



# Asbestos: Medical guidance note

## Guidance Note MS 13

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance as illustrating good practice.

### INTRODUCTION

1 This Guidance Note supersedes the previous edition of MS13, published in 1999. Several notable changes have occurred since then. The Control of Asbestos at Work Regulations 1987, as amended by the Control of Asbestos at Work (Amendment) Regulations 1992 and 1998, have been replaced by the Control of Asbestos at Work Regulations 2002 (CAWR).<sup>1</sup> The 2002 Regulations are supported by three Approved Codes of Practice, *Work with asbestos insulation, asbestos coating and asbestos insulating board*;<sup>2</sup> *Work with asbestos which does not normally require a licence*;<sup>3</sup> and *The management of asbestos in non-domestic premises*.<sup>4</sup> The action levels and control limits for asbestos exposure quoted in the last edition of MS13 remain unchanged, but will be reduced before April 2006.

2 This Guidance Note informs appointed doctors and other health professionals with responsibility for and/or an interest in medical surveillance of employees exposed to asbestos, about the following:

- action levels and control limits;
- health effects;
- relevant doctors and the process of appointing doctors to conduct medical examinations;
- medical surveillance and the role of chest X-rays;
- notification of asbestos-related diseases;
- Social Security benefits;
- further information.

3 Asbestos is the name given to a group of naturally occurring fibrous minerals. There are several types.

Guidance Notes are published under five subject headings:

### Medical

Environmental Hygiene  
Chemical Safety  
Plant and Machinery  
General

Chrysotile ('white'), crocidolite ('blue') and amosite ('brown') are the most common, but fibrous actinolite, fibrous anthophyllite and fibrous tremolite may also be encountered. Chrysotile is in the serpentine group of asbestos minerals, the other fibres are in the amphibole group. These groups of asbestos fibres differ in their mechanical and chemical properties. The different types of asbestos can be found on their own or as a mixture with any of the other fibres. They cannot usually be identified by their colour alone. Where asbestos is affected by heat and chemicals or is combined with other substances, its colour and appearance can easily change.

4 UK legislation prohibits the importation, supply and use of virtually all asbestos products to which asbestos has been intentionally added. However, for a small number of applications where there are no substitutes, exceptions for the continued use of chrysotile were allowed until 1 January 2005. After that date, the Marketing and Use Directive effectively banned all use of chrysotile in the EU, except for research purposes.

5 In the past, asbestos was widely used by industry, for example in construction and shipbuilding. It was commonly used for insulation or fire protection purposes. Therefore, occupational exposure to the different asbestos fibres now mainly occurs during demolition, renovation or routine maintenance activities, mostly in the building trade. Research has shown that employee groups such as plumbers, electricians and IT technicians are at high risk of inadvertent contact with asbestos-containing products. Exposure to asbestos can also still occur during the remaining but very limited manufacture, installation and use of products containing chrysotile

asbestos. In the UK, examples of asbestos use have included:

- insulation material for buildings, boilers and pipes;
- insulating board for protecting buildings and ships against fire;
- asbestos cement for roofing sheets and pipes;
- yarn or cloth for protective clothing;
- resins for vehicle clutch faces and brake linings;
- gaskets or filters operating under severe conditions.

6 Many work activities with asbestos have the potential to expose workers to high concentrations of asbestos fibres if not adequately controlled. Some activities can also contaminate the surrounding area.

## ACTION LEVELS AND CONTROL LIMITS

7 Action levels and control limits for asbestos exposure are given in CAWR<sup>1</sup> and in the Approved Code of Practice, *Work with asbestos insulation, asbestos coating and asbestos insulating board*,<sup>2</sup> and are shown below in paragraphs 9 and 11 respectively. Further information on sampling and counting of asbestos fibres can be found in *Asbestos: Exposure limits and measurement of airborne dust concentrations*<sup>5</sup> and *Asbestos fibres in air: Sampling and evaluation by Phase Contrast Microscopy (PCM) under the Control of Asbestos at Work Regulations*.<sup>6</sup>

### Action levels

8 Action levels apply to exposure in the longer term and are cumulative exposures calculated over any continuous 12-week period. The 12-week period should not be chosen to avoid exceeding an action level, it should represent a 'worst case' for the work being done.

