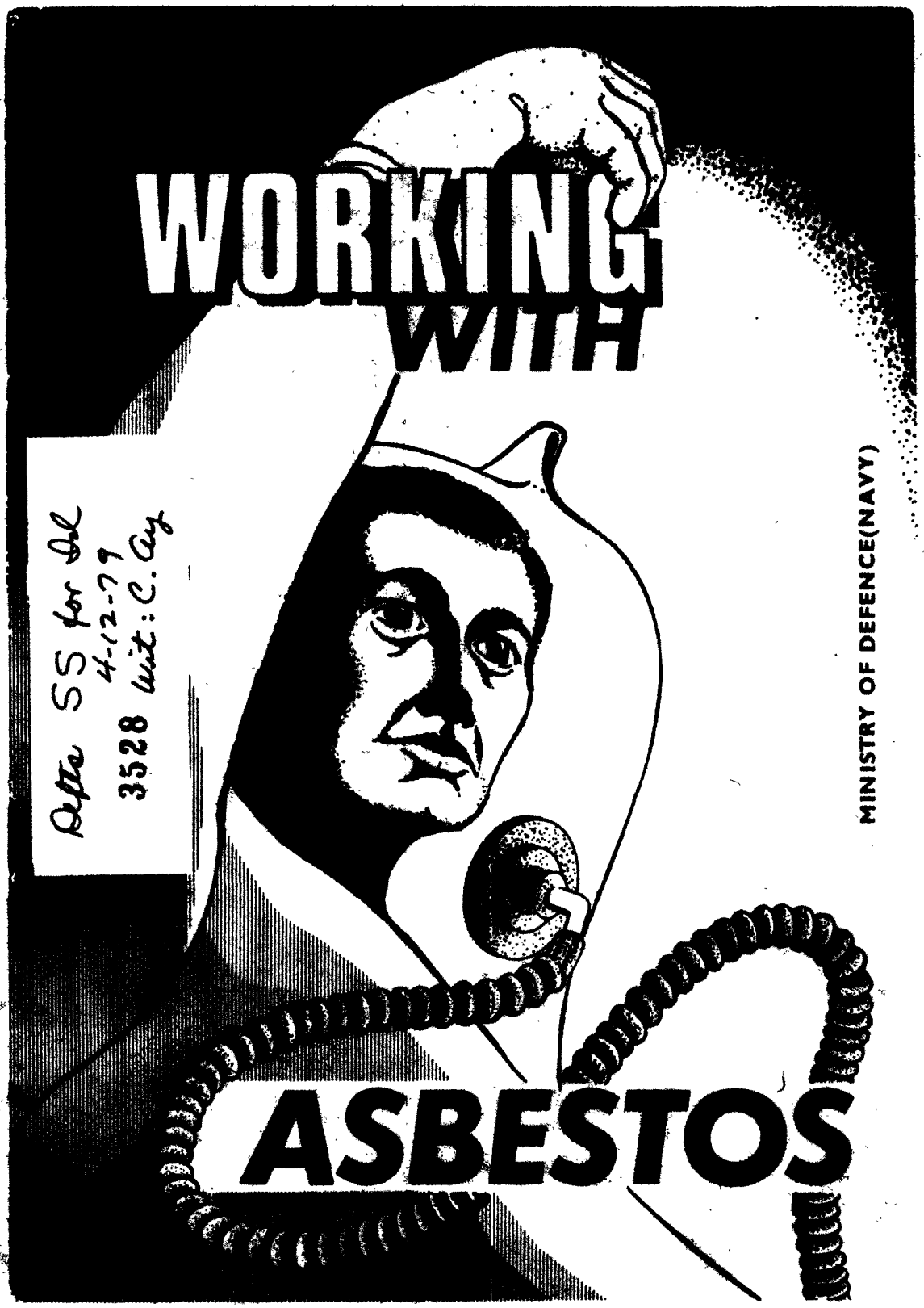
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WORKING WITH ASBESTOS



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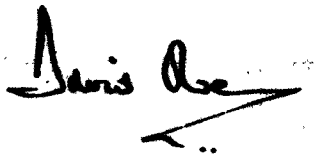
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A message from Dr. David Owen, M.P.,
Parliamentary Under Secretary of State for
Defence for the Royal Navy

I have asked for this booklet to be prepared so that everyone will be aware of the dangers of working with asbestos and of the precautions which they should take both for their own protection and to safeguard the health of their fellow-workers.

I cannot emphasize too strongly how important it is to follow the safe working practices summarized in this booklet. The disease of asbestosis is a cause of concern throughout the world and we can take some pride in the fact that the Navy Department is playing its part in this country's research into the early diagnosis and prevention of this industrial disease.

