



COMMISSION OF THE EUROPEAN COMMUNITIES

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COMMUNICATION FROM THE COMMISSION

**ON THE RESULTS OF THE
ASSESSMENT PROVIDED FOR IN THE COUNCIL DIRECTIVE ON THE
PROTECTION OF WORKERS FROM THE RISKS RELATED TO
EXPOSURE TO ASBESTOS AT WORK**

S U M M A R Y

Asbestos is a particularly hazardous agent which can cause serious illness and which is found in various forms in a large number of circumstances at work. To combat these dangers the European Council adopted in September 1983 a Directive 83/477/EEC¹ on the protection of workers from the risks related to exposure to asbestos at work, which was subsequently updated and amended by Council Directive 91/382/EEC².

Article 9(1) provides for the review of the provisions of the Directive by 31 December 1995 "taking account in particular of progress made in scientific knowledge and technology and of experience gained in applying the Directive".

Following the analysis of the implementation of Council Directive 83/477/EEC, as amended by Council Directive 91/382/EEC, and on the basis of consultations with the Member States of the European Union, the Commission considers that the measures provided for by the existing Community legislation are still demonstrating their validity in the global framework of the protection of the health of workers exposed to asbestos; as stressed before, the Council Directive 90/394/EEC on the protection of workers exposed to carcinogens, which lays down protection measures which are sometimes more stringent, completes incisively at some points the Asbestos Directive. Consequently a thorough revision of Directive 83/477/EEC would be necessary only after a radical change in policy on the marketing of products containing asbestos, in other words if it were decided at Community level to extend prohibition of the use of asbestos.

¹ JO L 263, 24.9.1983, p. 25

² JO L 206, 29.7.1991, p. 16

1. Introduction

Asbestos is a particularly hazardous agent which can cause serious illness and which is found in various forms in a large number of circumstances at work. To combat these dangers the European Council adopted in September 1983 a Directive 83/477/EEC¹ on the protection of workers from the risks related to exposure to asbestos at work, which was subsequently updated and amended by Council Directive 91/382/EEC².

Article 9(1) provides for the review of the provisions of the Directive by 31 December 1995 "taking account in particular of progress made in scientific knowledge and technology and of experience gained in applying the Directive".

In addition, Article 7(1) provides at the same time for a review of the reference method for the measurement of asbestos in the air, described in Annex I, "with a view to establishing a single method for measurement of asbestos-in-air concentrations at Community level".

This Communication refers to the above reviews.

2. Overview on asbestos

Mineralogical details

The term asbestos refers to a group of fibrous, microcrystalline hydrated silicates, of varying chemical composition. The four main types of asbestos are:

- chrysotile or white asbestos
- crocidolite, or blue asbestos

¹ JO L 263, 24.9.1983, p. 25

² JO L 206, 29.7.1991, p. 16

- amosite
- anthophyllite.

There are two main mineralogical groups of asbestos: serpentine asbestos, comprising chrysotile, and amphibole asbestos comprising crocidolite, amosite and anthophyllite.

Chrysotile fibres vary in length up to 5 cm; crocidolite fibres can be up to 8 cm in length. Asbestos fibres are generally much smaller in diameter than other mineral or vegetable fibres, and therefore have a high length/diameter ratio. The respirable fibres, which are considered liable to induce biological effects, are usually fractions of bigger fibres, with a length of more than five micrometres and a length/breadth ratio greater than 3:1.

When fibres small enough to enter the respiratory airways are inhaled, they are further split into their component fibrils, 350 angstroms or so in diameter in the case of chrysotile and somewhat larger with amosite or crocidolite.

Its fibrous structure and chemical composition give asbestos unique properties: it is resistant to abrasion, high temperatures and corrosive chemicals, and, because of its low electrical and thermal conductivity, it is fireproof.

Uses

Asbestos was widely used in the past because of its physical and chemical properties and because of its relative cheapness.

