the case of plant and equipment, including engineering controls and personal protective equipment, it is maintained in an efficient state, in efficient working order, in good repair and in a clean condition; and*
- b) *in the case of provision of systems of work and supervision and of any other measure, it is reviewed at suitable intervals and revised if necessary.*

*(2) Where exhaust ventilation equipment or respiratory protective equipment (except disposable respiratory protective equipment) is provided to meet the requirements of these Regulations, the employer shall ensure that thorough examinations and tests of that equipment are carried out at suitable intervals by a competent person.*

*(3) Every employer shall keep a suitable record of the examinations and tests carried out in accordance with paragraph (2) and of repairs carried out as a result of those examinations and tests, and that record or a suitable summary thereof shall be kept available for at least 5 years from the date on which it was made.*

### ***Maintenance of control measures***

**199** When working with asbestos, employers should make sure that maintenance procedures are drawn up for all control measures and for PPE. These should include the equipment used for cleaning, the washing and changing facilities, and the controls to prevent the spread of contamination. The procedures should make clear:

- a) which control measures require maintenance;
- b) when and how the maintenance is to be carried out; and
- c) who is responsible for maintenance and for making good any defects.

### ***Maintenance of enclosures***

**200** For licensable work, enclosures are normally required to prevent the spread of asbestos and prevent the exposure of people other than employees who may be affected by the work.

**201** If an enclosure is being used, then when work has started employers should make sure that:

- a) the enclosure is properly maintained;
- b) a thorough visual inspection of the integrity of the enclosure, airlocks and the ducting from the air extraction equipment is carried out at least at the beginning of each shift;
- c) negative pressure is maintained in the enclosure throughout the work, including breaks, and for at least 60 minutes after the end of each shift;

- d) air monitoring is undertaken outside the enclosure when appropriate, e.g. if the air being exhausted from the enclosure cannot be routed external to the building because it is not reasonably practicable to do so;
- e) any defect found during inspection and testing is repaired immediately;
- f) a record of inspections, tests, and defects repaired is kept available on site for inspection by the enforcing authority;
- g) viewing panels are maintained in a clean state to ensure clear visibility, and
- h) barriers are maintained on open sites.

### ***Maintenance of hygiene facilities***

202 If specific hygiene facilities are necessary such as for licensable work, then daily checks should be made throughout the duration of the work to ensure the showers, heating, lighting, extractor unit, battery-charging facilities and residual current devices are all working. The shower should provide sufficient quantities of water at a reasonable temperature and pressure to allow thorough decontamination. Blocked shower rosettes and systems which result in alternate hot and cold water are not acceptable. A record of inspections and defects repaired should be kept available on site for inspection by the enforcing authority.

### ***Maintenance of vacuum cleaners***

203 Employers should make sure that vacuum-cleaning equipment is inspected weekly when in use and is tested and examined thoroughly every six months in accordance with the manufacturer's instructions. Before the vacuum cleaner is used, employers should ensure that the waste bag is inspected to see whether it needs to be emptied and that the vacuum is providing adequate suction. Because of the potential for fibres to be released, this should be carried out under controlled conditions to prevent spread, ie within the enclosure, by workers wearing PPE, including RPE.

204 Further information on training, operation, cleaning, maintenance and record keeping for type "H" vacuum cleaners can be found in PAS 60/3.<sup>19</sup>

### ***Maintenance of air extraction equipment***

205 All air extraction equipment which is necessary (also known as air movers or negative pressure units (NPU's)), including extraction units provided on hygiene facilities, should be visually inspected daily when in use, and should be thoroughly examined and tested at least once every six months by a competent person to make sure that it is working

<sup>19</sup> Operation, cleaning and maintenance of type "H" vacuum cleaners – code of practice. BSI Publicly Available Specification 60, Part 3.

properly to its design specification. A record of inspection, examination, maintenance and of defects remedied must be kept available for inspection by the enforcing authority.

***Maintenance of respiratory protective equipment for non-licensable work***

**206** When non-disposable RPE is used, employers should make sure before it is put on it is always examined to check that it is in good working order. The pre-use examination should include checks on:

- a) the condition of the head harness and facepiece including the seal and the visor, breathing hose if fitted, and that threaded connections are securely fastened;
- b) the condition of the inhalation and exhalation valves, if fitted;
- c) the type and condition of the filter;
- d) the battery charge/condition;
- e) the airflow rate for powered respirators; and
- f) any additional tests in accordance with the manufacturer's instructions.

**207** The pre-use test by the wearer should also include a fit check. The manufacturer's instructions will give information on simple fit checks, such as those involving blocking filters and inhaling to create suction inside the mask so that any leakage can be detected.

**208** RPE should be inspected and cleaned after each use and, additionally, disinfected whenever the equipment is transferred from one person to another. Maintenance and cleaning procedures need to be suitable for the type of RPE being used.

**209** Thorough maintenance, examinations and, where appropriate, tests of items of RPE, other than one-shift disposable respirators, should be made at least once every month.

**210** However, in situations where respirators are used only occasionally, an examination and test should be made prior to next use and maintenance carried out as appropriate. The person who is responsible for managing the maintenance of RPE should determine suitable intervals between examinations, but in any event, the intervals should not exceed three months. Emergency escape type RPE should be examined and tested in accordance with the manufacturer's instructions.

**211** Those people carrying out examinations and tests on RPE should be competent and have adequate knowledge, training and experience in examination methods and techniques.

***Maintenance and storage of respiratory protective equipment for licensable work***

212 RPE should be examined at different stages by a competent person to make sure that it is in good working order. Firstly it should be examined by a competent person before it is issued to any wearer for the first time. It should then be checked by the wearer before and after it is used to make sure that it is in good working order. It should also be checked by a competent person at periodic intervals.

213 Each examination should include checks on:

- a) the condition of the head harness and facepiece including the seal and the visor, breathing hose if fitted, checking behind the seal, and that threaded connections are securely and correctly fastened;
- b) the condition of inhalation and exhalation valves, if fitted;
- c) the correct type and condition of the filter;
- d) the battery charge/condition;
- e) the airflow rate; and
- f) any additional tests in accordance with the manufacturer's instructions.

214 The pre-use test by the wearer should also include a fit check. The manufacturer's instructions will give information on simple fit checks, such as those involving blocking filters and inhaling to create suction inside the mask so that any leakage can be detected.

215 RPE needs to be decontaminated, cleaned and reassembled after each use. It should also be disinfected whenever the equipment is transferred from one person to another.

216 Thorough maintenance, examinations and, where appropriate, tests of items of RPE, other than one-shift disposable respirators, should be made at least once every month, and more frequently where the health risks and conditions of exposure are particularly severe.

217 However, in situations where respirators are used only occasionally, an examination and test should be made prior to next use, and maintenance carried out as appropriate. The person who is responsible for managing the maintenance of RPE should determine suitable intervals between examinations, but in any event, the intervals should not exceed three months. Emergency escape type RPE should be examined and tested in accordance with the manufacturer's instructions.

**218 A record of fit-testing, inspection, examination, maintenance and defects remedied must be kept available for five years, for inspection by the enforcing authority with copies of the most recent records kept available on site.**

219 More guidance on RPE can be found in the Licensed Contractor's Guide.<sup>17</sup>

#### *Regulation 14*

##### *Provision and cleaning of protective clothing*

**14—(1)** Every employer shall provide adequate and suitable protective clothing for such of his employees as are exposed or are liable to be exposed to asbestos, unless no significant quantity of asbestos is liable to be deposited on the clothes of the employee while he is at work.

(2) The employer shall ensure that protective clothing provided in pursuance of paragraph (1) is either disposed of as asbestos waste or adequately cleaned at suitable intervals.

(3) The cleaning required by paragraph (2) shall be carried out either on the premises where the exposure to asbestos has occurred, where those premises are suitably equipped for such cleaning, or in a suitably equipped laundry.

(4) The employer shall ensure that protective clothing which has been used and is to be removed from the premises referred to in paragraph (3) (whether for cleaning, further use or disposal) is packed, before being removed, in a suitable container which shall be labelled in accordance with the provisions of Schedule 2 as if it were a product containing asbestos or, in the case of protective clothing intended for disposal as waste, in accordance with regulation 24(3).

(5) Where, as a result of the failure or improper use of the protective clothing provided in pursuance of paragraph (1), a significant quantity of asbestos is deposited on the personal clothing of an employee, then for the purposes of paragraphs (2), (3) and (4) that personal clothing shall be treated as if it were protective clothing.

#### ***Protective clothing***

**220 As part of the assessment, the employer must decide whether or not protective clothing is required for work with asbestos. The assessment should start from the assumption that protective clothing will be necessary unless exposures are extremely slight and infrequent. For work which requires a licence exposure will potentially be significant and employers will always need to provide a full set of PPE.**

**221 The protective clothing must be adequate and suitable and include footwear, whenever employees are liable to be exposed to a significant amount of asbestos debris or fibres. It should be appropriate and**

**suitable for the job and must protect the parts of the body likely to be affected. If the assessment has concluded that a risk of contamination exists, disposable overalls (of a suitable standard fitted with a hood) and boots without laces will be required.**

222 Further PPE may be required based on the outcome of the assessment eg waterproof clothing for outdoor work.

### ***Suitability of protective clothing***

**223 To be adequate and suitable and depending on the circumstances, the protective clothing must:**

- a) fit the wearer;
- b) to be of sufficient size to avoid straining and ripping the joints;
- c) to be comfortable and, where appropriate, to allow for the effects of physical strain;
- d) be suitable for cold environments;
- e) prevent penetration by asbestos fibres;
- f) be elasticated at the cuffs, ankles and on the hoods of overalls and designed to ensure a close fit at the wrists, ankles, face and neck;
- g) not have pockets or other attachments which could attract and trap asbestos dust; and
- h) be easily decontaminated or disposable.

**224 Where disposable overalls are used, these should be of a suitable standard.**

**225 For licensable work in particular, headcoverings should be close-fitting and cover the parts of the head and neck not covered by the facepiece of the respirator, and should be connected to the main overall. The headstraps of RPE should be worn under the headcovering. Wellington boots are preferable to any other form of footwear because they are easy to clean when leaving the work enclosure. Lace-up footwear will trap asbestos fibres between the laces and should not be worn.**

226 Risks other than those created by potential exposure to asbestos should not be overlooked for example where methods involve use of equipment with naked flames the protective clothing should not be flammable.

### ***Removal of contaminated protective clothing***

**227 For licensable work in particular, protective clothing should be removed before taking off RPE and before leaving the work area for any**

reason, including for meal breaks, for other breaks and at the end of the shift. Protective clothing should be vacuum-cleaned before removal using a type “H” (*BS 5415: 1985*) vacuum cleaner fitted with suitable attachments. Once removed, clothing should be placed in the storage area specifically provided for that purpose and at a safe distance from changing facilities. If it is to be removed from the premises for cleaning or disposal it should be sealed in a labelled, dust-tight bag.

228 If an enclosure is being used, and the main hygiene facilities are connected to the enclosure, then, following preliminary decontamination in the airlock, protective clothing, including footwear, should be taken off in the dirty end of the hygiene facility. If the main hygiene facilities are not connected to the enclosure, employers will need to provide additional overalls (transit overalls of a different colour to those worn inside the enclosure) for employees to wear after preliminary decontamination has taken place in the airlock to allow transfer to final decontamination at the main hygiene facilities. Where footwear cannot be properly decontaminated at the preliminary decontamination stage, then clean transit footwear will need to be provided.

### ***Cleaning, maintenance and storage of protective clothing***

229 Non-disposable protective clothing and towels must be effectively washed after every shift. If the employer does not have the facilities and expertise for laundering asbestos-contaminated clothing, it must be sent to a specialist laundry.

230 Where disposable overalls are used they should be treated as asbestos waste and properly disposed of after every shift.

231 This may not be necessary for overalls used for occasional sampling where there is a low risk of contamination.

232 When working in enclosures, clothing for washing should be collected from the airlock and hygiene facility as soon as it has been discarded.

233 For licensable work in particular, asbestos contaminated clothing should be placed in bags which are dust-tight but which are soluble in hot water and can then be loaded, unopened, into a washing machine. These inner bags should then be placed inside a second bag which is labelled and which is strong enough to remain dust-tight during transport and handling. Dripping-wet overalls and other types of PPE should not be put into soluble bags as they may cause the bags to partially dissolve during transport, which could result in a release of dust when the outer bags are removed. Employers must make sure at the end of the working period that the bagged contaminated protective clothing is:

- a) placed in a specific storage area; or

- b) disposed of as asbestos waste (especially disposable overalls which should be disposed of after every shift); or
- c) prepared for dispatch to a laundry.

**234** Analysts undertaking occasional sampling should use their judgement to determine whether or not their overalls may have been contaminated and should be disposed of.

**235** Contaminated protective clothing or materials, including contaminated towels, must never be taken home.

**236** Where the contaminated clothing is cleaned on the premises, or by a specialist laundry the washer and drier used must be dedicated for this use to prevent spread of asbestos to other items of laundry. The room containing the washer and drier should have its own local exhaust ventilation, preferably an air mover fitted with High Efficiency Particle Arrestor (HEPA) filtration. The employee loading the washer should be wearing RPE for protection. The air from the drier should be discharged to external atmosphere and on no account to an occupied workroom. Separate cycles should be used for heavily and lightly contaminated items.

**237** The waste water from the washer should be filtered before going to drain. The filter should be treated as contaminated asbestos waste and when replaced disposed of accordingly.

#### *Regulation 15*

##### *Arrangements to deal with accidents, incidents and emergencies*

**15—(1)** *Subject to regulation 3(2) and to paragraph (3) of this regulation, and without prejudice to the relevant provisions of the Management of Health and Safety at Work Regulations 1999<sup>(20)</sup>, in order to protect the health of his employees from an accident, incident or emergency related to the use of asbestos in a work process or to the removal or repair of asbestos-containing materials at the workplace, the employer shall ensure that—*

- a) *procedures, including the provision of relevant safety drills (which shall be tested at regular intervals), have been prepared which can be put into effect when such an event occurs;*
- b) *information on emergency arrangements, including—*
  - i) *details of relevant work hazards and hazard identification arrangements, and*
  - ii) *specific hazards likely to arise at the time of an accident, incident or emergency,*

<sup>(20)</sup> S.I. 1999/3242, as amended by S.I. 2003/2457.

*is available; and*

- c) suitable warning and other communication systems are established to enable an appropriate response, including remedial actions and rescue operations, to be made immediately when such an event occurs.*

*(2) The employer shall ensure that information on the procedure and systems required by paragraph (1)(a) and (c) and the information required by paragraph (1)(b) is—*

- a) made available to the relevant accident and emergency services to enable those services, whether internal or external to the workplace, to prepare their own response procedures and precautionary measures; and*
- b) displayed at the workplace, if this is appropriate.*

*(3) Paragraph (1) shall not apply where—*

- a) the results of the risk assessment show that, because of the quantity of asbestos present at the workplace, there is only a slight risk to the health of employees; and*
- b) the measures taken by the employer to comply with the duty under regulation 11(1) are sufficient to control that risk.*

*(4) In the event of an accident, incident or emergency related to the unplanned release of asbestos at the workplace, the employer shall ensure that—*

- a) immediate steps are taken to—*
  - i) mitigate the effects of the event,*
  - ii) restore the situation to normal, and*
  - iii) inform any person who may be affected; and*
- b) only those persons who are responsible for the carrying out of repairs and other necessary work are permitted in the affected area and they are provided with—*
  - i) appropriate respiratory protective equipment and protective clothing, and*
  - ii) any necessary specialised safety equipment and plant,*

*which shall be used until the situation is restored to normal.*

### **Accidents, incidents and emergencies**

**238 Employers of people removing or repairing ACMs must have prepared procedures which can be put into effect should an accident,**

**incident or emergency occur which could put people at risk because of the presence of asbestos unless, because of the quantity or the condition of the asbestos present at the workplace, there is only a slight risk to the health of employees.**

239 Such events may include: an employee collapsing or suffering a serious accident within an active stripping enclosure, emergency evacuation of the building eg due to fire or an uncontrolled release of asbestos, eg loss of containment in an active stripping enclosure, accidental spillage from waste bags, or damage to wrapped plant/pipework, which is being moved along the waste route.

**240 Sufficient information should be made available to the emergency services (eg fire and rescue and paramedics) so that when they are attending a relevant incident they can properly protect themselves against the risks from the asbestos.**

### ***Uncontrolled releases***

**241 In any circumstance where there is an accidental uncontrolled release of asbestos into the workplace then measures, including emergency procedures, should be in place to limit exposure and the risks to health. Such procedures should include means to raise the alarm and procedures for evacuation, which should be tested and practised at regular intervals. The cause of the uncontrolled release should be identified, and adequate control regained as soon as possible.**

**242 Any people in the work area affected who are not wearing PPE including RPE must leave that area. Where such people have been contaminated with dust or debris then arrangements should be made to decontaminate those affected. Any clothing or PPE should be decontaminated or disposed of as contaminated waste.**

**243 The contaminated area should be thoroughly cleaned of visible debris or dust that may have become contaminated by asbestos fibres using a suitable type “H” vacuum cleaner. Employees doing this work must wear appropriate PPE, including RPE. Air sampling should then be carried out to confirm that the remedial measures taken have been effective.**

**244 It is essential for supervisors or managers to make a careful check to ensure the work has been properly carried out. Even if the work was non-licensable, a licensed contractor and/or analyst should be employed to thoroughly clean the area if contamination is severe.**

**245 Only those people who are essential for carrying out repairs and other necessary cleaning and maintenance work must be allowed into the affected area (other than emergency services). For any employees who were not wearing adequate RPE or have been potentially exposed to asbestos fibres in an incident, a note that the exposure has occurred should be added to the employee’s health record or to the employee’s personal record if they do not have a health record. A copy of the note**

**must be given to the employee with instructions that it should be kept indefinitely.**

*Regulation 16*

*Duty to prevent or reduce the spread of asbestos*

**16. Every employer shall prevent or, where this is not reasonably practicable, reduce to the lowest level reasonably practicable the spread of asbestos from any place where work under his control is carried out.**

**246 Any plant or equipment which has been contaminated with asbestos should be thoroughly decontaminated before it is moved for use in other premises or for disposal. The basic decontamination procedures described in paragraph 227 must be followed every time a person leaves the work area.**

**247 Asbestos materials should never be left loose or in a state where they can be trampled, tracked over by plant and machinery or otherwise spread. All asbestos contaminated waste should be removed at regular intervals in appropriate waste containers.**

248 For non-licensable work where a risk of significant contamination exists, the work area should be enclosed. A full enclosure will be expected where there is large scale work eg asbestos-containing textured decorative coating removal. A 'mini-enclosure' should be used where the work is minor.

***Enclosures for licensable work***

**249 It should be assumed that for most of the work which requires a licence, which is not external/remote, a full enclosure will normally be required.**

**250 Employers should, where reasonably practicable, make sure that the work area is completely enclosed to contain any asbestos debris and airborne asbestos fibres, either by erecting a purpose-made enclosure or by sealing the whole or part of the area where the work is to be carried out. Where the structure of a building forms part of the enclosure then particular attention should be paid to seal areas such as windows, doors, vents and grilles and apertures through which pipes and other services/facilities pass which may allow air to escape. Openings in the enclosure for entry and exit (known as airlocks) should be designed to prevent the escape of asbestos when people or waste bags pass through them, permit the decontamination referred to in paragraphs 258 to 259 and should not reduce the effectiveness of the air extraction equipment. Air extraction units of sufficient capacity should be used to maintain negative pressure within the enclosure and ensure sufficient numbers of air changes take place. The unit(s) should be positioned at suitable places to ensure no 'dead spaces' wherever possible within the work area. Wherever reasonably practicable the air from the enclosure should be discharged to external atmosphere. The enclosure including airlocks should be fitted wherever practicable with a**

**sufficient number of suitable viewing panels and be kept clean to allow viewing at all suitable places.**

251 Information on the design and instructions for the installation and use of negative pressure units can be found in PAS 60/2.<sup>21</sup>

252 Where viewing panels are impractical eg in basements or upper floors or do not cover all areas, alternative viewing arrangements should be installed. Close-circuit cameras or computer webcam systems should be used. Detailed guidance on the design and construction of enclosures can be found in The Licensed Contractors' Guide.

**253 The enclosure should normally be designed and constructed so that asbestos materials are not disturbed until the enclosure is complete and placed under negative pressure. In circumstances where the area that is to be enclosed is contaminated with asbestos debris which will be disturbed by the actual work to enclose the area, then the following action should be taken. As much of the area as practicable should be enclosed (and placed under negative pressure), taking care not to disturb the asbestos debris. The debris must then be cleaned up using methods to minimise fibre release and the enclosure completed. Where dust and debris must be cleaned up before the enclosure can be built, methods of minimising fibre release should be specified and adopted. Suitable PPE, including RPE, should be worn for all work which disturbs or potentially disturbs asbestos during the building of enclosures.**

254 Where scaffolding forms part of the enclosure or is liable to disturb asbestos while it is being erected then the employer of the scaffolders may require a licence and must take precautions under these Regulations.

**255 Before starting work within the completed enclosure, its integrity should be checked by smoke testing. The filtered air extraction equipment should also be tested to ensure that it is achieving the required negative pressure.**

### ***Location of facilities and use of airlocks for licensable work***

**256 Where reasonably practicable, hygiene facilities should be connected directly to the enclosure airlock system. However, where this is not practicable, they should be located as close as is practicable, and procedures for preliminary decontamination and transiting should be drawn up and followed. The airlocks need to be of sufficient size (1m x 1m x 2m minimum) to allow storage of equipment (eg vacuum cleaner, footbath with brush, separate bucket of water and sponge for wiping RPE, overalls, footwear) and to allow proper preliminary decontamination to take place. There should be weighted flaps on each of the airlocks, located on the enclosure side. Where practicable, the 'transit route' should avoid occupied areas. If this cannot be done, then more rigorous decontamination of personnel will be required prior to transiting.**

<sup>21</sup> Negative pressure units – specification. BSI Publicly Available Specification 60, Part 2.

257 Detailed guidance on the design and construction of airlocks can be found in The Licensed Contractors' Guide.

### ***Preliminary decontamination procedures for licensable work***

258 Employers must have in place clear procedures for exiting the enclosure and removing waste in order to prevent the spread of asbestos (regulation 16) and the subsequent potential risk of exposing others (regulation 11). The bulk of employee contamination should be removed during the preliminary decontamination procedure within the enclosure and airlocks, with only the residues being removed in the showers of the main hygiene facilities.

259 In addition to the main hygiene facilities, vacuum-cleaning equipment should be provided, which should be type "H" (BS 5415) fitted with suitable tools, and be preferably located within the enclosure immediately next to the airlocks. Employees, using a 'buddy' system should use the equipment to clean their protective clothing as thoroughly as possible whenever they leave the enclosure or work area. In transiting situations, in the inner stage of the airlock, footwear should be washed using a brush and respirators (still worn and with the motor still running if a positive powered model is worn) should be wiped with wet cloths or sponges, using separate washing facilities to those provided for the footwear. All cloths, brushes and sponges should then be treated as contaminated waste. In the middle stage of the airlock, work overalls and boots should be removed. Transit overalls and footwear should be put on in the final compartment (outer stage) of the airlock.

### ***Protective clothing for licensable work***

260 Contaminated clothing should not be taken into the shower area or into the clean end of the hygiene facility.

### ***Removal of waste during licensable work***

261 Where practicable waste bags should be removed from the enclosure via a separate bag lock. The bags should be vacuumed all over before being passed into the next compartment of the bag lock where the bags are put into second outer bags. The bags are then passed to the outside or to an additional storage compartment before being passed to the outside. Under no circumstances should people exit the enclosure via the bag exit. Where it is not practicable to have a separate bag lock system the bag lock should be constructed off the inner or middle stage of the three-stage air lock which provides the entry/exit system for people. Under no circumstances should waste bags be taken through the main hygiene facilities.

262 All exits, whether for people or waste bags, should be designed to prevent the escape of airborne fibres and to allow 'negative pressure' equipment to operate effectively.

***Final decontamination procedure within main facilities for licensable work***

**263 RPE should not be removed until the wearer is in the shower and the respirator has been washed. The exception to this is where transit arrangements are in operation and the nature of the site is such that to wear the equipment in transit would be dangerous for the wearer. This must be justified in the risk assessment. In such instances it is important that a suitable disposable respirator or half-mask respirator fitted with a particle filter is worn between the enclosure and the hygiene facilities. The RPE should be wiped before removal prior to transiting in order to prevent exposure.**

**264 Parts of RPE which have been thoroughly cleaned in the hygiene facilities can be taken out through the 'clean' area. Contaminated equipment including any towels that have been taken into the shower or 'dirty end' will need to be put into a sealable container prior to being taken out through the 'dirty' area.**

**265 Once the work has started and asbestos has been disturbed, anyone (including analysts and supervisors) leaving the enclosure or working area should carry out preliminary and final decontamination (eg pass through the main hygiene facilities and should shower), except where there is an acute risk to workers' health or safety due to a medical emergency in the enclosure.**

266 Analyst decontamination procedures during the 4-stage clearance will depend on whether the person has, or may have become, contaminated. The potential for contamination will reflect the conditions inside the enclosure and the activity undertaken whilst in there. The analyst should always carry out preliminary decontamination on leaving the enclosure including in situations where there is no obvious visible contamination. Full decontamination (preliminary and final decontamination) would be expected in situations where the analyst may have become contaminated with asbestos or suspect asbestos. An example would be after a failed visual inspection where RPE or PPE including footwear could have become contaminated by the intrusive nature of the inspection eg where the analyst has had to crawl through confined areas such as an undercroft or ceiling space, or any other such area where significant contamination was possible.

267 Analysts should wear appropriate protective clothing for the 4-stage clearance procedure. As there is always the possibility that the analyst may become contaminated (and the need for full decontamination), all PPE including undergarments, should be disposable or be able to be cleaned. Arrangements should be in place to ensure that a set of clothes, shoes and towel are always available in the clean end of the hygiene facility. Under no circumstances should an analyst take or wear contaminated personal clothing home.

### ***Licensable work in open sites***

**268** If it is not reasonably practicable to enclose the work area (eg on exposed or remote sites) then the area should be marked by suitable warning notices and by physical barriers. Employers must assess the risks to workers nearby and, if necessary, the work should be done when other workers or members of the public will not be in the vicinity. Where it is not reasonably practicable to build a full enclosure, the spread of fibres should be prevented by other containment and dust suppression techniques,

269 For example, techniques such as wrap-and-cut where enclosures are used at the cut points, or glove bags combined with controlled wet stripping may be more appropriate for this. In addition, partial enclosures can be used for asbestos soffit removal. Guidance on the choice of asbestos stripping techniques is given in The Licensed Contractor's Guide <sup>22</sup>

**270** Where enclosures are not used, particular attention should be given to the assessment to establish what will be required to ensure that the work area is thoroughly cleaned.

#### *Regulation 17*

##### *Cleanliness of premises and plant*

**17.** Every employer who undertakes work which exposes or is liable to expose his employees to asbestos shall ensure that—

- a) *the premises, or those parts of the premises where that work is carried out, and the plant used in connection with that work are kept in a clean state; and*
- b) *where such work has been completed, the premises, or those parts of the premises where the work was carried out, are thoroughly cleaned.*

##### ***Cleanliness of premises and plant***

**271** When work with asbestos comes to an end, the work area should be thoroughly cleaned before being handed over for reoccupation or for demolition. All visible traces of asbestos dust and debris should be removed and a thorough visual inspection carried out. Where the work is licensable then the 4-stage clearance procedure (which includes air sampling) should be carried out and a certificate of reoccupation issued. Where licensed work is performed out of doors (eg soffit removal), then air sampling will not be required. In this situation, the certificate of reoccupation should still be completed but without stage 3 (air monitoring). More information on clearance procedures for non-licensed work is given in Asbestos Essentials.

**272** To aid the process of cleaning and to prevent the spread of asbestos, employers must choose work methods and equipment to

<sup>22</sup> Reference to Controlled Asbestos Stripping

prevent the build-up of asbestos waste on floors and surfaces in the working area. Wherever practicable, waste should be transferred direct into waste bags as workers remove the asbestos materials. Employers must make sure that any asbestos dust and debris is cleaned up and removed regularly to prevent it accumulating (and drying out where wet removal techniques have been used), and at least at the end of each shift.

273 Procedures will need to take account of the necessity for cleaning following an accidental and uncontrolled release of asbestos.

***Further measures to keep premises and plant clean during licensable work***

274 Procedures will need to be set up for cleaning:

- a) working areas including transit and waste routes;
- b) plant and equipment; and
- c) hygiene facilities.

275 Dustless methods of cleaning should be used including, wherever practicable, a type “H” (*BS 5415: 1986*) vacuum cleaner with appropriate tools. Procedures for cleaning should make clear:

- a) the items and areas to be cleaned;
- b) how often they need to be cleaned;
- c) the cleaning methods, which should not create dust; and
- d) any special precautions which need to be taken during cleaning, including the low-dust technique to be used, and the measures to be taken to reduce the spread of dust.

276 Dry manual brushing, or sweeping or compressed air must not be used to remove asbestos dust.

***Site clearance certification for reoccupation***

***Site Clearance duties and roles***

277 The employer of the people carrying out work with the asbestos or ACMs has duties:

- a) to ensure other people are not exposed to asbestos;
- b) to prevent the spread of asbestos; and
- c) to ensure that the premises or parts of premises where work with asbestos has taken place are thoroughly cleaned.

278 Compliance with these duties is aided by:

- a) pre cleaning where necessary;
- b) choosing methods which reduce the amount of airborne asbestos to the lowest level reasonably practicable;
- c) controlling the waste produced;
- d) using enclosures to prevent spread;
- e) the thorough cleaning of the work area and areas which may have become contaminated;
- f) visual inspection of the work area and areas which may have become contaminated;
- g) obtaining a clearance certificate for reoccupation of the area and a separate clearance certificate for the hygiene facility.

*The process for site clearance certification for reoccupation*

**279** Once removal of the asbestos has been completed, the premises must be assessed to determine whether they are thoroughly clean and hence fit to be returned to the client. It is important that this includes the premises, any plant or equipment or parts of the premises where work with asbestos has taken place and the surrounding areas which may have been contaminated. The areas requiring assessment for site clearance certification for reoccupation include:

- a) the enclosed area including airlocks or the delineated work area where an enclosure has not been used;
- b) the immediate surrounding area (for enclosures this will include the outside of walls and underneath polythene floors; for delineated areas this will include surfaces nearby either where asbestos may have been spread or where the pre-cleaning was not done properly);
- c) the transit route if one has been used; and
- d) the waste route and area around the waste skip.

**280** Those employing an organisation to carry out site clearance certification for reoccupation must ensure that the organisation is accredited to meet the relevant criteria in ISO 17020 and ISO 17025.<sup>23</sup> The process is intended to allow flexibility, but in practice it is likely to be the same person or organisation who carries out each stage. This will aid continuity and consistency, and will avoid problems with interfaces at each stage of the process. The organisation should have the necessary independence to act completely impartially. If the analyst is contracted by the client then a copy of the clearance certificate should be made available to the asbestos removal company.

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<sup>23</sup> Reference to ISO 17025

**281 Site clearance certification for reoccupation should only be carried out when work has been completed and the employer of those who have carried out the work has ensured that the areas requiring clearance assessment have been thoroughly cleaned and allowed to dry. In order to do this employers should follow the guidance given in paragraphs 288 to 290 on checking site condition, job completeness and carrying out a thorough visual inspection. Site clearance certification for reoccupation should normally be carried out in four successive stages, with the next stage only being commenced when the previous one has been completed.**

**282 However, more complex jobs eg where multi-stage clearance is required or where scaffolding is remaining on site, may involve more stages.**

**283 In situations where more clearance stages are required, this should be taken account of in the plan of work.**

**284 The four stages of site clearance certification for reoccupation are:**

- a) stage one – preliminary check of site condition and job completeness;**
- b) stage two – a thorough visual inspection inside the enclosure/work area;**
- c) stage three – clearance air monitoring;**
- d) stage four – final assessment post enclosure/work area dismantling.**

**285 Where practical the areas to be assessed should be dry and therefore sealants (such as PVA and other fibre wetting agents) should not be used prior to any visual inspections or disturbed air tests. Where it is not practical for the area to be dry (eg where there is natural water ingress) this fact should be recorded by the contractor before the site clearance process commences.**

**286 Occasionally some surfaces or materials, e.g. concrete, require sealing before the disturbed air test because they produce quantities of non-asbestos dust which would lead to an apparent failure in the air test. The use of sealants in this circumstance should only be done under the direction of the person carrying out the air test and the fact recorded by the contractor before the clearance process commences.**

**287 In some circumstances the floor of an enclosure may be covered with a 'sacrificial' layer of suitable floor material to prevent damage to the polythene underneath it, reduce the risk of slips and allow safe use of access equipment. Dust or debris may have penetrated between the sacrificial layer and the polythene, and therefore it will become necessary to take up the covering before site clearance certification.**

***Stage one: Preliminary check of site condition and job completeness***

**288** The scope of clearance should be established. The plan of work kept at the site should be checked and the extent of the clearance being sought agreed between the analyst and the contractor. The scope of the clearance should be recorded (eg on a diagram). A note should be made of any remaining asbestos which was outside the scope of the work.

**289** The work area, enclosure, hygiene facilities, and controls should be intact, operable and clean, with all ACMs included in the scope of the work and non essential asbestos contaminated equipment removed. The hygiene facilities should remain operable until a certificate of reoccupation has been issued. The work area, surrounding area, transit route, waste route together with the area around the waste disposal storage and all sections of the hygiene facility must be free of obvious asbestos containing waste and debris of any kind. If a viewing panel is fitted, this should be looked through so that a preliminary check can be made of the inside of the enclosure to see whether it contains any waste and debris. The result of these pre-inspections should be recorded.

***Stage two: thorough visual inspection***

**290** A thorough visual inspection should then be carried out to make sure that all visible traces of asbestos and other dust and debris have been removed, as far as is reasonably practicable, from the enclosure (including airlocks) or work area. It is important to refer to the plan of work to check that all the asbestos that was due to be removed has been removed. To be thorough this visual inspection should consist of the following three checks:

- a) the completeness of the removal of the ACM from the underlying surfaces;
- b) the presence of any visible asbestos debris left inside the enclosure and airlocks or work area where there is no enclosure; and
- c) the presence of fine settled dust.

**291** Suitable facilities should be made available to enable the inspection to be properly carried out eg step-ladders so that higher levels of the enclosure can be inspected.

***Stage three: clearance air monitoring***

**292** Following the successful completion of the thorough visual inspection, and before the enclosure is dismantled or the work area handed back to the client, air monitoring should be carried out to check that the concentration of airborne fibres remaining in areas affected by the work is as low as is reasonably practicable. For enclosures this is carried out with the enclosure intact and dry, but with the negative pressure unit switched off and the pre-filter capped and sealed.

293 The monitoring should be accompanied by activities which raise dust from the surfaces at least to a level consistent with normal use of the area and possible future work activities. The type of disturbance method and the length of time it is carried out for should be recorded. As many areas will subsequently be subjected to normal cleaning activities, air disturbance tests should be carried out using a brush to raise potential dust. Any person carrying out air disturbance must wear appropriate PPE. For work areas without enclosures, reassurance or background air testing is more appropriate than a disturbed air test. In most cases it will be reasonably practicable to clean the working area thoroughly enough for the airborne fibre concentration in the enclosure / work area, after final cleaning, to be less than  $0.010 \text{ f/cm}^3$  when measured by methods set out in the Analyst Guide. If measurements of  $0.010 \text{ f/cm}^3$  or more are found, an investigation will need to be carried out to find out the cause. If it is found that the enclosure or work area has not been cleaned properly then it must be re-cleaned, visually inspected and re-monitored. The threshold of less than  $0.010 \text{ f/cm}^3$  should be taken only as a transient indication of site cleanliness, in conjunction with visual inspection, and not as an acceptable permanent environmental level.

*Stage four: final assessment post enclosure/work area dismantling.*

294 Once the enclosure or work area has passed the visual inspection and clearance air monitoring the enclosure or work area can be dismantled. A type H vacuum cleaner (*BS 5415: 1986*) and suitable PPE, including RPE, should be kept available during dismantling so that any small amounts of asbestos debris which have become lodged behind the fabric of the enclosure or within folds in the polythene sheeting or on the floor underneath can be removed. Once the enclosure or work area has been dismantled, the area should be visually inspected again by a competent person to ensure that all debris has been removed.

295 Where there is evidence of dust and debris being released during dismantling of the enclosure, and this cannot be easily removed by vacuum, the site should be re-enclosed, re-cleaned, the visual inspection repeated and a disturbed air test carried out to make sure that the airborne asbestos fibre concentration is as low as is reasonably practicable, and in any case below the clearance indicator.

*Clearance certification*

296 Taking into account the results of each of the four stages of the clearance process, a certificate of reoccupation should be issued when the area concerned is deemed to be clean and cleared and suitable for return to the client. The certificate should include details of the site address, the dates of the work and a brief description, the name of the contractor, details of the clearance action that was undertaken under each stage and the specific areas and items checked, the results of each stage, and the signature of the person completing each stage.

**297** For premises permanently set aside for the testing and maintenance of plant and equipment contaminated with asbestos, the measures set out in paragraphs 272 to 276 should be followed in order to keep the area clean. When such an area is to be used for non asbestos work then the area will need to be thoroughly cleaned, the clearance process carried out and a site certificate of reoccupation issued beforehand.

### ***Clearance testing of hygiene facilities***

**298** Once the certificate of reoccupation has been issued for the work area, a clearance test should be carried out on the hygiene facility before it is removed from the site. The facility should be visually inspected and air tested. There should be a thorough visual inspection of all sections (ie clean end, showers and dirty end). The unit, including the shower, should be dry before the inspection takes place. On successful completion of the visual examination, a disturbed air test should be performed in the shower and dirty end. Clearance testing should be performed by a competent person. A separate clearance certificate should be issued for the hygiene facility. A copy of the most recent clearance certificate should be kept with the facility.

### ***Duties of those issuing clearance certificates***

**299** The person who issues the site clearance certificate for reoccupation or the clearance certificate for the hygiene facility does not have direct duties under the Asbestos Regulations. However, people issuing these certificates should follow this guidance in order to comply with their duty under section 3 of HSW Act to protect the health of people other than their employees. They should also consider the provision in section 36 of HSW Act which may become operative if they cause other people having duties under these Regulations to fail in those duties.

#### *Regulation 18*

##### *Designated Areas*

**18—(1)** Every employer shall ensure that any area in which work under his control is carried out is designated as—

- a) an asbestos area, subject to regulation 3(2), where any employee would be liable to be exposed to asbestos in that area;
- b) a respirator zone where the concentration of asbestos fibres in the air in that area would exceed or would be liable to exceed the control limit.