9 Certain regulations (including regulation 21: Health records and medical surveillance) are only triggered when action levels are exceeded. The action levels are:

- where the exposure is solely to chrysotile, 72 fibre-hours/ml of air;
- where exposure is to any other form of asbestos, either alone or in mixtures, including mixtures of chrysotile with any other form of asbestos, 48 fibre-hours/ml of air; or
- where both types of exposure occur separately during the 12-week period concerned, a proportionate number of fibre-hours per millilitre of air.

10 Further explanation of the calculation technique for separate exposures is given in *Asbestos: Exposure limits and measurement of airborne dust concentrations*.<sup>5</sup>

### Control limits

11 Control limits do not represent safe levels of exposure. If they are exceeded, despite the use of other control measures, the employer is required to provide employees with suitable respiratory protective equipment (RPE). This RPE should reduce exposure to as low a level as is reasonably practicable, and in any case below the control limits. Failure to comply with control limits or to reduce exposure to the minimum reasonably practicable

may lead to enforcement action. The control limits are:

- for chrysotile alone:
  - 0.3 fibres/ml of air averaged over any continuous period of 4 hours;
  - 0.9 fibres/ml of air averaged over any continuous period of 10 minutes;
- for any other form of asbestos either alone or in mixtures, including mixtures of chrysotile with any other form of asbestos:
  - 0.2 fibres/ml of air averaged over any continuous period of 4 hours;
  - 0.6 fibres/ml of air averaged over any continuous period of 10 minutes.

12 The current control limit for chrysotile of 0.3 fibres/ml still constitutes a fibre concentration of 300 000 fibres per m<sup>3</sup>. When the Council Directive 83/477/EEC<sup>7</sup> on the protection of workers from the risks related to exposure to asbestos at work, as amended in 2003 (2003/18/EC),<sup>8</sup> is transposed into national law (by no later than April 2006), the control limit will be reduced to 0.1 fibres/ml for all asbestos types.

## HEALTH EFFECTS

13 Inhalation is the usual route of exposure to asbestos fibres. The most common changes that asbestos exposure may cause, depending on the total dose received, are pleural plaques, pleural thickening, asbestosis, lung cancer and mesothelioma of the pleura and peritoneum. Asbestos-related diseases are of insidious onset and generally appear many years after first exposure. The initial diagnosis is often suspected by exclusion of other conditions in combination with past asbestos exposure. Inhalation may lead to secondary ingestion when mucus from the upper respiratory tract with asbestos fibres attached to it is coughed up and subsequently swallowed. It is unclear whether or to what extent this may be a factor in the development of peritoneal mesothelioma.

### Pleural plaques

14 Pleural plaques are discrete fibrous or partially calcified thickened areas, which arise from the surface of the parietal pleura and can be detected in chest X-ray or Computer Tomogram (CT) examination. Pleural plaques do not become malignant and do not normally cause impaired lung function.

### Diffuse pleural thickening

15 Diffuse pleural thickening may occur with or without prior effusion. It may or may not be associated with asbestosis. It is usually asymptomatic, but if extensive may cause signs and symptoms of a restrictive lung disorder.

### Asbestosis

16 Asbestosis is a fibrotic, interstitial lung disease resulting from inhalation of asbestos fibres. The diagnosis of asbestosis is essentially made by radiological examination (chest X-ray and/or CT scan). The correlation

between chest X-ray findings and decline in lung function, and possible subsequent decline in cardiopulmonary performance, is poor. Fibrosis usually begins in the bases of the lower lobes. Clinical features include basal crackles on auscultation and cough (dry or with sputum production). When the asbestosis progresses, the individual may also start to complain about exercise dyspnoea. Finger clubbing may be present in more severe cases. Diagnosis is usually based on detection of late inspiratory crackles, positive work history for asbestos exposure and X-ray appearances, and may need to be supported by more specialised investigations.