It has been claimed that there are over 3 000 uses for asbestos, although this has never, in fact, been properly documented. Its main uses have included:

1. Asbestos-cement sheets and wall boards (buildings, work surfaces, housings and electrical equipment)
2. Asbestos-cement pipes (water, gas, special fluids, sewage)
3. Asbestos thread (textiles, tape, seals, friction disks, flexible hose, etc.)

4. Asbestos cloth (mattresses, sheeting, clothing, gloves, conveyor belts, etc.)
5. Asbestos felt (noise insulation)
6. Asbestos card (insulation, coating, cladding, etc.).
7. Asbestos board (flameproof cladding, seals for chemical containers, etc.)
8. Raw asbestos (mixed with other substances for insulation).

At present the biggest use of asbestos remains in the production of asbestos-cement pipes. Most other uses have been replaced.

Substitutes

Asbestos is difficult to replace and each new technology of substitution necessitates expense and research.

Because no natural mineral fibres are as readily utilised as asbestos, until a few years ago efforts to find a substitute were therefore confined to man-made fibres. It may seem illogical, from the safety angle, to replace a fibrous material such as asbestos with a fibrous equivalent, but only fibrous structures give materials refractory and abrasion resistance properties.

Indeed a 1993 WHO Environmental Health Criteria Report (IPCS - International Programme on Chemical Safety) recommends that "all fibres which are respirable and biopersistent must undergo testing for toxicity and carcinogenicity. Exposure to these fibres should be controlled to the same degree as required for asbestos until data are available supporting a less degree of control".

For some years now, interest has focused on a number of chemicals capable of producing a compact non-fibrous material, which is particularly useful for thermal and noise insulation. However, more is known about man-made mineral fibres (MMMMF) and their industrial applications are tried and tested. Examples are mono- and polychrySTALLINE glass fibres. In general two categories are distinguished: insulating wool (glass wool, rock wool, slag wool) and refractory fibres (ceramics and alumina).

There is still some doubt as to the health risk posed by man-made mineral fibres for workers exposed to them, and epidemiological studies are not conclusive at present. The activities intended to classify MMMF at Community level, in the framework of the Directive 67/548/EEC³, are in progress (see 6.a).

3. Asbestos-related diseases

The group of diseases known to be caused by asbestos includes pulmonary and pleural fibrosis and cancer of the lungs, pleura and peritoneum.

- Diffuse interstitial fibrosis of the lung (or asbestosis) has been associated with exposure to asbestos from the 1930s; it is a chronic progressive disease leading to respiratory failure which can cause death.

The development of asbestosis depends chiefly on the quantity of fibres inhaled, which is related to the intensity and duration of exposure. Smoking seems to aggravate the biological action of asbestos.

- Lung cancer, which can occur many years after exposure (latency up to 20 years), is the second most frequent cause of death due to asbestos exposure.

There is no comparative scale of the lung cancer risk associated with the different types of fibre; however, recent studies have shown that amphibole-type fibres are more harmful than chrysotile. The incidence of lung cancer is also dose-related; in epidemiological terms, the more fibres inhaled, the higher the incidence.

The combined effect of cigarette smoking and exposure to asbestos is one of the better studied examples of the synergy of occupational factors and personal habits; for smoking/asbestos relationships, the most accredited is the multiplicative model. Taking into account that smoking by itself causes a

³ JO 196, 16.8.1967, p. 1

major increase in lung cancer, scientific data seem to demonstrate that in a worker who smokes and who is also exposed to asbestos that already high risk is enormously increased, one in five death being attributable to lung cancer.

- Cancers of the pleura and peritoneum (or mesothelioma) generally take longer to appear after initial exposure than tumours of the lung (over 25 years in some cases). That means that in the following ten years we will continue to be faced to the results of the higher levels of asbestos concentration in the air existing before the adoption of the 83/477/EEC Directive.