**(2)** Asbestos areas and respirator zones shall be clearly and separately demarcated and identified by notices indicating—

- a) that the area is an asbestos area or a respirator zone or both, as the case may be; and

*b) in the case of a respirator zone, that the exposure of an employee who enters it is liable to exceed the control limit and that respiratory protective equipment must be worn.*

*(3) The employer shall not permit any employee, other than an employee who by reason of his work is required to be in an area designated as an asbestos area or a respirator zone, to enter or remain in any such area and only employees who are so permitted shall enter or remain in any such area.*

*(4) Every employer shall ensure that only competent employees shall—*

*a) enter a respirator zone; and*

*b) supervise any employees who enter a respirator zone,*

*and for the purposes of this paragraph a competent employee means an employee who has received adequate information, instruction and training in compliance with regulation 10*

*(5) Every employer shall ensure that—*

*a) his employees do not eat, drink or smoke in an area designated as an asbestos area or a respirator zone; and*

*b) arrangements are made for such employees to eat or drink in some other place.*

### ***Designated areas for licensable work***

**300 All areas where licensable work is being undertaken should be demarcated and identified by suitable warning notices as asbestos areas.**

**301 Any area, where an employee may be exposed to asbestos to a level which may exceed a control limit, must be designated as a respirator zone. Respirator zones, whether enclosed or not, must be demarcated and identified by suitable warning notices. Notices that RPE must be worn are also necessary.**

**302 Only employees who need to do so for their work can enter and remain in asbestos areas and respirator zones.**

**303 Only employees who are competent may enter respirator zones or supervise people working in respirator zones. To enter a respirator area, the employee must have received adequate information, instruction and training in accordance with regulation 10.**

**304 Employers should ensure the provision of suitable facilities for employees to eat and drink outside the working area and where appropriate as close as is reasonably practicable to the hygiene facilities. No-one should eat, drink or smoke in the enclosure or work**

area, in the hygiene facilities or in any areas which have been marked as asbestos areas or respirator zones.

**305** Employers should also ensure that toilet facilities are provided, if they are not provided elsewhere on the site.

**306** Where hygiene facilities are not being used, personnel should wash and decontaminate themselves whenever they leave an asbestos area or respirator zone.

*Regulation 19*

*Air Monitoring*

**19**—(1) *Subject to paragraph (2), every employer shall monitor the exposure of his employees to asbestos by measurement of asbestos fibres present in the air—*

- a) at regular intervals; and*
- b) when a change occurs which may affect that exposure.*

*(2) Paragraph (1) shall not apply where—*

- a) the exposure of an employee is not liable to exceed the control limit; or*
- b) the employer is able to demonstrate by another method of evaluation that the requirements of regulation 11(1) and (5) have been complied with.*

*(3) The employer shall keep a suitable record of—*

- a) monitoring carried out in accordance with paragraph (1); or*
- b) where he decides that monitoring is not required because paragraph 2(b) applies, the reason for that decision.*

*The record required by paragraph (3), or a suitable summary thereof, shall be kept—*

- a) in a case where exposure is such that a health record is required to be kept under regulation 22 for at least 40 years; or*
- b) in any other case, for at least 5 years,*

*from the date of the last entry made in it.*

*(5) In relation to the record required by paragraph (3), the employer shall—*

- a) on reasonable notice being given, allow an employee access to his personal monitoring record;*

- b) *provide the Executive with copies of such monitoring records as the Executive may require; and*
- c) *if he ceases to trade, notify the Executive forthwith in writing and make available to the Executive all monitoring records kept by him.*

### ***Air monitoring***

**307** Air monitoring may be required to protect the health of employees by determining or checking the concentrations of airborne asbestos to which they are exposed and to establish employee exposure records. This should be done at regular intervals for a representative range of jobs and work methods.

**308** Air monitoring should always be done when there are any doubts about the effectiveness of the measures taken to reduce the concentration of asbestos in air (eg that engineering controls are working as they should to their design specification and do not need repair), and, in particular, measures taken to reduce that concentration below the control limit or below a peak level measured over 10 minutes as detailed in paragraph 158 of 0.6 f/m<sup>3</sup>. Monitoring will also necessary to confirm that the RPE chosen will provide the appropriate degree of protection where the level of asbestos fibres in air exceeds, or is liable to exceed, the control limit or a peak level measured over 10 minutes of 0.6 f/m<sup>3</sup>.

**309** Air monitoring will be appropriate unless:

- a) exposures are known to be low and not likely to approach the control limit or a 10 minute peak of 0.6 f/m<sup>3</sup>;
- b) the work is such that it complies with regulation 3(2) and adequate information is available to enable the appropriate protective equipment to be provided; or
- c) the protective equipment provided is of such a standard that no foreseeable measurement could indicate a need for equipment of a higher standard.

**310** If the employer decides monitoring is not necessary then he or she should use other sources of information about the likely concentrations of asbestos in air, for instance the guidance issued by HSE in the Licensed Contactors Guide or exposure data from previous similar work.

**311** Monitoring of employee exposure should be by personal sampling. Static sampling can be used to check that control measures are effective. Analysis must be undertaken using the 1997 WHO recommended method.

**312** Further information on air monitoring techniques can be found in the Analysts' Guide.

**313 All records of monitoring will need to state the employer's name and address, the site address where appropriate and the date of air monitoring, and should also include:**

- a) the type of work being done and where relevant its exact location;
- b) the type of sample, eg personal, static, clearance etc;
- c) the location of any static sampler;
- d) the date and time of sampling, the sample duration and the flow rate;
- e) the length of time for which individuals are exposed;
- f) the measured fibre concentration;
- g) the fibre type, if known; and
- h) the names and organisations of the sampler and analyst and the sampling and analysis method used.

**314 Records of air monitoring or a summary must be kept for 5 years except that, where employees are under medical surveillance, employers must keep the records or summary to supplement the health record for 40 years. Any summary of results will need to contain enough information about airborne fibre levels to allow individual average exposures for different types of work to be estimated as accurately as possible.**

**315 Employers should consult employees, safety representatives or representatives of employee safety when making arrangements for monitoring.**

### ***Air monitoring for non-licensable work***

**316 For those engaged in non-licensable work which involves continuous or repetitive activities, routine monitoring should be carried out at least once every three months, although the frequency may be reduced to once a year where:**

- a) there is no substantial change in workplace conditions; and
- b) the results of the two previous measurements have not exceeded half the control limit or a peak level measured over 10 minutes as detailed in paragraph 158 of 0.6 f/m<sup>3</sup>.

**317 Where groups of workers are doing the same type of work in similar conditions, sampling can be carried out on a group basis. Individuals chosen for sampling within a group should be selected at random.**

318 Further guidance on when air monitoring is necessary is given in - *Monitoring strategies for toxic substances*.

### ***Air monitoring for licensable work***

**319 Air monitoring will be required for licensable work:**

- a) if confirmation is needed to show that the RPE worn by workers can give adequate protection against the asbestos concentrations in the enclosure or work area;
- b) while work is in progress, to make sure that control measures are keeping the amount of asbestos in the air outside the enclosures as low as is reasonably practicable and that engineering controls are working as they should to their design specification and do not need repair; and
- c) after work has finished, in conjunction with a visual inspection, to check that the area has been adequately cleaned.

**320 Information on employee exposure needs to be compared with the control limit or a peak level measured over 10 minutes as detailed in paragraph 158  $0.6 \text{ f/m}^3$ , as the results may trigger the need for certain control measures.**

**321 Static sampling can be used to measure the concentration of asbestos fibres present in respirator zones and asbestos areas. Static sampling can also be used for leak sampling, reassurance sampling, etc and to check that control measures are effective.**

**322 Where groups of workers are doing the same type of work in similar conditions, sampling can be carried out on a group basis. Individuals chosen for sampling within a group should be selected at random.**

#### *Regulation 20*

##### *Standards for air testing and site clearance certification*

**20—(1) In this regulation “site clearance certificate for reoccupation” means a certificate issued to confirm that premises or parts of premises where work with asbestos has been carried out have been thoroughly cleaned upon completion of that work in accordance with regulation 17(b).**

**(2) Every employer who carries out any measurement of the concentration of asbestos fibres present in the air shall ensure that he meets criteria equivalent to those set out in the paragraphs of ISO 17025 which cover organisation, quality systems, control of records, personnel, accommodation and environmental conditions, test and calibration methods, method validation, equipment, handling of test and calibration items, and reporting results.**

*(3) Every employer who requests a person to carry out any measurement of the concentration of asbestos fibres present in the air shall ensure that that person is accredited by an appropriate body as complying with ISO 17025.*

*(4) Every employer who requests a person to assess whether premises or parts of premises where work with asbestos has been carried out have been thoroughly cleaned upon completion of that work and are suitable for reoccupation such that a site clearance certificate for reoccupation can be issued shall ensure that that person is accredited by an appropriate body as complying with the paragraphs of ISO 17020 and ISO 17025 which cover organisation, quality systems, control of records, personnel, accommodation and environmental conditions, test and calibration methods, method validation, equipment, handling of test and calibration items, and reporting results.*

*(5) Paragraphs (2) and (3) shall not apply to work carried out in a laboratory for the purpose only of research.*

**323 Those engaged to carry out air measurements and employee exposure monitoring must demonstrate that they conform with specified requirements in *ISO 17025* through accreditation with a recognised accreditation body.**

**324 Employers carrying out their own air measurements or employee exposure monitoring should make sure that employees carrying out this work receive similar standards of training, supervision and quality control to those required by *ISO 17025*.**

**325 Those engaged to carry out site clearance certification for reoccupation must demonstrate that they conform with specified requirements in *ISO 17020* and *ISO 17025* through accreditation with a recognised accreditation body.**

326 The United Kingdom Accreditation Service (UKAS) is currently the sole recognised accreditation body in Great Britain.

#### *Regulation 21*

##### *Standards for analysis*

**21—(1) Every employer who analyses a sample of any material to determine whether it contains asbestos shall ensure that he meets criteria equivalent to those set out in the paragraphs of *ISO 17025* which cover organisation, quality systems, control of records, personnel, accommodation and environmental conditions, test and calibration methods, method validation, equipment, handling of test and calibration items, and reporting results.**

*(2) Every employer who requests a person to analyse a sample of any material to determine whether it contains asbestos shall ensure that that person is accredited by an appropriate body as complying with *ISO 17025*.*

*(3) Paragraphs (1) and (2) shall not apply to work carried out in a laboratory for the purposes only of research.*

**327 Those engaged to analyse samples of material to determine whether or not they contain asbestos must demonstrate that they conform with *ISO 17025* by accreditation with a recognised accreditation body.**

**328 Employers carrying out their own analysis of samples should make sure that employees carrying out this work receive similar standards of training, supervision and quality control to those required by *ISO 17025*.**

329 The United Kingdom Accreditation Service (UKAS) is currently the sole recognised accreditation body in Great Britain.

*Regulation 22*

*Health records and medical surveillance*

**22—(1) Subject to regulation 3(2), every employer shall ensure that—**

- a) *a health record, containing particulars approved by the Executive, relating to each of his employees who is exposed to asbestos is maintained; and*
- b) *that record or a copy thereof is kept available in a suitable form for at least 40 years from the date of the last entry made in it.*

*(2) Subject to regulation 3(2), every employer shall ensure that each of his employees who is exposed to asbestos is under adequate medical surveillance by a relevant doctor.*

*(3) The medical surveillance required by paragraph (2) shall include—*

- a) *a medical examination not more than 2 years before the beginning of such exposure; and*
- b) *periodic medical examinations at intervals of not more than 2 years or such shorter time as the relevant doctor may require while such exposure continues,*

*and each such medical examination shall include a specific examination of the chest.*

*(4) Where an employee has been examined in accordance with paragraph (3), the relevant doctor shall issue a certificate to the employer and employee stating—*

- a) *that the employee has been so examined; and*
- b) *the date of the examination,*

*and the employer shall keep that certificate or a copy thereof for at least 4 years from the date on which it was issued.*

*(5) An employee to whom this regulation applies shall, when required by his employer and at the cost of the employer, present himself during his working hours for such examination and tests as may be required for the purposes of paragraph (3) and shall furnish the relevant doctor with such information concerning his health as the relevant doctor may reasonably require.*

*(6) Where, for the purpose of carrying out his functions under these Regulations, a relevant doctor requires to inspect any record kept for the purposes of these Regulations, the employer shall permit him to do so.*

*(7) Where medical surveillance is carried out on the premises of the employer, the employer shall ensure that suitable facilities are made available for the purpose.*

*(8) The employer shall—*

- a) on reasonable notice being given, allow an employee access to his personal health record;*
- b) provide the Executive with copies of such personal health records as the Executive may require; and*
- c) if he ceases to trade, notify the Executive forthwith in writing and make available to the Executive all personal health records kept by him.*

*(9) Where, as a result of medical surveillance, an employee is found to have an identifiable disease or adverse health effect which is considered by a relevant doctor to be the result of exposure to asbestos at work the employer of that employee shall—*

- a) ensure that a suitable person informs the employee accordingly and provides the employee with information and advice regarding further medical surveillance;*
- b) review the risk assessment;*
- c) review any measure taken to comply with regulation 11 taking into account any advice given by a relevant doctor or by the Executive;*
- d) consider assigning the employee to alternative work where there is no risk of further exposure to asbestos, taking into account any advice given by a relevant doctor; and*
- e) provide for a review of the health of every other employee who has been similarly exposed, including a medical examination (which shall include a specific examination of the chest) where such an examination is recommended by a relevant doctor or by the Executive.*

***Health records and medical surveillance for licensable work***

**330** The employer must keep a health record for any employee who undertakes licensable work. The health record must be kept for 40 years in a safe place and should contain at least the following information:

- a) the individual's surname, forenames, sex, date of birth, permanent address, postcode and National Insurance number;
- b) a record of the types of work carried out with asbestos and, where relevant, its location, with start and end dates, with the average duration of exposure in hours per week, exposure levels and details of any RPE used;
- c) a record of any work with asbestos prior to this employment of which the employer has been informed; and
- d) dates of the medical examinations.

**331** Anyone who undertakes licensable work must have been medically examined within the previous two years. Employers will need to obtain certificates of examination for any employees who state that they have been examined under these Regulations within the previous two years and keep them for four years from the date of issue. Employers should check with the previous employer or with the examining doctor that the certificates are genuine.

**332** Medical examinations should take place during the employee's normal working hours and be paid for by the employer. Employees should co-operate with their employer regarding attendance for medical examinations.

**333** Where an employee is diagnosed with a condition related to exposure to asbestos then the employer must review the health of all other current employees similarly exposed, as well as reviewing his assessments and methods of work.

**334** If the examination reveals the presence of any potentially limiting health conditions then a decision should be reached on whether a general fitness assessment is required in addition to the asbestos medical examination.

*Regulation 23**Washing and changing facilities*

**23—(1)** *Every employer shall ensure that, for any of his employees who is exposed or liable to be exposed to asbestos, there be provided—*

- a) *adequate washing and changing facilities;*

- b) *where he is required to provide protective clothing, adequate facilities for the storage of—*
  - i) *that protective clothing, and*
  - ii) *personal clothing not worn during working hours; and*
- c) *where he is required to provide respiratory protective equipment, adequate facilities for the storage of that equipment.*

(2) *The facilities provided under paragraph (1) for the storage of—*

- a) *personal protective clothing;*
- b) *personal clothing not worn during working hours; and*
- c) *respiratory protective equipment,*

*shall be separate from each other.*

**335 The type and extent of washing and changing facilities provided should be determined by the type and amount of exposure as indicated by the risk assessment**

### ***Hygiene facilities for licensable work***

**336 If the work is licensable, separate facilities should be provided for the workers working with asbestos. Employers must ensure that adequate changing and showering facilities are provided so that employees can clean and decontaminate themselves completely each time they leave the work area. This includes providing shampoo, soap or gel and towels. The provision of suitable hygiene facilities (also known as a decontamination unit (DCU)), should be on site and fully operational before any work (including ancillary work) commences. Maintenance records for DCUs (or copies of them) should be kept on site. The hygiene facility should not leave the site until the job is complete and the certificate of reoccupation has been issued.**

**337 The hygiene facility enables the employer to further comply with their duties to prevent the spread of asbestos and reduce the potential exposure of employees and other people to as low as reasonably practicable. The facilities will need to:**

- a) **have separate changing rooms for dirty, contaminated work clothing and for clean or personal clothing known as ‘dirty’ and ‘clean’ areas respectively. The showers should be located between the two changing rooms so that it is necessary to pass through them when going from one changing facility to the other. All doors between each room and those leading to the outside from the ‘dirty end’ should be self-closing and provide an airtight seal. The ‘clean’ and ‘dirty’ ends should be fitted with adequate seating and be of sufficient size for changing purposes;**

- b) be designed so that they can be cleaned easily;
- c) be fitted with air extraction equipment which keeps a flow of air from the clean to the dirty areas. The extracted air should be discharged through a HEPA filter;
- d) be adequately heated, lit (i.e. light switches at both the 'clean' and 'dirty' ends) and have internal vents so that air can pass through the unit;
- e) be of sufficient size, including allowance for sufficient and separate storage for personal clothing and protective clothing and equipment in the 'clean' end and sufficient receptacles for contaminated clothing, towels, filters etc in the 'dirty' end and shower area;
- f) have an adequate supply of clean running hot and cold or warm water, at a suitable pressure, in the showers, and soap or gel, shampoo, nailbrushes and individual dry towels. If gas heating is provided and the heater is mounted inside the unit, it must be a room-sealed type, and not open-flued. Waste water should be filtered before being discharged to the drains. All filters should be treated as asbestos waste;
- g) the shower areas should be of sufficient size to allow thorough decontamination and to have means to support the power pack of a full face respirator while it is still required to be worn (the power pack support should be out of the direct line of the shower to avoid contact with water and prevent damage to the batteries);
- h) have a wall-mounted mirror in the clean end of the unit; and
- i) have the electricity supply enter it via a 30 mA residual current circuit-breaker fitted at the point of entry into the unit, and the unit must be effectively earthed when in use.

*Regulation 24*

*Storage, distribution and labelling of raw asbestos and asbestos waste*

**24—(1)** *Every employer who undertakes work with asbestos shall ensure that raw asbestos or waste which contains asbestos is not—*

- a) *stored;*
- b) *received into or despatched from any place of work; or*
- c) *distributed within any place of work, except in a totally enclosed distribution system,*

*unless it is in a sealed container clearly marked in accordance with paragraphs (2) and (3) showing that it contains asbestos.*

(2) Raw asbestos shall be labelled in accordance with the provision of Schedule 2.

(3) Waste containing asbestos shall be labelled—

- a) where the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004<sup>(24)</sup> apply, in accordance with those Regulations; and
- b) in any other case in accordance with the provisions of Schedule 2.

### **Management of waste asbestos**

**338** Waste should be placed in suitable, labelled containers as it is produced. Where practicable, containers should be sealed and the outside cleaned before removal from enclosures or the work area, and they should be taken to a suitable and clearly identified secure storage area if they are not being disposed of at once.

**339** Any friable waste should be placed in UN approved packaging (available in up to 2 tonnes capacity). The Licensed Contractors' Guide provides further advice.

**340** Containers must be designed, constructed and maintained to prevent any of the contents escaping during normal handling. For most waste, double plastic sacks are suitable provided they will not split during normal use. It is important that the inner bag is not overfilled, especially when the debris is wet, and each bag should be capable of being securely tied or sealed. Air should be excluded from the bag as far as possible before sealing. Precautions will need to be taken as the exhaust air may be contaminated. Stronger packages are necessary if the waste contains sharp metal fragments or other materials liable to puncture plastic sacks.

**341** Wherever practicable, large pieces of rigid material must not be broken or cut for disposal in plastic sacks. They should be double-wrapped intact in plastic sheeting or other suitable material and placed in a sealed, labelled container such as a lockable skip or freight container.

**342** You may need a waste management licence from the relevant environment agency if you intend to sort ACMs from other debris or you want to re-use rubble contaminated with ACMs on the same site.

### **Transport of waste asbestos**

**343** Bags containing asbestos waste should be appropriately labelled and transported to a licensed disposal site in an enclosed vehicle, skip or freight container. The specific requirements of various Hazardous Waste Regulations in England and Wales and the Special Waste Regulations in Scotland should be adhered to, as appropriate.

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<sup>(24)</sup>S.I. 2004/568.

## **Labelling of asbestos waste**

### **344 Asbestos waste must be labelled:**

- a) in accordance with the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004<sup>25</sup> where those Regulations apply;**
- b) where the Regulations in (a) do not apply, in accordance with Schedule 2 of the Asbestos Regulations 2006.**

345 The Licensed Contractors' Guide contains more detailed advice on waste handling.

### *Regulation 25*

#### *Interpretation of prohibitions*

#### **25—(1) In this Part —**

*“asbestos cement” means a material which is predominantly a mixture of cement and chrysotile and which when in a dry state absorbs less than 30% water by weight.*

*“asbestos spraying” means the application by spraying of any material containing asbestos to form a continuous surface coating;*

*“extraction of asbestos” means the extraction by mining or otherwise of asbestos as the primary product of such extraction, but shall not include extraction which produces asbestos as a by-product of the primary activity of extraction; and*

*“supply” means supply by way of sale, lease, hire, hire-purchase, loan, gift or exchange for a consideration other than money, whether (in all cases) as principal or as agent for another.*

*(2) Any prohibition imposed on any person by this Part shall apply only to acts done in the course of a trade, business or other undertaking (whether for profit or not) carried on by him.*

*(3) Any prohibition imposed by this Part on the importation into the United Kingdom, or on the supply or use of asbestos shall not apply to the importation, supply or use of asbestos solely for the purposes of research, development or analysis.*

*(4) Where in this Part it is stated that asbestos has intentionally been added to a product or is intentionally added, it will be presumed where—*

- a) asbestos is present in any product; and*

<sup>25</sup> Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004. SI 2004 No 568, The Stationery Office, ISBN 0 11 049063 0

- b) *asbestos is not a naturally occurring impurity of that product, or of any component or constituent thereof,*

*that the asbestos has intentionally been added or is intentionally added, as the case may be, subject to evidence to the contrary being adduced in any proceedings.*

#### *Regulation 26*

##### *Prohibitions of exposure to asbestos*

**26—***(1) No person shall undertake asbestos spraying or working procedures that involve using low-density (less than 1g/c<sup>3</sup>) insulating or soundproofing materials which contain asbestos*

*(2) Every employer shall ensure that no employees are exposed to asbestos during the extraction of asbestos.*

*(3) Every employer shall ensure that no employees are exposed to asbestos during the manufacture and processing of asbestos products or of products containing intentionally added asbestos, except during the treatment and disposal of products resulting from demolition and asbestos removal.*

*(4) In the case of chrysotile only, the prohibition in paragraph (3) is subject to the exception in paragraph 2 of Schedule 3.*

#### *Regulation 27*

##### *Prohibition of the importation of asbestos*

**27—***(1) Subject to paragraph (2), the importation into the United Kingdom of asbestos or of any product to which asbestos has intentionally been added is prohibited and any contravention of this paragraph shall be punishable under the Customs and Excise Management Act 1979<sup>(26)</sup> and not as a contravention of a health and safety regulation.*

*(2) In the case of chrysotile only, the prohibition in paragraph (1) is subject to the exceptions in paragraphs 1, 2 and 3 of Schedule 3.*

#### *Regulation 28*

##### *Prohibition of the supply of asbestos*

**28—***(1) Subject to paragraphs (2) and (3), no person shall supply, other than solely for the purpose of disposal, asbestos or any product to which asbestos has intentionally been added.*

*(2) In the case of chrysotile only, the prohibition in paragraph (1) shall not apply where the asbestos or the product was in use before 24th November 1999, except in the case of a product to which asbestos has intentionally been*

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<sup>(26)</sup> 1979 c.2.

added of which the supply was prohibited by regulation 7 of the Asbestos (Prohibitions) Regulations 1992<sup>(27)</sup> as in force immediately before 24th November 1999.

(3) In the case of chrysotile only, the prohibition in paragraph (1) is subject to the exceptions in paragraphs 1 and 2 of Schedule 3.

#### Regulation 29

##### Prohibition of the use of asbestos

**29**—(1) Subject to paragraphs (2) to (6), no person shall use, except in the course of any activity in connection with its disposal, asbestos or any product to which asbestos has intentionally been added.

(2) In the case of products containing crocidolite or asbestos grunerite (amosite), the prohibition in paragraph (1) shall not apply where the product was in use before 1st January 1986.

(3) In the case of products containing any other form of asbestos than crocidolite or asbestos grunerite (amosite), but excepting chrysotile, the prohibition in paragraph (1) shall not apply where the product was in use before 1st January 1993.

(4) In the case of chrysotile only, the prohibition in paragraph (1) shall not apply where the asbestos or product was in use before 24th November 1999, except in the case of a product containing chrysotile of which the supply was prohibited by regulation 7 of the Asbestos (Prohibitions) Regulations 1992 as in force immediately before 24th November 1999.

(5) Notwithstanding paragraph (4), no person shall use, except in the course of any activity in connection with its disposal,—

- a) asbestos cement;
- b) any board, panel or tile, all or part of which has been painted with paint containing chrysotile; or
- c) any board, panel or tile, all or part of which has been covered in a textured finishing plaster used for decorative purposes and containing chrysotile,

unless it is installed in or forms part of any premises or plant and, before 24th November 1999, it was installed in or formed part of those same premises or plant.

(6) In the case of chrysotile only, the prohibition in paragraph (1) is subject to the exceptions in paragraphs 1 and 2 of Schedule 3.

#### Regulation 30

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<sup>(27)</sup> S.I. 1992/3067.

*Labelling of products containing asbestos for use at work*

**30—(1)** Subject to paragraph (2), a person shall not supply under an exception in Schedule 3 or an exemption granted pursuant to regulation 32 or regulation 33 a product which contains asbestos unless that product is labelled in accordance with the provisions of Schedule 2.

(2) Where a component of a product contains asbestos, it shall be sufficient compliance with this regulation if that component is labelled in accordance with the provisions of Schedule 2 except that where the size of that component makes it impossible for a label to be fixed to it neither that component nor the product need be labelled.

*Regulation 31**Additional provisions in the case of exceptions and exemptions*

**31—(1)** Where under an exception in Schedule 3 or an exemption granted pursuant to regulation 32 or regulation 33 asbestos is used in a work process or is produced by a work process, the employer shall ensure that the quantity of asbestos and materials containing asbestos at the premises where the work is carried out is reduced to as low a level as is reasonably practicable.

(2) Subject to paragraph (3), where under an exception in Schedule 3 or an exemption granted pursuant to regulation 32 or regulation 33 a manufacturing process which gives rise to asbestos dust is carried out in a building, the employer shall ensure that any part of the building in which the process is carried out is—

- a) so designed and constructed as to facilitate cleaning; and
- b) is equipped with an adequate and suitable vacuum cleaning system which shall, where reasonably practicable, be a fixed system.

(3) Paragraph 2(a) shall not apply to a building in which, prior to 1st March 1988, there was carried out a process to which either—

- a) as then in force, regulation 13 of the Asbestos Regulations 1969<sup>(28)</sup> applied and the process was carried out in compliance with that regulation; or
- b) that regulation did not apply.

*Regulation 32**Exemption certificates*

**32—(1)** Subject to paragraph (2), the Executive may, by a certificate in writing, exempt any person or class of persons or any product containing asbestos or class of such products from all or any of the requirements or prohibitions

<sup>(28)</sup> S.I. 1969/690—revoked by S.I. 1987/2115.

imposed by regulations 4, 8, 12, 13, 2, 122(5) to (7), 27, 28 and 29 of these Regulations and any such exemption may be granted subject to conditions and to a limit of time and may be revoked by a further certificate in writing at any time.

(2) The Executive shall not grant any exemption under paragraph (1) or (2) unless having regard to the circumstances of the case and in particular to—

- a) the conditions, if any, which it proposes to attach to the exemption; and
- b) any other requirements imposed by or under any enactments which apply to the case,

it is satisfied that the health or safety of persons who are likely to be affected by the exemption will not be prejudiced in consequence of it.

### Regulation 33

#### Exemptions relating to the Ministry of Defence

**33**—(1) The Secretary of State for Defence may, in the interests of national security, exempt any person or class of persons from all or any of the prohibitions imposed by Part 3 of these Regulations by a certificate in writing, and any such exemption may be granted subject to conditions and to a limit of time and may be varied or revoked by a further certificate in writing at any time.

### Regulation 34

#### Extension outside Great Britain

**34** These Regulations shall apply to any work outside Great Britain to which sections 1 to 59 and 80 to 82 of the Health and Safety at Work etc. Act 1974 apply by virtue of the Health and Safety at Work etc. Act 1974 (Application Outside Great Britain) Order 2001<sup>(29)</sup> as they apply to work in Great Britain.

### Regulation 35

#### Revocations, amendments and savings

**35**—(1) The revocations listed in Schedule 4 shall have effect.

(2) The amendments listed in Schedule 5 shall have effect.

(3) Any record or register required to be kept under any Regulations revoked either by paragraph (1) or by regulation 27(1) of the Control of Asbestos at Work Regulations 2002<sup>(30)</sup> shall, notwithstanding that revocation, be kept in the same manner and for the same period as specified in those Regulations as if these Regulations had not been made, except that the Executive may approve the keeping of records at a place or in a form other than at the place

<sup>(29)</sup> S.I. 2001/2127.

<sup>(30)</sup> S.I. 2002/2675.

*where, or in the form which, records were required to be kept under the Regulations so revoked.*

*Regulation 36*

*Defence*

**36** *Subject to regulation 21 of the Management of Health and Safety at Work Regulations 1999<sup>(31)</sup>, in any proceedings for an offence consisting of a contravention of Part 2 of these Regulations it shall be a defence for any person to prove that he took all reasonable precautions and exercised all due diligence to avoid the commission of that offence.*

*Signed by authority of the Secretary of State*

DRAFT

*Name*

*Minister of State*

*Day Month 200X*

*Department for Work and Pensions*

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<sup>(31)</sup> S.I. 1999/3242, amended by S.I. 2003/2457.

## SCHEDULE 1 Regulation 9(1)

## PARTICULARS TO BE INCLUDED IN A NOTIFICATION

*The following particulars are to be included in a notification made in accordance with regulation 9(1), namely—*

- a) the name and address of the notifier and the address and telephone number of his usual place of business;*
- b) a brief description of—*
  - i) the location of the work site,*
  - ii) the type(s) of asbestos to be used or handled (classified in accordance with regulation (2),*
  - iii) the maximum quantity of asbestos of each type to be held at any one time on the premises at which the work is to take place,*
  - iv) the activities and processes involved,*
  - v) the number of workers involved, and*
  - vi) the measures taken to limit the exposure of employees to asbestos, and*
- c) the date of the commencement of the work and its duration.*

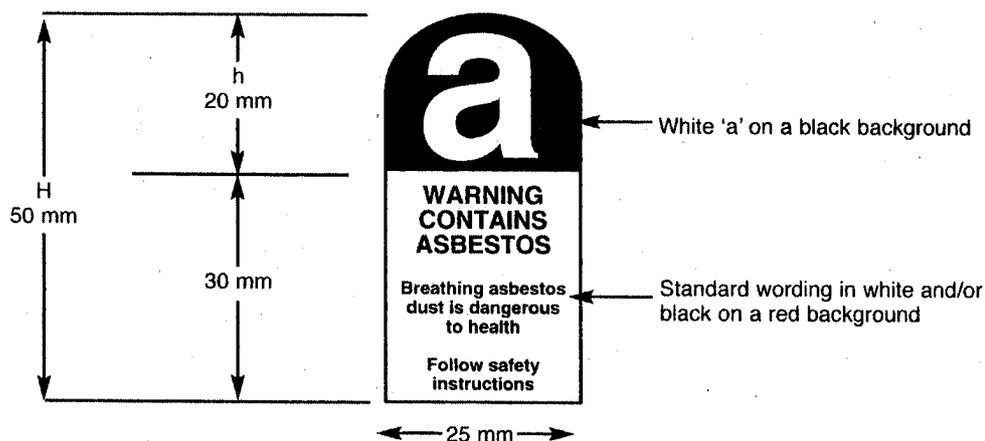
## SCHEDULE 2 Regulations 14(4), 24(2) and (3) and 30(2)

## THE LABELLING OF RAW ASBESTOS, ASBESTOS WASTE AND PRODUCTS CONTAINING ASBESTOS

1—(1) Subject to sub-paragraphs (2) and (3) of this paragraph, the label to be used on—

- a) raw asbestos (together with the labelling required under the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002<sup>(32)</sup> and the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004<sup>(33)</sup>);
- b) asbestos waste, when required to be so labelled by regulation 24(3); and
- c) products containing asbestos, including used protective clothing to which regulation 14(2) applies,

shall be in the form and in the colours of the following diagram and shall comply with the specifications set out in paragraphs 2 and 3.



(2) In the case of a product containing crocidolite, the words “contains asbestos” shown in the diagram shall be replaced by the words “contains crocidolite/blue asbestos”.

(3) Where the label is printed directly onto a product, a single colour contrasting with the background colour may be used.

2 The dimensions in millimetres of the label referred to in paragraph 1(1) shall be those shown on the diagram in that paragraph, except that larger measurements may be used, but in that case the dimension indicated as  $h$  on the diagram shall be 40% of the dimension indicated as  $H$ .

<sup>(32)</sup> S.I. 2002/1689, as amended by S.I. 2004/568.

<sup>(33)</sup> S.I. 2004/568.

**3** *The label shall be clearly and indelibly printed so that the words in the lower half of the label can be easily read, and those words shall be printed in black or white.*

**4—(1)** *Where a product containing asbestos may undergo processing or finishing it shall bear a label containing safety instructions appropriate to the particular product and in particular the following instructions—*

*“operate if possible out of doors in a well-ventilated place”;*

*“preferably use hand tools or low speed tools equipped, if necessary, with an appropriate dust extraction facility. If high speed tools are used, they should always be so equipped”;*

*“if possible, dampen before cutting or drilling”;* and

*“dampen dust, place it in a properly closed receptacle and dispose of it safely”.*

*(2) Additional safety information given on a label shall not detract from or contradict the safety information given in accordance with sub-paragraph (1).*

**5—(1)** *Labelling of packaged and unpackaged products containing asbestos in accordance with the foregoing paragraphs shall be effected by means of—*

- a) an adhesive label firmly affixed to the product or its packaging, as the case may be;*
- b) a tie-on label firmly attached to the product or its packaging, as the case may be; or*
- c) direct printing onto the product or its packaging, as the case may be.*

*(2) Where, in the case of an unpackaged product containing asbestos, it is not reasonably practicable to comply with the provisions of sub-paragraph (1) the label shall be printed on a suitable sheet accompanying the product.*

*(3) Labelling of raw asbestos and asbestos waste shall be effected in accordance with sub-paragraph (1)(a) or (c).*

*(4) For the purposes of this Schedule but subject to sub-paragraph (5), a product supplied in loose plastic or other similar wrapping (including plastic and paper bags) but no other packaging, shall be treated as being supplied in a package whether the product is placed in such wrapping at the time of its supply or was already so wrapped previously.*

*(5) No wrapping in which a product is placed at the time of its supply shall be regarded as packaging if any product contained in it is labelled in accordance with the requirements of this Schedule or any other packaging in which that product is contained is so labelled.*

*SCHEDULE 3 Regulations 26(3), 27(2), 28(3) and 29(6)*

*EXCEPTIONS TO THE PROHIBITIONS ON THE IMPORTATION, SUPPLY AND USE OF CHRYSOTILE*

*1 Regulations 27(1), 28(1) and 29(1) shall not apply to the products described in paragraph 4 of this Schedule,*

*2 Where it is not practicable for an employer to substitute for chrysotile a substance which, under the conditions of its use, does not create a risk to the health of his employees or creates a lesser risk than that created by chrysotile, regulations 26(3), 27(1), 28(1) and 29(1) shall not apply to—*

- a) the products described in paragraph 5 of this Schedule,*
- b) chrysotile, or products to which chrysotile has intentionally been added, required solely for the manufacture of the products described in paragraph 5 of this Schedule.*

*3 Regulation 27(1) shall not apply to the products described in paragraph 6 of this Schedule.*

*4 Brake linings within the meaning of the Road Vehicles (Brake Linings Safety) Regulations 1999<sup>(34)</sup>.*

*5 Diaphragms for use in electrolytic cells in existing electrolysis plants for chlor-alkali manufacture.*

*6 Receptacles used for the storage of acetylene gas under pressure and in use before 24th November 1999.*

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<sup>(34)</sup> S.I. 1999/2978, as amended by S.I. 2003/3314.