17 Asbestosis is irreversible and can progress even after exposure to asbestos fibres has stopped. It is generally accepted that the development of clinically relevant asbestosis requires a cumulative fibre dose in the range of 25-30 fibres/ml air over many years of exposure. Such fibre loads are no longer encountered and as a consequence, clinically relevant asbestosis with significant impairment in lung function should become rare in the future.

### Lung cancer

18 Workers exposed to asbestos have an increased risk of developing lung cancer. Smoking increases the risk further. These two risk factors combined appear to have an effect that is greater than the sum of the individual increases of risk from smoking or asbestos exposure alone. This may also be influenced by the inhaled asbestos fibre dose and smoking habit. Ex-smokers show a significantly lower excess risk than current smokers. Smokers should therefore always be encouraged to stop smoking to greatly reduce their risk of developing lung cancer. Lung cancer induced by asbestos exposure is indistinguishable from that caused by other agents.

### Mesothelioma

19 Malignant mesothelioma is a tumour arising from the cells of the pleura, pericardium or peritoneum. The development of mesothelioma is so strongly associated with exposure to asbestos that in most cases it can be considered a signal tumour indicating past asbestos exposure. However, it is estimated that in the UK up to 50-100 cases of 'spontaneous' mesothelioma could occur in the general population without prior occupational asbestos exposure. Smoking does not influence the risk of mesothelioma. Early symptoms such as weight loss, fever and night sweating are often vague. Chest pain, breathlessness on exertion and/or pleural effusion are frequently present at the time of diagnosis. Peritoneal mesothelioma may result in abdominal discomfort, a change in bowel habit and weight loss. Radiological appearances vary with the stage at which the tumour is first detected and whether or not it is associated with effusion. Investigation may require invasive techniques, both for diagnostic and staging purposes.

### Cancers at other sites

20 Although an association between cancers of the larynx and gastrointestinal tract (colo-rectal) and exposure to asbestos has been suggested, data from relevant studies have not shown a consistent picture.

## RELEVANT DOCTORS AND THE PROCESS OF APPOINTING DOCTORS TO CONDUCT MEDICAL EXAMINATIONS

21 Employees exposed to asbestos above the action level must be placed under adequate medical surveillance by a relevant doctor in accordance with CAWR. A relevant doctor is an Employment Medical Adviser, ie a medical inspector from the Health and Safety Executive (HSE), or an appointed doctor. In practice, the Employment Medical Advisory Service (EMAS) of HSE will usually appoint a doctor outside HSE to conduct this medical surveillance. The appointed doctor is therefore acting as an agent for HSE. However, the appointed doctor is entirely responsible for any contractual arrangements with the employer.

22 Appointment as an appointed doctor under the Regulations requires an application in writing to the local EMAS office using the forms FODMS38A and B. Both the employer and the medical practitioner are required to provide information on these forms. The forms can be obtained from your local EMAS office or downloaded from HSE's website ([www.hse.gov.uk](http://www.hse.gov.uk)) under 'Forms' and 'Health Services'.

23 Usually EMAS will require the practitioner requesting appointment to have a minimum level of training in occupational medicine, such as the Diploma in Occupational Medicine course, but in any case the practitioner will have to provide satisfactory evidence of sufficient knowledge and competence. Applications are always judged on their own merit. However, appointment is at the discretion of EMAS. Local EMAS offices can provide names of doctors who already hold appointments under CAWR.

## MEDICAL SURVEILLANCE

24 Medical surveillance should consist of initial and periodic medical examinations. Both should include a specific examination of the chest and any laboratory tests or chest X-ray as the doctor may require. The purpose of medical surveillance is to:

- advise the employee on fitness for work with asbestos (with particular attention to the respiratory system);
- provide objective information to the employee on their current state of health (with particular attention to the respiratory system);
- alert workers to early signs of disease and advise on continued exposure;
- alert the employer to any particular problems which may require provision of a special respirator.

*Note:* Legally, the medical examination is not a general fitness for work examination and the employer may need to consider a fitness examination beyond CAWR to comply with other legal obligations. For further details see paragraphs 32-36.