In general, epidemiologically, the risk levels seem to be, in descending order, crocidolite and amosite (two amphibole types of asbestos), followed by chrysotile and anthophyllite (another amphibole).

The existence of a dose response relationship for mesothelioma is less evident and open to debate, mainly because the assessment of the effect of low doses of asbestos on the induction of this type of cancer lends itself to considerable uncertainties.

4. Community legislation

Asbestos, with no distinction between the various types, is listed in Annex I of the Council Directive 67/548/EEC "on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances", and classified as a "Category 1 carcinogenic agent" with the phrase risk R45.

A substantial body of legislation has been adopted by the Council, on the basis of proposals from the Commission, to limit the health risks of exposure to asbestos, and a strategy of protection has been put in place at several levels:

- restriction of entry onto the market of asbestos and products containing it and of its use (Council Directive 83/478/EEC⁴ and 85/610/EEC⁵; Commission Directive 91/659/EEC⁶).
- reduction of the exposure levels as well limitation of use at workplace (see below)
- prevention and reduction of environmental pollution, including control on wastes containing asbestos (Council Directives 78/319/EEC⁷ and 87/217/EEC⁸)
- rules for import/export of certain dangerous chemicals, among whose crocidolite (Council Regulation 1734/88⁹).

The Commission has launched studies on the asbestos industry and on the industries producing fibres which can substitute for asbestos. The Commission intends to review the present Directive on restrictions for marketing and use of asbestos on the basis of this work.

The actions carried out up to now in the field of environment, internal market and workers' protection are complementary, even if it must be stressed that the protection of workers exposed to the inhalation of asbestos fibres is not strictly speaking related to the policies concerning the restriction or prohibition of the use of products containing these fibres; in fact, even if, all use of asbestos were prohibited, some categories of workers would still be exposed to the inhalation of the fibres because products containing it would still be present (for example, asbestos-cement sheets, cladding, textiles, etc.) or because they were involved in maintenance or removal (e.g. renovation of buildings).

4 JO L 263, 24.9.1983, p. 33
5 JO L 375, 31.12.1985, p. 1
6 JO L 363, 31.12.1991, p. 36
7 JO L 84, 31.3.1978, p. 43
8 JO L 85, 28.3.1987, p. 40
9 JO L 155, 22.6.1988, p. 2

The Communication concerns particularly the protection of workers, which is specifically regulated at Community level by a) the Council Directive 83/477/EEC, as amended by the Council Directive 91/382/EEC, on the protection of workers from the risks related to exposure to asbestos at work and b) the Council Directive 90/394/EEC, on the protection of workers from the risks related to exposure to carcinogens at work.

- a) In view of the risks of exposure to asbestos, as described above, the Council Directive 83/477/EEC stresses the need for preventive measures and the commitment of the Member States. This Directive applies to all exposed workers, with the exception of those in sea or air transport.

It requires that in the case of any risk activity, the risk must be assessed "to determine the nature and degree of the workers' exposure" and that this assessment will be the subject of consultation with the workers and/or their representatives and "shall be revised where there is reason to believe that it is incorrect or there is a material change in the work".

The activities in which workers are or may be exposed are subject to a notification system administered by the responsible authority of the Member States. It is interesting to note that the Directive prohibits the application of asbestos by means of the spraying process as well the working procedures that involve using low-density insulating or soundproofing materials which contains asbestos.

One crucial measure is the establishment of exposure limit values. The Directive prescribes 0.6 fibres per cm^3 measured or calculated in relation to an eight-hour reference period for chrysotile, and 0.3 fibres per cm^3 for all other forms of asbestos, either alone or in mixtures, including mixtures containing chrysotile. A reference method and measurement procedure are laid down.

Although important, compliance with the limit value is only one of the many measures provided for in the Directive ; others include the restriction of the

numbers of workers exposed, appropriate design of work processes, proper cleaning of work areas, information, medical surveillance, etc.