## SCHEDULE 4 Regulation 35(1)

## REVOCATIONS

<i>Instruments revoked</i>	<i>References</i>	<i>Extent of revocation</i>
<i>The Asbestos (Licensing) Regulations 1983</i>	<i>S.I. 1983/1649</i>	<i>The whole Regulations</i>
<i>The Personal Protective Equipment at Work Regulations 1992</i>	<i>S.I. 1992/2966</i>	<i>Schedule 2 Part VII</i>
<i>The Asbestos (Prohibitions) Regulations 1992</i>	<i>S.I. 1992/3067</i>	<i>The whole Regulations</i>
<i>The Asbestos (Licensing) (Amendment) Regulations 1998</i>	<i>S.I. 1998/3233</i>	<i>The whole Regulations</i>
<i>The Asbestos (Prohibitions) (Amendment) Regulations 1999</i>	<i>S.I. 1999/2373</i>	<i>The whole Regulations</i>
<i>The Asbestos (Prohibitions) (Amendment) (No. 2) Regulations 1999</i>	<i>S.I. 1999/2977</i>	<i>The whole Regulations</i>
<i>The Asbestos (Prohibitions) (Amendment) Regulations 2003</i>	<i>S.I. 2003/1889</i>	<i>The whole Regulations</i>
<i>The Control of Asbestos at Work Regulations 2002</i>	<i>S.I. 2002/2675</i>	<i>The whole Regulations</i>
<i>The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004</i>	<i>S.I. 2004/568</i>	<i>Schedule 13 paragraph 12(2)</i>
<i>The Fire and Rescue Services Act 2004 (Consequential Amendments) (England) Order 2004</i>	<i>S.I. 2004/3163</i>	<i>Article 63</i>
<i>The Fire (Scotland) Act 2005 (Consequential Modifications and Amendments) (No 2) Order 2005</i>	<i>S.S.I. 2005/344</i>	<i>In Schedule 1 Part 1 the heading "The Control of Asbestos at Work Regulations 2002" and paragraph 26</i>

## SCHEDULE 5 Regulation 35(2)

## AMENDMENTS

<i>Instruments amended</i>	<i>References</i>	<i>Amendments to have effect</i>
<i>The Personal Protective Equipment at Work Regulations 1992</i>	<i>S.I. 1992/2966</i>	<i>In regulation 3(3)(c) for the reference to the Control of Asbestos at Work Regulations 1987 substitute a reference to these Regulations</i>
<i>The Health and Safety (Enforcing Authority) Regulations 1998</i>	<i>S.I. 1998/494</i>	<p><i>After paragraph 4 of Schedule 2 insert the following paragraph—</i></p> <p><i>“4A. The reference in paragraph 4(a)(iii) to a physically segregated area does not include an area segregated only in order to prevent the escape of asbestos; and in this paragraph “asbestos” has the meaning assigned to it by regulation 2(1) of the Control of Asbestos (at Work?) Regulations 2006”</i></p>
<i>The Provision and Use of Work Equipment Regulations 1998</i>	<i>S.I. 1998/2306</i>	<i>In regulation 12(5)(b) for the reference to the Control of Asbestos at Work Regulations 1987 substitute a reference to these Regulations</i>
<i>The Control of Substances Hazardous to Health Regulations 2002</i>	<i>S.I. 2002/2677</i>	<i>In regulation 5(1)(a)(iii) for the reference to the Control of Asbestos at Work Regulations 2002 substitute a reference to these Regulations</i>
<i>The Fur Farming (Compensation Scheme) (England) Order 2004</i>	<i>S.I. 2004/1964</i>	<i>In Schedule 6 Part 6 paragraph 14(a)(i) and (ii) after the words “the Control of Asbestos at Work Regulations 2002” insert in each case the words “or, from 6th April 2006, by Part 3 of the Control of Asbestos (at Work?) Regulations 2006</i>
<i>The Health and Safety (Fees) Regulations 2005</i>	<i>S.I. 2005/676</i>	<p><i>In the heading to regulation 5 for the reference to the Asbestos (Licensing) Regulations 1983 substitute a reference to these Regulations.</i></p> <p><i>In regulation 5(1) for the words “the Asbestos (Licensing) Regulations 1983 (“the 1983 Regulations)” substitute the words “the Control of Asbestos (at Work?) Regulations 2006 (“the 2006 Regulations)” and for each subsequent reference in regulation 5 to “the 1983 Regulations” substitute a reference to “the 2006 Regulations”</i></p> <p><i>In the heading to Schedule 4 for the reference to the Asbestos (Licensing) Regulations 1983 substitute a reference to these Regulations.</i></p>

*In Schedule 4 Table 1 column 1 after the words “work with asbestos” delete the words “insulation or asbestos coating or asbestos insulating board”*

*In regulation 6(3) and in Schedule 5 columns 1 and 2 row (b) for the references to the Control of Asbestos at Work Regulations 2002 substitute in each case a reference to these Regulations*

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Annex 1: Example of licence application form  
Figure 1: Example of licence application form  
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Annex 2: Example of notification form  
Figure 2: Example of notification form  
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**AMENDMENTS TO THE CONTROL OF ASBESTOS AT WORK  
AND ASBESTOS (LICENSING) REGULATIONS**

## **1. REGULATORY IMPACT ASSESSMENT**

1.1.1. This is a Partial RIA.

## **2. PURPOSE AND INTENDED EFFECT**

### **2.1. Issue**

2.1.1. This document examines the impact of implementing the amendments to the Asbestos Worker Protection Directive - 2003/18/EC amendment directive (AWPD amendments) and other proposed amendments to current asbestos legislation. The proposals will mainly affect those at work who may be exposed to asbestos fibres and in particular those involved in asbestos removal, and maintenance and demolition in buildings which contain asbestos materials.

### **2.2. Objectives**

2.2.1. The objective of the proposed amendments to asbestos Regulations and Approved Codes of Practice (ACoPs) is to further reduce the risk of future exposure to asbestos by fully implementing the amendments to the AWPD and making some adjustments to clarify and simplify existing asbestos legislation.

2.2.2. The purpose of the amendment Directive is to refocus measures on those who are now most at risk, in particular workers who remove asbestos and maintenance workers who may disturb asbestos during their work.

2.2.3. The amendments to the AWPD, intended to reduce asbestos exposure, are; a single lower Control Limit which worker exposure must not exceed, simplification of the limits regime, a strengthened emphasis on worker training, a greater focus on protecting maintenance workers and encouraging a risk-based approach to asbestos controls rather than the current, materials-based approach.

2.2.4. In addition HSE is taking this opportunity to simplify and clarify the regulatory framework by combining two sets of regulations and amending the licensing and notification regulations to create a consistent, risk-based system of control. This will remove the requirement to use licensed asbestos removal contractors in specific cases where the risk assessment does not justify it. HSE is also proposing to bring the Regulations into line with the current accreditation scheme for site clearance to encourage higher standards of site clearance following asbestos removal.

### **2.3. Background**

2.3.1. Asbestos has been responsible for more occupationally induced deaths than any other single cause. Since asbestos can result in death 15-60 years after exposure, the current mortality rate, which is expected to rise until around 2011-2015, is largely determined by the level of exposure before the

introduction in the 1980s of modern and more stringent asbestos legislation. Nevertheless, the current risk of exposure to asbestos remains significant.

- 2.3.2. The exposure of workers to asbestos is currently controlled by three sets of Regulations:
- 2.3.2.1. **Control of Asbestos at Work Regulations 2002<sup>1</sup>** (CAW) came into effect in 1987 and were amended in 1999 and 2002. They apply to any work in which asbestos is encountered, whether intentionally or not. Some particular regulations are triggered only if exposure is liable to exceed an action level.
- 2.3.2.2. **The Asbestos (Licensing) Regulations 1983<sup>2</sup>** (ASLIC) as amended in 1998. The Regulations generally ban work with asbestos insulation or asbestos coating or asbestos insulating board, unless carried out by an organisation holding a licence granted by HSE. The regulations allow the enforcing authorities (HSE inspectors and local authority inspectors) to identify and monitor closely work with the asbestos materials that pose the greatest risk to people's health.
- 2.3.2.3. **The Asbestos (Prohibitions) Regulations 1992<sup>3</sup>** as amended in 1999. The 1992 Regulations prohibited the importation, supply and use of the amphibole family of asbestos (including crocidolite and amosite) and products containing them and included a list of products containing chrysotile asbestos. The 1999 amendments prohibit the importation, supply and use of chrysotile asbestos, and of most products containing it.
- 2.3.3. In 1995 new research identified maintenance workers as the group most at risk from exposure to asbestos. As a consequence, in 1998 the UK amended the Control of Asbestos at Work (CAW) Regulations 1987 to make it clear that they applied to this high-risk group.
- 2.3.4. HSC has previously consulted on a range of measures to enhance protection for those working with, or affected by, asbestos containing materials. On 21 May 2004 the duty to manage asbestos in non-domestic premises came into force (regulation 4 of the Control of Asbestos at Work Regulations 2002). It requires those who own, occupy, manage or have responsibilities for non-domestic premises (including commercial buildings and the common areas of residential property) to proactively identify asbestos containing material (ACM), assess its condition and manage the risk arising from it. Information about the location and conditions of ACM must be made available to anyone who may be exposed to asbestos.
- 2.3.5. During its Presidency in April 1998, the UK was instrumental in negotiating an agreed set of Council conclusions (98/C 142/01) inviting the EC to prepare a second amendment to the Asbestos Worker Protection Directive.
- 2.3.6. The UK played a key role in the development of the AWPD amendments and the Directive was finally adopted on 18 February 2003. It must be transposed into UK legislation by 15 April 2006. The final form of the amending Directive is generally in line with the UK negotiating position.

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<sup>1</sup> Control of Asbestos at Work Regulations 2002 SI N° 2675

<sup>2</sup> Asbestos (Licensing) Regulations 1983 SI N° 1649 as amended in 1998 SI N° 3233

<sup>3</sup> Asbestos (Prohibitions) Regulations 1992 SI N° 3068 as amended in 1999 SI N° 2373 and in 2003 SI N° 1889

2.3.7. Full compliance with the duty to manage, together with the requirements in the AWPDP, e.g. clearer training specifications and a tighter control limit, will help to eliminate risks from exposure to asbestos.

## 2.4. Risk assessment

2.4.1. Asbestos exposure has been investigated in detail as part of the earlier HSE proposals for a duty to identify and manage the presence of asbestos in workplace premises. Human health risks can be considered in two groups; occupational exposure from workers disturbing asbestos containing materials (ACMs) and exposure to other individuals including members of the public, who may be affected by the presence of disturbed or degraded asbestos in the buildings they work in or inhabit.

2.4.2. The investigation mentioned above highlighted that workers were at risk from asbestos exposure when working with asbestos-containing materials (ACMs) either inadvertently or without proper controls in place. A review by the Health and Safety Laboratory (HSL) on exposure levels, summarised in Annex A, suggests that maintenance workers encounter situations where the proposed revised Control Limit could be exceeded up to 20% of the time they work with ACMs. The changes HSE proposes to implement are intended to reduce asbestos exposure by increasing awareness of both the presence and risks of ACMs and ensuring proper controls are in place when working with them.

2.4.3. This earlier investigation indicated that, from a baseline year of 2000, approximately 7,800 individuals would go on to develop a fatal asbestos related disease over the next one hundred years, as a result of exposure over the next fifty years. This figure is based on current levels of exposure, but allows for the routine demolition of buildings over time. Of these deaths around 4,500 would be as a result of occupational exposure, around 2,000 would be as a result of indirect, or work-related, exposure and 1,300 would be as a result of domestic exposure. Details of how these figures were estimated are contained in Annex A.

2.4.4. To calculate the monetary value of these deaths, HSE has applied the current Department for Transport value of risk reduction to each fatality (£1.3 million in 2003 values), discounting at 3.5% per year in line with HM Treasury guidance, uprating by 2% to allow for an assumption about constant marginal valuation of health with respect to changes in income, and doubling the figure to allow for a particular aversion to carcinogens<sup>4</sup>. Using this method the benefits of a total elimination of current risk (7,800 deaths) are calculated as having a present value of at least £8.4 billion, of which some £7.0 billion will be due to occupational exposure (6,500 deaths).

2.4.5. HSE has conducted further analysis on the risks to licensed asbestos removal workers, the highest exposure group, who form a small subset of the above occupationally exposed workers. The details of this analysis are contained in Annex A. HSE estimates that the number of licensed workers who will go on to die over the next 100 years as a result of current levels of exposure over

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<sup>4</sup> This practice is mentioned in the Green Book.

the next 50 years is 87<sup>5</sup>. Numerous assumptions were made in the estimation of this figure, and HSE therefore suggests that applying an uncertainty factor of two is appropriate. This yields a range of between 44 and 174 fatalities. Converted into monetary terms, this gives a present value of between £51 million and £204 million. This is included within the totals mentioned in paragraph 2.4.3, above.

- 2.4.6. Proper risk control can only result from a full package of measures of which this Directive is one part, designed to reduce exposure, (through the lowering of the Control Limit, for example) and encourage increased compliance (for instance, with training). The full package also includes the new duty to manage asbestos requirements, which came into force in 2004.

### 3. OPTIONS

Table 1

<b>Option 1 - Do nothing</b>	
Para 3.3.1	Retains current regulations and ACoPs without amendment
Para 3.3.3	Includes two Control Limits, two Action Levels and two (STELs)
<b>Option 2 - Implement the AWPD Amendments substantially as adopted</b>	
Para 3.4.1	Most amendments will have no significant impact
Para 3.4.2	Action levels replaced by concept of 'sporadic and low intensity'
Para 3.4.3	Requirements to minimise worker exposure to asbestos
Para 3.4.6	Introduction of WHO fibre counting method
Para 3.4.8	Explicit requirement that employers provide appropriate training
Para 3.4.12	Requirement of evidence of ability to do asbestos work
Para 3.4.13	Control Limit of 0.1 fibres per cm <sup>3</sup> over 8-hour TWA
<b>Option 3 - Implement the Control Limit with minor amendments to take account of current GB practice</b>	
Para 3.5.1	Control Limit of 0.1 fibres per cm <sup>3</sup> over 4-hour TWA
<b>Option 4 - Changes to the regulatory regime</b>	
Para 3.7.1	Combine CAW and ASLIC to form one set of Regulations
Para 3.7.5	A risk-based approach to define what is exempt from licensing
Para 3.7.7	Employers on their own premises will require a licence
Para 3.7.8	Change to 1 – 3 year licences
Para 3.7.11	ACoP to require DCU maintenance record on site
<b>Option 5 - Four-stage site clearance certification for reoccupation</b>	
Para 3.8.1	Bring Regulations into line with accreditation scheme requiring ISO 17025.

- 3.1.1. The options considered in this document, summarised in Table 1, above, relate to changes to existing Regulations and Approved Codes of Practice<sup>6</sup> (ACoPs) that are necessary to implement amendments adopted on 27 March 2003 to the Asbestos Worker Protection Directive (Council Directive

<sup>5</sup> The baseline for these estimates is in fact 2004, whereas, as previously mentioned, the baseline year for the headline figures is 2000. However, the difference that this creates for the purposes of comparison is very slight, and is due purely to an assumption about the rate at which buildings containing asbestos are demolished.

<sup>6</sup> Work with Asbestos Insulation, Asbestos Coating and Asbestos Insulating Board (L28), Work with Asbestos which does not normally require a Licence (L27) and the Management of Asbestos in Non-Domestic Premises (L127)

2003/18/EC which amends Council Directive 83/477/EEC, the AWPDP amendments).

- 3.1.2. The options being considered also include some regulatory simplification, minor amendments to the current licensing regime and an alignment of accreditation requirements for site clearance with changes in ACoPs introduced in 2002.
- 3.1.3. HSE is proposing to implement the AWPDP amendments as detailed in Option 2 with the modification detailed in Option 3. In most cases this will require little, if any, change to UK regulations as many of the requirements introduced by the amending Directive are already contained within current asbestos Regulations or in the associated Approved Codes of Practice (ACoPs).
- 3.1.4. As the final form of the amending Directive is generally in line with the UK negotiating position, HSE does not consider it appropriate to propose under-implementation of any AWPDP Article.
- 3.1.5. HSE also propose to introduce changes to existing Regulations and ACoPs as detailed in Options 4 and 5. Option 1 is not considered feasible.

### **3.2. Implementation of Amendments to the Asbestos Worker Protection Directive**

#### **3.3. Option 1 – Do Nothing**

- 3.3.1. The first option to be considered was to retain the current Regulations and ACoPs without amendment as being sufficient to implement the AWPDP. Many of the requirements introduced by the AWPDP amendments are already substantially implemented either in current Asbestos Regulations or, more often, in ACoPs. However, there are some requirements in the AWPDP amendments that are not currently included either in Regulations or in ACoPs. Also, including the requirements of a Directive in ACoPs rather than Regulations is, in many cases, likely to lead to under-implementation of the Directive and will probably give rise to infraction proceedings, as the requirements would not be legally binding.
- 3.3.2. As well as under-implementation of the AWPDP amendments, leaving the Regulations and ACoPs unchanged would not accord with the UK policy and negotiating position during the development of the amending Directive in Europe, which was to strengthen the current legislative requirements for those who may be exposed to asbestos fibres at work. In particular, the UK supported a single Control Limit of  $0.1 \text{ f/cm}^3$  for all types of asbestos; a strengthening of the requirements to protect workers who may otherwise be unknowingly exposed to asbestos; and the introduction of the World Health Organisation's (WHO) method for the determination of asbestos fibres in air.
- 3.3.3. The 'do nothing' option would include the retention of two Control Limits, two Action Levels and two Short Term Exposure Limits (STELs) that are currently in CAW. The Directive replaces Action Levels with the concept of 'sporadic and low Intensity exposure' (see paragraph 3.4.2). The Directive does not include STELs and the UK did not include them in its negotiating position.

3.3.4. Given the above, HSE considers that the do nothing option is not feasible for those requirements of AWPDP where changes to legislation are required in order to properly implement the amendments to the Directive.

### 3.4. Option 2 - Implement the AWPDP Amendments substantially as adopted

3.4.1. Implementation of the requirements of the AWPDP amendments substantially as adopted has been identified as the preferred option for most of the requirements of the amending Directive. The final form of the AWPDP amendments was generally in line with the UK negotiating position and the UK policy of continuing to reduce the risk from exposure to asbestos that remains in buildings and elsewhere to as low as is reasonably practicable. Those requirements of the AWPDP where it is proposed to adopt this approach and where this will have no significant impact on UK working practices are detailed in Annex B. Those issues involving significant changes are outlined here.

3.4.2. **Action levels replaced by ‘sporadic and low intensity’** - In place of the Action Levels previously detailed in Article 3.3 of the Directive, a new concept of ‘sporadic and low intensity’ exposure has been introduced. Where certain types of work fit within this definition, some requirements of the AWPDP are waived (i.e. to notify the HSE and to have medical surveillance). The types of work concerned include: short, non-continuous maintenance activities; removal without deterioration of materials where asbestos is firmly linked into the matrix; encapsulation of asbestos-containing materials; air monitoring and control, and the collection of samples. HSE propose to implement this requirement of the AWPDP amendments using the wording of the Directive in the Regulations, and to provide authoritative guidance in the ACoP. This affects a number of issues, the following changes are notable:

3.4.2.1. Textured decorative coatings – The sporadic and low intensity definition will maintain the status quo for most work with asbestos, however new research undertaken by the Health and Safety Laboratory (HSL) indicates that work with most textured decorative coatings containing asbestos gives rise to only very sporadic and low intensity exposure to asbestos fibres. Work with these types of materials is currently specifically within the scope of the ASLIC. It is proposed that this will no longer be the case and work with textured decorative coatings will no longer require a licensed contractor, to be notified, or the maintenance of medical records.

3.4.2.2. Removing the use of Action Levels – These set an exposure limit for asbestos fibres over a three-month period. A number of the CAW regulations are which are currently triggered by Action Levels will be amended accordingly. These include:

- i. Notification of work with asbestos - work which requires an asbestos licence must be notified to the relevant enforcing authority a minimum of 14 days before work commences.
- ii. Medical Surveillance and Records – currently, where the action level is exceeded, medical surveillance is undertaken and health records are maintained for all workers. This is amended to require these measures in all cases unless the work is sporadic and low intensity

as defined. There are ancillary licence holders (mainly scaffolding companies) and supervisory licence holders whose workers are not currently required to have medicals and who will be caught by this requirement of AWPDP as they do not fall within the categories that may be exempt.

- 3.4.3. **Minimising worker exposure** - Article 6 of AWPDP details requirements to minimise worker exposure to asbestos. Most of the Article requires no change or only technical change to CAW. However, Article 6 states that for all activities where workers may be exposed to asbestos, exposure must be reduced to a minimum and in any case below the Control Limit. CAW regulation 10 already requires employers to reduce exposure to as low as is reasonably practicable but HSE intends to amend this regulation to align with new wording included in the COSHH (Amendment) Regulations 2004<sup>7</sup> which lays out principles of good practice for the control of exposure to substances hazardous to health.
- 3.4.4. HSE currently uses a STEL to reinforce and support high standards of control such as wearing respiratory protective equipment (RPE). HSE intends to maintain a limit for peak exposures, otherwise it could be argued that RPE is not legally required as long as exposure does not exceed 2.4 f/cm<sup>3</sup> over 10 minutes (the equivalent of the proposed Control Limit over 4 hours). HSE's proposal is a maximum peak level of 0.6 f/cm<sup>3</sup> (the current STEL for amphibole asbestos) with the assertion that it is always reasonably practicable to carry out work such that no personal exposure to asbestos fibres, however short, exceeds this peak.
- 3.4.5. As COSHH already applies in so far as CAW does not, these amendments will simplify the regulatory regime and impose no additional regulatory burden. In practice this is unlikely to significantly change working practices as it is designed to ensure that the current requirement for employers to continue to minimise exposure even after they have reached the Control Limit is fully implemented, rather than new working methods adopted.
- 3.4.6. **World Health Organisation (WHO) method of fibre counting** - A revised Article 7 details the requirements for measurement of asbestos fibres in air and the introduction of the World Health Organisation (WHO) method of fibre counting. Some of its clauses are already in UK Regulations and require no change. Others will be implemented substantially as per the Directive. However, only one has any impact on the RIA:
- 3.4.7. Article 7(6) introduces the WHO method of fibre counting. This will be implemented by deleting the present Annex 1 in CAW and specifying use of the WHO method in Regulations. Analytical laboratories will be required to transfer to this counting method and some training for staff will be necessary to ensure proficiency in the new system. Currently, sampling is carried out using the European Reference Method (ERM). Under the ERM method, fibres are discounted if they touch particles that are greater than 3 microns in width, but under the WHO method, these fibres are not discounted. The amount by which WHO methods result in greater fibre counts compared to the ERM method is dependent on the amount of other particulate matter associated

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<sup>7</sup> The Control of Substances Hazardous to Health (Amendment) Regulations 2004 SI N° 3386

with the asbestos. This varies between no difference and approximately 1.4 for site clearance sampling. The effect for sampling originating from maintenance work is unknown.

- 3.4.8. **Training** - Article 12a introduces an explicit requirement that employers shall provide appropriate training for all workers who are, or who are likely to be, exposed to asbestos-containing dust. The article goes on to specify that the training must enable workers to acquire the necessary knowledge and skills with regard to a range of specific issues. Regulation 9 of CAW places the same basic general requirement on employers i.e. that all workers liable to be exposed to asbestos are provided with adequate information, instruction and training.
- 3.4.9. Both the Directive and CAW regulation 9 require appropriate training for all workers who are or are liable to be exposed to asbestos, not just those whose work requires them to disturb asbestos-containing materials directly. In most cases this will be asbestos awareness training.
- 3.4.10. Although CAW regulation 9(1) goes on to detail a range of general 'training' issues aimed at safeguarding employees, the list falls significantly short of the training requirements listed within the AWPD amendments. This level of detail is contained within the ACoP supporting regulation 9.
- 3.4.11. It is proposed that the training issues, as detailed in the Directive, are moved from ACoP into regulation 9 of CAW. This does not change the existing requirements for training and is not expected to change current good practice.
- 3.4.12. **Evidence of ability to carry out asbestos work** - Article 12b introduces a new requirement that prior to carrying out asbestos demolition and removal activities firms are to demonstrate their ability to carry out such work. The evidence is to be established in accordance with national laws and/or practice.
- i. For licensable work the 'ability' requirements associated with the asbestos licensing application process meet the needs of this requirement.
  - ii. For 'non-licensable' work no comparable assessment of the 'ability' of firms carrying out this work is currently in place in UK legislation. However, regulation 7 of CAW requires that a Plan of Work be prepared prior to any work being undertaken with asbestos. It is HSE's opinion that the detailed information required for inclusion within the Plan of Work would provide adequate indication of a firm's understanding of the work to be undertaken.
- 3.4.13. **Control Limit of 0.1 fibres per cm<sup>3</sup> as an 8-hour time weighted average** - Article 8 amends the Directive to introduce a single Control Limit (maximum concentration of asbestos fibres in air to which a worker may be exposed) for all asbestos types and also lowers the Limit. In AWPD this new Control Limit is 0.1 f/cm<sup>3</sup> over 8 hours. This reduces the limit for amphibole asbestos (Blue asbestos, brown asbestos etc) from 0.2 f/ml and for chrysotile (white asbestos) from 0.3 f/ml<sup>8</sup>.

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<sup>8</sup> The current Control Limits in CAW are described in terms of millilitres (ml). AWPD uses cm<sup>3</sup> for the new Control Limit. In practice these are the same measure.

3.4.14. HSE's negotiation position was to reduce the Control Limit and to introduce a single limit. It is therefore proposed that these two elements are implemented in CAW as per the Directive.

### **3.5. Option 3 – Implement the Control Limit with minor amendments to take account of current GB practice**

3.5.1. **Control Limit of 0.1 fibres per cm<sup>3</sup> as a 4-hour time weighted average** - HSE intends to implement the revised Control Limit substantially as per the AWPD amendments. However, in line with the UK negotiating position and to reflect normal working practice in this country, it is proposed that the Control Limit of 0.1 f/cm<sup>3</sup> is measured over a time weighted average (TWA) of 4 hours rather than 8 hours.

3.5.2. Where workers are dealing with high levels of fibre in air normal working practice is to wear RPE and in these circumstances UK workers tend to do 4- to 6-hour shifts, rather than the longer, 8-hour shifts of other construction-type workers. Article 10(3) of the AWPD amendments requires that where protective breathing equipment is necessary it shall be kept to a strict minimum and that physical and climatological conditions are taken into consideration. The shorter working shift is in line with this requirement.

3.5.3. HSE believes that the proposed eight-hour TWA is outdated and is a carry-over from regulating in the asbestos manufacturing industry. Patterns of work have changed and it is unlikely that the majority of asbestos workers will be exposed to asbestos for an eight-hour period. Consequently, use of an eight-hour TWA would allow higher exposures in the normal work period (4-6 hours) and still achieve compliance with the limit. This would be a relaxation of the UK position. Keeping the TWA of 4 hours stops the possibility of doubling the limit to 0.2 f/cm<sup>3</sup> over a 4-hour shift, but still complies with the Directive if the asbestos in air is measured over an 8-hour working period.

3.5.4. The UK negotiating position was that the Control Limit should be measured over a 4-hour TWA and not the 8-hour period adopted in AWPD. HSE do not, therefore, propose to implement this requirement of the Directive exactly as adopted (see Option 2, paragraph 3.4.13, above) but to maintain the 4-hr TWA.

### **3.6. Options 4 and 5 – Amendments to improve the current regulatory regime not resulting from implementation of the Directive**

3.6.1. It is proposed to take the opportunity, whilst revising the asbestos regulations to take account of AWPD amendments, to simplify the current legislative structure and to bring accreditation requirements in line with earlier changes to ACoPs now that appropriate accreditation schemes have been developed.

### **3.7. Option 4 - changes to the regulatory regime imposing no significant changes**

3.7.1. **Regulatory simplification** - HSE proposes to combine the requirements of CAW and ASLIC to form a single set of Regulations.

3.7.2. The asbestos licensing regime has been in existence since 1983; before the CAW Regulations came into force. Its separation from CAW is therefore

historical. Currently in certain areas the two sets of Regulations duplicate, for example in the requirement to notify. Combining the Regulations will simplify the current asbestos regulatory regime. The simplification will be particularly noticeable where it is not immediately clear whether a job requires licensing (ASLIC), notification (CAW and ASLIC) or in some cases neither of these. A single set of Regulations should make the legislation easier to understand and therefore easier to comply with.

- 3.7.3. This change will not affect the number of organisations that are licensable and should have no significant impact on working practices.
- 3.7.4. **Licensing** - The current licensing regime requires that employers or self-employed persons hold a licence to work with asbestos insulation, asbestos coating or asbestos insulating board unless certain exemptions apply such as work of short duration (defined as 1 hour for one worker and 2 hours for all employees on that job in any seven days). Companies working with other types of ACMs do not need a licence.
- 3.7.5. HSE proposes to have a risk-based approach to define what comes within the definition of sporadic and low intensity for worker exposure (see paragraph 3.4.2, above) and intends to define which work will be exempt from requiring a licence on the same basis. The proposal is that the requirement to have a licence will be based on whether the worker exposure will be sporadic and low intensity. For most work with asbestos this will maintain the status quo.
- 3.7.6. This approach will simplify and clarify the asbestos regulations by aligning when a licence is needed with the requirement to notify work as per AWPD amendments. The intention is that all work that must be notified to HSE will need to be carried out by a licensed contractor and work that comes within the definition of 'sporadic and low intensity exposure' and therefore does not require notification will also not require a licence. With two exceptions (see paragraphs 3.4.2.1, above and 3.7.7, below) there will not be a significant change in the types of work that require a licence and those that do not.
- 3.7.7. HSE proposes that employers using their own workers on their own premises will no longer be exempt from the licensing requirements. This exemption from the requirement to hold a licence originates from the time when there was still some manufacturing and use of materials containing asbestos, but this is no longer the case. The proposed requirement to hold an HSE asbestos licence will have little impact as the only companies that are likely to be affected will be those that maintain equipment used by the asbestos removal companies. HSE records suggest that this amounts to only around 6 firms. Employers who do use their own employees on their own premises to work on licensable ACMs are currently required to notify HSE of the work. HSE has not received any such notifications in the last year.
- 3.7.8. **Asbestos licence time limits** - Change to allow a variation and maximum time limit on a licence to remove asbestos.
- 3.7.9. Regulation 4(2)a of ASLIC currently allows a licence to be "with or without a limit of time". Regulation 4(3)b not only allows HSE "to vary the terms of the licence" but also to "impose a limit of time where none had been imposed" and allows for that time limit to be varied or removed.

- 3.7.10. It is impractical to allow an indefinite time limit and common practice is that licences are issued for one to three years. Changing the Regulations to reflect this would then mean that the requirement to “impose a limit of time where none had been imposed” would no longer be necessary. In practice it has never been necessary to remove a time limit. To reflect current practice it is therefore proposed to allow a maximum licence time limit of three years and to allow for that limit to be varied if necessary.
- 3.7.11. **Documentation on site** - Amendment of the ACoP to require certain documentation to be kept on site by a licensed contractor.
- 3.7.12. In addition to the documentation already required by CAW it is proposed that licensed contractors also keep on site a daily record of maintenance of the decontamination unit (DCU). The DCU is necessary to allow asbestos removal workers to remove all traces of asbestos from themselves when they have finished work. In order to prevent exposure to asbestos fibres, it is vital that the DCU is working properly and is clean.
- 3.7.13. In practice many companies already have this information and documentation on site as they currently comply with HSE guidance (ALG memo 5/03). Those involved with the work, including inspectors, need to know that the DCU is being properly maintained.

### **3.8. Option 5 - Four-stage site clearance certification for reoccupation**

- 3.8.1. HSE proposes to introduce into Regulations the requirement that those issuing clearance certificates for reoccupation, as detailed in paragraphs 154 - 173 of the current ACoP L28, meet the relevant accreditation requirements of ISO 17025.
- 3.8.2. In 2002, HSE introduced into ACoP significant changes to the role and function of laboratories carrying out clearance certification after asbestos removal. Previous practice had been for a laboratory to carry out a two-stage clearance certification at the completion of the asbestos removal process. However, concern about both the quality of service provided by laboratories and the scope of the clearance process caused HSE to introduce changes to deal with these problems. Regulation 19 of CAW 2002 addressed the issue of quality of service through a new requirement that those undertaking measurement of asbestos fibres in air meet the standard required in ISO 17025.
- 3.8.3. The issue of the scope of the clearance certification process was addressed in ACoP requiring that removal of asbestos material be followed where appropriate by a fuller, four-stage process of site clearance certification to ensure that the whole site is thoroughly clean.
- 3.8.4. However, HSE has concerns that some parts of the 4-stage clearance certification procedure that are not covered by current accreditation arrangements, and that this could undermine the overall clearance process.
- 3.8.5. To address these problems, HSE worked with UKAS to develop a credible assessment and accreditation regime for the full four-stage process, which was completed in 2004. Currently some 62 laboratories have applied for an extension of the scope of their present accreditation to include the full four-

stage process and 43 of these are going through the assessment process. The actual awarding of accreditation will commence in December 2005.

- 3.8.6. HSE proposes to amend regulation 19 of CAW to require that labs contracted to issue clearance certificates be accredited to the ISO standard for all four stages of the process.

#### **4. INFORMATION SOURCES AND BACKGROUND ASSUMPTIONS**

- 4.1.1. Much of the information in this Regulatory Impact Assessment is derived from two previous RIAs; for the Control of Asbestos at Work Regulations 2002 (which included the new Duty to Manage) and for the negotiation stage of these amendments to the European Asbestos Worker Protection Directive.
- 4.1.2. Some information on licensed asbestos work is gathered through the notification system and this has provided details on numbers of companies, numbers of workers, amount of work done and the types of materials worked on.
- 4.1.3. The inclusion of textured decorative coatings removal in the definition of 'sporadic and low intensity' work, effectively taking this type of work out of the requirements to notify HSE and to hold a licence will have an impact on the cost and working method of such removal. For information on this impact HSE discussed this issue with representatives of both the Federation of Master Builders and the Association of British Insurers. Estimates from both sources were used in the development of the Costs section, below. Both sources provided estimates of cost to the client of removing a textured decorative coated ceiling in three situations:
- 4.1.3.1. where the coating contained asbestos and was a licensed material (the current situation),
- 4.1.3.2. where the material contained no asbestos, and
- 4.1.3.3. where it contained asbestos, but the material was not licensable due to the reduced level of risk.
- 4.1.4. This change will be implemented with the amendments required by AWPDP in April 2006 and it is proposed that it comes into force immediately.
- 4.1.5. In the development of the proposals to require accreditation analysts undertaking 4-stage clearance certification, work undertaken by the United Kingdom Accreditation Service was considered.
- 4.1.6. For the small firms' impact test twenty-two organisations were contacted, including 5 analysis laboratories, for their views. The Small Business Service was also consulted as part of this process.
- 4.1.7. The base year for calculations is 2004 and the appraisal period is 50 years. However, because of the long latency of mesothelioma, legacy benefits will occur for another 50 years after the appraisal period as a direct result of expenditure on compliance within the appraisal period. The potential benefits from introducing the regulatory amendments are therefore measured over a 100-year period. Costs and benefits have been discounted at the Treasury's recommended 3.5% a year. Health benefits are uprated by 2% a year to allow for the highly plausible assumption that individuals' valuations of

improvements in health do not decline with increasing income (as would be implied if the an unadjusted 3.5% discount rate were applied to these benefits). Earnings are uprated by 1.8% a year to account for observed changes in real incomes over the last 30 years<sup>9</sup>.

- 4.1.8. The regulatory amendments and changes that have been assessed in this RIA are numerous and diverse. Existing levels of compliance therefore vary between each option under consideration. These have been taken into account in the compliance cost calculations. For the sake of simplicity, HSE has assumed that post implementation compliance will be 100% for the majority of articles in the AWPDP. In some cases there are very strong reasons to believe that this assumption is a good approximation of the likely outcome. In other cases, there is more doubt. The consequences of varying the assumption about post implementation compliance are considered later in the section on uncertainties. There are some AWPDP articles already implemented in CAW that currently do not enjoy 100% compliance, but HSE believes that insisting on greater compliance in these cases would entail a disproportionate effort for a minimal reduction in risk. Post AWPDP implementation compliance is therefore assumed to be approximately equivalent to current levels. These articles are discussed below in Option 2.

## **5. EQUITY AND FAIRNESS**

- 5.1.1. We do not expect the proposed regulatory changes to have differential impacts on ethnic groups, women, or those with disabilities.

### **5.2. Atypical workers**

- 5.2.1. There appears from research findings, to be a slightly higher turnover of workers in the asbestos removal industry than in construction and maintenance generally. This will have an effect on the costs to employers of the training requirements in the Directive and this has been taken into account in the costs section dealing with training, below.

## **6. BENEFITS**

### **6.1. Health and safety benefits**

- 6.1.1. Taking a baseline year of 2000, the Risk Assessment (section 2.4, above) for this RIA revealed that, if no additional measures had been taken to control the risks posed by man-made sources of asbestos over the following 50 years, an estimated 6,500 occupationally exposed workers and 1,300 other people would have died of asbestos related diseases. This figure is based on current levels of exposure, but allows for the routine demolition of buildings over time.
- 6.1.2. The contribution that the transposed AWPDP amendments will have on reducing this risk beyond what has already been achieved since 2000 is impossible to isolate because the amendments will contribute to an existing package of mutually reinforcing interventions. The British government, through CAW, continues to introduce a package of measures that seeks to control risks posed by asbestos. In May 2004, amendments to CAW placed duties on

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<sup>9</sup> HSE recently reviewed the accuracy of this uprating factor and concluded that there was no reason to change the figure

those with maintenance responsibility for commercial property to identify and manage asbestos hazards in their premises. By the time the transposed AWPD amendments come into force in 2006, the 2004 CAW amendments should have significantly reduced the risks to occupationally exposed workers and to other people who are subject to background exposure. Maintenance workers in particular will bear substantially lower risks because they will be much less likely to disturb asbestos inadvertently.

- 6.1.3. As implied in the previous paragraph, optimal risk control can only be achieved through the full package of measures within CAW. The transposition of the AWPD amendments into CAW will contribute to the risk reduction in two ways. Firstly it will drive greater compliance with existing regulations, most critically, with training and the duty to control exposure to as low as reasonably practicable (ALARP). Secondly it will lower exposure limits. However, the degree to which the new lower Control Limit will bring further risk reductions for maintenance workers is questionable. The duty to manage asbestos in commercial properties should already mean that many maintenance workers will, once informed of the presence of a substantial asbestos hazard, simply avoid the work. Others will continue to do the work (providing it is non-licensable) but will presumably take greater precautions. Furthermore, employers are already required in CAW to reduce exposure ALARP. The application of simple precautions lowers exposures to well below the new limit in the great majority of cases. The exposure limit therefore only serves to protect the small minority of workers who, despite taking the simple precautions, are still exposed at unacceptably high levels.
- 6.1.4. *Benefits to maintenance workers:* Taking these points into consideration, HSE expects that the AWPD reduction in the Control Limit will not, by itself, bring substantially greater reductions in risk to maintenance workers than those already being achieved by the duty to manage asbestos in commercial premises<sup>10</sup>. However, the AWPD's effect on securing greater compliance with the existing duty to reduce exposure ALARP should have a substantial impact on reducing risks to maintenance workers. Quantifying this impact is not possible because of the huge impracticalities of separating the influences of the existing "duty to manage" regulations from those of the AWPD.
- 6.1.5. *Benefits to indirectly exposed people:* As noted in the risk assessment, an estimated 3,300 people who would have gone on to die as a result of indirect and domestic exposure to asbestos. To the extent that the AWPD will contribute to a reduction in the amount of asbestos that is released into the air as a result of work activities, a proportion of the 3,300 lives will be saved by implementing the AWPD. The number of prevented fatalities is impossible to estimate.
- 6.1.6. *Benefits to licensed removal workers:* HSE believes that licensed asbestos removal workers in particular will benefit from the implementation of AWPD amendments. The size of this sector is approximately 9,000 workers. As noted in the risk assessment, 87 (uncertainty range of 44 to 174) of these workers

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<sup>10</sup> However, the duty to manage asbestos does not yet extend to residential properties. Until this happens, plumbers, electricians etc will continue to be subject to unidentified hazards in these properties. In this respect, the AWPD may mean that more such workers are able to identify and deal appropriately with the hazards they encounter.

would have been expected to die of asbestos related diseases over the next 100 years as a result of exposure that occurs over the next 50 years. HSE has estimated that 36 of these deaths would be prevented simply by the introduction of the new 0.1 f/m<sup>3</sup> Control Limit over a four hour time weighted average (details of the calculation are contained in Annex A). Given the uncertainties involved in estimating the benefits, it is reasonable to introduce an uncertainty factor of 2. This gives a minimum range of between 18 and 72 prevented fatalities as a result of implementation of AWPDP. The monetary value of this range is £21 million to £84 million in present values (using the assumptions described in the risk assessment).

- 6.1.7. The total number of licensed removal worker lives saved by the implementation of the AWPDP should be greater than the 18 to 72 range because, as argued previously, the Directive will encourage greater compliance with existing duties to reduce exposure to levels that are as low as reasonably practicable below the control limit. The 18 to 72 range of prevented deaths can therefore be seen as a minimum impact that the AWPDP will have.
- 6.1.8. Theoretically, the introduction of an eight-hour TWA (as called for by the AWPDP amendments) would prevent fewer fatalities because those working for less than eight hours could be exposed to slightly higher levels of asbestos and still remain within the Control Limit. This is, however, one of a package of measures. The effects of each cannot be measured separately, but if there were full compliance with the duty to control exposure ALARP then the number of workers still exposed at or above the new Control Limit over a four-hour TWA is likely to be very small.

