

VPD: Hearing Draft for Asbestos 1982

THE NORWEGIAN PETROLEUM DIRECTORATE

GUIDELINES FOR
ASBESTOS
AND PRODUCTS CONTAINING ASBESTOS

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FOREWORD

The Work Environment Act has stipulated that toxic and other materials that are injurious to health shall not be used if they can be substituted with materials that are less dangerous to the employees. Moreover, it gives the Norwegian Petroleum Directorate authority to prohibit health-hazardous materials/products from being used or stored on the installations, as well as the authority to stipulate further provisions regarding the use or production of a given material.

On the basis of occupational experience with regard to exposure to fibrous asbestos materials, the Norwegian Petroleum Directorate has placed a general ban on the use of asbestos or materials containing asbestos.*

According to the Work Environment Act § 22, any physician treating an employee suffering from an occupational illness of the same standing as occupational injury according to the National Insurance Act § 11.4, or another illness which the physician attributes to the employee's situation at work, shall report this in writing to the Norwegian Petroleum Directorate.

This publication explains the Norwegian Petroleum Directorate's requirements for a responsible handling of asbestos and materials containing asbestos in those cases where the Directorate has granted exemption from the ban on the use of asbestos. The terms of a possible exemption are further described under the main item: EXCEPTIONS FROM THE BAN ON THE USE OF ASBESTOS.

* Stipulated in the Resolution of 27 March 1980 (OD/5340/UPU),¹ by authority of § 11 in the Work Environment Act.

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ABOUT ASBESTOS AND PRODUCTS CONTAINING ASBESTOS

What is asbestos?

Asbestos is a common term for a number of silica minerals with a needle-like or fibrous structure. Asbestos is divided into the main groups Serpentine and Amphibole, named after the rock in which asbestos is found.

Serpentine asbestos (white, grey, green or yellowish) consists of magnesium silicates, while amphibole asbestos constitutes five main types consisting of different mixtures of iron, sodium, magnesium and calcium silicates. The most important asbestos types within the amphibole group are crocidolite (blue asbestos) and amosite.

Asbestos' technical characteristics

Asbestos has a number of valuable characteristics, such as great mechanical strength, chemical constancy, durability against high temperatures and good heat insulation characteristics. It combines readily with a number of inorganic and organic agents and its fibres are easily separated and spun.

Uses of asbestos

Asbestos is included in products and processes in free as well as composite form. Asbestos is used particularly in the form of panels, cloth or thread for insulating against high temperatures.

In other areas asbestos is used partly for its thermic, chemical or fibrous characteristics.

On offshore installations asbestos has had a certain widespread use as:

- insulating materials in roofs and wall panels.
- heat shields, for example in welding, flame cutting etc.
- flexible links between air ducts
- gaskets
- electrical insulating materials
- additive in drilling mud
- asbestos mats with heating wires for heating welding areas.

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ABOUT EXPOSURE TO ASBESTOS AND DANGER OF INJURY TO HEALTH OR
OCCUPATIONAL ILLNESS

Changes in the chest membrane

A thickening or calcification of the chest membrane (so-called "pleuraplaques") may occur due to long-lasting exposure to asbestos. The changes can only be detected with the aid of an X-ray examination, but they may also occur without showing up on X-rays. The changes in the chest membrane will usually not entail any discomfort and may be the only sign of previous asbestos exposure.

Asbestosis

Asbestosis is a pneumoconiosis due to inhalation of asbestos particles. The illness develops gradually after many years of exposure to the particles (10-20 years) and is caused by the increased formation of tissue in the lungs. The main symptom is a increasing difficulty in breathing. The functioning of the lungs will eventually decline. Serious cases may result in disability and death. The changes in the lung membrane may be detected by X-ray examination; but asbestosis may be prevalent even if such changes in the lung membrane are not detected by X-ray examination.

The diagnosis of asbestosis in the lungs and chest membrane must in some cases be based on information on occupational exposure to asbestos particles, evaluation of the effects of asbestos particles, clinical examination, examination of how well the lungs are functioning and X-ray examination.

Lung cancer

probably more
likely
with
Surveys have shown that asbestos workers are more exposed to lung cancer than other workers. This applies particularly to smokers exposed to asbestos particles.

Mesothelioma

This is a rare form of cancer of the chest membrane and/or peritoneum. It has been shown that this type of cancer may develop from long-term exposure to asbestos, but it may also develop after a short (a few weeks), intense exposure. There may be a long interval (15-40 years) between asbestos exposure and the first symptoms of mesothelioma.

Other forms of cancer

Asbestos is in the public eye as a possible causal factor in a number of other forms of cancer, particularly in air passages and stomach/intestinal tracts.

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BAN ON THE USE OF ASBESTOS

Generally prohibited

It is prohibited to use asbestos or materials containing asbestos as an additive during the different operations and processes during drilling, completion work or production of oil and gas.

It is further prohibited to use asbestos or materials containing asbestos in the following insulation work:

- electrical insulation
- thermal insulation — ?
- noise insulation
- damp insulation
- construction panels for indoor/outdoor insulation.