Specific measures are also requested for workers involved in the demolition work or in work on removing asbestos and/or asbestos-containing products from buildings, structures, plant or installations or from ships.

The Directive allows employers not to apply certain provisions where the asbestos-in-air concentration is below 1/3 of the above limit values and/or lower than a cumulative dose of 12.00 fibre/days per cm³ over a three-month period for chrysotile and of 6.00 fibre/days for other forms of asbestos or mixtures.

- b) The Directive 90/394/EEC¹⁰ has as its aim the protection of workers against risks to their health and safety, including the prevention of such risks, arising or likely to arise from exposure to carcinogens at work.

As at the time of its adoption, asbestos was not yet classified and labelled at Community level as carcinogen, the Directive was not to be applied to workers exposed to these fibres.

Since 1991, when all forms of asbestos were classified as carcinogens in the framework of the Council Directive 67/548/EEC, the Directive 90/394/EEC is in principle to be applied also to the workers exposed to asbestos. As the Directive on asbestos is still in force, the Directive 90/394/EEC is to be applied only where measures are more stringent than in 83/477/EEC.

Among the provisions of the Directive 90/394/EEC which are to be considered, the principles of substitution of a carcinogen with a substance which is not dangerous or less dangerous to the health at workers has to be pointed out. This is the first measure that employers have to consider, when technically possible.

¹⁰

JO L 196, 26.7.1990, p. 1

This provision has to be analyzed very carefully in order to get enough knowledge of the substitute as far as its hazard for health is concerned; this exercise takes sometimes very long time, as it is demonstrated, for instance, by the current difficulties on the classification of man-made mineral fibres at Community level.

5. Other Community activities

The initiatives of the Commission have not been only concerned with legislation.

During the period prior to the adoption of the Directive 83/477/EEC, the Commission was advised on the need to stimulate the establishment of a mesothelioma register in those countries of the EEC where none exists, "in accordance with criteria and procedures agreed upon by a panel of pathologists".

In replying to this advice, the Commission set up in 1977 a Mesothelioma Panel comprising pathologists from each Member State whose main task was to standardize the pathological diagnosis of mesothelioma by exchange of information between members of national Panels.

This information has been made available in the publication "A colour Atlas of Mesothelioma", which illustrated the macroscopic and microscopic criteria for the diagnosis of mesothelioma. The Panel embarked also on a programme to explore new diagnostic methods, particularly of histochemical and immunohistochemical techniques which might assist pathologists in coming to concise conclusions, particularly with respect to small biopsy samples during life.

This Panel exists today and continues to be of assistance to national panels. However during 1996-1997 the Commission intends to redefine the mandate of the Panel to improve its role in relation to national registers.

This activity is complemented by the action currently carried out by the Commission on the harmonization of European statistics on occupational diseases.

This action was launched in 1991 and has culminated in 1995 with a pilot project covering 31 items of the European Schedule recognised in the year 1995 in all the Member States of the European Community. Among the 31 items are included:

- Asbestosis
- Mesothelioma following the inhalation of asbestos dust
- Complication of asbestosis in the form of bronchial cancer.

The evaluation of the data obtained in the pilot study will start in 1996. Although the main aim of this action is to reorientate future work in the field of comparable statistics in the European Community, the data obtained for the three above items will be extremely useful for setting the magnitude of the health hazard posed by asbestos.

"The Commission is currently funding a research proposal on mesothelioma within the Biomedical and Health Research Programme, which runs until 30 November 1996. Its title is "A Multicentric Case Reference Study on Malignant Mesothelioma, Environmental Asbestos Exposure and Risk Factors other than Asbestos", and it brings together 25 teams from Belgium, Denmark, Greece, Italy, Spain, Sweden and Switzerland".