## 7. COSTS

### 7.1. Business sectors affected

- 7.1.1. Assessing the number of firms affected by the Regulations is complicated. HSE has estimated that approximately 1.8 million workers will be involved, of which 37% are self-employed. Assuming that the remaining 63% are employed in firms that conform to construction sector norms for employers (average size 9.5 employees), then the average firm size across the whole group is approximately 2.3. This would mean that approximately 790,000 firms are potentially affected by the regulatory changes. In addition there will be approximately another 200 laboratories that would be affected by Option 5.
- 7.1.2. The main sectors affected by these proposals are licensed asbestos removal contractors (694 companies), building demolition, building maintenance and refurbishment, building services installation, analytical laboratories and asbestos removal equipment provision (including 67 licensed scaffolding companies) and maintenance companies.

### 7.2. Familiarisation Costs

- 7.2.1. Except for the do nothing option, all other options will require dutyholders to familiarise themselves with the regulatory changes. HSE believes that the associated costs will be approximately the same regardless of what set of options is finally implemented.

7.2.2. Of the estimated 790,000 firms affected by the proposals, 7,500 are involved in asbestos removal and demolition. HSE assumes that familiarisation will take each of these firms 4 hours to complete. Another 105,000 firms employ workers such as plumbers and electricians who are regularly exposed to asbestos in the course of their daily trades. This includes the laboratories undertaking clearance testing. HSE assumes that familiarisation will take each of these firms 2 hours. Finally, 676,000 firms employ other workers who are less frequently exposed to asbestos. HSE assumes that familiarisation will take each of these firms 0.5 hours to complete. HSE further assumes that the full economic cost of time spent on familiarisation is £20/hr<sup>11</sup>. In total, familiarisation is estimated to impose a one-off cost of £11.5 million in the first year of implementation.

### **7.3. Costs of Option 1 – Do nothing**

7.3.1. Retaining current Regulations and ACoPs without amendment. As noted in the “options” section, the do nothing option would probably involve the UK in EU infraction proceedings. Without knowing how far the proceedings would run until a solution was found, HSE is unable to estimate their potential costs.

### **7.4. Costs of Option 2 – Implement the Directive amendments substantially as adopted**

7.4.1. Where HSE proposes to adopt requirements of AWPD as per the Directive and where this will have no significant impact on costs to UK industry those requirements are detailed in Annex B. Those issues involving significant costs are outlined here.

#### **7.4.2. Sporadic and Low Intensity Exposure** (see paragraph 3.4.2).

7.4.2.1. Removing textured and decorative coatings from the scope of the licensing requirements will result in a cost saving due to the reduced cost of using a non-licensed contractor to undertake the work with these materials. This is due both to the broadening of the field from which a contractor can be drawn and a relaxation of the controls required, given the lower level of risk. See paragraph 7.4.8.

7.4.2.2. Changing from Actions Levels for notification. The amended system for triggering notification and the requirement to hold an HSE licence is designed to affect the same types of work as at present. Therefore there are not expected to be significant cost implications from the implementation of the Directive itself. However, there is a small but possibly significant amount of work done that is not compliant with current notification or licensing requirements under CAW and ASLIC. Costs for using licensed contractors are higher than for other building and maintenance companies and so increased compliance would bring with it some additional costs. There is uncertainty about the level of non-compliance and this will be investigated further during the consultation process.

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<sup>11</sup> SOC 1121 “Production, works and maintenance managers” from NES 2003, £15.43, increased by 30% to account for non-wage labour costs.

- 7.4.2.3. Changing from Actions Levels for Medical Surveillance and record keeping. Again the amended system for triggering the requirement for medicals is designed to affect the same types of work as at present. However there are 70 ancillary licence holders and 67 supervisory licence holders whose workers are not currently required to have medicals and will be caught by this AWPD requirement. These companies employ relatively small numbers and so we estimate that between 500 and 2,000 workers will require medical surveillance that had not previously. The cost of medicals is approximately £80 and so there would be an additional cost of up to £160,000 every two years. The fifty year present value is estimated to lie between £0.5 million and £2.0 million.
- 7.4.3. **Minimising Worker Exposure** - In order to implement Article 6 - the requirement to minimise the asbestos exposure of workers (see paragraph 3.4.3 and Annex B) elements of COSHH will be included in CAW. COSHH already applies wherever CAW does not, so this amendment will simplify the regulatory regime and impose no additional regulatory burden. The costs associated with this change are included below in the discussion of Option 3 for a new Control Limit and reducing exposure to as low as reasonably practicable (see paragraph 7.4.7).
- 7.4.4. **WHO method of fibre counting** - In Article 7(6) AWPD requires sampling to be conducted according to methods recommended by the WHO.
- 7.4.4.1. The change of fibre counting method is unlikely to affect the cost of work done, since a worker would not be able to differentiate between these possible differences in exposures in advance. In any case workers should be controlling to as low as is reasonably practical, which will bring them well below the new limit.
- 7.4.4.2. However, there would be some costs of conversion to the WHO method. Training an estimated 1000 analysts in 200 labs (already expert in ERM rules) would take around 1/4 day each at an estimated cost of £75,000. The 200 labs would have to recount their internal quality control slides at a further cost of £300,000. The scheme used in the UK for proficiency testing the analysts' results (Regular Inter-laboratory Counting Exchange, RICE) would need to be changed at an additional cost of approximately £50,000. The total costs of converting to WHO method is estimated at approximately £425,000.
- 7.4.5. **Training** - Cost implications of the training requirement in Article 12a (see paragraphs 3.4.8 to 3.4.11) were considered within the RIA prepared as part of the negotiations on AWPD. However, it should be noted that these costs relate to increased compliance only as HSE does not intend that current best practice should change. There are no additional costs because of stricter legal requirements.
- 7.4.5.1. Training for all workers liable to be exposed to asbestos is already the case in CAW. The Directive specifies in more detail what the training is required to include. We estimate that some 1.8 million workers are likely to disturb asbestos during routine work activity. The major groups affected are electricians, carpenters and joiners, plumbers and heating engineers, and painters and decorators (these total around 860,000) and other

construction and maintenance workers (around 500,000). Non-maintenance workers (for example surveyors and valuers, building managers and inspectors and civil engineers) account for another 500,000 workers, although we believe that their exposure would be typically very low

- 7.4.5.2. Training in awareness of asbestos, to the level suggested by the AWPD amendments, is currently required under CAW. However, a large proportion of those exposed (around 37%) are self-employed, and HSE is aware that compliance with the requirement to undertake training in asbestos awareness in this sector is low. Training will be higher amongst employees, especially those working for larger contractors and may also be higher amongst those who encounter asbestos more frequently.
- 7.4.5.3. The length and detail of the training needed depends on the nature of the work. Asbestos removal workers typically require a 3-day training course. Training in controlling exposure for non-licensed asbestos work typically requires two days. General asbestos awareness training takes around half a day. However, there are various specific circumstances where the levels of training for particular workers can be tailored to their needs.
- 7.4.5.4. Given all these factors, we assume that of the 1.8 million workers detailed above;
- i) All the 9,000 licensed removal workers already receive the necessary training.
  - ii) 250,000 are regularly exposed to asbestos in their work and should be receiving 2-day training. We estimate that 80% of the self-employed require more training than they are currently receiving. 60% of employees require more training than they are currently receiving.
  - iii) Of the remaining 1.54 million remaining workers, we assume that 60% of the 500,000 non-maintenance workers are already adequately trained. The remaining 40% require a variety of levels of training. This can be averaged to half a day. Of the remaining maintenance workers, 600,000 should be receiving training that takes one half day and of these, two thirds require training they are not currently receiving. 60% percent of the remaining 440,000 workers are assumed to require training for an average of 2 hours (we assume these workers would need basic training in asbestos awareness).
  - iv) We allow a cost of £150 per day<sup>12</sup> to include training fees and lost output.
- 7.4.5.5. Both AWPD and UK Regulations require refresher training regularly. This is every year for workers who are regularly exposed to asbestos. We assume that workers who receive two day initial training require two hours

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<sup>12</sup> This is justified on the basis that the full labour cost per day for a typically affected worker is likely to be about £75 (SOC 5 “Skilled trades occupation”, £7.28 per hour from NES 2003, multiplied by 1.3 to account for non wage labour costs and then multiplied by eight hours to give the full cost per day). A further £75 per day for the cost of the training does not seem unreasonable.

refresher training, while those workers who receive less than one day training require half an hour. For workers who are infrequently exposed, refresher training occurs every two years and we assume takes a quarter of an hour per worker. We also allow new training relating to an industry turnover of 10% each year.

- 7.4.5.6. Initial costs are £106 million. Present value costs over fifty years are estimated at £871 million.
- 7.4.5.7. It should be re-emphasised that these costs relate to increased compliance only, and do not arise because of stricter legal requirements. The costs arising from full compliance with the training requirements in CAW would have been taken into account previously, when training was first included in the Regulations in 1987 and strengthened in subsequent amendments.
- 7.4.6. **Article 12b** – Article 12b requires that, for demolition and removal work (the majority of which is licensable), firms must provide evidence of ability in the field. For licensable work the ‘ability’ requirements associated with the asbestos licensing application process meet the needs of this Article and there is therefore no associated costs. In regard to ‘non-licensable’ activities regulation 7 of CAW requires that a Plan of Work be prepared prior to any work being undertaken with asbestos. It is our opinion that the detailed information required for inclusion within the Plan of Work would provide a strong indicator of knowledge of the requirements of the work being undertaken by the firm. Where this is in place we do not anticipate any additional costs associated with implementation of this requirement. However in the case of small, non-licensed companies levels of compliance with the requirement to draw up a plan of work are uncertain and the level of non-compliance will be investigated further during the consultation process.
- 7.4.7. **Implementing the Control Limit as adopted** - The EU proposed limit is 0.1 f/cm<sup>3</sup> over an eight-hour TWA. At present, the UK has two Control Limits (for amphiboles and for chrysotile asbestos) measured over a 4-hour period. It is generally thought that an eight-hour TWA is unhelpful for the reasons given in Option 3 (section 3.5). To that extent, the AWPD proposed standard represents a relaxation in terms of the time period, but a tightening in terms of the Control Limit for all types of asbestos.
- 7.4.7.1. The consideration of a Control Limit cannot be addressed in isolation. The Control Limit sets a maximum exposure limit beyond which anyone working with asbestos should not be exposed. However, Article 6 of the AWPD amendments requires that any exposure of workers to dust must be reduced to a minimum. UK Regulations interpret this as being reduced to as low as reasonably practicable (ALARP). The number of workers exposed at the Control Limit should be very few as it will normally be reasonably practicable to reduce exposure considerably below this. The same is true for the proposed non-regulatory peak for short-term work of 0.6 f/cm<sup>3</sup>. As it is already a statutory requirement to reduce exposure to ALARP, most of the costs associated with the new Control Limit are as a result of increased compliance with this duty to reduce exposure rather than the Control Limit itself. The costs of meeting the new Control Limit and reducing exposure to as low as reasonably practicable are considered

in turn for maintenance workers and for licensed asbestos removal workers, below.

#### Maintenance workers

- 7.4.7.2. HSE's consideration of training costs suggests that approximately 400,000, mainly maintenance, workers encounter situations where the proposed new Control Limit could be exceeded if work progressed without adequate controls. HSE believes that this level of risk justifies the training proposed in the training costs section. However, the frequency with which maintenance workers will encounter these situations is thought to be low. A review conducted by HSL on exposure levels by type of material (summarised in Annex A) suggested that maintenance workers will encounter situations where the proposed limit could be exceeded in less than a fifth of the time they are working with ACMs (which itself is only a proportion of the overall time worked).
- 7.4.7.3. The information about the type and location of ACMs provided to maintenance workers as a result of the Duty to manage Asbestos amendments to CAW, together with increased level of awareness among maintenance workers through increased compliance with training requirements<sup>13</sup>, mean that maintenance workers are more likely to be aware of the materials they are dealing with. When presented with an ACM hazard, the workers have two options under HSE's proposals for a risk-based approach. They can continue with the work over a prescribed short duration and implementing sensible measures to minimise exposure, or, if these conditions cannot be met, the option would be for the work to cease either completely or until a licensed contractor has removed the hazard<sup>14</sup>.
- 7.4.7.4. Given the above, HSE to believe that the number of occasions that maintenance workers will have to take action to reduce their exposure levels to below the proposed exposure limit (as opposed to the occasions where they simply avoid the hazard completely) are likely to be very few. Therefore the costs to maintenance workers of controlling to the proposed exposure are thought to be negligible.
- 7.4.7.5. The AWPD calls for exposure to be reduced to "a minimum" below the exposure limit. HSE judges that this criterion is satisfied providing that dutyholders take sensible precautions of the type that are set out in HSE's "Asbestos Essentials" guidance. HSE assumes that these simple methods can be adopted relatively costlessly. However, if the risk of exposure is still relatively high, then further control can be achieved by temporary encapsulation, or the provision of respiratory protective equipment (RPE) to a higher standard.

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<sup>13</sup> Training will be particularly important when plumbers, electricians etc are working in domestic premises, where "duty to manage" regulations do not currently apply.

<sup>14</sup> The involvement of a licensed contractor would of course increase costs. However, a provision was made for this likelihood when calculating compliance costs for the "duty to manage" amendments to CAW. The costs have therefore already been estimated and deliberated as part of the previous regulatory process.

- 7.4.7.6. The majority of workers will use a mixture of controls, with the effect that work with ACMs will typically take longer than otherwise. The level of control will be related to the level of exposure, and the nature of the work.
- 7.4.7.7. For workers who encounter asbestos on a regular basis, HSE assumes that applying sensible precautions takes 10% longer than would otherwise be the case. For the average worker currently exposed above the control limit, we estimate that they spend around 7% of their time (18 working days) working with ACM. The additional time spent on these jobs would therefore be approximately 1.8 days, at a cost of around £135 per worker each year<sup>15</sup>. In some cases, simple equipment might have to be purchased. HSE therefore suggests that total costs would amount to £150 per worker year.
- 7.4.7.8. HSE believes that there are approximately 850,000 workers who are regularly exposed to asbestos<sup>16</sup>. However a proportion of these workers will already be taking the necessary sensible precautions. By the time the amended Regulations that implement the AWPD amendments come into force, this proportion will have grown because the 2004 Duty to Manage Asbestos in Non-domestic Premises requirements will have increased awareness. For these reasons, HSE assumes that only an additional 20% to 30% (200,000 to 300,000 workers) will have to start taking extra precautions. Beyond this time, the number of relevant workers falls by the proportion of buildings containing ACM demolished each year, as asbestos is routinely removed before demolition (averaged at 2% per annum).
- 7.4.7.9. For the 440,000 infrequently exposed workers we allow a nominal cost of £10 per year for the extra time that might be spent on the 1 or 2 jobs per year that they may encounter asbestos. Again, the number of workers these cost apply to are substantially reduced because of the requirements of the Duty to Manage. These costs are also estimated to decline at the rate of demolition of buildings containing asbestos.
- 7.4.7.10. The total present value of these costs over 50 years is estimated to be between £0.62 billion to £0.92 billion. The annualised cost is between £17 million and £25 million. As already indicated, most of this relates to increased compliance with existing legislation.

#### Licensed removal workers

- 7.4.7.11. Licensed removal workers will, for some of their work, need to take action to reduce their exposure to below the proposed Control Limit. In many cases this will simply involve greater adherence to simple measures. In a small number of cases where this provides insufficient control, the use of powered respirators may be necessary.
- 7.4.7.12. In cases where simple control measures are adequate, HSE assumes that the main cost is a 5% loss of labour productivity. HSE further assumes

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<sup>15</sup> This is justified on the basis that the full labour cost per day for a typically affected worker is likely to be about £75 (SOC 5 “Skilled trades occupation”, £7.28 per hour from NES 2003, multiplied by 1.3 to account for non wage labour costs and then multiplied by eight hours to give the full cost per day).

<sup>16</sup> This includes the 250,000 who encounter situations where the control limit might be exceeded and the 600,000 who regularly encounter asbestos, but in contexts where the control limit is unlikely to be exceeded.

that simple measures are required between 20% and 30% of the total working time. Applied to the 9000 workers who are believed to work in the industry (refer to Annex A) and costed at approximately £17,000 per year<sup>17</sup>, HSE's assumptions imply a first year cost of between £1.5 million and £2.2 million. This initial cost is assumed to decline by 2% per annum as the demolition of buildings containing asbestos reduces the demand for licensed removal workers. The 50 year present value of these costs is between £35 million and £52 million, and the annualised cost is between £1.0 million and £1.4 million.

- 7.4.7.13. To cope with situations where simple measures produce inadequate control, some firms will purchase powered respirators. HSE assumes that only 5% to 10% of the 500 active licensed removal firms in Britain<sup>18</sup> will purchase the necessary extra equipment. This is because HSE expects only a small number of firms to specialise in the more complicated types of removal (where extreme caution is required). Furthermore, some firms may already have the necessary equipment. The total fixed investment in equipment is as follows:

**Table 2**

	Cost	Lifetime (yrs)
Breathing apparatus set (x2)	£500	10
Compressor and air filtration unit	£5,000	30
Compressed air receiver	£2,000	30

- 7.4.7.14. Additionally there will be annual maintenance, repair and running expenses of approximately £3,000. Assuming each of the 25 to 50 firms each purchase one set of equipment, the fifty year present value of these costs is between £2 million and £6 million, while the annualised cost is between £0.2 million and £0.5 million.
- 7.4.7.15. Total costs that licensed removal firms will bear in reducing exposure to below the new exposure limit are estimated to have a 50 year present value of between £37 million and £59 million, and an annualised cost of between £1.1 million and £1.9 million. Again, much of this cost will be due to increased compliance with existing requirements.

#### **7.4.8. Savings due to the removal of textured decorative coatings from the licensing regime**

- 7.4.8.1. Indicative estimated costs of removing decorative coatings at present suggest that a day's work would normally be charged at between £900 and £2,000 for removing a textured ceiling coating containing asbestos, whereas the same amount of work to remove the material if there was no asbestos present would cost the client £200 to £900. As such coatings contain some asbestos, precautions under CAW will still be necessary (such as containment to prevent spread), and in many cases air testing after the job is finished to confirm clearance will still be undertaken. The

<sup>17</sup> This is justified on the basis that the full labour cost per year for a typically affected worker is likely to be about £17000 (SOC 5 "Skilled trades occupation", £76 per day multiplied by 220 working days).

<sup>18</sup> Based on HSE's database of licensed removal firms)

comparative cost under these conditions is estimated to be approximately £500 - £1,300. The total number of textured decorative coating jobs notified to HSE (as part of licensing requirements) over the 3-year period May 2001 to April 2004 was 15,297. This was the equivalent of approximately 64,217 job-days (the number of days decorative coating removal work that took place over that period).

- 7.4.8.2. Article 12(2) of the AWPD amendments states that ACMs should be removed before a building is demolished except where the risk is greater than leaving the ACMs in place (see Annex B). It is expected, given the low level of risk from this material, that decorative coating removal before demolition will be significantly reduced. Estimates from HSE's notification database suggest that there are approximately 50 jobs of this sort averaging 10 days each per year.
- 7.4.8.3. Assuming that the number of jobs, and therefore job days, decreases by 2% a year (as the stock of decorative coating ceilings declines), the total fifty year present value of cost savings to the economy is between £206 million and £365 million<sup>19</sup>. The first year saving is a minimum of £8.6 million.
- 7.4.8.4. HSE anticipates approximately 5,000 less notifications per year as a result of removing decorative coatings from the requirement to notify. On the basis that this costs £10 per notification, this would reduce costs by approximately £50,000 in the first year. The fifty year present value is £1.2 million.

7.4.9. The following table summarises the combined costs and savings of Option 2- Implement the Directive amendments substantially as adopted:

**Table 3**

<b>Option 2: Compliance Costs and Savings</b>			
	<b>Present value £ million</b>	<b>First year £ million</b>	<b>Annualised £ million</b>
<b>Administration costs</b>			
Familiarisation	11.6	11.6	-
Conversion to WHO counting method	0.4	0.4	-
Medical surveillance	0.5 to 2.0	0.0 to 0.2	0.0 to 0.1
<b>Policy costs</b>			
Training (increased compliance only)	871	106	25
Cost of control maintenance workers	616 to 923	26 to 40	17 to 25
Cost of control licensed workers	37 to 59	2 to 3	1 to 2
<b>Subtotal Compliance costs</b>	<b>1,536 to 1,865</b>	<b>146 to 160</b>	<b>43 to 52</b>
<b>Compliance savings</b>			
Reclassification of textured coatings	207 to 366	9 to 16	6 to 10
<b>NET TOTAL</b>	<b>1,170 to 1,658</b>	<b>130 to 151</b>	<b>33 to 46</b>

<sup>19</sup> The figures assume an average real increase in costs of 1.8% a year, in line with expected increases in the real earning rates.

### **7.5. Option 3 – Implement the Control Limit with minor amendments to take account of current GB practice**

- 7.5.1. As noted above, the AWPDP's eight-hour TWA is thought not to be appropriate to British work practices. HSE proposes that the exposure limit should be set at  $0.1 \text{ f/cm}^3$  over a four-hour TWA period. Although in theory this represents a tightening of the limit, the reality is that very few British workers who come into contact with asbestos are exposed for a full eight-hour period at or around  $0.1 \text{ f/cm}^3$ . This means that the compliance costs that would apply to a limit set in terms of a four-hour TWA would be negligibly larger than the costs for an eight-hour limit.
- 7.5.2. Therefore the compliance costs and savings of option 3, over and above those of option 2, would be negligible.

### **7.6. Option 4 - changes to the regulatory regime imposing no significant changes**

- 7.6.1. **Regulatory simplification** - There are not expected to be any significant costs to industry incurred as a result of regulatory simplification by combining the CAW and ASLIC Regulations.
- 7.6.2. **Licensing** - The risk based approach to notification, to which licensing is to be aligned, whilst changing the detail of how it is decided whether a licence is needed, will not significantly change which work must be undertaken by a licensed contractor, with the exception of work with textured decorative coatings, detailed separately (see paragraph 7.4.2). The costs to the industry other than this would be insignificant.
- 7.6.3. One consequence of aligning licensing with notification together with the move to a concept of 'sporadic and low intensity' work, is that those undertaking work with asbestos on their own premises using their own employees would need to be licensed (at present they only need to notify HSE of the work). However, HSE estimates that less than 10 companies would be affected and would need to apply for a licence, therefore the costs would be insignificant.
- 7.6.4. **Asbestos licence time limits** - Allowing a variation and a maximum time limit on a licence – this change will reflect current practice and will therefore not have any cost implications for businesses.
- 7.6.5. **Documentation on site** - Additional documentation required to be kept on site by licensed contractors – this requirement refers to daily maintenance checks of the DCU, and most contractors will already have the documentation. The requirement is simply that the documentation is kept on site, which will reflect current practice for most contractors and so there will be negligible cost implications.

### **7.7. Option 5 – Four-stage site clearance certification for reoccupation**

- 7.7.1. It is our view that there will be no significant cost directly attributed to requiring extended accreditation in regulation to incorporate the requirements of the four-stage clearance process introduced in 2002 through CAW.
- 7.7.2. Some 50% of those laboratories already accredited to the 'two-stage' process have applied to UKAS for extension of scope at an initial cost of £1000, and

with an additional annual cost of £700. It is anticipated that the majority of the remaining accredited laboratories will seek extension prior to the making of the new CAW Regulations.

## 7.8. Compliance costs for a 'typical' business of Option 2

7.8.1. HSE has identified two types of typical business that would be affected by the proposals. The first is a maintenance contractor employing ten workers, four of whom are electricians and plumbers who are likely to encounter licensed asbestos materials. The remaining six workers encounter non-licensable asbestos. The control measures that all ten workers apply relate only to the type of simple precautions set out in "Asbestos Essentials" measures. The following estimated costs apply:

**Table 4**

	50 yr present value	First year cost	Annualised cost
Familiarisation	£40	£40	-
Training	£4,863	£590	£138
Costs of control	£7,159	£307	£197
Total	£12,061	£937	£335

7.8.2. The second type of firm employs eight licensed asbestos removal workers. The firm chooses not to purchase specialised powered respirator equipment. The following estimated costs apply:

**Table 5**

	50 yr present value	First year cost	Annualised cost
Familiarisation	£80	£80	-
Training	-	-	-
Costs of control	£46,647	£1,999	£1,281
Total	£46,727	£2,079	£1,281

## 7.9. Total compliance costs to business

**Table 6**

<b>Compliance Costs and Savings</b>			
	<b>Present value</b>	<b>First year</b>	<b>Annualised</b>
	<b>£ million</b>	<b>£ million</b>	<b>£ million</b>
<b>Option 2</b> (see Table 3, p 23 for detailed breakdown)	<b>1,170 to 1,658</b>	<b>130 to 151</b>	<b>33 to 46</b>
<b>Option 3</b>	negligible incremental costs over option 2		
<b>Option 4</b>	negligible		
<b>Option 5</b>	negligible		

7.9.1. Table 6 gives the estimated compliance costs and savings for Options 2, 3, 4 and 5. Option 2 amounts to implementing the AWPD substantially as adopted. Under the current evidence and assumptions, all other options do not add to compliance costs. Some options, particularly those associated with regulatory simplification, may lead to marginal cost savings, although these are impossible to estimate.

## 7.10. Costs to HSE

7.10.1. HSE are not expecting incremental costs as a result of implementing these amendments.

## 7.11. Environmental impacts

7.11.1. None of the changes required as a result of the amendments to AWPD are designed to affect the levels of asbestos removal taking place or the rate at which asbestos is removed in the future. HSE will continue to advise that where asbestos is in good condition and is unlikely to be disturbed, it is better to leave it in place and manage the risk, than to remove it.

7.11.2. As levels of removal are likely to be unchanged, levels of disposal are also expected to be unaffected and therefore there will not be any significant additional environmental impact due to these amendments.

## 7.12. Total costs to society

7.12.1. HSE has been unable to identify any significant incremental costs to non-business stakeholders. Consequently, the total costs to society and the total costs to industry are, for all practical purposes, the same.

## 8. SMALL FIRMS' IMPACT TEST

8.1.1. A total of 25 small firms were contacted initially by telephone. They were each then sent an e-mail, which included a questionnaire on the relevant issues that were considered might have an impact on their business along with some background information on the changes being proposed. Thirteen of the companies responded. A breakdown of the types of companies contacted, number of employees and the demographic details are contained in the table below.

**Table 7**

Type of company	Number contacted	Number of responses	Number of employees	Regions
Construction/demolition	8	4	Less than 50	North West, South East, South West and Eastern
Licensed asbestos removal contractors	12	5	Less than 50	North West, North East, South West, South East, London, Wales, Northern Home Counties

Laboratories	5	4	One company less than 50 employees, 4 companies up to 250 employees	Scotland, Home Counties, Greater London, Yorkshire and North East.
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8.1.2. The firms were asked to consider the likely impact the following proposals may have on their businesses.

- 8.1.2.1. A single control limit of 0.1 f/ml over 4 hours for all types of asbestos (relevant to all the types of companies);
- 8.1.2.2. the possible withdrawal of STELs (relevant to all the types of companies);
- 8.1.2.3. removal of requirement for those working with textured decorative coatings containing asbestos to be licensed (relevant to all the types of companies);
- 8.1.2.4. before commencement of demolition/maintenance work employers to take all necessary steps to identify ACMs (relevant to all the types of companies);
- 8.1.2.5. the Regulations to require appropriate training for all workers likely to be exposed to ACMS (relevant to building/demolition contractors and licensed contractors);
- 8.1.2.6. the removal of the requirement to have a licence in order to work with asbestos materials if using own employees on own premises (relevant to building/demolition contractors);
- 8.1.2.7. simplification of the Regulations so that notification, the requirement for medicals and licensing will be aligned (relevant to licensed contractors);
- 8.1.2.8. analysts to be accredited for the full 4 stage site clearance certification process; (relevant to licensed contractors and laboratories);
- 8.1.2.9. fibre counting to be carried out in accordance with the 1997 WHO recommended method (relevant to laboratories only).

## 8.2. Results of the impact test

- 8.2.1. The results indicate that the small firms who took part in the test felt there would be very little impact on them as a result of the proposed options.
- 8.2.2. In terms of the groups, those from construction/demolition recognised that a number of the proposals are already in Regulation or ACoP. They considered that they would probably experience an increase in business and that a 'level playing field' would be created as a result of the requirement to identify presumed ACMs prior to demolition/maintenance work. Two of the companies thought however, that it would probably increase their costs.
- 8.2.3. Licensed contractors considered that there would not be an increase in costs from the majority of the options. However, they all considered that they would experience a reduction in business as a result of the proposal to remove textured decorative coatings from the requirement to have a licence.

- 8.2.4. The contacts from the Laboratories considered that “a single control limit would make the situation clearer”. The main change for laboratories is the move to the WHO fibre counting method. This was not seen as a significant burden on their business as they are already familiar with the procedure. It was nevertheless acknowledged that there would be a minor cost implication for retraining. Two of the laboratories had some reservations about the withdrawal of STELs and considered that in place of the regulation something should be included in guidance on sampling for short time intervals.
- 8.2.5. On the basis of this assessment, HSE believes that the Regulations to implement AWPD would not impose a substantially disproportionate burden on small business. The Small Business Service (SBS) has been consulted and agree with HSE’s view that a number of these requirements are already in existence (either in existing Regulation or ACoP) and they believe that this Directive should not be too onerous on small firms.

## 9. COMPETITION ASSESSMENT

- 9.1.1. The Regulations will affect many diverse industrial sectors. Measuring the potential impact on competition in the numerous affected markets is difficult. In these circumstances, the Office of Fair Trading recommends selecting markets with a high degree of supplier concentration, as adverse competition impacts are more likely to occur in such markets. In the present case, the asbestos removal market is of primary concern. The competition assessment also looks at the potential competition effects of the regulations on the market of asbestos specialist equipment.
- 9.1.2. The market for licensed asbestos removal is composed of approximately 500 active companies<sup>20</sup>, employing around 9000 workers<sup>21</sup>. Despite the relatively large number of incumbents in the market, a number of specific requirements limits competition and tends to create regional markets. One of the main restrictions concerns the stocking and disposal of asbestos wastes. Firms are required to dispose of wastes only at specialist specific sites. This reduces firms’ ability to operate throughout Britain, thus reducing the scope for geographical substitution. The relatively small number of waste disposal facilities further reinforces this fragmentation effect. This has lead to high levels of clustering of companies in some areas.
- 9.1.3. The new Regulations are expected to affect the structure of the licensed asbestos removal market by modifying the licensing regime. On the one hand, employers using their own employees on their own premises will no longer be exempt from the licensing requirements. On the other hand, the licensing regime will no longer be required for undertaking removal of textured and decorative coatings. The overall likely effect will be to encourage new firms to enter the market, exploiting the opportunity of carrying asbestos removal work without the need of a licence. However, this might have some adverse effect

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<sup>20</sup> Figure estimated by HSE experts.

<sup>21</sup> The figure is derived from the number of medical examinations, which asbestos workers are required to have every two years. According to HSE’s Employment Medical Statistics Unit, there were around 4903 medical examinations for asbestos workers in 2001 and 4798 in 2002. Furthermore, among those workers being examined, a proportion of these have it before the end of the two years and another work for less than two years. Please see Annex A for further details.

on licensed firms, for whom removal of textured and decorative coatings accounts for a substantial part of their activity<sup>22</sup>. In terms of costs, new entrants carrying asbestos removal for textured and decorative coatings are unlikely to benefit from significantly lower set up and ongoing costs for not having to comply with the licensing regime. Firms will still be subject to minimum requirements<sup>23</sup> that would prevent suppliers, new non-licensed companies in particular, from providing low quality services. It must finally be noted that asbestos removal processes are well established and the market would not be classified as one experiencing rapid technological change. Overall, the new Regulations are therefore unlikely to have an adverse effect on competition in the asbestos removal market.

9.1.4. The market for asbestos specialist equipments is fairly concentrated. HSE estimates that there are only 6 companies in Great Britain<sup>24</sup>. These companies supply and maintain respiratory protective equipment and various equipment to reduce asbestos exposure.

9.1.5. The new Regulations will only affect the market indirectly. The regulations require that, while protective breathing equipment should be kept to a strict minimum, maximum precautions should be taken to limit the release of asbestos fibres. These requirements are likely to create pressures on the demand for specialist equipment. This is however unlikely to have an adverse impact on the market structure, as all firms tend to provide the same range of product. The Regulations would not have any differential impact on existing specialist equipment providers compared to new companies that might want to enter the market. The production processes are not experiencing great changes over time and the market would not be classified as one experiencing rapid technological change. Finally, the Regulations would not impose specific requirements on products, thus not reducing specialist equipment suppliers' production choices. For specialist equipment providers, the impact of the Regulations is unlikely to produce any adverse effect on competition.

## 10. BALANCE OF COSTS AND BENEFITS

10.1.1. The table below presents a summary of quantified and unquantified information on costs and benefits. This represents option 2 as options 3, 4 and 5 do not add significantly to costs. Importantly, although total quantified benefits and costs have been reported, a direct comparison between the two would be spurious because there are substantial benefits that are unquantifiable. These benefits and costs mainly arise from the effect the transposition and implementation of the AWPD will have on increasing compliance with existing British regulations. In particular, better compliance with training and the requirement to control exposure as low as reasonably practicable should have a major positive impact on the prevention of fatalities.

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<sup>22</sup> According to HSE experts, the removal of textured and decorative coatings accounts for 15% of licensed removal jobs, and about 9% of licensed removal job-days. Source HSL. For more details please see Annex A.

<sup>23</sup> Under the new regulations, HSE will check the ability of non-licensed companies to carry out asbestos removal work through the scrutiny of companies' "Plan of work".

<sup>24</sup> Source: Health Unit, HSE.

Table 8

<b>Summary of costs and benefits over 50 years</b>		
	Costs	Benefits
	<b>Present value £ million</b>	<b>Present value £ million</b>
Familiarisation	11.6	Substantial health benefits through encouragement of greater compliance with existing regulations
Health surveillance	0.5 to 2.0	
Conversion to WHO counting method	0.4	
Training	871	
Cost of control maintenance workers	616 to 923	
Cost of control licensed workers	37 to 59	
Reclassification of textured coatings	(206) to (365)	21 to 84
Removal of notification for textured coatings	1.2	
<b>NET TOTAL</b>	<b>1,171 to 1,659</b>	<b>(21) to (84)</b>

10.1.2.A reasonable comparison can however be made between costs and benefits in the context of licensed workers. The estimates in the table are reasonably comprehensive, and suggest that costs and benefits are probably in balance with each other<sup>25</sup>. In any case, costs are very unlikely to be grossly disproportionate to benefits.

## 10.2. Uncertainties

10.2.1. Most uncertainties have been incorporated into the analysis through the use of ranges. However, HSE made the initial assumption that, in most cases, compliance with the transposed AWPDP would be 100%. Of course, in absolute terms, this is very unlikely but there are reasons to believe that compliance in many cases will be high, not least because of HSE's on-going programme of awareness raising (running since late 2001) will promote the existing and new AWPDP requirements. Lingering uncertainty over compliance is unlikely to change judgements about the balance between costs and benefits. The vast majority of costs have a direct impact on the primary policy objective (the reduction of ill health) and there is no reason to believe that there is not a direct relationship between the costs and the benefits.

## 11. ENFORCEMENT AND SANCTIONS

11.1.1. HSE are undertaking a campaign promoting an awareness of and compliance with the Duty to Manage Asbestos and this is increasing broader awareness of the CAW. This campaign, started in 2001 is intended to continue until 2007.

11.1.2. The need for the training of HSE and Local Authority enforcement staff will be considered and delivered where appropriate. In support of this appropriate inspection support material will be prepared for circulation to enforcement staff

<sup>25</sup> Note that the benefits are a minimum. As noted in the benefits section, compliance with the AWPDP and existing British regulations will bring exposure down significantly below the exposure limit, thereby leading to a substantially greater number of prevented fatalities.

11.1.3. The process for dealing with licence revocation will be revised to introduce a modified system, which can be used where appropriate. Under the modified procedure if a contractor meets the criteria for revocation but it is foreseeable that they can quickly take steps to achieve and maintain the necessary standard for holding a licence, then, subject to a satisfactory re-assessment, the licence can be reissued promptly. When this is not the case the existing procedures for revocation will continue to apply.

## **12. ARRANGEMENTS FOR MONITORING AND EVALUATION**

12.1.1. As a means of evaluating the effectiveness of the current and proposed awareness raising campaign initiatives, research is planned to assess present levels of awareness/compliance with the current regulations, particularly with the levels of training of workers. A corresponding exercise three years after the amendments come into force will also be planned.

**13. LIST OF ABBREVIATIONS USED**

ACMs	Asbestos-containing materials
ACoPs	Approved Codes of Practice
ALARP	As low as is reasonably practicable
ASLIC	Asbestos (Licensing) Regulations 1983
AWPD	European Asbestos Worker Protection Directive
CAW	Control of Asbestos at Work Regulations 2002
COSHH	Control of Substances Hazardous to Health Regulations 2004
DCU	De-contamination Unit
ERM	European Reference Method
HSE	Health and Safety Executive
HSL	Health and Safety Laboratory
LA	Local Authority
Prohibitions Regulations	Asbestos (Prohibitions) Regulations (as amended) 1999
RIA	Regulatory Impact Assessment
RICE	Regular Inter-laboratory Counting Exchange
RPE	Respiratory Protective Equipment
SBS	Small Business Service
SQWG	European Council's Social Questions Working Group
STEL	Short term exposure limit
TWA	Time weighted average
UKAS	United Kingdom Accreditation Service
WHO	World Health Organisation

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## **RIA ANNEX A: HSL RISK ASSESSMENT**

### **Introduction**

- A1. The European Union classifies all forms of asbestos as category 1 carcinogens. It has long been accepted that the risk from exposure to amphiboles (amosite and crocidolite) exceeds that from exposure to chrysotile. Nevertheless HSC's policy (and that of the European Union) has been that exposure to all forms of asbestos should be prevented, or exposure minimised where prevention is not reasonably practicable.
- A2. The main human health effects associated with occupational exposure to asbestos are fibrosis (asbestosis), lung cancer and mesothelioma. Evidence that asbestos is associated with an increased risk of cancer at other sites is inconclusive. The rate of asbestos related diseases in the UK has been predicted to increase and high levels of incidence are found among maintenance workers (Peto et al. 1995).
- A3. Health risks can be divided into two main groups, namely workers disturbing asbestos containing materials (ACMs) and other individuals, including members of the public, who may be affected by these work activities or the presence of disturbed or degraded asbestos within buildings they inhabit or visit. The first group, workers disturbing ACMs can be subdivided into a number of sub-groups:
1. Primary manufacturing of ACMs;
  2. Secondary manufacture and use of ACMs;
  3. Installation of ACM products;
  4. Maintenance and repair of ACMs;
  5. Removal / demolition of ACMs
- A4. Since late 1999, except for a very few products, all manufacturing and installation of ACMs has ceased and maintenance, repair, removal and demolition of existing ACMs are the main activities of concern. This was reflected by the introduction of an explicit duty to manage ACMs in building in the updated Control of Asbestos at Work Regulations 2002 (CAW).
- A5. Overall it was previously estimated (in CD159) that the following amounts of asbestos were installed into the UK:
- Approximately some 50,000 tonnes of crocidolite, mainly in the form of textile, thermal and spray insulation:
  - Approximately some 500,000 tonnes of amosite, mainly in the form of asbestos insulating board, thermal and spray insulation:

- Approximately some 2.7 million tonnes of chrysotile, mainly in the form of cement products (and minor amounts of textiles).