Special prohibition against the use of blue asbestos (crocidolite)

It is not permitted to use blue asbestos in pure form or as an additive to products where the production process or use of the product may cause, release asbestos particles into the air.

Personnel who are not to be exposed to asbestos particles

Persons with chronic illnesses in the lungs, air passages or heart, shall not be exposed to asbestos particles.

Note:

Special attention should be paid to the fact that smokers exposed to asbestos particles run a high risk of developing lung cancer.

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EXCEPTIONS TO THE BAN ON THE USE OF ASBESTOS

Asbestos shall always be replaced by products that are not a health hazard when possible.

If substitute materials for asbestos cannot be obtained or used, and the work operation is vital to operations, the Norwegian Petroleum Directorate may grant exemptions from the ban on the use of asbestos.

The criteria for a possible exemption will be that the operator has prepared a written procedure for ensuring that the work will be executed according to the guidelines drawn up by the Directorate in this guide, as well as in accordance with the general occupational hygiene norms.

This procedure, together with comments from the Working Environment Committee/Safety Delegate, shall be submitted to the Norwegian Petroleum Directorate together with the application for exemption. The procedure shall ensure that the instructions drawn up by the Directorate for the safe handling of asbestos and products containing asbestos* are incorporated in the operator's instructions and plans for the execution of the work.

* See page .

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SAFE HANDLING OF ASBESTOS AND PRODUCTS CONTAINING ASBESTOS

Product requirements

Products containing asbestos where asbestos constitutes a minor ingredient bound to organic or inorganic substances, e.g. asbestos gaskets, brake linings etc., shall as far as possible be prefabricated and ready processed, eliminating as far as possible the need for subsequent cutting, drilling or other processing which causes the release of asbestos particles.

Where technically possible, materials used for insulation or gaskets/packings in pipe fittings shall not contain asbestos.

On existing installations, all materials containing asbestos and in need of repair or replacement shall, as far as technically possible, be replaced with asbestos-free materials.

Precautions for work with asbestos and products containing asbestos

The work supervisor is under obligation to obtain the necessary general understanding of the nature of the work and the materials that personnel will come into contact with, so that the work can be planned properly before it commences.

As far as technically possible, the work processes shall take place in closed systems. (7. SIKKING) (7. SIKKING)

As far as technically possible, asbestos shall be impregnated/moistened before and during processing work.

Dust containing asbestos shall be removed at or near the spot where it develops, with the aid of a spot vacuum system. Air from the vacuum system shall be expelled into the atmosphere after the necessary cleansing.

The work area shall be cleaned daily after working hours. Cleaning is to be carried out with a filtered vacuum cleaner.*

On emptying the vacuum cleaner, necessary personal protective equipment shall be used.

If vacuum cleaning cannot be carried out, cleaning shall be done by wet mopping, hosing or washing. A fine dust mask shall be worn during this work. Dry mopping is not allowed.

* The vacuum cleaner shall retain at least 99.99% of the number of fibres that can be seen through a 400-500 power optical microscope. The possible use of other techniques may be arranged with the Norwegian Petroleum Directorate.

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PERSONAL PROTECTIVE EQUIPMENT

The employer shall equip the employees with correct personal protective equipment. He shall give the employees training in the use of the equipment and see to it that it is used to the necessary extent.

Note:

It is assumed that personal protective equipment provides extra security where other protective measures are inadequate, e.g. with brief, dusty work operations. The protective equipment in question may be special dust-resistant protective clothing, suitable head and respiratory protection (mask) with filter or supply of fresh air.

Face mask

Generally, partial masks in conjunction with a filter for dust protection are used.

However, the partial mask's peripheral leakage* is so great (1 %) that a whole mask must be used in dusty work operations.

Suspended particle filter masks shall be equipped with valves for inhalation and exhalation.

* Leakage as a result of a poor fit against the face and nose.

For longer stays in places with much dust, it may be necessary to use equipment consisting of a hood with a fresh air supply, either from approved facilities that produce breathing air, or from an air bottle with a reduction valve, so that a slight excess pressure is formed in the hood which prevents dust from entering.

The filter unit

As a main rule it may be said that the finer the fibre, the better the filter. However, with finer filters the breathing resistance also increases and dust filters of a certain quality therefore always have a special folded filter which provides the surface area necessary to prevent breathing resistance from becoming too great.

A high effective filter may be used where the concentration of dust is 10,000 times higher than the occupational hygiene norm. However, it should be kept in mind that a great filtering effect is of little use if there is a simultaneous peripheral leakage.

For dusty work operations, a filter of

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shall be used.

Pure dust filters are marked with the letters St which indicate that they protect against airborne particles.

Note on the use of dust filters

A dust filter will clog during use. This entails better filtering at the same time as it increases the breathing resistance. In the end, this means too great a burden for the user and the filter must be replaced. Normally it cannot be cleaned, but must be discarded.