25 Medical surveillance specifically provides the opportunity to warn employees of the increased risk of lung cancer from the combined exposure of smoking and asbestos. The need for employees to use available

control measures and follow good work practices can be emphasised. In addition, affected workers can be informed of Social Security benefits which might be applicable. It also offers the employee the opportunity to ask the appointed doctor for advice regarding any concerns they may have.

### Initial medical examination

26 The first medical examination should be conducted no more than two years before beginning exposure to asbestos above the action level. It should as a minimum include:

- a medical and occupational history;
- completion of a respiratory symptom questionnaire;
- physical examination with emphasis on the respiratory system;
- measurement of lung function – at least FEV<sub>1</sub>, FVC.

27 A full size PA chest X-ray should only be part of the examination if justified on clinical grounds (see paragraphs 28-31).

### Use of ionising radiation

28 Under the Ionising Radiation (Medical Exposure) Regulations 2000,<sup>9</sup> any medical practitioner who is considering applying ionising radiation for health screening or other purposes on humans, is obliged to make a judgement about the individual net benefit of that examination. This means that the *routine* taking of a chest X-ray at the first and every subsequent two yearly medical examination is no longer justified. Therefore, the appointed doctor has to base the decision on whether to perform a chest X-ray specifically in respect of CAWR, on individual clinical grounds for every employee at every consecutive medical examination.

### Justification for the use of ionising radiation

29 In justifying the indication for a chest X-ray on individual clinical grounds the appointed doctor should note that:

- the latency time between asbestos exposure and the development of benign changes, in particular asbestosis, is usually more than 15-20 years;
- asbestosis is essentially a radiological diagnosis. In early stages, without any lung function impairment, it will have no impact at all on general fitness for work. Asbestosis may still progress even when employees are withdrawn from further exposure to asbestos fibres;
- the development of clinically relevant asbestosis is associated with exposure to very high fibre burdens. Under most current exposure situations these are unlikely to occur. Other than for compensation purposes, the diagnosis of early asbestosis without any signs of lung function impairment does not provide a clinical benefit for the employee. It simply confirms past asbestos exposure. The CAWR medical examination is not specifically intended to cover Social Security benefits or compensation claims;
- based on the long latency period between exposure

and the development of any radiological signs of asbestosis, a 'clear' chest X-ray may unintentionally suggest to employees that their current working practices are satisfactory. In fact this may not be the case;

- chest X-rays are not a suitable screening tool for the potential malignant consequences of asbestos exposure. The average latency time from first exposure for mesothelioma is approximately 35-40 years, with a variance of 15-67 years. The latency period for lung cancer is probably no different than the development time for lung tumours from other causes and is estimated at 20-40 years;
- treatment options for mesothelioma are limited and currently the disease still carries a poor prognosis. This also applies generally to lung cancer;
- statutory medical examinations are only required for asbestos exposed workers while in employment. At the moment there are no provisions for regular examinations after employment has ceased. People who are liable to be exposed to asbestos as their main occupation, such as asbestos strippers, will only rarely remain in that occupation for their entire career. Therefore any signs of ill health could develop after they have left their employment.

### Indication for chest X-ray examination

30 The decision to perform a chest X-ray is the appointed doctor's. However, HSE recommends sensible restraint in performing chest X-rays. Due to the long latency period between exposure to asbestos and the potential radiological manifestation of pathology, a chest X-ray taken early during exposure will only reveal limited useful information. Individuals who have been under regular medical surveillance, including regular chest X-ray, may be distressed if the chest X-ray is no longer performed on a routine basis. It is up to the appointed doctor to decide whether or not this distress or anxiety constitutes sufficient justification to perform a chest X-ray.

31 If the appointed doctor is of the opinion that a chest X-ray is justified on clinical grounds, the reasons for this decision should be clearly documented in the medical record for future reference. The employer must pay the costs of the chest X-ray and any other investigations the appointed doctor may require.

