

**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

<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

into UK legislation by 15 April 2006. The final form of the amending Directive is generally in line with the UK negotiating position.

- 2.3.7. Full compliance with the duty to manage, together with the requirements in the AWPD, 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 f/cm<sup>3</sup> 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 AWPD 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 AWPD. 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 AWPD 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 AWPD 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 AWPD 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 AWPDP 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 AWPDP 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) AWPDP 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 AWPDP. 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> £ million	<b>First year</b> £ million	<b>Annualised</b> £ million
<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 AWPD 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 AWPD 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 AWPD 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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