A6. The previous estimate in 1999 (CD159) was that about a quarter of the asbestos products installed had been removed and that the majority of the remaining material would be removed over a 50 year period. It would be consistent with this to estimate that about one third of the installed asbestos has now been removed. However, this is an overall estimate and the amounts removed will vary for particular products.

### **Main changes to risk of UK workers from the amended EU directive**

A7. The EU directive 2003/18/EC (AWPD amendments) makes a number of amendments to Council Directive 83/477/EEC “On the protection of workers from the risks related to exposure to asbestos at work”, that will have implications on the risks to workers. The main changes in the directive that will have a direct influence on the risk to workers are those, which will either avoid further exposure to current groups of workers, or those that will reduce current exposures still further. As several of the changes in the EU Directive are already in place in the current UK regulations (CAW and the Asbestos (Licensing) Regulations 1987 (ASLIC)), it is necessary to evaluate the effect of the EU amendments with regard to both the additional risk reduction to the current UK Regulations and the risk reduction that may already be in place. As full compliance is normally assumed when making risk estimates, it is also necessary to determine which measures increase the compliance rather than introducing further reductions in risk.

A8. For instance, the current duty to manage (regulation 4 in CAW) and regulation 5 of CAW already enact most of the new measures in Article 10A of the AWPD amendments, which introduce measure to avoid exposure of maintenance and other workers. “Before beginning demolition or maintenance work, employers shall take, if appropriate by obtaining information from the owners of the premises, all necessary steps to identify presumed asbestos-containing materials. If there is any doubt about the presence of asbestos in a material or construction, the applicable provisions of this Directive shall be observed.”

A9. However, the requirement in Article 12a that “Employers shall provide appropriate training for all workers who are, or are likely to be, exposed to asbestos containing dust,” will result in increased awareness and hence compliance but in itself does not directly introduce any new reduction in risk or the number of asbestos related deaths. For example, with increased awareness training any suspected damaged or deteriorated asbestos will be more likely to be brought to the attention of the employer and result in increased compliance. Similarly, maintenance workers will be less likely to unknowingly disturb or clean up the deteriorated asbestos material.

A10. The main amendment that will result in lower exposure is the reduction of the control limits to  $0.1 \text{ f/cm}^3$  for all types of regulated asbestos in Article 8 in

conjunction with the revised Article 6 (exposure must be reduced to a minimum and in any case below the limit value). The effects of this reduction are also magnified by a change in Article 7, which introduces the use of the WHO method for the assessment of airborne fibre exposure as it will increase the numbers of fibres counted in the analysis. The changes to Articles 7 and 8, will have a direct impact on licensed asbestos removal workers who regularly work in an environment where the control limit is approached and exceeded and will lead to the use of increased controls.

A11. Other demolition workers who work with unlicensed materials may also find that they have to introduce further controls to ensure they comply with the lower control limits. Unlicensed maintenance workers will also be affected but at present as they are limited to 1 hour of work with materials for which a licence is required per week, the lower control limits are unlikely to make a significant difference to their exposure compared with the benefits of avoiding unknown and hence uncontrolled exposures. Also, with better management of the asbestos in buildings and increased training of maintenance workers, it is much less likely that unlicensed maintenance workers will be working on materials for which a licence is required in the future. However changes introduced to comply with Article 3 and in particular the new concept of “sporadic and low intensity work” may result in changes to the types of work carried out by demolition and maintenance workers and hence a change to their risks.

A12. The previous RIA for the new Duty to Manage Asbestos (in CD174) gave a detailed assessment of the best estimate of annual mortality for all workers likely to be exposed to asbestos into the future. After correcting for demolition of existing asbestos containing buildings (average of 2% per annum), this gave a total of 7,800 deaths arising from exposure to asbestos over the next fifty years (if no further action other than routine demolition is undertaken). Given the lag between exposure and death (an additional 50 years after exposure) deaths will continue to occur up to the end of this century. The average number of deaths is 78 in each future year, and the peak number is 158, which is predicted to occur in the year 2058. The figure of 7,800 excluded deaths related to purely environmental exposures (~1,200). The number of occupational exposure deaths avoided was estimated at 58% of 7,800, or 4,500, with around 2,000 as a result of indirect, or work-related, exposure. The remaining 1,300 deaths would be as a result of domestic exposure, most of which are not covered by CAW (or the amended Directive).

A13. The baseline year for this estimate was 2000 but as the Duty to manage only came into force in 2004 and the EU directive is to be implemented less than two years later, the risks and actual numbers of deaths predicted are essentially the same and the risk estimate has not been updated. The previously published figure of 4,500 has therefore been taken as the baseline of avoidable deaths. The modeling process for these risks were fully discussed and published in CD174. The principles used for the modeling are briefly outlined below before describing in detail the modeling process used for the additional reductions due to measures other than for Article 10A.

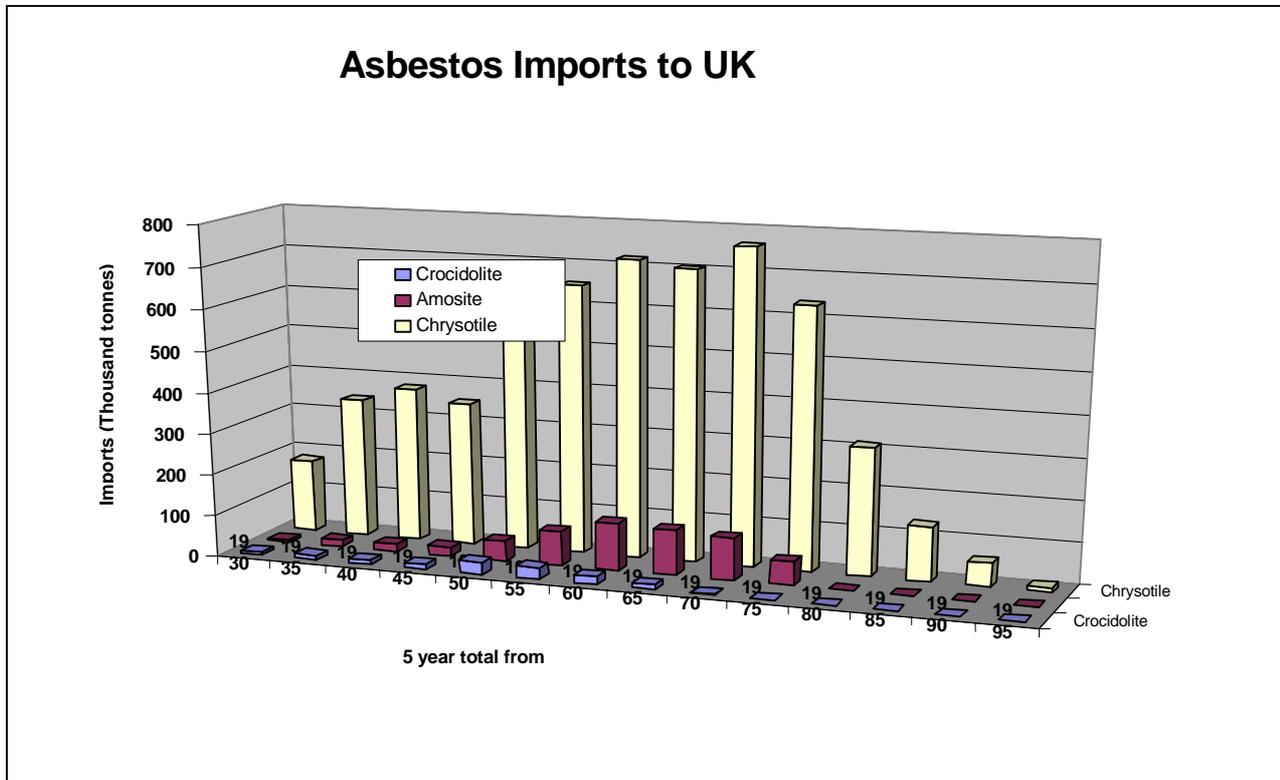
**Modelling past and present risk for all workers**

A14. Due to the long lag times between exposure and the onset of disease (15 – 60 years), many of the current UK asbestos-related deaths are in workers who were exposed to high airborne asbestos fibre levels during the manufacture and installation of asbestos products. The importation of asbestos into the UK (figure 1) is therefore a good predictor of the likely disease rates to these groups of workers and has been used to model the expected levels of UK disease. The quantitative epidemiological dose-response models used for risk assessment are based on the exposures and disease rates found among various cohorts of asbestos production and manufacturing workers. These have been reviewed and described by Hodgson and Darnton (2000) and the outcomes have been used to model future rates of asbestos related lung cancer and mesothelioma to maintenance, repair and removal workers.

A15. The approach taken for previous risk estimates (CD159 & CD174) to estimate potential lives saved involved the following steps:

- Step 1. Model the link between exposure and mesothelioma deaths at the population level.
- Step 2. Estimate current exposure levels.
- Step 3. Calibrate the risk generated by estimated current levels to the exposure index in population model
- Step 4. Estimate how this current level of population exposure would change over the next 50 years if no additional control action was taken
- Step 5. Use the model derived in Step 1 to predict the number of deaths over the next century which would be produced by the future exposure profile estimated in Step 4.
- Step 6. Partition these assumed deaths into those due to asbestos in commercial buildings and those in domestic buildings.

Figure 1: Asbestos imports into the UK



**Step 1: Modelling the link between exposure and mesothelioma deaths at the population level.**

A16. The basic approach here has been to infer the past track of asbestos exposure from year to year from the detailed pattern of male mesotheliomas by age and year (the data is single years, and single years of age to age 89). This approach assumes that the population's total exposure to asbestos can be summarised in each year by a single number and that the relationship between this summarised exposure index and future deaths from mesothelioma will take the same form as is widely assumed for the relationship between asbestos exposure and mesothelioma risk at the individual level:

$$r = CD(t-10)^k$$

A17. Here,  $r$  is mesothelioma risk at time  $t$ ;  $D$  is cumulative exposure;  $t$  is time in years since exposure and  $C$  and  $k$  are parameters to be estimated. The value estimated for  $k$  is 2.6, in the middle of the range expected 2 - 3. The maximum year for exposure is estimated at 1967, with a very steep (but poorly determined) reduction in exposure after this date. When expressed at the population level further factors need to be built into the equation to reflect the age distribution of exposure. This included terms to model a possible trend in the completeness of diagnosis, and of clearance of asbestos fibres from the lung.

A18. The estimates of relative exposure potential at different ages imply that exposure is concentrated on the age group 20 to 49 and that it is occupation, especially male occupation, that provide the main source of exposures. A non-clearance model was adopted as the basis for predictions.

A19. A large (and increasing) proportion of the predicted future deaths are at ages 80 and above. This is driven both by the form of the model, and by the increasing survival to older ages in the population. Although the mesothelioma model used here fits observed mortality in occupational cohort studies quite well, it can reasonably be doubted whether the risk of mesothelioma increases indefinitely with time after exposure. The few occupational cohorts with very long follow-up all show eventual falls in mesothelioma rate. For this reason previous risk assessments have truncated their predictions at age 80. Clearly this is an approximation since there will be at least some deaths at ages 80 and over. Therefore, the population model fitted here has included deaths up to age 89. There is some indication that the fit is less satisfactory at ages 80 and over. For the purposes of mortality prediction we will limit these to deaths below age 80, though we note that this is likely to be an under estimate. The true value will lie somewhere between this total and the total predicted including deaths to age 89.

A20. Comparison of the estimated track of exposure with the figures for imports of asbestos of various types suggests that the amphibole component of imports was a much more important determinant of mesothelioma mortality than that of chrysotile. Figure 2 shows the profile of asbestos imports along with the fitted exposure index. None of the import series reflect the exposure index profile very closely, but the timing of the fall in exposure corresponds quite closely with that for amosite imports. Chrysotile imports did not fall until about ten years later. If chrysotile was a major determinant of mesothelioma mortality, the fitted exposure index might be expected to show a later fall.

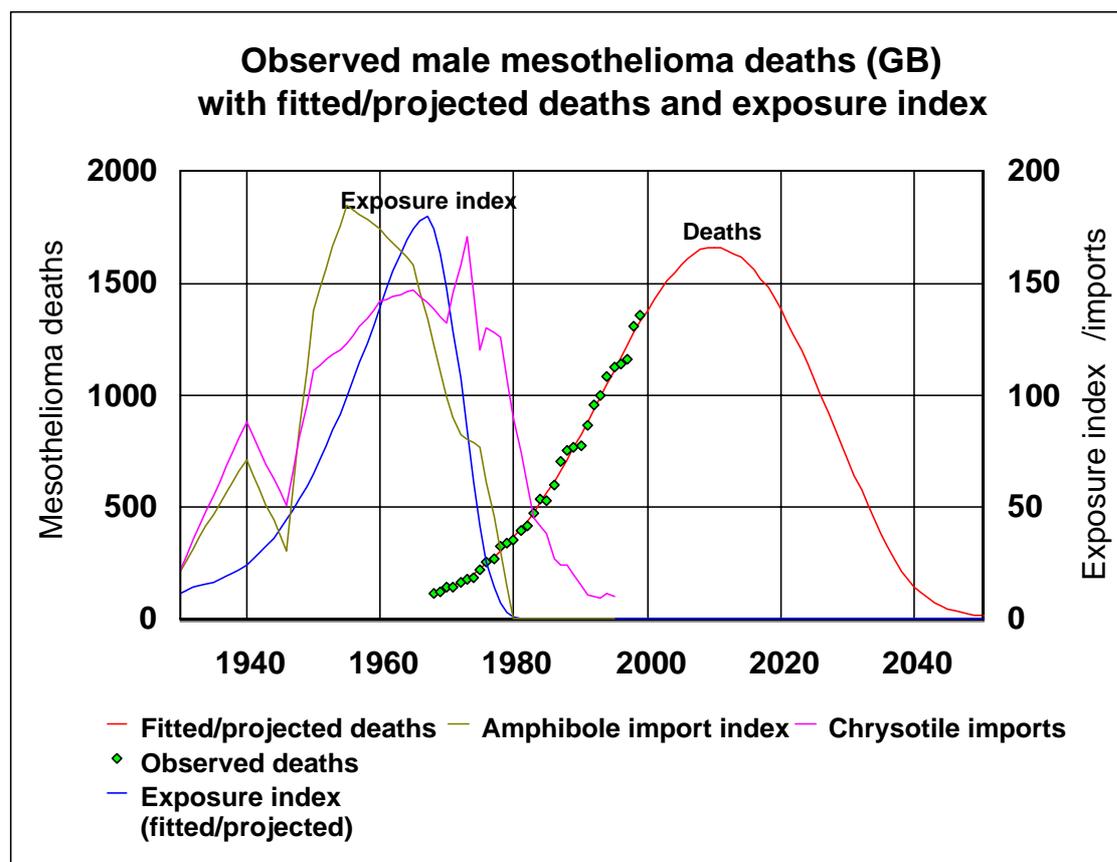


Figure 2: Comparison of fitted exposure index with import volumes

### *Estimating the fall in previous exposure levels*

A21. If the rate of decline in the 10 years following the implied exposure peak had continued, exposure levels would have fallen to essentially trivial levels well before the year 2000. But there is no real basis for assuming this rate of decline will have continued. Its main driver will have been the rapid reduction in initial processing of imported fibre into asbestos products and their installation. Once exposure has fallen to the level generated by continued routine building maintenance and demolition (and asbestos removal), the rate of total population exposure would be expected to be fairly constant. We have no good measurement-based evidence for knowing what this level is but for the purposes of projecting mortality levels in the future the current and future path of exposure is the crucial assumption.

### **Step 2: Current exposure to asbestos**

A22. Table 1 shows the exposure distributions and numbers exposed in the broad occupational categories described above on a typical working day. In order to calculate the level of risk this exposure pattern presents in relation to historic exposures, we estimate the annual level of deaths that would eventually be

generated by the long-term continuation of this exposure pattern. Over an extended period of time the same individuals would not experience the same exposure level from day to day. Furthermore, a given individual would not be expected to spend their entire working lifetime within the same job category.

A23. In order to model the sharing of exposure over time, and the flow of individuals through these job categories over a working lifetime, we assume a turnover factor for each of the three highest exposure job categories. For example, we assume that over a working lifetime (40 years) 10 times as many people will at some time work in a demolition or asbestos removal job than are involved in these jobs on a given current day. (This is consistent with data on individuals having statutory asbestos medicals as asbestos removal workers over the past 14 years). Smaller (5-fold and 2.5-fold) working lifetime turnover factors are assumed for the larger, less specialised categories of maintenance worker and other building work respectively. These estimates are based on the Labour Force Survey, which provides estimates of time with current employer, and also on whether the respondent's occupation has changed over the last year. However, for our purposes, this is complicated by the fact that individuals may move between both employers, and also detailed occupation, but still be exposed to asbestos.

A24. The working lifetime exposure distribution for the group of individuals who have ever worked as a demolition or asbestos removal worker will not be the same as that for this group of workers on a given day, but will depend on what other job categories these individuals have occupied over their working life. For these calculations we have assumed that workers in demolition and asbestos removal at some time in their working life are drawn from the "other building work" distribution. In other words this group is formed by adding to the numbers for demolition/removal on a given day a proportion of the "other building work" drawn pro-rata from the exposure distribution of that group. The average exposure in the resulting group is consequently a weighted average of the demolition/removal and other building groups for a given day.

Table 1 Occupational exposure distributions assumed

Exposure level (f/m)	Exposure distributions on a given current day				Average daily exposure distribution in working lifetime pools (taking account of turnover)				
	Asbestos removal/ demolition	Regularly exposed maintenance	Other building jobs	Other occupations	Asbestos removal/ demolition	Regularly exposed maintenance	Other building jobs	Other occupations	Total
10	9	120	8	0	9	120	7	0	137
5	17	241	77	0	25	241	70	0	335
1	170	2,406	774	13	247	2,406	699	11	3,363
0.5	510	7,217	7,742	131	1,275	7,221	6,989	114	15,599
0.1	1,700	24,055	38,708	1,310	5,525	24,103	35,006	1,138	65,772
0.05	3,400	48,110	77,415	13,097	11,050	48,591	71,003	11,378	142,023
0.01	3,390	48,110	154,831	523,883	18,690	67,354	189,040	455,130	730,214
0.001	3,400	48,110	557,390	2,095,531	58,480	125,087	700,347	1,820,518	2,704,432
0.0001	2,705	38,127	556,531	11,772,814	57,700	470,585	1,614,117	10,227,775	12,370,176
0.00001	1,700	24,055	154,831	11,787,364	17,000	457,047	1,253,487	10,240,416	11,967,950
total	17,000	240,551	1,548,306	26,194,143	170,000	1,202,755	3,870,765	22,756,480	28,000,000
mean level ..with lowest	0.057	0.057	0.010	0.00036	0.014	0.012	0.0037	0.00036	0.0014
two levels set to zero	0.057	0.057	0.010	0.00031	0.014	0.012	0.0037	0.00031	0.0014
turnover	10	5	2.5						

A25. In a similar way, the extra individuals in the "ever maintenance" and "ever other building" groups are drawn from the "other occupations" group. The resulting numbers and exposure distributions are shown in the last four columns of table 1.

A26. Within each group it is assumed that all individuals have an equivalent probability of days at each exposure level. The predicted asbestos related mortality is accordingly calculated assuming a working lifetime (age 20 to age 60) exposure at the group average using the risk factors suggested by Hodgson and Darnton (2000).

A27. A further set of assumptions has to be made about the proportions of the different fibre types in the assumed exposure. Most of the fibre in asbestos products was chrysotile, but the kinds of product into which chrysotile was incorporated, and the location of these products in buildings implies that the proportion of fibres in exposures that are likely to be generated is much more heavily weighted towards the amphibole fibres than would at first seem likely. One basis for assessing the likely proportions is to assume a "release factor" to reflect the different probability that fibres of a particular type will be released. We believe that the release factor for the amphibole fibres is at least ten times that of chrysotile. Applying these factors to the amounts of the three fibre types which were imported in the 1960s (the peak period for imports) implies exposure proportions of around 10:60:30 for blue, and brown and white asbestos respectively. This is broadly in line with the limited air monitoring evidence available. The difficulty of using direct evidence of air monitoring is that this is only done in situations where exposure to asbestos is known to be taking place, or to be likely to take place. It cannot be taken to be representative of the exposures that will occur in situations where this is not known.

A28. Our best model assumes the above proportions for the proportions of the three fibre types in airborne exposure, with variants 15:50:35 and 5:50:45. The central pattern of fibre mix together with the exposure distributions shown in figure 3 imply a long term annual total of 93 mesothelioma deaths (based on overall death rates of the 1970s), of which 71 will be men. This is assuming that all the highest exposure individuals are male and the rest of the exposed population is divided in equal proportions of male and female.

***Step 3: Calibration of risk generated by estimated current levels to exposure index in population model***

A29. The next stage in the procedure is to calibrate the risk generated by the exposure outline above by estimated current levels to exposure index in the population model. The predictions of annual mortality levels generated by applying the risk factors from Hodgson and Darnton relate to deaths before age 80, and to a population subject to the overall death rates of the 1970s.

A30. To determine what constant level of the exposure index in the projection models corresponds to this predicted annual death rate from mesothelioma, we

have to find the constant exposure level within the model which predicts the appropriate number of male mesothelioma deaths at ages up to 80 in the 1970s. The improvements in survival to the ages where mesothelioma death rates are highest between the 1970s and now (and the further improvements which are expected in the future) mean that the predicted annual total generated by a constant exposure rises over time. To generate 71 annual male deaths from mesothelioma in the 1970s from a constant exposure level in the projection model, the exposure index needs to be set at 4.2% of the peak.

***Step 4: Estimating how this current level of population exposure would change over the next 50 years if no additional control action was taken.***

A31. Taking exposure at 4.2% of the peak value as our assumed present level, we next estimate its future path to fall in proportion to the predicted demolition rate of the generation of buildings with high probability of containing asbestos materials. Existing regulations will apply on demolition, but the benefits of any asbestos management programme cease at this point. Data from the Valuation Office suggested an average building life of fifty years. We had therefore previously reduced both the costs and benefits attributable to the proposals by 2% each year.

A32. This figure is based on the median age of commercial buildings (around fifty years). The demolition rate for the cohort of older buildings containing asbestos will rise on a yearly basis, as these buildings reach the end of their lives. We therefore apply a demolition rate of 1% of current stock a year currently, rising to 4% by the end of the period, and giving an average of around 2%. The effect of this change is to slightly increase benefits, since commercial buildings (and therefore the on-going benefits from establishing a management system) last longer from the present. The effect is through discounting, rather than any change in the average demolition rate.

A33. We are now in a position to estimate future mortality from asbestos, in the absence of any further action (or increased compliance with existing regulation) other than routine demolition.

***Step 5: Estimation of the total number of future deaths in all sectors (step 5 in the modelling procedure)***

A34. Taking the best estimate annual mortality into the future, and correcting for demolition, leads to a total of 7,800 deaths arising from exposure to asbestos over the next fifty years, if no further action other than routine demolition is undertaken.

A35. Given the lag between exposure and death, these deaths continue to occur up to the end of this century. The average number of deaths is 78 in each future year, and the peak number is 158, which is predicted to occur in the year 2058. The profile of mortality is shown in graphical form in fig 3.

A36. These estimates include both deaths from lung cancer and also deaths to women. The numbers of lung cancer cases prevented in the future is more questionable than for the mesotheliomas. The uncertainties underlying this calculation are also considerable, particularly those associated with the risk factors at these - generally - low levels of exposure. By varying the key input assumptions: the risk factors taken from Hodgson and Darnton (2000), the fibre mix assumption, the size of the regularly exposed maintenance group and the turnover of individuals through exposure groups. The possible range in risk factors has a five-fold upward and eightfold downward impact on the estimated mortality levels, while the other assumptions introduce less than a twofold in total uncertainty. There are (at least) two additional sources of uncertainty. The typical levels of exposure we are now considering are at the low end of the intensity scale, and it is at least arguable (HSE's recent review of fibre toxicology has advanced this position) that there is a threshold for asbestos related lung cancers. In any case, the interaction between smoking levels and asbestos exposure, and the fact that the prevalence of smoking has fallen considerably over recent years, means that the number of lung cancers per mesothelioma is likely to be lower in the future than it has been in the past.

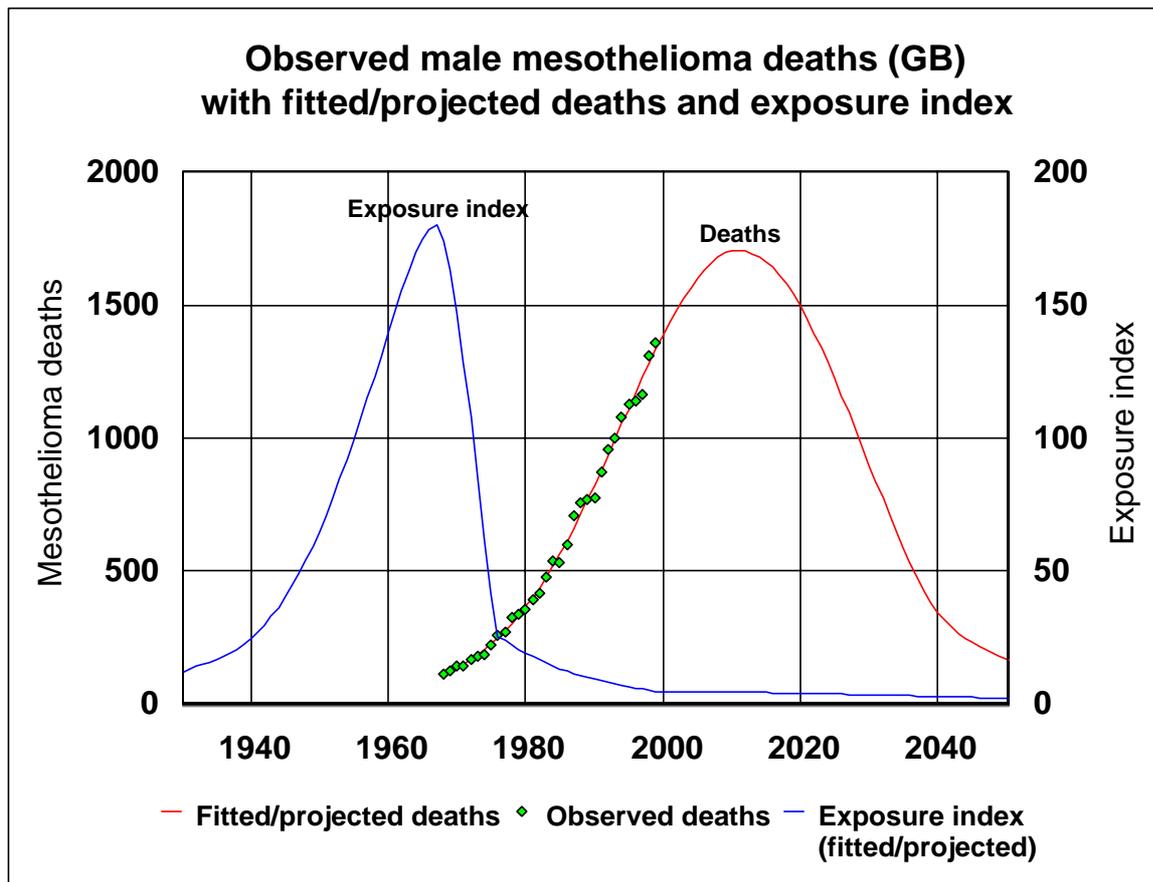


Figure 3: Best estimate of Fitted/Projected deaths

A37. The projection modeling applies to males deaths only (due to the relative lack of data for female deaths), but the risk assessment from current exposures also generates predicted numbers of female deaths which can then be used to uprate the predicted male deaths from the production model pro rata. The uprating factor

for the best model is 31%, which varies depending on whether 'background exposure' is included.

**Step 6: Apportioning total deaths between commercial and residential premises**

A38. The final step in the modelling procedure is to apportion this future mortality between commercial and residential premises. In order to calculate this, we require our mortality estimates split between the different exposed groups. The number of deaths that would occur in the different exposed groups, given the exposures and other assumptions in our risk model is given in table 2.

Exposed groups	Number of deaths		
	Mesothelioma	Lung cancer	Total
Removal/demolition	3	1	4
Regularly exposed building workers	27	4	31
Other building workers	20	5	25
Rest of working population	25	1	26
Domestic exposure (aged 20+)	5	0	5
Domestic exposure (aged <20)	13	0	13
<b>Total</b>	<b>93</b>	<b>11</b>	<b>104</b>

A39. The model used to provide our best estimate attributes 58% of total risk to be from occupational exposure to maintenance and building workers. The other 42% of the total risk is attributable to the background exposure of the people working/living in buildings containing asbestos. Of this 42%, the model attributes 17% of total risk to residents in all housing types, with the remaining 25% attributable mainly to background exposure in commercial buildings.

A40. The DTI construction statistics gives the total value of repair and maintenance activity, broken down by a broad building type. Around 48% of repair and maintenance are conducted on commercial buildings. Of the remaining amount, 32% is conducted in private housing and 20% on public housing.

A41. Private housing is known to contain far less asbestos than local authority provided housing. A generous assumption would be that private housing - on a unit by unit basis is four times less likely to contain asbestos than publicly provided housing (or equivalently a private house containing asbestos will contain one-quarter the amount of that found in local authority accommodation that contains asbestos). This together with the above figures indicates that around 7% of total risk will be in the owner occupied sector and around 29% in the local authority and rented sectors, giving a total of 35% after rounding. Some of this

risk will relate to common areas of residential accommodation, which are included in these proposals. As noted below, we cannot separate these from the costs and benefits relating to rented accommodation as a whole, which are examined in a separate document.

A42. The remaining 65% of total risk is that attributable to workers conducting maintenance activity on commercial buildings and also the background exposure to the occupants of such buildings. Forty percentage points of this total risk in commercial buildings is risks to workers conducting maintenance on the building. This is consistent with the fact that a higher proportion of buildings in the commercial sector contain asbestos, and where it is found it would also be more extensive than in residential accommodation. Commercial buildings thus account for the majority of occupational risk to workers conducting maintenance work.

A43. Looking at background risk, the split between the commercial and residential sectors is more equal, despite the fact that asbestos is more prevalent in commercial buildings. This is partly due to the longer time exposure of residents of housing compared to occupants of workplaces, and also to the higher population estimates.

A44. It should be noted that the above proportions relate to *current risk*. Since our model estimates a lower demolition rate amongst the residential sector, in the future the proportion of risk in the residential sector will increase. This can be demonstrated by the fact that although the residential sector accounts for 35% of current risk, 39% of preventable deaths are estimated to occur in this sector.

A45. The total number of deaths in the commercial sector is therefore estimated at 4,700 and the total number of deaths in the residential sector is estimated at 3,100. Assuming full compliance with article 10A of the new directive, most of these deaths would be avoided.

### **Modelling risks and benefits from a reduced control limit**

A46. The modelling approach used above for all workers, was based on estimates of the current daily exposures to the working population of 28 million, with several specific groups (see table 1) having increased exposure from direct contact and disturbance of ACMs in buildings. The numbers of workers who will be actively working with and disturbing asbestos, at or above the control limit on a daily basis is a much smaller group of ~85,000 mainly construction and maintenance workers (see table 3). The numbers of workers approaching the control limit has also been summarised.

<b>Table 3: Summary of previously estimated numbers of workers at or above the control limit on a daily basis</b>						
Exposure level (f/ml)	Asbestos removal/demolition	Regularly exposed maintenance workers	Other building jobs	Other occupations	Total all categories	Total Maintenance & other building jobs
≥ 0.1	2406	34039	47309	1454	85208	81348
0.05	3400	48110	77415	13097	142022	125525
All workers	17,000	240,551	1,548,306	26,194,143	28,000,000	1,788,857
Av. days of exposure/year.	34	34	7.33	0.013		

A47. It can be seen that the estimates made on the numbers exposed daily will also reflect the average frequency that a worker will be exposed at or above the proposed control limit of 0.1 f/ml. The estimated number of workers exposed is based on estimates before the duty to manage (regulation 4 of CAWR) came into effect in 2004. The effect of these regulations will be to substantially reduce the figures of persons exposed at or above the control limit for other building jobs and other occupations. If 100% compliance was assumed these would of course be zero. The regularly exposed maintenance workers will also be expected to greatly reduce the amount of work carried out on ACMs and particularly the types of work, which have the potential to release levels above the control limit. Increased levels of training for maintenance workers in the amended directive will also improve awareness and controls further reducing exposures.

A48. Only the removal and demolition sector is likely to have increased numbers of workers who are regularly exposed above the control limit. This sector of workers is therefore looked at in closer detail. This is also the group that has the highest frequency, duration and level of amphibole asbestos exposure and the need to monitor compliance with the control limit.

### **Method for estimation of the reduction of risk from the lowering of the control limit**

A49. The method for estimating the reduction of risk uses the following steps:

- 1) derive the current arithmetic average asbestos exposure of the groups of asbestos workers who will be affected;
- 2) calculate their current expected lifetime risk using the HD quantitative risk assessment model with a realistic job duration and age at first exposure;

- 3) adjust risk parameters to allow for the use of RPE and future trends/changes etc.;
- 4) recalculate lifetime risks with new parameters using the HD quantitative risk assessment model.
- 5) Subtract the adjusted values from the current values to estimate the reduction in risk expected from those changes.
- 6) Express difference in terms of a benefit (e.g. the calculated numbers of asbestos related deaths avoided) and as a reduction in lifetime or annual risk

A50. The following main parameters have been assessed to estimate the exposure for three different categories of workers (Licensed asbestos removers, unlicensed demolition work and maintenance work):

- The type of activity and frequency which it is carried out;
- The types of material being disturbed or removed;
- The average concentration of airborne asbestos fibres produced by the different types of activity;

A51. The lifetime risks related to the asbestos exposure are calculated using the same model derived from Hodgson and Darnton (2000) and that was used to calculate the risks for all workers above. The main inputs into the model that will affect the calculated risk are:

- The arithmetic mean exposure;
- The age first exposed and survival age;
- The frequency and duration of the exposure;
- The type of asbestos released.

A52. The number of deaths calculated will also depend on the:

- The numbers of workers exposed in each category of work;
- The lag time allowed for the disease.

### ***Category of work***

A53. The type of ACM being disturbed defines the category of work. Due to the existing ASLIC regulations, removal work can be divided into two main categories: licensed and unlicensed. Demolition of buildings should only take place after all the ACMs have been removed. Most demolition workers should therefore only be involved in controlled removal of unlicensed material, while specialist removal contractors will remove licensed materials. As article 10A of the directive has already been substantially implemented, along with improved standards, definitions and accreditation for surveying, this should strictly limit the number of sites where residual or overlooked ACMs are still present during demolition. As the UK has a well-established system of licensing, and it is only through failure to implement the regulations that demolition workers will be exposed to the addition risks from licensed materials. The relative risks from the various types of licensed and unlicensed materials are looked at in more detail in a separate section of this RIA.

A54. Although maintenance workers have been restricted to work of short duration (< 1 hour per week per person) with licensed materials, there is no limit to the amount of work they can carry out on unlicensed ACMs. However, there is usually a difference in the scale, type and amount of disturbance and sometimes the types of controls applied between small scale maintenance work and more significant refurbishment and removal work. All work with asbestos is covered by CAWR, (2002) and one of two approved codes of practices (L27 & L28), with a duty to ensure airborne exposures to workers and the spread of asbestos are kept as low as reasonably practicable.

### ***Estimation of exposure***

The type of activity and frequency which it is carried out

A55. The type of activity or disturbance taking place is one of the main determinants of the airborne fibre concentration. Work with asbestos should be carried out in a controlled way to minimise the release of airborne fibres. However, even after many years after the adoption of controlled wet removal a significant percentage of asbestos removal is still carried out dry. On average, with licensed materials this will produce airborne concentrations some 2 orders of magnitude higher than controlled wet removal methods. Similarly the use of energetic and dusty processes to remove asbestos (e.g. dry grit blasting and sanding, as well as the use of power tools) increase exposures and their use is discouraged. The frequency that removal work is undertaken is also a basic determinant of the annual exposure / dose. Published data and HSE's own data has been used to estimate the exposures for different types of activity with asbestos materials.

### ***Type and amount of material being disturbed or removed,***

A56. Certain types of ACMs are licensed materials because of a perceived increased risk. There are many asbestos products but they fall into about 10 main groups of products. Five of them are defined as licensed materials (ASLIC, 1983, as amended 1998); sprays and coatings, lagging (including textile ropes), asbestos insulating board and decorative / textured coatings. Non-licensed asbestos products include: cement, bitumen, flooring and friction products, as well as, various other reinforced plastic and resin composites. The total amount of airborne asbestos released will depend on the volume / area of material that is being disturbed or removed.

***The average concentration of airborne asbestos fibres produced by the activity,***

A57. The cumulative exposure (dose) is an important metric in any risk assessment. For asbestos fibres exposure has been defined in terms of the airborne concentration of regulatory fibres (in fibres per millilitre f/ml) as counted by an approved method (e.g. MDHS 39/4 until 2006). The cumulative exposure is normally expressed in f/ml.years and is the sum of many individual exposures, where each exposure will depend on a number of variables (e.g. type of ACM/s being disturbed, type of activity/disturbance, amount of material being disturbed, type of controls, duration of activity, etc.) and on the use and effectiveness of personal and respiratory protection. Often there are only a limited number of individual exposure measurements available and these are used to estimate the arithmetic mean fibre exposure concentration. The available data (see CD174) have been updated for this review.

***Modelling and calculation of lifetime risk***

A58. The HD model estimates the number of lung cancers and mesotheliomas that will occur. Most of the risk is due to mesothelioma and the model is discussed in A14 and A15 is related by a power relationship to the time since first exposure. This will result in increasing numbers of asbestos related deaths in an ageing population with an increasing life expectancy.

***The arithmetic mean exposure***

A59. The exposure assessment is used to calculate an arithmetic mean for input into the risk model. As discussed above this is an overall estimate made from published data and data collected by HSE. As the arithmetic mean is used a few high exposures can significantly affect the mean if limited data is available.

***The age first exposed and survival age***

A60. For licensed asbestos removal work all workers are required to have a medical before starting work and the age at the first recorded medicals is given in figure 4. This is shown to have a mean age of 32.5 but significant numbers are exposed from the age 20 onwards.