### Certificate of examination (FODMS72A) and fitness for work

32 An employee may present with a history of pre-existing respiratory disease such as asthma, evidence of impaired lung function or radiological abnormality. In these cases, consider whether any degree of disablement precludes the use of RPE and whether it is appropriate to add risk of further insult to pre-existing disease.

33 Under CAWR the examining doctor can only **advise** employees about their health. The Regulations do not provide the option to issue certificates of unfitness to the employer and suspend employees from work with asbestos, as is possible with other statutory examinations. As a consequence, the certificate of examination does **not** constitute a fitness for work verdict for work with asbestos.

34 However, the employer may have to consider other relevant legislation regarding general fitness for work. This may be particularly relevant for the work circumstances encountered in asbestos stripping. This typically takes place in specially constructed enclosures, with controlled exchange of air and strict decontamination procedures intended to reduce the exposure to and spread of asbestos. The employee may encounter hot and/or strenuous work or work at height with the risk of falling. Diseases with impaired cardiopulmonary performance (eg heart disease, exercise-induced asthma), impaired equilibrium or the presence of diseases which might suddenly incapacitate the employee (eg unstable diabetes mellitus, epilepsy, psychiatric diseases), could constitute contraindications for these environmental work requirements.

35 Work inside an asbestos enclosure almost always requires the use of RPE. The employee must be suitably fit to use it. The 'technical fitness' of an employee to achieve a proper face-fit, ie a proper seal between the mask and the skin, will already have been assessed. However, this face-fit test does not take any general physical or mental health abilities into consideration regarding the employee's suitability to work with RPE.

36 If the examination under CAWR reveals the presence of any potentially limiting health conditions, it would be prudent for the appointed doctor to contact the employer and discuss the general conditions of work in more detail. A decision should then be reached on whether a general fitness assessment is required in addition to the CAWR medical examination. This approach could also be relevant when the appointed doctor has advised the employee under CAWR that in their opinion they are not fit to work with asbestos. It should be noted that the rules of medical confidentiality apply.

#### **Periodic medical examination**

37 Periodic medical examinations are identical to the first examination and must be conducted at intervals of not more than two years while exposure above the action level continues. This interval may be shortened at the discretion of the doctor. For example, if there are clinical indications of lung disease or if the doctor considers it necessary for other reasons. If an individual shows symptomatic, spirometric or radiological evidence of lung disease, further specialist investigation may be warranted.

#### **Records**

38 Employers have to maintain a health record for all employees exposed to asbestos above the action level. The details that a health record must contain are reproduced in Appendix 1 from the Approved Code of Practice to regulation 21 of CAWR, paragraph 193.<sup>2</sup> This health record should be kept in a suitable form for at least 40 years from the date of the last entry.

39 Following examination, the doctor must issue **both** the employer and the employee with an **original** 'Certificate of Medical Examination' (FODMS72A), confirming that the examination has taken place and the date it was conducted. This is aimed at reducing the

number of fraudulent certificates in circulation. Employers must keep the certificate, or a copy, for at least 40 years from the date it was issued.

#### **Asbestos worker database**

40 A research team within HSE uses the information from the CAWR medicals for epidemiological research into asbestos-related diseases. The appointed doctor records certain non-medical information about work practices and smoking habits on the medical surveillance form (FODMS75) during the course of each worker's medical examination. The epidemiological research team will request the return of all completed FODMS75 forms from appointed doctors twice a year (forms completed during the first six months of the financial year will be requested in autumn and forms for the second six months in spring). Information collected on FODMS75 forms is recorded in the Asbestos Worker Database (AWD) and workers are flagged with the National Health Service Central Register (NHSCR). The latter permits notification of any deaths and cancer registrations as and when they occur.