6. Attitude of Member States

Between 1993 and 1994, the Commission organized two meetings with representatives of the Member States in order to discuss some points relevant to a possible second amendment of Directive 83/477/EEC. The following subjects were discussed:

- a) possibility of proposing a joint Directive on asbestos and man-made mineral fibres (MMMF),
- b) exposure limit values for asbestos,
- c) method for measuring the asbestos-in-air concentration at the workplace,
- d) prohibition on use.

A summary of the discussions is given below:

- a) The delegations were in general opposed to a joint Directive, mainly because of the difficulty of extending the Asbestos Directive, in its present form, to cover the wide variety of man-made mineral fibres and the prevention of the risks associated with them.

Many Member States have already introduced measures which apply specifically to workers exposed to MMMF, with occupational exposure limit values generally of around 1 fibre/ml for ceramic fibres and between 1 and 5 fibres/ml for the other fibres.

The results of discussions on the classification of man-made mineral fibres (Council Directive 67/548/EEC) are of particular interest to the Member States; after numerous postponements, because of the extended discussions, the Committee for Adaptation to Technical Progress created under Directive 67/548/EEC is not expected to take a decision on this classification until sometime in 1996. Pending this decision, however, some Member States have already classified MMMF as carcinogens, as a precautionary measure, on the basis of the classification adopted by the International Agency for Research on Cancer (IARC) in Lyon.

The delegations supported the involvement of the Scientific Committee for Occupational Exposure Limits to Chemical Agents, recently established officially by Commission Decision 95/320/EC¹¹ of 12 July 1995.

- b) Adherence to the occupational exposure limit values must be regarded as only one of the preventive measures to be taken, albeit an important one. According to the latest epidemiological findings, the level of protection provided for by Directive 83/477/EEC as amended by Directive 91/382/EEC still seems to be adequate, at least against the risk of asbestosis and lung cancer. For mesothelioma, there is no level which can be regarded as safe.

¹¹ JO L 188, 9.8.1995, p. 14

Some Member States apply values even lower than those specified in the Council Directive, i.e. between 0.15 and 0.5 fibres/cm³ for chrysotile and about 0.1 fibres/cm³ for amphiboles (see indicative table).

	Chrysotile	Other forms
Austria	0.15	0.15
Belgium	0.5	0.15
Denmark	0.3	0.3
Finland	0.3	0.3
France	0.3	0.1
Germany	0.15	0.15
Greece	1.0	0.5
Ireland	0.6	0.3
Italy	0.6	0.2
Luxembourg	0.6	0.3
Netherlands	0.3	0.1
Portugal	0.6	0.3
Spain	0.6	0.3
Sweden	0.2	//
United Kingdom	0.5	0.2
European Union (1991)	0.6	0.3

Table: Occupational Exposure Limit values for Asbestos in Member States (fibre/cm³)

- c) The method generally preferred for measuring fibres is the phase contrast optical microscope, as specified in Annex I of Directive 83/477/EEC. The electron microscope was preferred by one particular delegation, but although its use is more or less obligatory for concentrations below 0.2 fibres/ml, it has quite a number of disadvantages: technical (type of fibre not easily identifiable

if the microscope is not equipped with a spectrophotometer), economic (high cost of readings, approximately ECU 350 a time) and practical (limited availability both of the equipment itself and of personnel trained in its use).

Over the last two years, the Commission has collaborated on a project run by the World Health Organisation in Geneva to define a "Recommended method for the determination of airborne fibre number concentration by phase contrast optical microscopy (membrane filter method)" which could be used for all fibres, both natural and man-made, present in the atmosphere at the workplace.

The document, now being published, was approved by all the delegations and could therefore be used as a "single method for the measurement of asbestos-in-air concentrations".

- d) Prohibitions on use are clearly subject to the existing Council Directives (76/769/EEC¹², as amended in 1983 and 1985) relating to restrictions on the marketing and use of products containing asbestos. Irrespective of any development in this area (controlled use or prohibition with exceptions), many Member States already prohibit the use of asbestos almost entirely, with one or two specific exceptions (some countries adopted this policy as early as the 1970s).