A61. The risk model assumes exposure up to the age of 60 so the maximum duration of exposure of 40 years is possible if age of first exposure is 20. The average survival age used to calculate the lifetime risks has been retained at 80 although there is an argument for increasing this value, as life expectancy is still increasing among the general population. Instead of further increasing the

survival age, a more conservative value of 20 for the age of first exposure was used in the calculations. The increased time since first exposure increases the number of lifetime deaths.

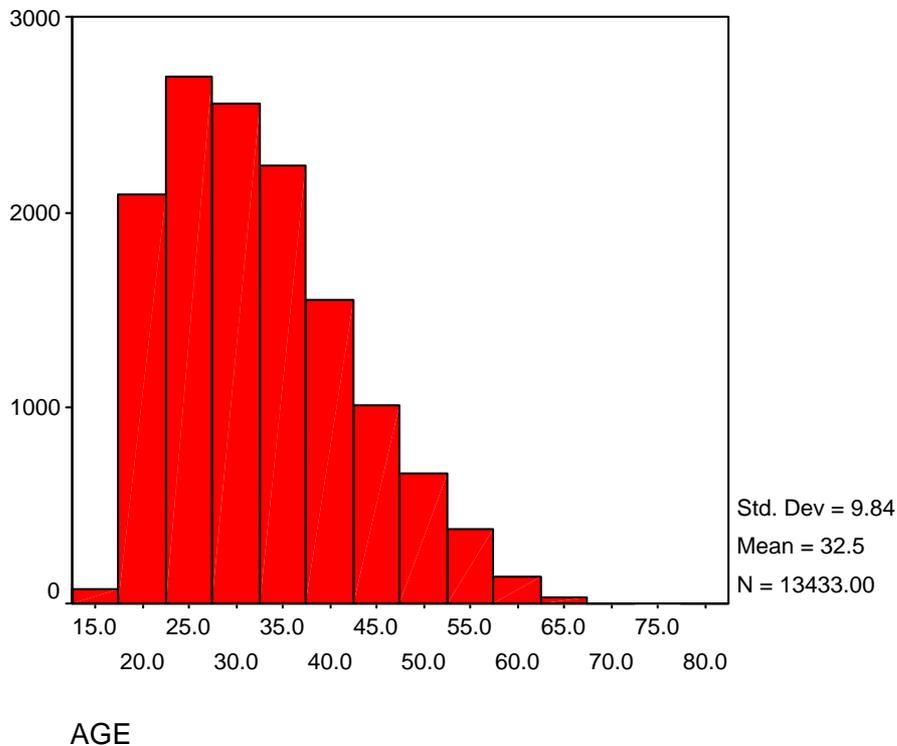


Figure 4: Age distribution for asbestos remover's first exam since 1995

### ***The frequency and duration of the exposure***

A62. The cumulative exposure is derived from the arithmetic mean exposure x frequency of exposure x average duration of exposure. Estimates of the frequency and duration of exposure were relatively easy to make for workers in the asbestos manufacturing industries but are much more problematic for maintenance and demolition workers. However, there are data for licensed asbestos removal work. Under (CAWR, 2002) employers are required to keep records of their employees frequency and duration of asbestos work and an estimate of their exposure. Unfortunately, there is no requirement to calculate, record or report the annual cumulative exposure for each employee, so no direct figures for individual workers are available to HSE from the employers but more general information is available from the notification and medical systems.

A63. Under ASLIC, (1983) all work over exceeding 2 hours with licensed materials should be notified to HSE on a ASB 5 form along with an attached plan of work. These are usually held for 3 months by HSE regional offices before disposal but there is also a central system that records some of the data supplied on the ASB5 notifications. This is held by the Health Unit of the Field operating division of HSE and three years of computerised records were available for analysis.

A64. Information on the duration of exposure to licensed asbestos removal workers are available from the records held by the Employment Medical Statistics Unit (EMSU) of HSE on the number of medical carried out for asbestos removal workers. These are usually 2 years apart so doubling the number of medicals gives an approximation to the length of time an average worker spends in the licensed asbestos removal industry. The current information is given in figure 5 and implies that a large turnover of workers takes place. The medical examinations data also show that the average years working per man is 3.09 but this assumes the full period is worked and is likely to be an overestimate. The majority of workers (71.5%) only have one examination, i.e. work for less than 2 years. Just over 90% of workers work for 5 years or less. So for practical purposes, the risk estimates based on 5 years exposure (shown in bold in Table 5) apply to virtually all workers.

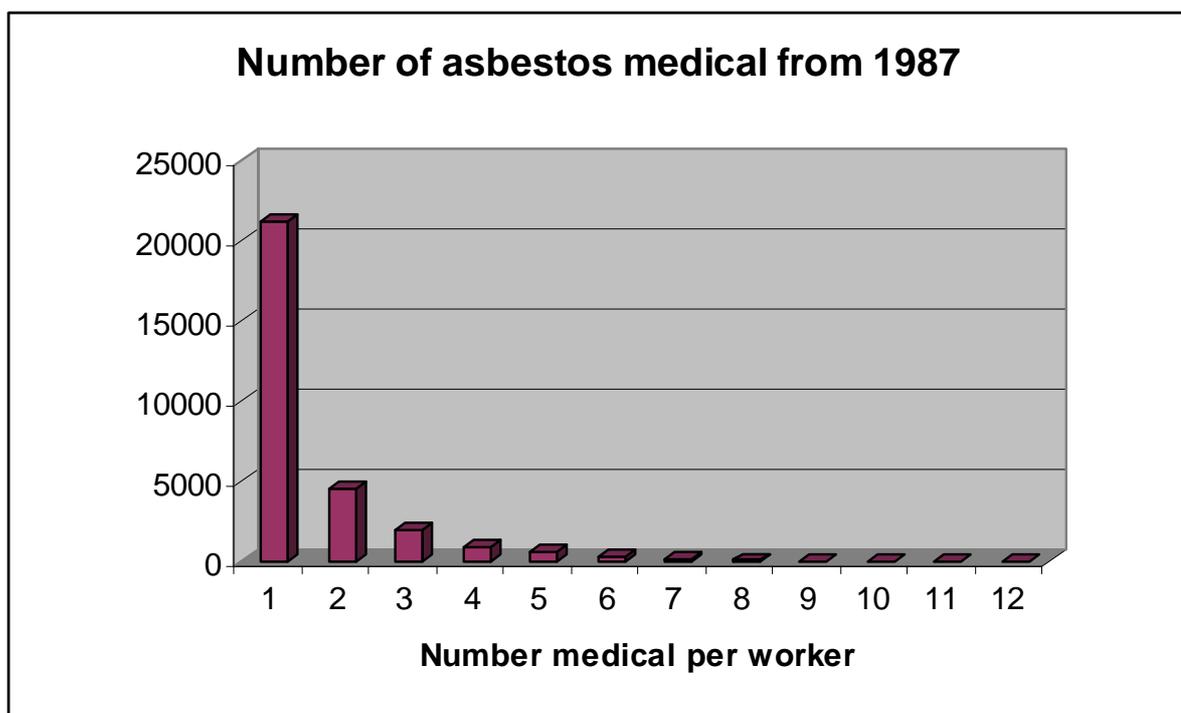


Figure 5: Numbers of asbestos medicals per worker from 1977

#### ***The type of asbestos released.***

A65. It has long been recognised in UK regulations that the type of asbestos released has different effects on the disease rates. In keeping with EU regulations the differentials in the control limits between the different types of asbestos have been reduced over the last 10 years and are due to disappear altogether in 2006. However, the more recent risk models place much greater emphasis on the type of asbestos to which the person has been exposed. For example, the Hodgson and Darnton model uses a factor of 500: 100: 1 to characterise the relative risks for mesothelioma for crocidolite, amosite and chrysotile respectively. However, the older EPA IRIS model uses a single average risk factor for all three types. As

removal and maintenance worker will receive a mixed exposure it is necessary to make assumptions on the fibre type. For the all worker model a mix of 10:60:30 crocidolite, amosite and chrysotile respectively was used for the best approach. The HD model is therefore very sensitive to assumptions and estimates about the type of asbestos to which people are exposed. Unfortunately this is not recorded on the main FOD database but are available if the plans of work held with the ASB 5 notifications for 3 months at the regional offices are inspected.

A66. For unlicensed work there are no notifications so no direct information was available.

### ***Number of asbestos related deaths***

The numbers of workers exposed in each category of work

A67. The number of persons exposed will determine the estimated number of asbestos related deaths. As ACMs are still present in many older buildings, the number of people potentially exposed to any asbestos due to workplace activity is large ~ 28 million (see table 1). However, the numbers of workers who will be actively working with and disturbing asbestos at or above the control limit on a daily basis is a much smaller group of ~85,000 mainly construction and maintenance workers (see table 3). The previous RIA defined regularly exposed workers as those working with ACM for more than one-tenth of their total working time. An estimate of the total size of this group of 240,000, or 13% of all building and maintenance workers, is based on a judgement of which particular trades will be most at risk from asbestos and what proportions of all workers in these trades this regularly exposed group will account for. Detailed occupational information was obtained from the Labour Force Survey. Trades falling in this group include electricians, heating engineers, fitters, and some carpenters and joiners. In addition, we tried to account for activities not identified by the standard coding, such as 'cable-pulling'.

A68. According to HSE / EMSU figures, there were some 4903 medical examinations for asbestos workers in 2001 and 4798 in 2002. Examinations are required every two years. The number of workers with valid medical certificates in any one year should not be more than twice the number of examinations. It is known that some workers have their medicals before the 2 years is up and that some have medicals but work for less than 2 years. It is estimated there are currently some 9,000 licensed asbestos removal workers. In the modelling for all workers a turnover of X10 was assumed (CD 174). The numbers of people which have only one medical suggest that the turnover rate may be significantly higher than 10 over a period of 50 years. The total number of commercial and public premises currently containing asbestos is estimated to be in the region of 500,000. Given the rate of demolition of 2% on average (starting at 1% and rising to 4%) about 5,000 jobs arising from demolition in current years and 10,000 per year on average are predicted. Other groups of workers were given lower turnover rates X5 for maintenance workers and X 2.5 for other construction workers.

A69. The way the removal, demolition and maintenance workers perform their work and their use of appropriate precautions and controls will affect the exposure of other person and workers. Either those who are nearby during the work, or if debris and dust is left behind those workers who subsequently disturb the residual material (e.g. cleaners, other maintenance and construction workers, or other persons using the area). The previous update to the CAWR (2002), which introduced a new duty to manage ACMs, were designed to reduce the chances of construction or maintenance workers unknowingly or inappropriately working with ACMs. This would also result in fewer workers working with ACMs and would also limit uncontrolled exposures to workers and bystanders.

The lag time allowed for the disease.

A70. The model for all workers allowed for a further 50 years of exposure from the baseline year with a 50 year lag time from the end of the exposure for the disease to develop.

A71. Although a significant amount of asbestos has been removed in the last 5 years the accuracy to which we can predict worker numbers will make little difference if we use the same time periods as in the previous RIA.

## **Risk estimation for licensed asbestos removal workers**

### ***Fibre Concentration data***

A72. Measurement of personal exposures to airborne fibres for licensed UK asbestos removal work on various types of ACM were available from a database compiled by HSL (Burdett and Revell, 1995 – with some further results added later). A wider data set of airborne exposures monitored from work with ACMs from literature sources has also compiled by HSL, and was published in CD 174. The literature survey has been updated for this review and unpublished measurements from the French EVALUTIL database have also been added. These two sources have been used to derive the estimated the fibre concentration but as much of the literature data is from outside the UK, where removal methods and working practices may differ, preference has generally been given to the HSL UK database for estimating exposures for licensed asbestos removal work. Although the measurements are somewhat dated they are specific to controlled wet removal as carried out in the UK. As it was likely the measurements were biased towards best practice, as HSE / HSL or other monitoring personnel were on site during the work, this is counterbalanced by the fact that there will have been improvements in proficiency of use and in the performance of the controlled wet removal methods. Therefore, it was considered that current licensed asbestos removal using controlled wetting methods would have similar exposures to the good practice measured some 10 years ago.

A73. Some licensed removal work is still reportedly carried out dry, and is non-compliant with HSE's approved codes of practice and guidance but no allowances have been made for the much higher exposures that occur during dry removal or poor wet removal.

### **Types and frequency of licensed asbestos removal work**

A74. The database of licensed asbestos removal from FOD Health Unit (HU) has 97,940 job notifications over a period of approximately 3 years, amounting in total to 709305 working days (job-days). Because of the sample size, this is by far the most statistically reliable set of data we have. The database/ASB5s record five categories of asbestos materials, asbestos insulating board (AIB), asbestos insulation (AI), asbestos coatings (AC), textured coatings (TC) and others (OTH). One or more of these are recorded for each job with the most abundant material first. Figure 6 summarises the number of jobs by material type. It can be seen that asbestos insulating board currently accounts for 50% of all licensed removal jobs. The average time for jobs with different ACMs varies (see table 4). The shortest time was for textured coatings and the longer times were associated with multiple types of ACMs (i.e. the larger jobs are larger to have a greater variety of ACMs). Figure 7, summarises the proportion of time spent working (in terms of job days) by material type.

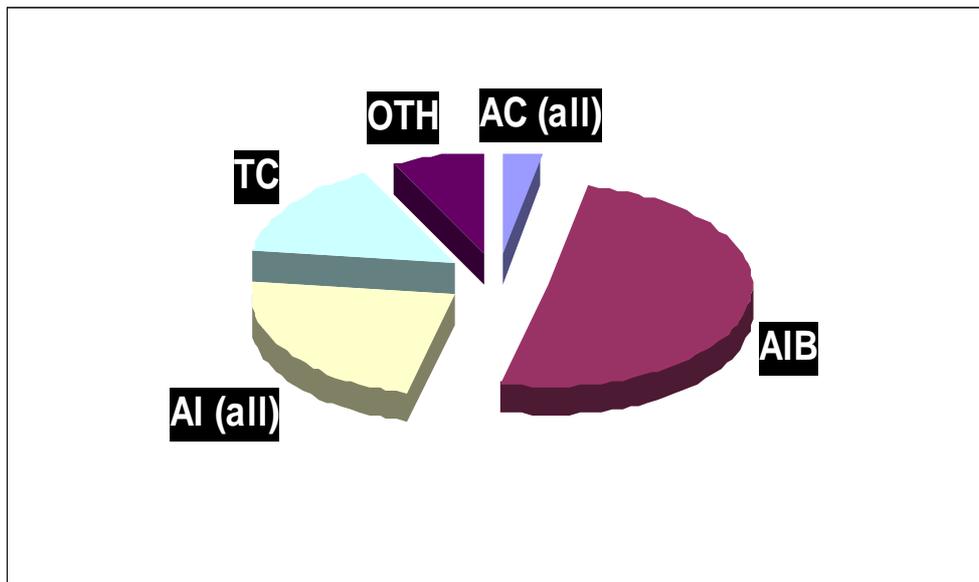


Figure 6: Relative frequency of asbestos material type encountered during licensed removal work (by number of jobs)

A75. Most removal jobs are of short duration: Nearly 30% take only one day and jobs of less than 4 days duration make up more than half the notifications. But the average duration (HU data set) is 7.2 days and there are a small number of big jobs, which make a large contribution to the number of working days. More than a quarter of the working days come from jobs lasting more than 50 days, which make up less than 2% of all jobs. Jobs for which there is a mixture of ACM types tend to take longer and employ more men than average; several types of ACM are most likely to be encountered on the larger scale jobs. The two (AC+AI+AIB) 365-day jobs make a large contribution, as they each employed 14 men, and these may well make the proportions on worker-days for each ACM untypical. There are, however, other long-duration jobs in the other ACM type categories. In

general, a small number of large-scale jobs make up a large part of the working time (man-days).

A76. Although one-day jobs make up more than a quarter of the total number, they only account for about 4% of working days. The duration of TC jobs tends to be less than average, as might be expected if many of these were small-scale work on domestic premises, and so too is the number of workers. So work on TC makes up a much smaller proportion of the man-days.

A77. The HU data give a clear picture of the scale of licensed asbestos removal work. Over 30,000 jobs are notified each year, which is over 600 a week; on average, over 120 new jobs will be started each day. Licensed asbestos work amounts to nearly quarter of a million working days each year, which means there are nearly a thousand jobs in progress each day. With an around 3 workers as the average number for a job (see below), this means that nearly 3000 workers are engaged in licensed asbestos removal each day.

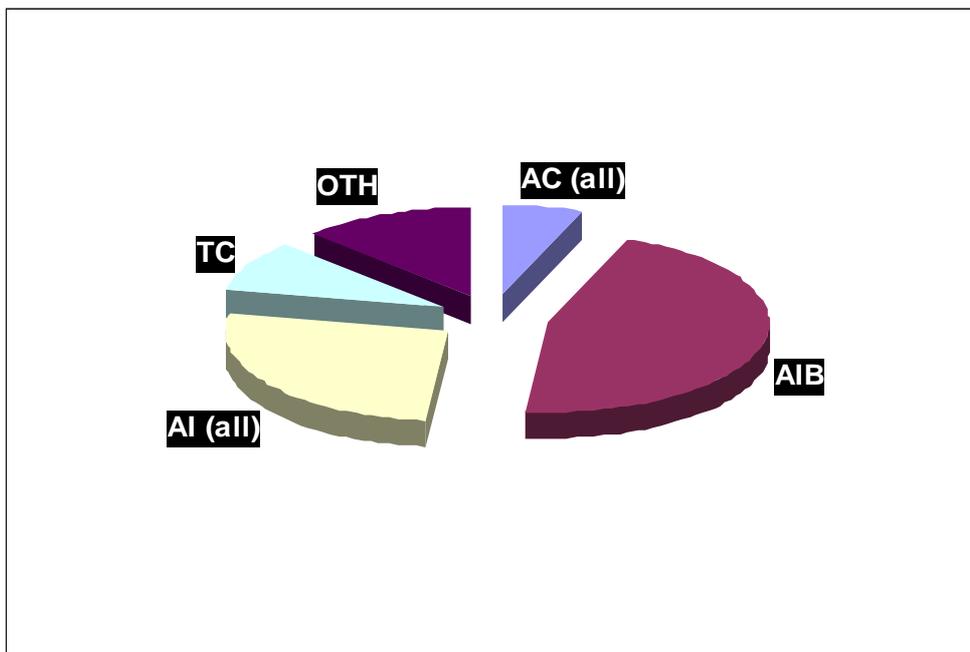


Figure 7: Relative frequency of asbestos material type encountered during licensed removal work (by number of job days)

Type of ACM	By number of jobs		By job-days		Average duration of job (days)
	Number of Jobs	Percentage of total	Number of job days	Percentage of total	
AC	2276	2.32%	23056	3.43%	10.1
AC & AIB	289	0.30%	4589	0.68%	15.9
AC & AI	220	0.22%	2620	0.39%	11.9
AC & AI & AIB	262	0.27%	6738	1.00%	25.7
AIB	49608	50.65%	290134	43.20%	5.8
AI	20303	20.73%	167579	24.95%	8.3
AI & AIB	2440	2.49%	39795	5.93%	16.3
Other	7245	7.40%	78891	11.75%	10.9
TC	15297	15.62%	58239	8.67%	3.8
<b>Total</b>	<b>97940</b>	<b>100.00%</b>	<b>671641</b>	<b>100.00%</b>	<b>6.9</b>

#### **Calculation of exposure from FOD HU database**

A78. By combining the fibre measurement data with the frequency of work with each category of material it was possible to calculate the average annual exposure to all asbestos removal workers in terms of job days. A fibre concentration for “other” asbestos has to be assumed to complete the exposure assessment. A weighted mean concentration in terms of number of jobs was calculated and used but if “other” was truly other non-licensed materials rather than a mixture of licensed materials the average fibre concentration would be lower.

Type of ACM	Arithmetic mean personal exposure (f/ml)	Cumulative exposure in 1 year (f/ml.job-days)	Percentage of total exposure
AC	14.36	110361	24.58%
AC & AIB	7.39	11297	2.52%
AC & AI	9.28	8105	1.81%
AC & AI & AIB	6.32	14202	3.16%
AIB	0.41	39652	8.83%
AI	4.2	234611	52.25%
AI & AIB	2.31	30576	6.81%
Other	?	0	0.00%
Textured coatings	0.01	194	0.04%
<b>total</b>		<b>448997</b>	<b>100.00%</b>

A79. Invaluable though the HU data set is, two key pieces of information for risk assessment are lacking: (i) the number of workers employed, which is required to estimate the total exposure duration of all workers, i.e. to get from job-days to man-days; (ii) the asbestos type(s) encountered in the various jobs, on which the risk is strongly dependent. The maximum number of workers is given on the ASB5 notification form but is not recorded in the HU data set. The asbestos type does not appear on the ASB5 form but is usually given in the accompanying Job Plan.

### ***Additional information from ASB5 notifications and Job plans***

A80. To obtain this additional information 903 ASB5 notifications and Job Plans (904 were examined, one being rejected as the number of workers was not given) from the Sheffield and Manchester Area Offices, covering periods of about 3 months up to October/November 2004. Table 6 gives the number of jobs and the calculated number of job days and person days from the ASB5 forms (e.g. worker-days = total number of workers on site x length of job in days). These are likely to be overestimates for duration of exposure as not all workers will be inside the enclosure removing asbestos for the entire time and during set up and take down lower exposures are likely than attributed from the air monitoring data.

Type of ACM	Number of jobs	Job-days	Total person-days	Average person-days
AC+AI+AIB	3	735	10245	3415.0
AC+AI	2	35	205	102.5
AC+AIB+TC	2	40	220	110.0
AC+AIB	5	107	424	84.8
AC	7	77	435	62.1
AI+AIB+O	2	42	168	84.0
AI+AIB	35	405	2263	64.7
AI+O	5	113	448	89.6
AI	135	1214	5080.5	37.6
AIB+O	11	80	285	25.9
AIB+TC+O	1	2	6	6.0
AIB+TC	10	136	690	69.0
AIB	446	3868	12746.5	28.6
O	53	806	3282	61.9
TC+AI	1	4	12	12.0
TC+O	4	308	1036	259.0
TC	181	589	1665.5	9.2
Overall average				43.4
Total	903	8561	39211.5	

A81. As the required information on asbestos type was given in only 723 of the 903 plan of work / notifications examined, some figures for asbestos type(s) present in each ACM type are statistically poor. Rounded off values of the

asbestos types listed against various types of ACM are given in Table 7. These were used to calculate risk factors for the ACM based on the HD relative risk factors of: chrysotile =1, amosite = 100 and crocidolite = 500. Overall, the average relative estimate of asbestos type for chrysotile: amosite: crocidolite were 10:85:5 giving a relative risk factor of 110.1 compared to chrysotile exposure only. This is somewhat different to the mix of asbestos types, estimated and used in the risk estimate for all workers (30:60:10). However, the relative risk factor for a mix of (30:60:10) =110.3, a remarkably similar overall risk.

ACM Type	Type of Asbestos Present (%)			Calculated risk factor
	Chrysotile (CH)	Amosite (AM)	Crocidolite (CR)	
AC *	5	75	20	175
AC + AIB	3	85	13	148
AC + AI	5	73	23	185
AC + AI+AIB	3	80	17	163
AIB	0	95	5	120
AI	5	70	25	195
AI + AIB	3	83	15	158
O	13	85	2	95
TC	100	0	0	1
All data	10	85	5	110

### **Calculation of relative risk**

A82. Table 8 brings together all the data in tables 5 –7 above and then uses this information to calculate the relative risks. Column 2 of table 8 gives the number of jobs per year by type of ACM (column 1) derived from the HU data on notifications over a three-year period. The average number of worker-days per job for each of the ACM types and combinations of types from the ASB5 data in table 6 is entered in column 3 and multiplied by the number of jobs to obtain the total worker-days per year (column 4). Column 5 of Table 1 gives the fibre concentrations for each type of ACM derived from the HSL data (table 5). Total worker exposure in f/ml.person-days per year (column 6) is calculated by multiplying columns 4 and 5. The percentage of total worker exposure contributed by each ACM type is given in column 7. The asbestos type taken from a sample of Job Plans in table 7 and the calculated risk factors for each type of ACM are entered in column 8. Multiplying f/ml.person-days per year by the risk factor gives a value adjusted for the relative risk (column 9) from which the contribution to the total risk from each ACM types can be calculated (column 10).

A83. It is worth noting that the relative risks for the various combinations of licensed materials varies between 1% - 43%, except for textured coatings which are some three orders of magnitude lower.

**Calculation of average licensed asbestos removal worker exposure for use in HD model**

A84. The total worker exposure of some 4320228 f/ml.person-days per year were apportioned to the 3 asbestos types as shown at the bottom of Table 7, i.e. 10% chrysotile, 85% amosite and 5% crocidolite. The average fibre concentrations per worker have been calculated by dividing by (9000\*240), i.e. based on 9000 men and 240 working days.

<b>Table 9: Average exposure of asbestos removal workers to different types of asbestos</b>		
Asbestos type	Annual worker exposure Worker days f/ml /year	Average fibre concentration Per worker
Chrysotile	432023	0.20
Amosite	3672194	1.70
Crocidolite	216011	0.10

ANNEX D(A)

**Table 8: Calculation of relative risks**

Type of ACM	Number of jobs in 3-year period	Number of jobs per year	Average worker-days per job	Worker-days per year	Fibre concentration (f/ml)	Exposure (Worker-days f/ml/yr.)	Percent of total exposure	Risk Factor for asbestos type	Weighted risk from work with various ACMs	Percent of total risk by type of ACM
	1	2	3	4	5	6	7	8	9	10
	HU	HU	ASB5		f/ml					
AC	2276	758.7	62.1	47145.7	14.4	677012.5	15.67%	175.1	118.51	16.41%
AC & AIB	289	96.3	84.8	8169.1	7.4	60328.6	1.40%	147.5	8.90	1.23%
AC & AI	220	73.3	102.5	7516.7	9.3	69754.7	1.61%	185.1	12.91	1.79%
AC & AI & AIB	262	87.3	3415.0	298243.3	6.3	1885892.0	43.65%	163.4	308.09	42.67%
AIB	49608	16536.0	28.6	472592.3	0.4	193762.8	4.49%	120.0	23.25	3.22%
AI	20303	6767.7	37.6	254689.8	4.2	1069697.3	24.76%	195.1	208.64	28.89%
AI & AIB	2440	813.3	64.7	52587.8	2.3	121214.9	2.81%	157.5	19.09	2.64%
Other	7245	2415.0	61.9	149547.7	1.6	238610.4	5.52%	95.1	22.70	3.14%
DTC	15297	5099.0	9.2	46919.2	0.1	3955.3	0.09%	1.0	0.004	0.001%
<b>Total</b>	<b>97940</b>	<b>32646.7</b>	<b>41.9</b>	<b>1368618.5</b>		<b>4320228</b>	<b>100.00%</b>		<b>722.10</b>	<b>100.00%</b>

AC = Asbestos Coating  
AIB = Asbestos Insulating Board  
AI = Asbestos Insulation  
DTC = Decorative Textured Coatings

**Calculated risks using the Hodgson & Darnton (HD) Model (no RPE)**

A85. The “best” estimate of the lifetime risk as excess deaths per 100000 has been calculated for 5, 10, 20 and 30 years exposure starting at age 20, which is the lowest starting age allowed by the model, the risk being greatest for the lowest starting age. The fibre concentrations above have been entered directly into the model with no allowance for the use of RPE and the risk estimates for each asbestos type and the total risk are given at the top of Table 10.

<b>Table 10: Calculated values of risk using the HD model (no RPE)</b>				
Length of exposure (years)	Chrysotile	Amosite	Crocidolite	Total
Lifetime excess deaths per 100000 after 5, 10, 20 and 30 years exposure from age 20				
<b>5</b>	<b>11.2</b>	<b>2426</b>	<b>857.5</b>	<b>3294.7</b>
10	18.1	5115.5	1310.7	6444.3
20	27.8	10965.2	1803.7	12796.7
30	35	16561.3	2073.5	18669.8
Annual excess deaths per million from 5, 10, 20 and 30 years exposure (Survival age 80)				
<b>5</b>	<b>2.2</b>	<b>485.2</b>	<b>171.5</b>	<b>658.9</b>
10	3.6	1023.1	262.1	1288.9
20	5.6	2193.0	360.7	2559.3
30	7.0	3312.3	414.7	3734.0
Lifetime excess deaths based on a total of 145000 asbestos workers in a 50-year period				
<b>5</b>	<b>16.2</b>	<b>3517.7</b>	<b>1243.4</b>	<b>4777.3</b>
10	26.2	7417.5	1900.5	9344.2
20	40.3	15899.5	2615.4	18555.2
30	50.8	24013.9	3006.6	27071.2

A86. Table 10 represents the best estimate of the current and predicted risk based on the many variables discussed above. A more detailed appraisal of the effect of the many variables is given in HSE/HSL report (Burdett and Chisholm, 2005). The largest variable is however in the risk model itself. The minimum and maximum estimates from the HD model being almost an order of magnitude lower and higher than the best estimate. As discussed data on the 2-yearly medical examinations of asbestos workers show that the average age at first examination (before starting work) is about 32. The distribution is skewed and most of the workers are aged around 25 at first examination with a significant number aged around 20. Taking the age at first exposure as 20 therefore errs on the side of caution and will lead to over-estimation of the risk.

A87. The medical examinations data also show that the average years working per man is 3.09 but the majority of workers (71.5%) only have one examination, i.e. work for less than 2 years. Just over 90% of workers work for 5 years or less. So for practical purposes, the risk estimates based on 5 years exposure (shown in bold in Table 5) apply to 90% of all workers.

A88. The annual risk (Table 10, middle part) is a linear estimate of the overall lifetime risk, simple division of the lifetime by the remaining life expectancy. A figure of 50 was used for the average life expectancy (this equates with the actual age of the first medical at 32 and a life expectancy of > 80 years. This value can be used to compare with the Tolerability of Risk (TOR) model currently used by HSE to categorise the scale of the risk in societal terms (R2P2). The units have been adjusted to number of premature deaths per million.

A89. To calculate the number of workers who will die from an asbestos related disease due to exposures incurred over the next 50 years; we will need to estimate of the total number of workers exposed. The information is available from the medical examinations data shows the current average years worked as an asbestos remover 3.09 years, which means a turnover of approximately 2900 workers each year, giving a total of 145000 workers in a 50-year period, assuming the current number of person employed and length of work represents the average for next 50 years. Previous predictions anticipated a rise in demolitions over time and may increase worker numbers in the short term but as removal takes place the stock of buildings with ACM's will decrease so numbers of removal workers will decline after a peak. Given that about one third of ACM's installed have been removed it is estimated that the current rate may represent a reasonable average for the next 50 years. The number of worker deaths predicted on this basis is given at the lower part of Table 10.

### ***Calculated risks using the Hodgson & Darnton (HD) Model (with RPE)***

A90. In practice, asbestos removal work should be carried out by workers using RPE with a assigned protection factor of 40 (i.e. 95% of the workers will have protection factors above this value). The risk estimates in Table 10 are therefore worst case assuming no RPE. The fibre concentrations used to assess the risk to removal workers using RPE was reduced to 1/100th of the values in Table 9 (i.e. assumes an average 99% reduction in all removal worker exposures). The calculation on the same basis as Table 10 corresponding to these reduced fibre concentrations is given in Table 11.

<b>Table 11: Calculated values of risk using the HD model (with RPE)</b>				
Length of exposure (years)	Chrysotile	Amosite	Crocidolite	Total
Lifetime excess deaths per 100000 after 5, 10, 20 and 30 years exposure from age 20				
<b>5</b>	<b>0.3</b>	<b>33.6</b>	<b>26.1</b>	<b>60</b>
10	0.5	53.4	38.9	92.8
20	0.6	79.3	50.6	130.5
30	0.7	97.2	55.3	153.2
Annual excess deaths per million from 5, 10, 20 and 30 years exposure (Survival age 80)				
<b>5</b>	<b>0.1</b>	<b>6.7</b>	<b>5.2</b>	<b>12.0</b>
10	0.1	10.7	7.8	18.6
20	0.1	15.9	10.1	26.1
30	0.1	19.4	11.1	30.6
Lifetime excess deaths based on a total of 145000 asbestos workers in a 50-year period				
<b>5</b>	<b>0.4</b>	<b>48.7</b>	<b>37.8</b>	<b>87.0</b>
10	0.7	77.4	56.4	134.6
20	0.9	115.0	73.4	189.2
30	1.0	140.9	80.2	222.1

### ***Estimate of Risk Reduction from Changes to Control Limits***

A91. Tables 12 and 13, which are calculated on the same basis as Tables 10 and 11, using the proposed 0.1 f/ml control limit, to determine the reduction in risk and numbers of deaths avoided. A proportionate effect is assumed i.e. that the average fibre concentrations for amosite and crocidolite would be reduced to half the values in Table 9 and that for chrysotile to one-third. Table 12 (without RPE) and table 13 (with RPE) summarises the risk results after recalculation based on the lower control limit. The actual number of premature deaths avoided over a 50-year period is the difference between the estimated risks at the current (tables 10 & 11) and the new (tables 12 & 13) control limits. The same approach may be used to estimate reduction in risk for any proposed change to control limits.

**Table 12: Recalculated risk results from HD model for new 0.1 f/ml control limit based on 5 years exposure only and the predicted reduction in excess deaths over 50 years (no RPE)**

Risk estimate	Chrysotile	Amosite	Crocidolite	Total
Lifetime excess deaths per 100,000	4.6	1150.9	503.0	1658.5
Annual excess deaths per million	0.9	230.2	100.6	331.7
Lifetime excess deaths	6.7	1668.8	729.4	2404.8
Predicted reduction in excess deaths over 50 years.	9.6	1848.9	514.0	2372.5

**Table 13: Recalculated risk results from HD model for new 0.1 f/ml control limit based on 5 years exposure only and the predicted reduction in excess deaths over 50 years (with RPE)**

Risk estimate	Chrysotile	Amosite	Crocidolite	Total
Lifetime excess deaths per 100,000	0.1	19.3	15.5	34.9
Annual excess deaths per million	0.0	3.9	3.1	7.0
Lifetime excess deaths	0.1	28.0	22.5	50.6
Predicted reduction in excess deaths over 50 years.	0.3	20.7	15.4	36.4

### Non-licensed removal / demolition work

A92. The risks from removal of non-licensed ACMs is harder to estimate as no information is recorded. Many smaller removals that occur will often be classed as maintenance work as there is no limit on the duration of the work as with licensed materials. However, there are three categories of non-licensed asbestos products where more extensive removal/demolition work may often be necessary: cement, bitumen and flooring products. Each of these groups contain a number of products which will normally be broken, ripped or scraped off during the removal process giving the potential for fibre release. The average concentrations when disturbing these materials are summarised in table 14. It should be noted that these averages are based on limited amounts of data.

**Risk from asbestos cement products.**

## Product types and uses

A93. A wide range of cement product types was developed and the main examples are summarised in table 15.

<b>Table 15: Examples of uses of asbestos cement products</b>		
<b>Asbestos product</b>	<b>Location / use</b>	<b>Asbestos content and type / Date last used</b>
<b>Cement products:</b> Profiled sheets.	Roofing, Wall cladding. Permanent shuttering, cooling tower elements.	10-15% asbestos (some flexible boards contain a small proportion of cellulose). Crocidolite (1950 -1969) and amosite (1945 - 1980) have been used in the manufacture of AC products, although chrysotile (used until 2000) is by far the most common type found.
Semi - compressed flat sheet and partition board.	Partitioning in farm buildings and infill panels for housing, shuttering in industrial buildings, decorative panels for facings, bath panels, soffits, linings to walls and ceilings, portable buildings, propagation beds in horticulture, domestic structural uses, fire surrounds, composite panels for fire protection, weather boarding.	As above. 10 -15% asbestos. Also 10 - 25% chrysotile and some amosite for asbestos wood used for fire doors etc. Composite panels contained ~ 4% chrysotile or crocidolite.
Fully compressed flat sheet used for tiles, slates, and board.	As above but where stronger materials are required and as cladding, decking and roof slates. (e.g. Roller skating rinks, laboratory work tops).	As for profiled sheets.

Pre formed moulded products and extruded products.	Cable troughs and conduits. Cisterns and tanks. Drains and sewer pressure pipes. Fencing. Flue pipes. Rainwater goods. Roofing components (fascias, soffits, etc.) Ventilators and ducts. Weather boarding. Window cills and boxes, bath panels, draining boards, extraction hoods, copings, promenade tiles etc.	As for profiled sheets.
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Amount of asbestos cement material.

A94. Figures provided by the asbestos cement industry to HSE in the past (Simpson, 1977, 1979) have been used to estimate the amount of asbestos products released into the UK market. Two sets of figures were available: the amount of chrysotile used for production and the total production of cement products. Previous estimates (CD159, MRC, 1997) of usage, were that 2.3 million tons of chrysotile were used for roofing and cladding products and 0.4 million tons of chrysotile were used for pipe products, installed in the UK. Taking figures for other moulded products into consideration (~18%) this suggests that some 3 million tonnes of chrysotile was added to all asbestos cement products. Published estimates of production and use of asbestos cement in the 1970's is given in table 19. Figures for chrysotile use for buildings and pipes from 1940 – 1976 gave an average use of 18% for pressure pipes. Written evidence from the manufacturers show the actual amount of chrysotile in cement sheets was ~10% so this would give a maximum amount chrysotile containing asbestos cement products of some 30 million tonnes.

	1973	1975(a)	1976	1975(b)*	% 1975 (b)*
Corrugated / profile sheeting	429	256	268	257	71.4
Flat sheeting	45	30	34	40	11.1
Rainwater goods	12	7	7	7	1.9
All other products	101	81	81	56	15.6
Pressure pipes	(83)	-	-	Not incl.	Not incl.
Total	587	360	376	360	
Reference	Ryder 1975	DoE, 1977	DoE, 1977	Simpson 1979	Simpson 1979

\*Total home deliveries taking account of imports and exports

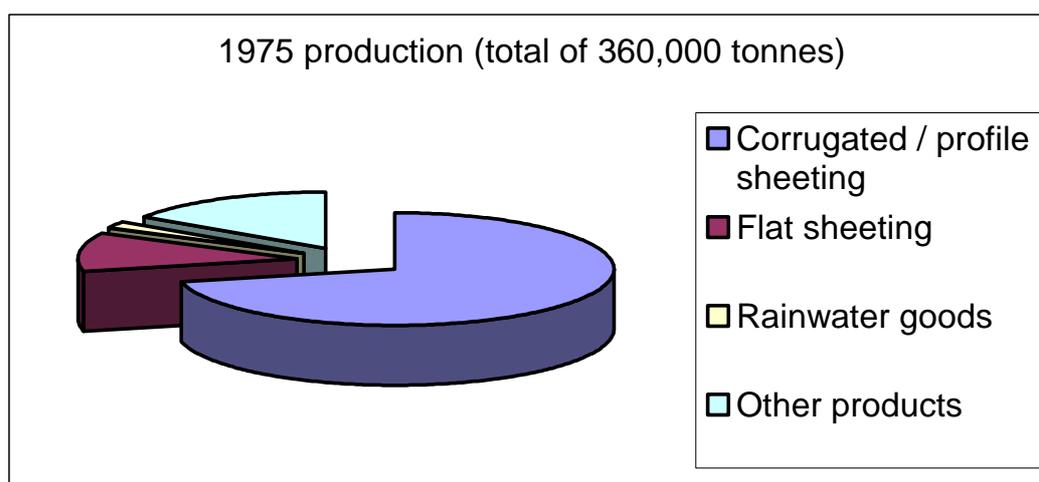


Figure 8: Types of asbestos cement used in UK home deliveries 1975 (Simpson, 1977)

A95. There are only limited figures supplied by industry for the amount of cement products produced. Production peaked in 1973, where a total of 527,000 tonnes of cement products were installed. The production in 1973 has also been estimated in terms of area (an area of some 30 million m<sup>2</sup> of corrugated/profile sheet and 3 million m<sup>2</sup> of flat sheet). Using previous estimates (Simpson, 1977) that the average asbestos cement production was around 0.4 million tonnes / year for 1945 – 1995 means that some 20 million tonnes of products were produced over this period. It can therefore be estimated that UK installation over the entire manufacturing period (1910 – 1999) is of the order of 30 million tonnes of asbestos cement products. Applying the relative percentages of product types estimated for 1975 UK home deliveries, this would suggest a total of 21.4 millions tonnes corrugated/profile sheet production, 3.3 million tonnes of flat sheet.