41 In order that HSE and appointed doctors comply with the Data Protection Act 1998, all workers are given the opportunity to opt out of the epidemiological research. It is important that appointed doctors draw the attention of all workers they examine to paragraphs 10-14 on the reverse of the current certificate of examination (form FODMS72A, version 01.2003). Any worker wishing to opt out of HSE's research should sign the declaration and give this to the appointed doctor. FODMS75 forms are not completed for such individuals. Supply of minimal, basic information on the reverse of the FODMS72A to HSE by those wishing to opt out is voluntary. However, workers should be encouraged to allow appointed doctors to pass this information on to the research team. This will allow monitoring of the number of workers opting out and identification of any workers who have been previously included in the research without consent (as a result of previous examinations), and take appropriate action to exclude them. It is important that as many workers as possible take part in the research.

#### **Providing information about medical certificates to HSE or local authority inspectors or employers**

42 HSE has become aware that certificates of examination are being forged. Therefore, inspectors from HSE or the local authority or employers may contact appointed doctors to verify that certificates of examination are authentic. Confirmation that an individual has been examined on a certain date is not considered medically confidential information as it merely indicates the authenticity of a certificate required by statute. The appointed doctor should therefore co-operate with any requests for authentication.

#### **Incidental exposure**

43 Employers or employees may on occasion approach the appointed doctor for advice when a suspected incidental exposure to asbestos fibres has occurred. While any concern from the potentially exposed person(s) is understandable, it is important to be able to give

objective advice based on the exposure circumstances. If at all possible, the appointed doctor should try to ascertain the type of asbestos, the duration and type of the work, any RPE/personal protective equipment (PPE) worn and, if available, the results from any air measurements. This information will usually help to make an estimate about the likely exposure dose. This can then be used to make a rough estimate of any potential increase in cancer risk. The possible increase in cancer risk from a short and low dose exposure is unlikely to be significant.

44 It is important to remember that the diameter of asbestos fibres is several magnitudes below the resolution capability of a chest X-ray. Therefore, there is no reason to subject individuals with an incidental asbestos exposure to a dose of ionising radiation, even if this is very small in the case of a chest X-ray. It also takes many years before any effects from asbestos exposure become visible in an X-ray. HSE therefore recommends that the employer investigates any incident and that the employee requests their GP to make an entry in their medical record for future reference. Further medical examinations are not usually beneficial. For asbestos workers, any abnormal exposure situation beyond their normal exposure assessments should be documented in the health record kept by the employer.

#### **NOTIFICATION OF ASBESTOS-RELATED DISEASES**

45 Asbestosis, lung cancer and mesothelioma in employees exposed to asbestos are notifiable diseases under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR). Employers are responsible for reporting these diseases when they receive written confirmation of the diagnosis from a registered medical practitioner and the employee concerned is currently employed in an associated work activity. Further information can be found in a free HSE booklet *RIDDOR Information for doctors*.<sup>10</sup>

#### **SOCIAL SECURITY BENEFITS**

46 Individuals with pleural thickening, asbestosis, lung cancer or mesothelioma may be able to claim Industrial Injuries Disablement Benefit. They should seek guidance from offices of the Department for Work and Pensions about their eligibility for benefit arising from previous exposure to asbestos. Completed claim forms should be supported by a letter from the relevant doctor.

#### **FURTHER INFORMATION**

47 Further information on risk assessments, the licensing regime for work with asbestos, statistical information on asbestos-related ill health or HSE's programme of work, can be found in HSE's asbestos web page at: [www.hse.gov.uk/asbestos/index.htm](http://www.hse.gov.uk/asbestos/index.htm).

#### **APPENDIX 1: CONTENT OF A HEALTH RECORD**

The employer must keep a health record for any employee who is exposed above the action level. The health record must be kept for 40 years in a safe place and should contain at least the following information:

- (a) the individual's surname, forenames, sex, date of birth, permanent address, postcode and National Insurance number;
- (b) a record of the types of work carried out with asbestos and, where relevant, its location, with start and end dates, with the average duration of exposure in hours per week, exposure levels and details of any RPE used;
- (c) a record of any work with asbestos prior to this employment of which the employer has been informed; and
- (d) dates of the medical examinations.

## REFERENCES

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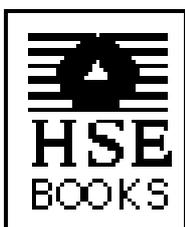
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