The dust filter may possibly be complimented by a prefilter. A prefilter is an easily replaceable filter of porous material. Its function is to filter out larger pollution particles and it protects the dust filter against too rapid clogging, preventing an unnecessary increase in breathing resistance.

The filters may be stored indefinitely. One should always check that the filter fits the mask correctly and that it is undamaged.

NOTE! DUST FILTERS MAY NOT BE USED WHEN THE AIR, IN ADDITION TO DUST, CONTAINS (1) TOXIC GAS OR VAPOURS OR (2) LACK OF OXYGEN. IN SUCH CASES THERE SHALL BE USED (1) A PROPER COMBINED AIR PARTICLE/GAS FILTER (2) APPROVED BREATHING PROTECTION WITH A SUPPLY OF BREATHING AIR.

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OCCUPATIONAL HYGIENE NORM

No totally safe can be established limit as to how much asbestos breathing air may contain without presenting a health hazard. For a carcinogen, the occupational hygiene norm for pollution of the working atmosphere should be set at zero.

In order to prevent asbestosis, many countries including Norway have made use of an administrative norm of 2 fibres per milliliter of air for an average over 8 hours*. Such an exposure, however, could cause the first signs of asbestosis in a few (1-3 %) of the persons exposed without protection daily during their entire active working life. When using asbestos, therefore, one should strive to keep the concentration of asbestos in the breathing air as low as possible below 1 fibre per milliliter air (1000 fibres per liter) over an average of 12 hours.

* This applies to asbestos fibres longer than 0.005 mm and thinner than 0.0035 mm counted on a membrane filter in a 400-500 power phase contrast microscope.

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TECHNICAL AND HYGIENIC CONTROL OF THE WORK AREA

Requirement to inspect the work area

The concession holder (operator) shall to the necessary extent ensure the inspection of work areas where asbestos is handled.

During inspection it should be verified that facilities and equipment meet the requirements stipulated in this guide, that the work is carried out in the manner indicated and that the protective equipment is accessible and used in accordance with the guide. New work operations and methods taken into use shall be given particular attention.

Note:

The safety delegate for affected employees should consider changes in equipment, materials and working conditions and bring up the question of pollution measurements (see below) with the employer as soon as there is a danger of a worsening of the dust conditions.*

* If such requests are not followed up, the safety delegate may take the case up with the Norwegian Petroleum Directorate or Working Environment Committee (Cf. Working Environment Act § 26 No: 3).

Requirements for dust readings

Dust counts shall be made at the work area where asbestos is handled.*

* The asbestos dust shall with the aid of suitable pumping equipment, be collected on a membrane filter with pore size 0.8 micrometers. Subsequent particle counts shall take place in a 400-500 power phase contrast microscope. (Cf. Norwegian Standard F 4853 Work Area Air. Criteria for Asbestos Fibre Readings). The possible use of other techniques may be arranged with the Norwegian Petroleum Directorate which also gives advice and guidance on the execution of dust counts. The result of the dust counts with indication of analysis laboratory shall be registered with the concession holder (operator) and submitted to the Norwegian Petroleum Directorate.

It is not required that dust counts be taken in work areas where asbestos or materials containing asbestos are used only on exceptional occasions, and where secure safety measures are taken in advance, e.g. the fitting of asbestos gaskets etc.

Concession holders' control

In accordance with the Norwegian Petroleum Directorate's "Guidelines for Concession Holders' Internal Control**", the concession holder shall ensure that all activities take place in a sound manner. This entails that the concession holder shall monitor inspections and dust measurements.

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The following information shall be accessible, and it should be possible to present the following upon demand to the Norwegian Petroleum Directorate:

- time of inspection or sampling
- who participated in the inspection or sampling
- which parts of the activity were inspected, possibly including sample locations
- analytical results
- analytical laboratory
- any comments.

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PREVENTIVE MEDICAL MEASURES AND EXAMINATIONS

Requirements for medical examination

Any employee who might be exposed to asbestos particles shall be subject to a medical examination. Any employee who works with asbestos or products containing asbestos shall be subject to an annual medical examination.

The employer is responsible for ensuring that the medical examination is carried out.

Aim of the medical examination

The aim of the medical examination is:

- to prevent persons with a reduced tolerance to asbestos particles from being put to work in an area that involves the risk of exposure to asbestos particles
- diagnose injuries to health due to exposure to asbestos at the earliest possible time
- provide a basis for current registration and monitoring of persons with definite or possible asbestos illness, constitute a part of a group evaluation of workers exposed to asbestos, and establish a basis for further preventive work.

The medical examination prior to employment provides a yardstick for comparisons with the subsequent annual examinations.

On the scope of the medical examination

The medical examination should cover:

- medical case history, including possible illnesses since the last examination
- registration of symptoms in the chest membrane, lungs and air passages
- charting of smoking habits
- examination of the lungs (including X-rays)
- examination of lung function (minimum requirement: measurement of vital capacity)
- supplementary examinations as required.

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Keeping journal or register

The employer should keep a register or journal of those employees who, in accordance with the above, shall have regular examinations.