- A96. The two estimates based on chrysotile use and cement product deliveries are similar. However, as some cement products contained crocidolite or amosite asbestos, as well as chrysotile, the actual amount of cement products should be higher than calculated from chrysotile alone. Cement products were also imported and exported with the latter being the higher (~3% net export) which accounts for the similarity of the two estimates that around 30 million tonnes of asbestos cement products will have been installed in the UK.
- A97. The use of amosite and crocidolite in asbestos cement will have an important effect on the risk. The vast majority of amosite and crocidolite imported went into non-cement products. Figures supplied to Simpson, (1979 see page 49) show that crocidolite and amosite asbestos were added to cement products from 1945 onwards. Crocidolite was not used after 1969, with figures of 574 tonnes in 1950 and 2130 tonnes in 1960 falling to low levels by the mid-sixties and to 0 by 1969. This would suggest a total of ~20,000 tonnes of crocidolite were used in the manufacture of cement products. This is about the same total amount that was estimated to have been installed for thermal and also for spray insulation.
- A98. The publication in 1960 of evidence linking mesothelioma to Cape crocidolite production in South Africa and the incidence of mesotheliomas in crocidolite using factories in the UK, lead to a rapid reduction in the use of crocidolite and to its temporary replacement by amosite. Amosite was used in cement sheet and pipe material by at least two major manufacturers. The estimated UK consumption figures as given by Cape industries the main producer and importer of raw crocidolite and amosite fibres (Simpson 1977) were: 227, 1278 and 1748 tonnes, for 1960, 1970 and 1975, respectively. Amosite was voluntarily reduced by industry from 1975 and there was a rapid drop in imports with a voluntary withdrawal of most amosite from 1980. Amosite use was banned in the UK in 1985. The low figure for amosite use in 1960 some 227 tonnes compared to crocidolite 2130 tonnes, suggests that most amosite was added to asbestos cement between 1960 –1980 with around 7000 tonnes in the 60's and 10,000 tonnes in the 70's with a further 3,000 tonnes outside these two decades. This means that about 20,000 tonnes of amosite was added to cement products.
- A99. Amosite and crocidolite was routinely used in the production of pressure pipes. Crocidolite fibre has a higher technical performance than amosite and was initially used for pressure pipes and was especially important for larger diameter pressure pipes but was increasingly replaced by amosite from the mid-sixties. Typically a few percent of crocidolite or amosite would be added. Figures (Simpson 1977) for consumption in 1973 showed that 7800 tonnes of chrysotile and 1200 tonnes of amosite were used for pressure pipes. This suggests that about 1.5% amosite was added on average. In 1976 some 1100 tonnes of amosite were used in pressure pipes and 500 tonnes for building products, i.e. some 69% of the amosite used for cement products was for pressure pipes.
- A100. The addition of amosite and crocidolite to profile and flat cement sheets and other moulded products tended to be much more variable. The main technical purpose for adding amosite and crocidolite was to give improved de-watering and increase the rate of curing and production. As there was an additional cost compared to chrysotile this was usually done when there was a need to increase production rates in periods of high demand or when there was disruption to the

supply of chrysotile. The relative occurrence of amphibole asbestos containing cement products is therefore hard to determine. A total of 20,000 tonnes of amosite represents some 0.66% of the total chrysotile use. In terms of amount of asbestos cement materials this represents some 1 million tonnes of a total of 30 million (~3%) assuming some 2% on average was added. This may be an overestimate as higher amounts of amphibole fibres (3-4%) were reportedly added. However, as seen from the figures, amosite was predominantly added to pressure pipes, so that only about a third, ~ 1% would be present in sheets and moulded products. As a similar amount of crocidolite was used, it would also make up the same percentage as amosite.

A101. Amosite was also added along with chrysotile to another cement product known as asbestos wood, which was used on fire doors etc. This had a higher percentage of asbestos (24%) than normal cement sheets.

A102. The estimated amounts of asbestos cement products installed into the UK by product and asbestos type are summarised in table 17. The figures are based on the 1975 (b) figures in table 16, after adjustment to include ~18% cement pressure pipes production. It has been assumed that only very limited removal or replacement of pressure pipes is taking place, as it is likely they will be left in place and remain buried and inaccessible. The amount of asbestos remaining in buildings has been estimated based on product type. No previous estimates were readily available. It was assumed that cement products used in building exteriors and subject to greater weathering have been preferentially removed compared to the estimated average of about one third of asbestos cement products overall had been removed. The weighting are shown in table 18, were used to calculate the amounts of asbestos cement products remaining.

**Table 17: Estimated amounts of asbestos cement products installed in the UK by product and asbestos type (thousand of tonnes) estimated on 1975 figures.**

Material type	Adjusted (%)	Chrysotile only	Chrysotile and amosite containing	Chrysotile and crocidolite containing	Total
Corrugated / profile sheeting	59.1	17370	177	177	17724
Flat sheeting	9.2	2703	28	28	2759
Rainwater goods	1.6	473	5	5	483
Other products	12.9	3785	39	39	3862
Pressure pipes	17.2	0	3621	1552	5172
Total	100	24331	3869	1800	30000
Amounts of amosite and crocidolite containing materials based on 1% of each					

Material type	Proportion of material remaining	Chrysotile only	Amosite containing	Crocidolite Containing	Total
Corrugated / profile sheeting	0.5	8684.8	88.6	88.6	8862.1
Flat sheeting	0.66	1784.3	18.2	18.2	1820.7
Rainwater goods	0.5	236.6	2.4	2.4	241.4
Other products	0.75	2838.6	29.0	29.0	2896.6
Pressure pipes	0.98	0.0	3548.3	1520.7	5069.0
<b>Total</b>		<b>13544.3</b>	<b>138.2</b>	<b>138.2</b>	<b>13820.7</b>

A103. Assuming an average density of  $\sim 1600 \text{ kg.m}^{-3}$  for sheet cement products and an average thickness of 6.35 mm 1 tonne of asbestos cement represents an area of  $\sim 100 \text{ m}^2$  of flat sheet and an area of  $\sim 70 \text{ m}^2$  for profile sheet. This means that there remains some  $800 \text{ km}^2$  of asbestos cement sheeting still to be removed of which some  $8 \text{ km}^2$  contains some crocidolite and  $8 \text{ km}^2$  contains some amosite.

#### Number of persons handling the asbestos

A104. The number of secondary employees directly handling the cement products was also given for 1975 (Simpson, 1977) (see table 19). At the present time no asbestos cement products would be handled by builder's merchants and since installation is no longer taking place, rather fewer workers will be handling/removing asbestos cement products on a regular basis. Roof repair and replacement and/or demolition specialists would make up the main group exposed to regular contact with profile cement sheet. A larger number of general builders may occasionally remove profile cement sheets from smaller buildings (e.g. sheds, garages and from internal partitions etc.) and some moulded products (e.g. rainwater goods, water tanks, flues etc). The estimated numbers of workers carrying out demolition and removal work with asbestos cement over the next 50 years are given in table 20.

Type of job/activity	Estimated number of people
Roofing contractors	18,000
Builders merchants	12,000
Others	22,000

Type of job/activity	Current number of workers exposed	Total number of workers exposed to remove remaining asbestos	Percentage of work time working directly with asbestos cement
Demolition and specialist roof removal	10,000*	50,000	10
General builders occasionally removing small amounts of asbestos products	100,000*	500,000	0.5
*			

A105. Assuming the remaining sheeting material is removed over the next 50 years, the figures for demolition and specialist removers represents an average handling / removal rate of sheeting material of ~100 – 200 m<sup>2</sup> per worker per day.

### Typical fibre release

#### Work on asbestos cement products

A106. Examples of exposure data for this type of work, mostly on AC roofing, are summarised in Table 21. The removal and replacement of asbestos cement is also given, as this material does not require a licensed asbestos contractor to carry out the work. The airborne fibre concentrations measured for work on AC sheeting, mainly roofing, cover a very wide range, from below the detection limit to 1.1 f/ml. The data compiled by CONSAD quoted in HEI (1991) give 0.12 f/ml as the estimated exposure for roofing repair and this is broadly in agreement with the detailed measurements from the literature. The range of fibre concentrations reflects the many factors, which contribute to exposure, which are discussed most comprehensively by Brown (1987).

A107. For removal of AC roofing and wall sheets whole (or in pieces if accidental breakage occurs), there is some evidence that wetting or sealing the sheets prior to removal does reduce exposure but the reduction is not as great as might have been expected. These types of AC sheet are dense and usually have a hard and smooth outer surface because they have to be reasonably weatherproof. Unfortunately this will make it difficult for water (or sealant) to penetrate into the body of the sheet and wetting or sealing may therefore not be very effective.

A108. There is also some evidence that AC sheets that are weather-damaged may give higher exposure levels on removal. Removal of the exterior walls gives lower exposures than removal of roofing which is more exposed to the weather. Exposures when installing new AC sheets or roofing are generally much lower

than for removal, probably because the sheets are unweathered and have to be handled more carefully.

A109. In contrast, exposures are higher when roof sheets are being removed as part of demolition than when they are being replaced or repaired; handling of the sheets was noted as being faster and much more vigorous during demolition with more visible dust being generated (Brown, 1987). According to Brown (1987), the key to reducing exposure during roof removal is a combination of careful handling and wetting before stacking to minimise abrasion of the AC sheets.

Table 21: work on asbestos cement roofs personal exposure to asbestos

All work on asbestos cement roofing and sheets	Range	Reference
	Not detected/<0.01 - 1.1 f/ml	(from data below)
Roof Repair "Representative"	Not detected - 0.3 f/ml	(CONSAD, 1990)
Roof Removal "Representative"	Not detected - 0.2 f/ml	(CONSAD, 1990)
Dry - replacing corrugated AC	0.01, <0.01 f/ml	(Roberts, 1985)
Collecting sheets and cleaning	0.24 f/ml	(Roberts, 1985)
Removal of corrugated sheets (detachment and sliding to gutter)	0.047 f/ml	(Preat, 1993)
Throwing sheets into lorry	0.161 f/ml	(Preat, 1993)
Removal of corrugated sheets (detachment, stacking, placing in pallets)	0.028, 0.038 f/ml	(Preat, 1993)
Removal of corrugated sheets (detachment)	0.018 f/ml	(Preat, 1993)
Stacking of sheets of pallets	0.032 f/ml	(Preat, 1993)
Removal of slates (detached with hammer)	0.064 f/ml	(Preat, 1993)
Sliding slates to gutter; throwing to ground	0.195 f/ml	(Preat, 1993)
Removal of slates (detachment and stacking)	0.037, 0.044 f/ml	(Preat, 1993)
Removal of slates (detachment and placing in container on roof)	0.050, 0.176 f/ml	(Preat, 1993)
Removal of slates (pulling off, stacking on elevator, broken slates thrown to ground)	0.100, 0.122 f/ml	(Preat, 1993)
Removal of slates (detachment with hammer, sliding to gutter)	0.068 f/ml	(Preat, 1993)
Bringing slates down and throwing into container	0.056 f/ml	(Preat, 1993)
Wet (but not effective)	Mean 0.020 f/ml	(Lange & Thomulka, 2000)

<b>Roof Replacement</b>			
Dry replacement (severely weathered) - unfastening, removal, stacking, disposal, installation of new roofing	0.03 - 0.24 f/ml		(Brown, 1987)
Dry unfastening, removal, disposal, installation of new roofing (no stacking)	0.03, 0.03 f/ml		(Brown, 1987)
Dry replacement (severely weathered)	0.04 - 0.27 f/ml		(Brown, 1987)
Dry removal (painted)	0.07 - 0.32 f/ml		(Brown, 1987)
Wet removal (painted) and replacement (careful handling and wetting as stacked)	Not detected - 0.07 f/ml		(Brown, 1987)
<b>Roof Removal - Demolition</b>			
Replacement (severely weathered) after lignin sulphonate treatment	0.23 f/ml		(Brown, 1987)
Replacement (severely weathered) after sealing with acrylic resin	0.03 - 0.08 f/ml		(Brown, 1987)
Replacement (severely weathered) after sealing with acrylic resin	0.04 - 0.26 f/ml		(Brown, 1987)
<b>Roof Removal - Demolition</b>			
Dry (building collapsed)	0.10 - 0.47 f/ml		(Brown, 1987)
Dry (from scissors lift)	0.04 - 0.12 f/ml		(Brown, 1987)
Sheets stacked in confined space	0.30 - 0.53 f/ml		(Brown, 1987)
Sheets stacked in confined space (accumulated dust under laps and ridges)	0.34 - 1.1 f/ml		(Brown, 1987)
Wet	0.05 - 0.06 f/ml		(Brown, 1987)
Wet (sheets staked in confined space)	0.10 - 0.13 f/ml		(Brown, 1987)
Wet (sheets staked in confined space; accumulated dust under laps and ridges)	0.29 - 0.68 f/ml		(Brown, 1987)
Sealed with acrylic resin	0.11 - 0.32 f/ml		(Brown, 1987)
Sealed with acrylic resin (sheets stacked in confined space; accumulated dust under laps and ridges)	0.41 - 0.76 f/ml		(Brown, 1987)

A110. The updated result in a database for removals of asbestos cement sheets under various conditions (mostly dry) are shown in table 22. A weighted mean of 0.08 f/ml was calculated for all personal data but clearly a lower mean exposure is obtained when precautions to wet the sheets before removal are taken. However as unusually the static samples gave a higher value than personal samples the figure of 0.08 f/ml were used for risk calculations and assumes no improvement in control of releases. A similar exposure for the removal of rainwater goods and other moulded cement products was assumed.

**Table 22: Summary of all results in HSL database for asbestos cement work.**

	Type of sample	No of data /site entries	Mean (f/ml)	SD	Minimum of means	Maximum of means	No of samples	Sum (mean * number)	Weighted mean (f/ml)
All	All	51	0.189	0.757	0	5.45	245	48.184	0.197
	Personal	36			0.0015	0.23	94	7.665	0.082
	Static	8			0	0.4	103	24.486	0.238
	Unspecified	7			0.008	5.45	48	16.033	0.334
Dry	All				0				
	Personal	7	0.124	0.076	0.03	0.23	39	4.450	0.114
	Static								
	Unspecified								
Not Known	All	43	0.203	0.825	0	5.45	198	43.494	0.220
	Personal	28	0.057	0.052	0.0015	0.195	47	2.975	0.063
	Static	8	0.120	0.149	0	0.4	103	24.486	0.238
	Unspecified	7	0.881	2.019	0.008	5.45	48	16.033	0.334
Wet	All								
	Personal	1	0.03		0.03	0.03	8	0.240	0.030
	Static								
	Unspecified								

### **Risk estimation**

A111. The risk was estimated using the Hodgson and Darnton model using the following parameters:

Average exposure = 0.08 f/ml

Percentage of time working with asbestos = 10% for demolition and specialist roof removal workers and 0.5% for general builders.

Actual average exposures = 0.008 f/ml for demolition and specialist roof removal workers and 0.0004 f/ml for general builders.

Start age = 20

Duration 10,20 & 30 years

A112. The predicted numbers of lifetime deaths (per 100,000) were calculated based on a ratio of relative exposure to crocidolite, amosite and chrysotile (0.01, 0.01, and 0.98). The annual risk of death was calculated on the same basis as for licensed removal workers and the actual number of deaths, were based on the

expected populations of exposed demolition and unlicensed roof removal workers (see table 23) and general building workers (see table 24) over the next 50 years.

**Table 23: Calculated values of risk using the HD model (no RPE) due to the demolition and removal of asbestos cement sheeting, rainwater and moulded products (Demolition and roof removal workers) with average exposure of 0.008 f/ml.**

Length of exposure (years)	Chrysotile	Amosite	Crocidolite	Total
Lifetime excess deaths per 100000 after 10, 20 and 30 years exposure from age 20				
10	1.32	0.29	1.87	3.47
20	1.77	0.41	2.46	4.64
30	2.00	0.49	2.72	5.20
Annual excess deaths per million from 10, 20 and 30 years exposure (Survival age 80)				
10	0.04	0.80	5.20	6.03
20	0.05	1.14	6.84	8.03
30	0.06	1.35	7.55	8.96
Lifetime excess deaths based on a total of 50,000 demolition workers in a 50-year period				
10	0.66	0.14	0.94	1.74
20	0.89	0.20	1.23	2.32
30	1.00	0.24	1.36	2.60

**Table 24: Calculated values of risk using the HD model (no RPE) due to the demolition and removal of asbestos cement sheeting, rainwater and moulded products (General Building workers) with average exposure of 0.0004 f/ml.**

Length of exposure (years)	Chrysotile	Amosite	Crocidolite	Total
Lifetime excess deaths per 100,000 after 10, 20 and 30 years exposure from age 20				
10	0.13	0.03	0.19	0.36
20	0.18	0.04	0.25	0.47
30	0.19	0.04	0.28	0.51
Annual excess deaths per million from 10, 20 and 30 years exposure (Survival age 80)				
10	0.00	0.08	0.54	0.62
20	0.00	0.10	0.70	0.81
30	0.01	0.11	0.77	0.89
Lifetime excess deaths based on a total of 500,000 general building workers exposed over a 50-year period				
10	0.67	0.14	0.97	1.78
20	0.88	0.18	1.27	2.33
30	0.96	0.20	1.38	2.55

A113. These are best estimates and give annual risk of death of 6- 9 per million for demolition and removal workers spending 10% of their time removing asbestos cement products for 10 –30 years from age 20. General building workers with 0.5% contact time have annual risks of below 1 per million. Rates below 1 in a million are regarded as an acceptable risk in the HSE TOR model (R2P2). The number of premature deaths from exposure to asbestos to remove all remaining asbestos cement is some 3-5 persons depending on the duration of exposure 10 – 30 years and the absence of any RPE or controls. The effect of lowering of the control limit to 0.1 f/ml would be minimal as the average personal exposure from the database was 0.08 f/ml, although some specific operations may be reduced to achieve compliance this is unlikely to make a significant difference.

### Other non-licensed asbestos products and activities

A114. As there are no detailed records of work with unlicensed materials, the types and amounts of products produced can be used to estimate the types of materials likely to be disturbed or removed and the frequency, which it is carried out. Table 25 gives an overview of asbestos usage in the 1970's for a number of product groups. Figure 9 shows the information for 1973 the peak year for production where: ~16% were licensed materials (insulating board and other insulation). 37.4% were cement products (32.2%) and pipes. About 14% were friction products and textiles (rarely found in buildings) and the remaining 32.6% were materials which may be used in buildings. On a first analysis there appears to be about the same amount of other unlicensed asbestos products in buildings as asbestos cement products, and possibly twice as much as products requiring licensed asbestos removal.

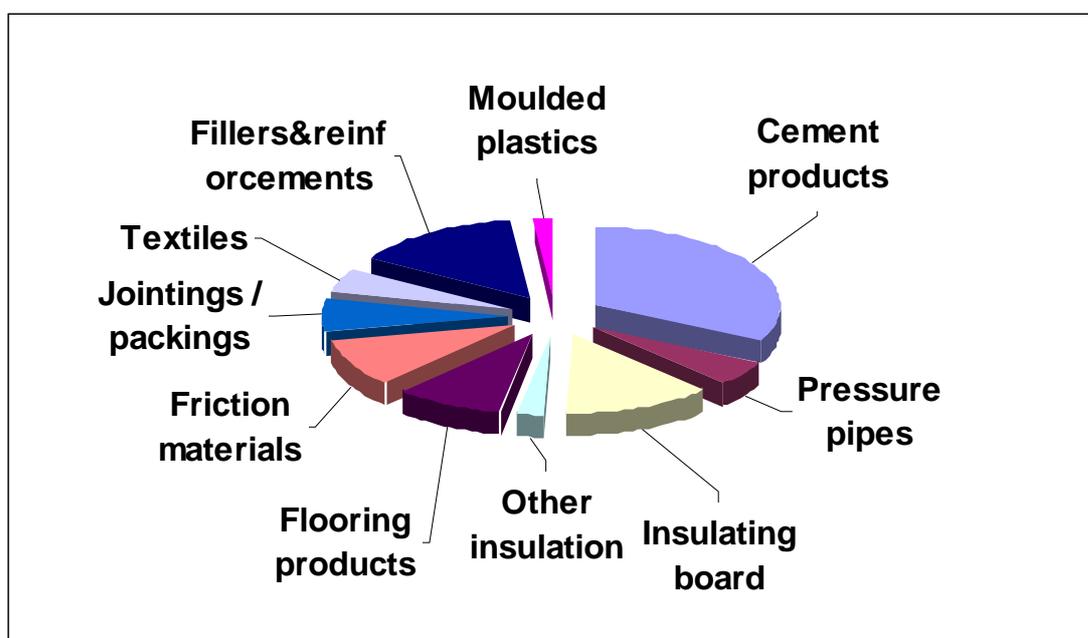


Figure 9: Relative asbestos fibre use by product type in 1973.

A115. Airborne fibre concentrations during removal and maintenance work with some of these unlicensed materials are summarised in table 26 and given in more detail in tables 27 & 28.

	1970	1973	1976	1978
Asbestos cement products for buildings	52.5	55.6	42.9	32.9
Asbestos cement pressure pipes	Not given	9.0	8.1	Not given
Fire-resistant insulating board	18.5	22.5	14.5	11.4
Other insulation (incl. spray)	4	4	0.4	1.5
Floor tiles and coverings	20.5	16.2	15.8	12.5
Friction materials	15	17	15.7	10.6
Jointings and packings	9	11.4	10	6.6
Other textile materials	9	8.3	6.3	5.3
Fillers and reinforcements (felts, millboard, paper, underseals, mastics, adhesives)	21.5	25.7	28.4	17.2
Moulded plastics	4.5	2.8	1.2	2.0
Total	154.5	172.5	143.3	100.0

Type of material	No of data /site entries	Mean (f/ml)	SD	Minimum of means	Maximum of means	No of samples	Sum (mean number)	Weighted mean (f/ml)
Cement sheet	51	0.19	0.76	0	5.45	245	48.18	0.20
Gaskets & packings	11	0.14	0.13	0.01	0.40	27	4.93	0.18
Floortile, mastics & bitumen	98	0.15	0.37	0.00	3	184	23.41	0.13
Roofing felt	2	0.013		0.006	0.02	30	0.36	0.012

**Table 27: Results in HSL database for work with asbestos containing floor tile, mastics and bitumen products**

	Type of sample	No of data /site entries	Mean (f/ml)	SD	Minimum of means	Maximum of means	No of samples	Sum (mean number)	Weighted mean (f/ml)
All	All	98	0.15	0.37	0.00	3	184	23.41	0.13
	Personal								
	Static								
	Unspecified								
Dry	All	37	0.10	0.21	0.01	1.29	59	4.57	0.08
	Personal	6	0.05	0.05	0.02	0.14	28	1.18	0.04
	Static	29	0.07	0.04	0.01	0.17	29	2.05	0.07
	Unspecified	2	0.67	0.88	0.05	1.29	2	1.34	0.67
Not Known	All	47	0.16	0.45	0.00	3	110	14.92	0.14
	Personal	32	0.07	0.09	0.00	0.33	73	5.61	0.08
	Static	9	0.09	0.11	0.01	0.31	14	1.24	0.09
	Unspecified	6	0.76	1.15	0.00	3	23	8.08	0.35
Wet	All	14	0.21	0.41	0.02	1.34	15	3.92	0.26
	Personal	3	0.35	0.52	0.03	0.95	4	2.00	0.50
	Static	9	0.04	0.01	0.02	0.054	9	0.33	0.04
	Unspecified	2	0.80	0.77	0.25	1.34	2	1.59	0.80
Wet personal -all data from EVALUTIL - 2 entries for road-planing (asbestos in road surfacing) using a machine. Does not include samples with gypsum fibres.									

**Table 28: Summary of all results in HSL database for gaskets and packings**

	Type of sample	No of data /site entries	Mean (f/ml)	SD	Minimum of means	Maximum of means	No of samples	Sum (mean * number)	Weighted mean (f/ml)
All	All	11	0.14	0.13	0.01	0.40	27	4.93	0.18
Dry	All								
	Personal								
	Static								
	Unspecified								
Not Known	All	5	0.18	0.16	0.01	0.40	14	3.17	0.23
	Personal	3	0.27	0.15	0.10	0.40	10	3.00	0.30
	Static	2	0.04	0.04	0.01	0.07	4	0.17	0.04
	Unspecified								
Wet	All								
	Personal	6	0.11	0.10	0.01	0.28	13	1.76	0.14
	Static								
	Unspecified	2	0.80	0.77	0.25	1.34	2	1.59	0.80

**Risk estimation for other non-licensed materials**

A116. The type of asbestos is a key determinant of the risk using the Hodgson and Darnton model. The type of asbestos used in the other unlicensed products (e.g. flooring, reinforced plastics, fillers and reinforcements) is almost all chrysotile asbestos and only high performance gaskets and packings in corrosive environments are likely to be amphibole asbestos. The percentage of amosite and crocidolite usage compared to chrysotile in other in other unlicensed (non-cement) materials is likely to be very small (<0.01%). With limited data and a variety of materials it is difficult to derive a single figure for exposure. As the majority of the work will involve flooring, mastics and roofing felt, which all release low average airborne fibre concentrations, same parameters as used for asbestos cement have been applied to the unlicensed non-cement products. These were:

Average exposure = 0.08 f/ml to chrysotile only

Percentage of time working with asbestos = 10% for demolition and specialist roof removal workers and 0.5% for general builders.

Actual average exposures = 0.008 f/ml for demolition and 0.0004 f/ml for general builders.

Start age = 20

Duration 10,20 & 30 years

A117. When applied to the same populations of workers 50,000 demolition workers and 500,000 general building workers over the next 50 years, the same estimates as for chrysotile in tables 23 and 24 are found i.e. a total of 2 excess deaths. A reduction in the control limit to 0.1 f/ml are unlikely to make a significant difference to much of the demolition and removal work and these figures assume no RPE is used. A maximum benefit of 1 life has been assumed.

**Effect of a reduction in control limit for maintenance and other workers who may incidentally disturb ACMs.***Numbers of maintenance workers affected by the new control limit*

A118. The provisions in article 10A of the new EU directive, "Before beginning demolition or maintenance work, employers shall take, if appropriate by obtaining information from the owners of the premises, all necessary steps to identify presumed asbestos-containing materials", limits the likelihood of significant exposure to maintenance or other workers from unknowing disturbance of ACMs. Also, article 3 requires that exposures above the control limit for maintenance and other workers will not be exceeded. Therefore if full compliance with articles 10A and 3 are assumed (as used to estimate the numbers of workers protected in paragraph A44) this means that the additional lives saved from a lower control limit are already accounted for in the estimates.

A119. Article 3 of the new Directive specifically limits maintenance activities which do not have to be notified etc (ie unlicensed work) to sporadic and low intensity work below the control limit and restricts such work to specific types of materials :

- a) short, non-continuous maintenance activities in which only non-friable materials are handled,

- (b) removal without deterioration of non-degraded materials in which the asbestos fibres are firmly linked in a matrix,
- (c) encapsulation or sealing of asbestos-containing materials which are in good condition.

A120. Compliance with Article 3 will therefore restrict any maintenance work with licensed materials and it is arguable nearly all maintenance work will be on unlicensed ACMs, which predominantly contain chrysotile. However, until the exact impact of the “sporadic and low intensity work” is better defined, the impact of the current arrangements has been calculated for both licensed and unlicensed materials.

### ***Estimates of numbers of maintenance workers***

A121. In the RIA for the new EU directive it was estimated that some 1.8 million workers are likely to disturb asbestos during routine work activity. The major groups affected are electricians (280,000); carpenters and joiners (260,000); plumbers and heating engineers (170,000); painters and decorators (150,000) and other construction and maintenance workers (around 500,000). Non maintenance workers (for example surveyors and valuers, building managers and inspectors and civil engineers) account for another 500,000 workers, although we believe that their exposure would be typically very low.

A122. The estimated exposure before any of the directive is implemented, was that some 200,000 workers are currently exposed at levels above the current control limit of 0.2 f/ml for a proportion of their working time. A large amount of this exposure will be inadvertent, and exposure will be far lower than this if efforts are made at control. A reduction in the control limit to 0.1 f/ml over a 4-hour TWA would increase this number to a total of 400,000 maintenance workers of a total of 1.8 million.

A123. If full compliance is not assumed or realised there will be some additional benefits from the lower control limit for up to 200,000 of the estimated 1.8 million regularly exposed maintenance & other building workers (see table 1 & 3). Although, given the limited information on the main variables (e.g. type of materials, type of asbestos, frequency and duration of exposures above or at the old control limit) the net benefit is difficult to estimate. It is also unlikely to be realised in practice, given the low likelihood that an accurate assessment or sampling will take place, for most maintenance work.

### ***Calculation of the maximum theoretical benefit based on the current circumstances***

A124. A maximum theoretical benefit can be calculated by assuming that some 200,000 maintenance workers would have been fully complying with the 0.2 f/ml limit and from 2006 would have taken further measures to fully comply with the 0.1 f/ml limit. (note: the effect of reducing chrysotile from 0.3 to 0.1f/ml are also calculated). The fibre type they are exposed to has been taken as the same as for licensed materials and an assumption that each of these workers carries out 1

hour a week of maintenance work on licensed materials for half of the working year (i.e. 24 x 1 hour per year). This is equivalent to one half of the maximum allowed at present and represent 1% contact time with licensed ACM's.

A125. Maintenance work on unlicensed materials is not restricted to 1 hour per week. Table 26, gives the weighted means of the HSL database of air monitoring measurements and shows these materials are in the range of 0.1 –0.2 f/ml. However, these include some high static measurement and the results for personal exposures should be taken into account e.g. tables 22 for AC cement and table 27 for floor tile, mastics and bitumen products which show average personal exposures below 0.1 f/ml. The exception is table 28 for work with gasket and packings, where the results are based on simulations rather than actual maintenance work. As shown in figure 9, the majority of the ACMs used in buildings are chrysotile based and relatively few jobs will exceed the new control limit. Using figure 9 it can be seen that about 30% of the ACMs in buildings are licensed (mainly groups: other insulation and AIB) and about 70% are unlicensed (exclude friction products and pressure pipes) therefore it has been assumed that for each hour of maintenance work on licensed products there is two hours work on unlicensed chrysotile products at 0.2 f/ml. This assumes an average of 3% exposure at the 0.2 f/ml control limit.

A126. The risk for amosite and crocidolite materials was calculated (see table 29) based on 30 years of exposure from age 20, using the HD model for an exposure at 0.2 f/ml for 24 hours of a 2400 hour working year and subtracting the risk from an exposure at 0.1 f/ml for 24 hours of a 2400 hour working year for amosite and crocidolite. Similarly for chrysotile the 0.3 f/ml risk was subtracted from the calculated risk for an exposure at 0.1 f/ml, but the cumulative exposure at 0.3 was doubled to account for unlicensed materials. The results of these differences are summarised for the best estimates and adjusted for likelihood each fibre type will be encountered in a licensed (1%) and unlicensed (3%) situation, using the ratios of 0.05:0.85:2.1 for crocidolite, amosite and chrysotile respectively. The annual excess deaths were calculated assuming a 60 - year survival from age 20 and that over the next 50 years a turnover of x3 occurs in the 200,000 maintenance workers who may be affected. As no reduction for removal of ACMs in the intervening period have been made and a long duration of exposure has been assumed, this hypothetical value is likely to be a considerable overestimate of the benefits in terms of premature deaths avoided.

**Table 29 : Calculated best values of risk using the HD model for the reduced risk from lowering the control limit from 0.2 f/ml to 0.1 f/ml for amosite and crocidolite and 0.3 to 0.1 f/ml for chrysotile for maintenance work on licensed and unlicensed ACMs after adjusting for types of materials encountered and frequency (No RPE).**

Length of exposure (years)	Crocidolite	Amosite	Chrysotile	Total
Lifetime excess deaths per 100,000 after 30 years exposure from age 20				
30	1.05	5.44	1.92	8.41
Annual excess deaths per million from 30 years exposure (Survival age 80)				
30	6.3	32.64	11.52	50.46
Lifetime excess deaths based on a total of 0.6 million maintenance workers over a 50-year period				
30	6.3	32.64	11.52	50.46

**Table 30: Calculated best values of risk using the HD model for the reduced risk from lowering the control limit from 0.2 f/ml to 0.1 f/ml for amosite and crocidolite and 0.3 to 0.1 f/ml for chrysotile for maintenance work on licensed and unlicensed ACMs after adjusting for types of materials encountered and frequency .( X10 APR RPE).**

Length of exposure (years)	Crocidolite	Amosite	Chrysotile	Total
Lifetime excess deaths per 100,000 after 30 years exposure from age 20				
30	0.33	0.85	0.105	1.29
Annual excess deaths per million from 30 years exposure (Survival age 80)				
30	2.01	5.1	0.63	7.74
Lifetime excess deaths based on a total of 0.6 million maintenance workers over a 50-year period				
30	2.01	5.1	0.63	7.74

A127. The same calculation has been done assuming x10 APF respiratory protection is worn by the maintenance workers, as required by guidance and approved code of practice for table 30. Again it must be stressed these are hypothetical calculations based on an exact reduction being achieved over a prolonged period of 30 years with an early age of first exposure and a continuous high amount of contact with licensed materials throughout the entire time.

### **Actual benefits to maintenance workers**

A128. In practice, compliance with the articles 3, 10A and 12 of the new directive it is expected to result in many fewer (or no) maintenance workers working with crocidolite and amosite asbestos containing materials, and these will be either avoided or removed prior to the work by a specialist asbestos removal contractor.

A129. If compliance with articles 3, 10 and 12 of the directive is achieved and RPE and controls stipulated in HSE guidance is followed, the net benefit of the reduction in the control limit over 50 years will be the avoidance of 1-2 premature deaths amongst maintenance workers.

### Uncertainty of the estimates

A130. Although only the “best” estimate has been calculated there are a number of uncertainties in the estimates. By far the greatest uncertainty is present in the epidemiology and the linear extrapolation from the available dose-response relationships. The HD model also calculates both a minimum and maximum value of deaths based on the epidemiology. The various estimates for the number of deaths for asbestos cement exposure due to uncertainty in the epidemiological model are given in table 31. This is a substantial range and hence the best estimate only has been used. Other variations due to limited exposure data, frequency of exposure and duration will also affect the best estimate. These are likely to produce a variation of approximately a factor of two on the best estimate.

**Table 31: Estimates from HD model of total number of deaths over 50 year period from asbestos exposure due to the demolition and removal of asbestos cement sheeting.**

Duration (yrs)	Best	Max	Min
<b>Demolition and specialist roof removal workers</b>			
10	1.7	8.4	0.2
20	2.3	11.2	0.4
30	2.6	12.9	0.4
<b>General Building workers</b>			
10	1.6	12.3	0.1
20	2.5	15.6	0.1
30	2.6	17.1	0.1

### Summary of risks

A131. The ‘best’ estimate of the numbers of asbestos-related deaths from the exposure patterns before the duty to manage came into effect were:

- 1) 9000 in total, including both occupational and non-occupational exposure, of which
- 2) 4700 occurred in maintenance and removal workers in the commercial sector;
- 3) 3100 occurred in maintenance and removal workers in the residential sector.

A132. These deaths would arise from exposures taking place over the next 50 years and occur over the next 100 years.

A133. The figure of 7,800 excluded deaths related to purely environmental exposures (~1,200). The number of occupational exposure deaths avoided was

estimated at 58% of 7,800, or 4,500, with around 2,000 as a result of indirect, or work-related, exposure. The remaining 1,300 deaths would be as a result of domestic exposure, most of which are not covered by CAW (or the amended Directive).

A134. The numbers of these deaths which can be avoided, depends on the level of compliance, awareness and training, so that ACMs are managed and only disturbed in a controlled way. Within these totals, assuming RPE is worn, it is calculated that some 87 excess deaths will occur among some 145,000 asbestos removal workers who are working with licensed materials. A lowering of the control limits to 0.1 f/ml will prevent an additional 36 asbestos related deaths among licensed asbestos removal workers wearing the recommended RPE (assuming an average nominal protection factor of 100). The importance of the RPE and the lower control limit is shown by that some 2372 deaths would be avoided by full compliance with the 0.1 f/ml control limit, if no RPE was worn.

A135. For all work on unlicensed materials (assuming no RPE is worn) between 3-6 deaths will be prevented, depending on the duration of the exposures. Often some level of RPE would be worn and the number of preventable deaths would decrease to ~ 1. The lowering of the control limit is unlikely to have a significant effect in reducing the number of deaths for work on unlicensed materials.

A136. If full compliance with articles 3 and 10A of the new directive is assumed, the lowering of the control limit for maintenance and other building workers will have a small effect (<7 premature deaths), compared to the number of lives saved by avoiding exposures.

A137. It is worth noting that the relative risks for the various combinations of licensed materials varies between 1% - 43%, except for textured coatings, which are some three orders of magnitude lower (0.001%). It is questionable that the risk from textured coatings is significant enough to be included as requiring a licensed removal.

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Simpson (1979) Asbestos: Final report of the Advisory Committee on Asbestos Volumes 1 & 2, HMSO, London UK.

# HEALTH AND SAFETY LABORATORY RESEARCH INTO AIRBORNE FIBRE RELEASES DURING THE REMOVAL OF TEXTURED DECORATIVE COATINGS

## EXECUTIVE SUMMARY

1. The Association of British Insurers (ABI) and HSE jointly commissioned this work, which was managed and co-ordinated by the Health and Safety Laboratory (HSL). The aim of the study was to measure the airborne fibre and asbestos concentrations released during the removal and repair of damaged chrysotile containing textured coatings, at some forty sites. The sites, identified by ABI for sampling, were all domestic premises.