The representative of Member States did not feel that it is necessary at present to prohibit more activities than those which are indicated in the existing Directive.

¹² JO L 262, 27.9.76, p. 201

CONCLUSIONS

Following the analysis of the implementation of Council Directive 83/477/EEC, as amended by Council Directive 91/382/EEC, and on the basis of consultations with the Member States of the European Union, the Commission considers that:

- the measures provided for by the existing Community legislation are still demonstrating their validity in the global framework of the protection of the health of workers exposed to asbestos; as stressed before, the Council Directive 90/394/EEC on the protection of workers exposed to carcinogens, which lays down protection measures which are sometimes more stringent, completes incisively at some points the Asbestos Directive. Consequently a thorough revision of Directive 83/477/EEC would be necessary only after a radical change in policy on the marketing of products containing asbestos, in other words if it were decided at Community level to extend prohibition of the use of asbestos. In this case the Directive might then concentrate in the specific and limited situation where it is likely that workers would still be exposed to asbestos.

The existing Directive requires that each employer assess the risk in the case of any activity likely to involve the risk of exposure to asbestos.

All employers may be concerned by this evaluation because the dangers of asbestos are not simply limited to workers in mines or in enterprises which manufacture asbestos products. They extend to workers manipulating such products and to workers who may unexpectedly encounter asbestos in buildings (or in products), for example electricians, plumbers and other service employees.

In fact there are several recent studies demonstrating that past exposure to asbestos in such categories of worker will regrettably and inevitably lead to illness.

The Commission has followed with interest the solutions found in certain Member States to this problem. These solutions involve employers or in some case proprietors of buildings with the obligation to search for the presence of asbestos in their premises.

The Commission believes that the approach offers certain advantages. On the other hand for small enterprises which may occupy older premises the procedures could be a financial burden.

The Commission invites Member States to reflect on this issue and intends to consider the necessity for Community action in a further review which it will carry out before the year 2000.

- as far as the occupational exposure limit values are concerned, more than half of the Member States have adopted figures up to 75% less than the "minimum requirements" prescribed by the Directive. Given that there is no agreement on the minimum exposure which can protect against lung cancer and mesothelioma the Commission intends to pursue a policy of further reduction to these limits. However, it has to be reiterated that these illnesses were in the main contracted before the 1983 Directive was in place and when levels of exposure were considerably higher. The benefits to health of even the first improvements in 1983 are not yet come to fruition, and the added benefit of further changes has to be assessed on the basis of modern scientific and technico-economic data.

Nevertheless, the Commission has undertaken a number of enquiries with interested parties which have suggested that a limit for chrysotile of 0.3 fibres/cm³ would be technically achievable.

At lower levels the method of measurement becomes inaccurate and would cause considerable technical difficulties. As indicated before, the advantages of such a diminution have yet to be fully evaluated scientifically, although without doubt a reduction in exposure must be considered advantageous.

The Commission will consult widely over the coming period in order to define the need for further change to the Directive and will be assisted by its Scientific Committee^{*)}.

*) This action by the Committee would be parallel to a analogous activity on values for man-made mineral fibres, which is planned to start soon.

For other forms of asbestos or for mixtures (including those with chrysotile) there is no obvious agreement on a suitable lower figure which is at the time scientifically valid and technically achievable although figures in Member States vary from 0.1 to 0.3 (the European Community existing value).

as soon as the current review is completed, the Commission will then take the appropriate steps during 1996-1997, in cooperation with Member States, to amend the Annex I (Reference method for measurement of asbestos in air) to this Directive to take into account the method adopted by the World Health Organisation. That would be made in accordance with the procedure described in Articles 9 and 10 of Council Directive 80/1107/EEC¹³ (adaptation to technical progress).

¹³ JO L 327, 3.12.1980, p. 8

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