### **Sampling, analysis and site data collection**

2. Airborne sampling at the sites and the initial analysis of half filters for the fibre number concentration was carried out by Casella Hazmat, based on the procedures in MDHS 39/4. A number of the sites were also sampled by HSL field sampling staff. HSL also carried out further analysis of the samples to discriminate between the fibre types. Questionnaires, completed by the site sampling personnel, were used to standardize information relating to, the cause and nature of the damage, the removal techniques employed and to identify work activities during sampling using activity codes. This information was used to classify work practises and help interpret the results and where possible to calculate the time weighted average (TWA) airborne fibre concentrations. As many of the jobs were less than 4 hours duration some assumptions had to be made.

3. Both the sampling and analysis of textured coating removal proved to be a challenge and there were a number of problems to overcome.

4. The nature of the removals and the material meant that most jobs were difficult to wet and proved to be very dusty, with much of the dust coming from the backing material (e.g. plaster) rather than the textured coating. Consequently at many jobs only limited numbers of short duration samples were taken, as the on-site sampling personnel attempted to avoid overloading the samples with airborne dust so that the filters could be analysed by optical phase contrast microscopy (PCM) for the numbers of fibres present. One result of the limited sampling times and volumes of air sampled was that the limit of quantification (LOQ)<sup>1</sup> was much higher than for longer-term samples. To overcome this and to improve the LOQ, pooling of the individual sample data by job or work activity was carried out.

5. Another important consequence of taking limited numbers of short duration samples, during the dustiest phase of the removal, was that it was difficult to accurately calculate the four-hour time weighted averages (TWA) required for assessment to the control limits. Other estimations of four-hour TWAs were therefore made using pooled averages (for the duration of the removal) and also for an upper limit (a worst-case scenario, based on continuous exposure at the highest individual recorded airborne fibre concentration measured during each job). To overcome the sampling problems, at later sites the sampling protocol was changed so that the flow rates of some samples were set much lower than the 1 litre per minute required for personal samples. This often allowed a single sample for the job to be collected overcoming issues related to the collection of many separate short-term samples.

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<sup>1</sup> Based on 20 fibres in 200 fields of view.

6. Analysis of the initial samples by transmission electron microscope (TEM) and energy dispersive x-ray analysis (EDXA) techniques indicated that many of the fibres countable by PCM were calcium sulphate fibres (from the under laying plaster) and not asbestos fibres. Additionally the presence of large amounts of non-fibrous calcium sulphate particles rendered some filters uncountable (over loaded). To overcome this problem a treatment technique was developed by HSL, to remove the soluble calcium sulphate particles from the filter prior to the sample filter being mounted for analysis by PCM and TEM. This meant that the Casella –Hazmat PCM results were for untreated samples which included a significant proportion of calcium sulphate fibres but HSL results were for both treated and untreated samples.

**PCM results for the Untreated Samples:**

7. One hundred and ninety-one samples, other than clearance samples, were collected from thirty-five sites. The average airborne fibre concentration from eighty-three samples analysed without any treatment was 0.28 f/ml. The overall four-hour TWA for these untreated samples was 0.04 f/ml and average (per job) total sampling time was 150 minutes (2½ hour).

**PCM results for the Treated Samples:**

8. The average airborne fibre concentration, determined from the analysis of one hundred and six samples treated to remove soluble material was 0.09 f/ml.

9. The short term TWAs calculated for fifty-one treated samples with sampling times of less than twenty minutes was 0.124 f/ml. One treated sample had a short term TWA that exceeded 0.6 f/ml.

10. The average for the upper limits to the four-hour TWAs (treated samples) was 0.096 f/ml with four of the eighteen jobs exceeding the 0.1 f/ml control limit. Using the more realistic estimates based on pooled data and job duration estimated from start of sampling to start of clearance sampling, then the average four-hour TWA (treated samples) was 0.047 f/ml with only one of these eighteen jobs exceeding the 0.1 f/ml control limit.

11. A sub-set of sixteen treated samples, each of which was for sampling times in excess of two hours (average 152 minutes) and for the full duration of the removal (in that area or room) had an average four-hour TWA of 0.02 f/ml.

**TEM results – Treated Samples:**

12. TEM analysis was carried out using the ISO10312:95 method to determine the concentration of PCM equivalent asbestos fibres (i.e. fibres >5 µm long, 0.2 –3 µm width and with an aspect ratio >3:1). Due to cost only a limited sub-set of samples were analysed by TEM. The TEM sub-set was selected based on a high PCM count being present. The pooled average PCM equivalent airborne asbestos fibre concentration from twenty-eight samples analysed using TEM techniques was 0.014 f/ml. Extrapolating to the whole set of treated samples (using the ratio of the average PCM value for this subset to the overall PCM average) suggested that the average TEM PCME airborne fibre concentration for the whole population would be about 0.01 f/ml.

13. Over half of the samples analysed by analytical TEM had air volumes equal to, or less than twenty litres (this implies sampling times of <20 minutes), therefore if a single fibre was counted the airborne concentration would exceed 0.6 f/ml (the proposed new short term control limit), and would bias the results, thus overestimating the percentage of jobs/ activities exceeding the control limits.

14. Only chrysotile asbestos fibres were found in the TEM analysis. Many chrysotile fibres were present in some samples, which would not be visible or counted by PCM and were not included in the TEM counts of PCM equivalent fibres. These <5 µm long and <0.2 µm

diameter fibres are present in all chrysotile releases but the PCM count (or its equivalent) is used as the index to assess the exposure and calculate risk.

### PCM results using the WHO Fibre Counting Rules

15. Changes in the directive (2003/18/EC) will introduce the World Health Organisation (WHO) method for fibre counting. Two important changes in regard to sample analysis are that: it will allow fibre discrimination to be carried out using other methods than PCM when assessing against the control limit: and changes in the counting rules will now include all >5 µm fibres visible by PCM in the count (fibres attached to particles >3µm diameter are currently excluded in the MDHS 39/4 counts). The PCM results from a sub-set of counts carried out using both counting protocols (MDHS 39/4 and WHO) increased the number of fibres (all types) counted by a factor of two (2.2). However, the increase is likely to be limited if fibre discrimination techniques are used to dissolve calcium sulphate fibres.

### Summary of Means and TWA's from the pooled data

16. A summary of the pooled averages of the individual samples for the various analyses is given in the table below.

## Summary of the pooled individual values

Method	Individual samples		
	Pooled mean <sup>♦</sup> (f/ml)	4 - hour TWA (f/ml)	10 - minute TWA (f/ml)
Control limit (f/ml TWA)		0.1	0.6
PCM – MDHS39	0.06 (86 samples)	0.03 (37 samples)	0.36 (48 samples)
Treated PCM - MDHS39	0.03 (106 samples)	0.012 (57 samples)	0.124 (51 samples)
Treated PCM - WHO	0.14 (21 samples)	0.04 (8 samples)	0.35 (12 samples)
Treated TEM PCME asbestos fibres	0.014 (28 samples)	~ 0.005*	~ 0.06*

The values in brackets are the number of samples or jobs from which the values were derived.  
 Four-hour TWAs for individual samples were only calculated if the sampling time exceeded twenty minutes. It was assumed that during the remaining part of the four hours no exposure occurred.  
 If the sampling time was less than twenty minutes (individual samples) then only short term, ten-minute TWAs were calculated.

♦ These are the pooled means for the raw data before time weighting.  
 \* Difficulties in calculating TWAs for the TEM data meant these values could only be derived by applying the ratio of the pooled means [treated PCM (MDHS39/4) and TEM PCME asbestos fibres] to the treated PCM MDHS 39/4 TWAs.

17. Direct determination of the TEM four-hour TWA was not possible due to the limited subset of data but comparisons with the PCM data suggest that it would reduce the airborne asbestos concentration to about 0.005 f/ml. Although these values are extrapolations from the measured data they do give a reasonable indication of TWA airborne asbestos fibre concentrations. Calculation of the TEM ten-minute TWAs presented no such problems. The average ten-minute TWA, 0.06 f/ml was not only about one tenth the 0.6 f/ml ten-minute control limit but was also below the 0.1 f/ml four-hour TWA.

18. All the four-hour TWA estimates were made assuming that there was no further exposure after the completion of sampling, or if less than four hours had elapsed before the end of the job.

**Conclusions**

19. Although the PCM data indicates that the airborne fibre concentrations for all fibres may on some occasions have exceeded the four-hour control limits, the TEM analyses indicated that most of these fibres were not asbestos and the PCM equivalent airborne asbestos concentrations during the removal of textured coatings were usually much lower. The pooled TEM average 0.014 f/ml (without time weighting) was one-seventh the proposed 0.1 f/ml, four-hour control limit and time weighting, considering the duration of most of these jobs, would further reduced this value.

20. Chrysotile fibres were the only type of asbestos detected in the TEM samples analysed.

21. The lower flow rate sampling strategy and removal of soluble particles before analysis overcame most of the problems associated with the sampling of this type of work.

**Further work**

22. The techniques developed in this study for the sampling and analysis of work with textured coatings should be further developed and introduced into HSE guidance.

23. A risk assessment should be carried out based on this new data to determine whether removal of chrysotile containing textured coatings should continue to done only by a licensed asbestos removal contractor.

## HSL RISK ANALYSIS OF LICENSED WORK WITH TEXTURED DECORATIVE COATINGS

### Introduction

24. The proposal to remove textured coatings from the licensing regulations (ASLIC, 1983) can be assessed in terms of risk. However, the calculated risk needs to be viewed in context with other asbestos containing materials (ACMs). As the information available to HSE on licensed ACMs is of much greater quality than unlicensed ACMs, the relative risk for all licensed materials has been calculated for comparison with textured coatings.

25. The HSE database for licensed asbestos removal is held by the FOD Health Unit (HU) and contained some 97,940 job notifications from a 3-year period, amounting to a total of 709305 working days (job-days). The database is based on information supplied by licensed asbestos removal contractors on the standard ASB5 notification forms. The forms specify five categories of asbestos materials: asbestos insulating board (AIB), asbestos insulation (AI), asbestos coatings (AC), textured coatings (TC) and others (OTH). One or more of these are recorded for each job with the most abundant material first. Figure 1 summarises the number of jobs by material type. Textured coatings accounted for 15.6% of all licensed removal jobs.

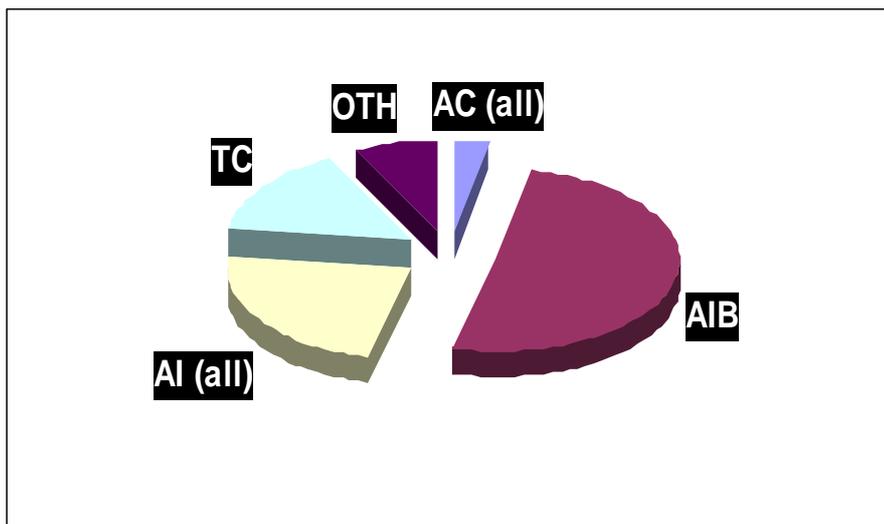


Figure 1: Relative frequency of asbestos material type encountered during licensed removal work (by number of jobs)

26. Work with textured coatings (and other licensed materials) not-exceeding a total of 2 hours does not require a licensed contractor to carry out the work or notification to HSE. It is likely many small jobs on textures coatings take place associated with: lighting, plumbing and cabling. All work with asbestos is covered by CAW, (2002) and one of two approved codes of practices (L27 & L28), with a duty to ensure airborne exposures to workers and the spread of asbestos are kept as low as reasonably practicable.

### Method for estimation of the risk from removing textured coatings from the licensing regulations

27. The method for estimating risk requires information on the exposure of workers. The following main parameters have been assessed to estimate the average exposure to licensed asbestos removers:

- The type of activity and frequency which it is carried out;
- The types of material being disturbed or removed;
- The average concentration of airborne asbestos fibres produced by the different types of activity;
- The effectiveness of controls.

28. The lifetime risks related to the asbestos exposure are calculated using a model derived from Hodgson and Darnton (2000). The main inputs into the model that will affect the calculated risk are:

- The arithmetic mean exposure;
- The age first exposed and survival age;
- The frequency and duration of the exposure;
- The type of asbestos released.

### Risk estimation for licensed asbestos removal workers

29. Data from the ASB5 notification forms was used to compile a table of the number of notified licensed asbestos removal jobs carried out over the last three years. These are summarised by both number of jobs and the actual number of job days. Removal of textured coating was found to be the shortest category of licensed asbestos removal work with an average time of 3.8 days compared to the overall average of 6.9 days per job. Therefore although removal of textured coatings account for 15.6% of the jobs, it only represents 8.7% of the exposure to licensed asbestos removal workers in job days.

Type of ACM	By number of jobs		By job-days		Average duration of job (days)
	Number of Jobs	Percentage of total	Number of job days	Percentage of total	
AC	2276	2.32%	23056	3.43%	10.1
AC & AIB	289	0.30%	4589	0.68%	15.9
AC & AI	220	0.22%	2620	0.39%	11.9
AC, AI & AIB	262	0.27%	6738	1.00%	25.7
AIB	49608	50.65%	290134	43.20%	5.8
AI	20303	20.73%	167579	24.95%	8.3
AI & AIB	2440	2.49%	39795	5.93%	16.3
Other	7245	7.40%	78891	11.75%	10.9
TC	15297	15.62%	58239	8.67%	3.8
<b>Total</b>	<b>97940</b>	<b>100%</b>	<b>671641</b>	<b>100%</b>	<b>6.9</b>

### Calculation of exposure by job from FOD HU database

30. By combining the frequency of work with the fibre concentration data for each category of asbestos material it was possible to calculate the average annual exposure to all asbestos removal workers in terms of job days. The fibre concentrations were primarily derived from HSL data collected inside enclosures during asbestos removals in the UK to reflect the wet removal process that should be taking place. Mostly the removal data is for a single type of asbestos. Where multiple ACM types were recorded in the HU database it should be in order of amount but we had no indication of the actual amount of each type. Therefore the fibre concentrations from mixtures are calculated from a simple arithmetic average of the fibre concentrations for each individual ACM types. A fibre concentration for “other” asbestos has to be assumed to complete the exposure assessment. A weighted mean concentration in terms of number of jobs was calculated and used but if “other” was truly other non-licensed materials rather than a mixture of licensed materials the average fibre concentration may be lower.

31. Very limited data for textured coatings was available because it is very difficult to monitor many removal jobs and as the coating is usually on a plaster surface calcium sulphate fibres are released and counted as asbestos fibres using the current phase contrast microscopy (PCM) counting methods. Very recent data where analytical transmission electron microscopy (TEM) analysis has been carried out to identify fibre types showed that for small-medium scale work, the average exposure of asbestos may be an order of magnitude lower than the value used (0.084 f/ml), which is based on PCM data.

**Table 2: Calculated annual exposure to asbestos removal workers (based on an average of a 3-year period 2000 – 2003).**

	Arithmetic mean personal exposure	Cumulative exposure in 1 year	Percentage of total exposure
Type of ACM	(f/ml)	f/ml.job-days	
AC	14.36	110361	22.4
AC & AIB	7.39	11297	2.3
AC & AI	9.28	8105	1.6
AC & AI & AIB	6.32	14202	2.9
AIB	0.41	39652	8.1
AI	4.2	234611	47.6
AI & AIB	2.31	30576	6.2
Other	1.60*	42075	8.5
Textured coatings	0.08	1553	0.3
Total		492432	100.0

\* Value estimated as a mixture of licensed ACMs

### Calculation of worker exposure

32. Two key pieces of information for risk assessment are lacking: (i) the number of workers employed, which is required to estimate the total exposure duration of all workers, i.e. to get from job-days to man-days; (ii) the asbestos type(s) encountered in the various jobs, on which the risk is strongly dependent. The maximum number of workers is given on the ASB5 notification form but is not recorded in the HU database. The asbestos type does not appear on the ASB5 form but is usually given in the accompanying Job Plan.

### Additional information from ASB5 notifications and Job plans

33. To obtain this additional information a sub-set of 903 ASB5 notifications and Job Plans from the Sheffield and Manchester Area Offices, covering periods of about 3 months up to October/November 2004. Table 3 gives the number of jobs and the calculated number of job days and person days from the ASB5 forms (e.g. worker-days = total number of workers on site x length of job in days). These are likely to be overestimates for duration of exposure as not all workers will be inside the enclosure removing asbestos for the entire time and during set up and take down lower exposures are likely than attributed from the air monitoring data.

Type of ACM	Number of jobs	Job-days	Total person-days	Average person-days
AC+AI+AIB	3	735	10245	3415.0
AC+AI	2	35	205	102.5
AC+AIB+TC	2	40	220	110.0
AC+AIB	5	107	424	84.8
AC	7	77	435	62.1
AI+AIB+O	2	42	168	84.0
AI+AIB	35	405	2263	64.7
AI+O	5	113	448	89.6
AI	135	1214	5080.5	37.6
AIB+O	11	80	285	25.9
AIB+TC+O	1	2	6	6.0
AIB+TC	10	136	690	69.0
AIB	446	3868	12746.5	28.6
O	53	806	3282	61.9
TC+AI	1	4	12	12.0
TC+O	4	308	1036	259.0
TC	181	589	1665.5	9.2
Overall Aver.				43.4
Total	903	8561	39211.5	

34. As the required information on asbestos type was given in only 723 of the 903 plan of work / notifications examined, some figures for asbestos type(s) present in each ACM type are statistically poor. Rounded off values of the asbestos types listed against various types of ACM are given in Table 4. These were used to calculate risk factors for the ACM based on the HD relative risk factors of: chrysotile =1, amosite = 100 and crocidolite = 500. Overall,

the average relative estimate of asbestos type for chrysotile: amosite: crocidolite were 10:85:5 giving a relative risk factor of 110.1 compared to chrysotile exposure only.

<b>Table 4: Information from plan of work data for the asbestos types present for different Types of ACM</b>				
ACM Type	Type of Asbestos Present (%)			Calculated risk factor
	Chrysotile (CH)	Amosite (AM)	Crocidolite (CR)	
AC *	5	75	20	175
AC + AIB	3	85	13	148
AC + AI	5	73	23	185
AC + AI+AIB	3	80	17	163
AIB	0	95	5	120
AI	5	70	25	195
AI + AIB	3	83	15	158
O	13	85	2	95
TC	100	0	0	1
All data	10	85	5	110

#### **Calculation of relative risk compared with other licensed ACMs**

35. Table 5 brings together all the data from tables 1-4 above and then uses this information to calculate the relative risks. Total worker exposure in f/ml.person-days per year (column 6) is calculated by multiplying columns 4 and 5. The percentage of total worker exposure contributed by each ACM type is given in column 7. The asbestos type taken from a sample of Job Plans in table 4 and the calculated risk factors for each type of ACM are entered in column 8. Multiplying f/ml.person-days per year by the risk factor gives a value adjusted for the relative risk (column 9) from which the contribution to the total risk from each ACM types can be calculated (column 10). It is worth noting that the relative risks for the various combinations of licensed materials varies between 1% - 43%, except for textured coatings which are some three orders of magnitude lower.

*Table 5: Calculation of relative risks*

Type of ACM	Number of jobs in 3-year period	Number of jobs per year	Average worker-days per job	Worker-days per year	Fibre concentration (f/ml)	Exposure (Worker-days f/ml/yr.)	Percent of total exposure (%)	Risk Factor for asbestos type	Weighted risk from work with various ACMs	Percent of total risk by type of ACM (%)
Column No.	1	2	3	4	5	6	7	8	9	10
Source/Calc	HU	HU	ASB5	(C2xC3)	HSL	(C4xC5)	(From C6)	Table 4		
AC	2276	758.7	62.1	47145.7	14.36	677012.5	15.7	175.1	118.51	16.41
AC & AIB	289	96.3	84.8	8169.1	7.39	60328.6	1.4	147.5	8.90	1.23
AC & AI	220	73.3	102.5	7516.7	9.28	69754.7	1.6	185.1	12.91	1.79
AC & AI & AIB	262	87.3	3415.0	298243.3	6.32	1885892.0	43.7	163.4	308.09	42.67
AIB	49608	16536.0	28.6	472592.3	0.41	193762.8	4.5	120.0	23.25	3.22
AI	20303	6767.7	37.6	254689.8	4.20	1069697.3	24.8	195.1	208.64	28.89
AI & AIB	2440	813.3	64.7	52587.8	2.31	121214.9	2.8	157.5	19.09	2.64
Other	7245	2415.0	61.9	149547.7	1.60	238610.4	5.5	95.1	22.70	3.14
TC	15297	5099.0	9.2	46919.2	0.08	3955.3	0.1	1.0	0.004	0.0006
<i>Total</i>	97940	32646.7	41.9	1368618.5		4320228	100.00		722.10	100.00

### Calculated risks using the Hodgson & Darnton (HD) Model

36. HSE data on the number of asbestos-related medical examinations show that the average years working per asbestos removal worker man is 3.09 but the majority of workers (71.5%) only have one examination, i.e. work for less than 2 years. Just over 90% of workers work for 5 years or less. The average age at the first medical was 32. The “best” estimate of the lifetime risk is 2.8 excess deaths per 100,000 for constant exposure to chrysotile at 0.08 f/ml from the removal of textured coatings for 5 years (for 240 days per year) from the age of 30 assuming no respiratory protective equipment (RPE) is worn. If RPE was worn with a protection factor of 100, the lifetime risk reduces to 0.1 excess deaths per 100,000. Clearly it is unlikely that a person would be removing textured coating every working day for 8 hours so the risk estimates are unlikely to be an underestimate.

37. To compare with the Tolerability of Risk (TOR) model currently used by HSE to categorise the scale of the risk in societal terms (R2P2), the units have to be adjusted to the annual risk of premature death per million. The annual risk was in this instance obtained from a linear estimate from the overall lifetime risk, by a simple division of the lifetime by the remaining life expectancy. A figure of 50 was used for the average life expectancy (this equates with the actual age of the first medical at 32 and a life expectancy of > 80 years. This gives a value of 0.6 per million annual risk of death for no RPE and 0.02 per million annual risk of death with RPE. The TOR approach considers annual risks of <1 per million to be the divide between “Broadly acceptable” and tolerable.

### Summary

38. Textured coating is currently included along with decorative coatings in the licensing regulations. As far as is known these textured coating contain only chrysotile asbestos up to a maximum of 4-5 % but due to progressive substitution the asbestos content may be lower and from 1992 their marketing and use was prohibited and non-asbestos containing coatings were used instead. These coating have been widely used on the ceilings and walls of domestic premises and are also found in commercial premises.

39. Removal of the coatings is normally difficult and is often a dusty process, as the coating is often on a plaster surface and is painted so it will not readily absorb water. As the chrysotile is bound in a matrix work with this material does not readily produce high levels of airborne asbestos fibres unless power tools are being used. The presence of plaster and its dusty nature means that many non-asbestos (calcium sulphate) fibres can be released if inappropriately handled.

40. Average releases of chrysotile asbestos fibres of the order of 0.01 – 0.1 f/ml are likely using good removal practice and peak levels from poor removals are unlikely to exceed 1 f/ml.

41. The removal of textured coatings account for 15.6 % of the total number of licensed removal jobs notified to the HSE but due to the relatively short time for carrying out the work accounts for only 8.7% in terms of job days. Due to the relatively low airborne asbestos fibre concentrations the textured coating account for only 0.1 % of the total airborne exposure to asbestos removal workers. The lower risk associated with chrysotile compared to other asbestos types, means that the risk associated with textured coatings (<0.0001%) is several orders of magnitude below the risk compared to all other licensed asbestos materials ( 1-43%).

42. The calculated lifetime excess risk for a typical asbestos removal worker who spent 5 years of continuous removal work on chrysotile containing textured coatings is 2.7 deaths / 100,000. In terms of annual risk it falls well into the broadly acceptable category (< 1 per

million) even when it is assumed no RPE is worn. More recent evidence suggests that the actual airborne asbestos concentration is nearer to 0.01 f/ml than the average 0.084 f/ml concentration used for the above calculations.

43. Based on risk alone, there appears no justification for this material to require the extra provisions currently provided by the asbestos licensing regime. Removal from the licensing regulations but continuing restrictions under CAW would be unlikely to increase the annual risk sufficiently to take it out of the of the “Broadly acceptable” category used by HSE in the TOR model.

**CONSULTEE RESPONSE FORM**

**Proposal for Revised Control of Asbestos Regulations 2006 and Approved Codes of Practice**

We would like you to tell us what you think about the proposals set out in this consultative document. The proposals are summarised below in this reply form that you may wish to copy or tear out and use. Please add extra sheets if you wish.

**Name of company or organisation**

.....

**Name of individual**

.....

**Address:**

.....

.....

.....

**Telephone number:**

.....

**E-mail address**

.....

**What is the nature of your organisation?**

.....

.....

**If responding as an individual what is your area of interest?**

.....

.....

**Question 1**

Do you agree with the proposal to follow AWPD requirements such that there should be a new regime to exempt work that produces only sporadic and low intensity exposure from the requirements of licensing, notification and medical surveillance?

Yes  No

**Comments**

**Question 2**

Which of the following most closely resembles your view of the proposal to remove work with asbestos-containing textured decorative coatings from the scope of licensing? Please tick and please give your reasons.

a) Work with asbestos-containing textured decorative coatings should be removed from the scope of the licensing regime and the controls proposed in this consultation document should be required.

b) Work with asbestos-containing textured decorative coatings should remain licensable and the current level of controls required to do the work should be maintained.

c) Neither of the above, another option should be considered (please give details).

**Comments**

**Question 3**

Do you agree with the proposal to align CAW requirements for minimising worker exposure more closely with the COSHH hierarchy of controls listed in order of priority?

Yes  No

**Comments**

**Question 4:**

Do you agree with the proposal to implement a single Control Limit of 0.1 f/cm<sup>3</sup> as a 4-hour TWA as measured using the WHO method? If not, please give details.

Yes  No

**Comments**

**Question 5:**

Do you agree with the approach to the requirements for identification of asbestos?

Yes  No

**Comments**

**Question 6:**

Do you agree with the approach to requirements for the evidence of ability to do asbestos demolition and removal work?

Yes  No

**Comments**

**Question 7:**

Do you agree with the proposed approach to training requirements?

Yes  No

**Comments**

**Question 8:**

Do you agree with the proposal that only those who are competent (as defined) to work inside an enclosure are allowed to do so?

Yes  No

**Comments**

**Question 9:**

Do you agree with the proposal to clarify and simplify the asbestos Regulations by bringing the requirements of ASLIC and the Prohibitions Regulations into CAW and creating one combined set of Control of Asbestos Regulations?

Yes  No

**Comments**

**Question 10:**

Do you agree with the proposal to produce a single Approved Code of Practice to cover all Control of Asbestos Regulations including Licensing?

Yes  No

**Comments**

**Question 11:**

Do you agree with the proposed changes to licensing such that:

- a) licences have a maximum time limit of 3 years

Yes  No

- b) removal of the exemption from licensing for employers using their own staff in their own premises for licensable work

Yes  No

**Comments**

**Question 12:**

Do you agree with the proposal that accreditation be required for someone to undertake a four-stage clearance certificate procedure?

Yes  No

**Comments**

**Question 13:**

Do you agree with the proposal to remove the two STELs from the Regulations and include a peak exposure limit of 0.6 f/cm<sup>3</sup> in ACoP such that no worker exposure, however short in duration should exceed that peak? If not, please give details.

Yes  No

**Comments**

In your view how well does the Proposal for Revised Control of Asbestos Regulations 2006 and Approved Codes of Practice represent the different policy issues involved in the matter?

Very Well  Well   
Not Well  Poorly

Is there anything you particularly liked or disliked about this consultation exercise?

**Comments**

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**Please note:** All views will be placed in HSE Information Centres unless you state specifically that this response, or part of it, should be treated as confidential.



**PROPOSALS FOR REVISED ASBESTOS REGULATIONS AND ACoP****CONSULTEES' LIST**

Aberdeen City Council  
ABI Property Claims Forum  
Advanced Environmental Engineering Ltd  
AHS Emstar plc  
AMEC Plc  
Amey Construction Ltd  
Amity Insulation Services Ltd  
Andys Gas  
Angus Council  
AOH Consultants  
ARCA  
Asbestos Control and Abatement Division (ACAD)  
Asbestos Insulation Removers Ltd  
Ashford Borough Council  
Associated Asbestos Removal Ltd  
Associated Society of Locomotive Engineers & Firemen  
Association of Manufacturers Against Asbestos  
Association of Plumbing & Heating Contractors  
Association Society of Locomotive Engineers and Fiermen  
ATAC  
Babtie Group  
Balfour Beatty Construction  
Basildon District Council  
Bassetlaw District Council  
BBA Friction  
Biotechnology and Biological Science Research Council  
Birmingham City Council  
Birwelco Ltd  
Blackpool Borough Council  
Blue Circle Industries Plc  
Blues Consultants Ltd  
Boclair Academy  
BP International Ltd  
Bradley Environmental  
Brazilian Workers Organisation for Mineral Sector  
British Council of Maintenance Assn  
British Gas Services  
British Institute of Facilities Management  
British Medical Association  
British Nuclear Fuels plc  
British Occupational Hygiene Society

British Property Federation  
British Retail Consortium  
British Safety Council  
British Telecom  
Bromhill Primary  
Burton Asbestos Removal Ltd  
Cable & Wireless Communications  
Cabot Thermals Ltd  
Cadogan Consultants  
Calder Insulations Ltd  
Camden Chief Executive's  
Came Automation Ltd  
Canadian High Commission  
Cape Boards Limited  
Cardiff County Council  
Casella Hazmat  
Castle Transmission  
CBI  
Chartered Institute of Environmental Health  
Chelmsford Borough Council  
CIRIA  
City Insulation Contractors  
City of Bradford Metropolitan District Council  
City of Salford  
Clarence Industrial Services  
Colchester Institute  
Comfort Air Conditioning Ltd  
Construction Confederation  
Construction Health & Safety Group  
Controlled Demolition Group Ltd  
COSHH Office  
Craig Plant Ltd  
Crewe & Nantwich Borough Council  
Croydon Borough Council  
CSE Space Management  
D S Industrial Services  
Dean Dismantlers Ltd  
Dept of Health  
Derby City Council  
DESD  
Devonport Management Limited  
DMW Environmental Consultants  
Doyle Demolition and Excavation Ltd  
Du Pont Non Wovens  
E J Foxall

East Hampshire DC  
East Hertfordshire NHS Trust  
East Lothian Council  
East Riding Laboratories  
Electricity Association  
Elf Exporation UK Plc  
Employers Organisation for Local Government  
Engineering Employers Federation  
Engineers' & Managers' Association  
Ensecon Laboratories  
Envirocor Waste Services Ltd  
Environmental Services  
Environmental Services Association  
Essex County Council  
Esso Petroleum Company Limited  
Eternit UK Ltd  
Ethos Environmental Ltd  
Federation of Master Builders  
Federation of Small Businesses  
Fibre Cement Manufacturers Association  
Fire and Rescue Service  
Fireline Insulation Services Ltd  
G W Hilditch Ltd  
General Federation of Trade Unions  
George Beattie Sons (Contractors) Ltd  
Glasgow City Council  
GMB  
Gravesham Borough Council  
Great Western Train Company Limited  
Gwent Safety Consultancy  
H H Moore Electrical  
HM Fire Service Inspectorate  
ICS  
Imperial Cancer Research Fund  
Imperial College of Science, Technology and Medicine  
Industrial Health Control  
Industrial Injuries Advisory Council  
Industrial Society  
Institute of Civil Engineers  
Institute of Directors  
Institute of Directors Wales Division  
Institute of Health Studies  
Institute of Occupational Medicine (IOM)  
Institution of Chemical Engineers  
Institution of Electrical Engineers

Institution of Lighting Engineers  
Institution of Mechanical Engineers  
Institution of Occupational Hygienists  
Institution of Occupational Safety and Health  
Insulation and Environmental Services Ltd  
Insulation Contracting Services  
Ipswich Borough Council  
J & S Bridle Associates  
Jack Peate & Sons  
JED Insulations Ltd  
Kent County Council  
Kirklees Metropolitan Council  
Kitsons Environmental Europe Ltd  
L Wynne & Co (Manchester) Ltd  
Lancashire Association of Chief Environmental Health Officers  
Lancashire County Council  
Lancaster City Council  
Leeds City Council  
Leicester City Council  
Leighton Carter Insulation Co Ltd  
Lenzie Academy  
Liverpool & District Victims of Asbestos Support Group  
Local Government Association  
London Borough of Bromley  
London Borough of Camden  
London Borough of Ealing  
London Borough of Harrow  
London Borough of Havering  
London Borough of Redbridge  
London Fire & Civil Defence Authority  
London Hazards Centre  
London School of Hygiene and Tropical Medicine  
London Transport  
M and G Hill Ltd  
Magnox Electric Plc  
McCoy Hill & Partners  
McCrone Scientific Ltd  
McNeela Construction Ltd  
Merseyside Fire Brigade  
Messer UK  
Middlesbrough Borough Council  
Midland Analytical Consultants  
Midland Bank plc  
Midlands Co-operative Society Ltd  
Mike Keeligan (maintains list of training providers)

Ministry of Agriculture Fisheries and Food  
Ministry of Defence  
Mitchell's Insulation  
MSF  
National Analytical Consultancy Service  
National Asbestos Training and Accreditation Scheme  
National Assembly for Wales  
National Assn of Local Councils  
National Assn of Shopfitters  
National Farmers Union  
National Housing Federation  
National Inspection Council for Electrical Installation Contracting (NICEIC)  
National Power Plc  
National Specialist Contractors Council  
National Union of Rail, Maritime and Transport Workers  
National Union of Teachers Headquarters  
NatWest Group  
North Yorkshire County Council  
Northern Ireland Committee  
Norwich City Council  
NUMAST  
Occupational and Environmental Diseases Association  
Occupational Health Service  
Orim Environmental Services Ltd  
Oxfordshire County Council  
P W Mills (Cradley) Ltd  
Particle Analysis  
Personal Safety Manufacturers' Association  
Pinnacle Insulation Ltd  
PMM EDD Birmingham City Council  
Procad  
Quebec Trade Unions (FTQ, CSN, CSD)  
RCN Society of Occupational Nurses  
Reading Borough Council  
Regency International Group Ltd  
Regional Employers Organisation for Local Authorities  
Registered Nursing Homes Association(RNHA)  
Renfrewshire Healthcare NHS Trust  
RICS  
Romford Insulations Ltd  
Rover Group  
Royal and Sun Alliance Insurance PLC  
RPS Health, Safety and Environment  
Rural Design and Buidling Association  
S P Shutler Associates Ltd

Sandwell MBC  
Scottish Association of Citizens Advice Bureaux  
Scottish Local Authorities Health and Safety Group  
Scottish Nuclear Limited  
Shropshire County Council  
Small Business Service  
Solihull MBC  
South Lanarkshire Council  
Spartan Consulting Ltd  
Starrant Ltd  
Stirling Council Environmental Health  
Suffolk County Council  
Swindon Borough Council  
The Asbestos Institute  
The Association of Occupational Health Nurse Practitioners (UK)  
The British Constructional Steelwork Assn Ltd  
The Building Consultancy  
The Chartered Institute of Building  
The Chartered Society of Physiotherapy  
The Chief and Assistant Chief Fire Officers' Association  
The Churches Main Committee  
The Crown Estate  
The District of Bolsover  
The Educational Institute of Scotland  
The Fire Brigades Union  
The National Federation of Demolition Contractors Ltd  
The National Federation of Roofing Contractors Ltd  
The NEC Group  
The Post Office  
The Royal College of Nursing Society of Occupational Health Nursing  
The Royal Institution of Chartered Surveyors (RICS)  
The Scottish Executive  
The Society of Chiropractors and Podiatrists  
The Society of Occupational Medicine  
The Society of Radiographers  
The University of Sussex  
THK Insulation  
Thomas Muir High School  
Thurrock College  
Tilbury Douglas Plc  
Trades Union Congress  
Transport and General Workers Union  
Trojan Metals Ltd  
UCATT  
UK Offshore Operators Association Limited

Union of Construction, Allied Trades and Technicians  
Union of Shop Distributive and Allied Workers  
UNISON  
United Kingdom Accreditation Service (UKAS)  
United Utilities Plc  
Universities and Colleges Employers Association  
Universities Safety Association  
University Hospital Birmingham NHS Trust  
Vauxhall Motors Limited  
W H Wesson (Fencing) Ltd  
W S Atkins  
Weld Lag (Preston) Ltd  
Welsh Local Government Association  
Welsh Office  
West Dunbartonshire Council  
West Sussex County Council  
Westminster City Council  
Wolverhampton Metropolitan Borough Council  
Woodside Primary  
Yorkshire & North East Region

### List of Abbreviations

ACMs	Asbestos Containing Materials
ACoP	Approved Code of Practice
ASLIC	Asbestos (Licensing) Regulations 1983 as amended
AWPD	Asbestos Worker Protection Directive
AWPD amendments	The amending Asbestos Worker Protection Directive 2003/18/EC
CAA	Civil Aviation Authority
CAW	Control of Asbestos at Work Regulations 2002
CD	Consultative Document
COSHH	Control of Substances Hazardous to Health Regulations 2002
DCU	De-contamination unit
The Directive	Directive 2003/18/EC of the European Parliament and of the Council of 27 March 2003 amending Council Directive 83/477/EEC on the protection of workers from the risks related to exposure to asbestos at work.
EC	European Commission
EP	European Parliament
ERM	European Reference Method
EU	European Union
GB	Great Britain
HSC	Health and Safety Commission
HSE	Health and Safety Executive
HSL	Health and Safety Laboratory
HSWA	The Health and Safety at Work etc Act 1974
MCA	Maritime and Coastguard Agency
RIA	Regulatory Impact Assessment
RPE	Respiratory Protective Equipment
STEL	Short Term Exposure Limit
TCs	Asbestos-containing textured decorative coatings
TWA	Time Weighted Average
UKAS	United Kingdom Accreditation Service
WHO	World Health Organisation

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# CONSULTATIVE DOCUMENT

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The full text of this and other Consultative Documents can be viewed and downloaded from the Health and Safety Executive web site on the internet:

**[www.hse.gov.uk/consult/](http://www.hse.gov.uk/consult/)**

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Consultative Documents are available from:

HSE Books, PO Box 1999  
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Tel: 01787 881165  
Fax: 01787 313995