I would ask you to read this booklet carefully and to follow the advice it gives. Asbestos has so many uses today that all of us come into contact with it at some time and we just cannot afford to shrug off safety measures as being someone else's problem.



May 1970

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Why and where asbestos is used and substitutes for it

Asbestos is unique as a fire- and heat-resisting material and as a material for binding and strengthening weak substances. Hence, it is unlikely that we shall ever be able to do without asbestos entirely. Unfortunately, it can sometimes present a risk, the reasons for which are given in this booklet, to the health of those who work with it.

Precautions

The risk can be kept down by following the very strict precautions now enforced by the managements of Naval establishments. These precautions are described in this booklet under 'Working Practices and Precautions' (page 5). Everyone using and handling materials containing asbestos—and anyone else for that matter—must be on the lookout for any failure to follow the proper precautions. Remember, no matter how carefully and strongly worded instructions may be, it is always possible someone may ignore or overlook them. If you see any methods of working you think do ignore instructions, or, if you consider the instructions on safe working methods could be improved, *please tell your supervisor immediately*, so that something can be done about it at once.

Use of substitutes

Since 1966 the Navy Department has drastically reduced the amount of asbestos in specifications for ships and machinery. The amount now included is less than one-tenth of what it was in 1966. If you want to know what has been done by the Navy Department since 1966 to find substitutes for asbestos, look at Table 2 on pages 14 to 16.

Trials of substitutes

In spite of the dramatic reduction already achieved in the use of asbestos, the Navy Department is continuing the search for substitute materials. But, whenever a new material is discovered, some years of trial are needed before it can be brought into general use in the Fleet,

since materials put into ships must be capable of withstanding extreme conditions for a long time.

Asbestos now in the Fleet

You will see from Table 2 that a great deal of asbestos has, in past years, been built into the existing Fleet, and the table also shows where you may expect to find, in H.M. ships, material containing asbestos. Generally speaking, it is better to leave any asbestos already in ships where it is rather than try to remove it, because most of the materials containing asbestos are quite safe if left alone. So, asbestos will probably continue to be found in the Fleet for some years to come, even though substitutes have been introduced into new ships and, during refits, into existing ships.

Use of asbestos ashore

Apart from shipbuilding and ship-repairing, asbestos is widely used in other industries—in buildings, railway carriages, brake-shoes for motor vehicles, and in many other places where heat insulation or fire resistance is needed.

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Working practices and precautions

The safety precautions laid down for working with asbestos and the working methods to be followed are complicated. They are presented in detail in Defence Council Instructions (RN) 510 69. Here is a summary of the contents of the D.C.I.

Precautions taken by management

Management has taken seven main precautions:

Precaution 1—*To keep asbestos work separate and away from other work.*

Precaution 2—*To reduce the amount of asbestos dust created during work with asbestos.* The aim is to achieve this by improving both the methods of work and the materials themselves. The packaging of asbestos has already been improved and the quantities issued have been changed to reduce the amount of handling and cutting needed.

Precaution 3—*To protect all employees whether they work directly with asbestos or not.* The protection that employees need depends upon the job they are doing and the amount of asbestos dust they are exposed to. To ensure that each employee has the right kind of protection, all employees have been put into one of three groups:

1 REGISTERED ASBESTOS WORKER—One directly engaged on asbestos work.

2 NEIGHBOURHOOD WORKER—One not directly engaged on asbestos work but employed on other work near to where asbestos is being used and thus possibly exposed to asbestos dust.

3 MANAGEMENT VISITOR—One who has to pay short visits to places where asbestos work is being carried out.

Precaution 4—*To keep a register of everyone who is employed directly on asbestos work.* This is done to ensure that every registered asbestos worker is given proper medical advice and supervision.

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Asbestos work includes work connected with sprayed limpet asbestos, de-lagging, lagging and cutting asbestos materials, and the handling of asbestos stores. Those who are 'registered asbestos workers' comprise laggers (including nominated boilermakers), nominated painters for sprayed limpet asbestos work, nominated joiners, shipwrights, sailmakers and plumbers, smiths employed in the fire hearth shops, labourers regularly employed in cleaning compartments where asbestos materials have been used, and workpeople employed in asbestos stores.

Precaution 5—To provide protective clothing and equipment, including respirators, which are issued personally to the wearer, plastic hoods and caps, green nylon overalls and skull-caps, overalls made of rubberized fabric, and gloves and footwear.

Precaution 6—To provide cleaning and decontamination arrangements.

Precaution 7—To carry out regular dust-sampling wherever asbestos is handled to ensure that the proper precautions are taken.

Precautions to be taken by those working with asbestos

Whenever you are working with asbestos there are three basic things you must remember to do:

1 Make as little dust as possible and keep any dust you do make to the smallest area you can. Above all, do all you can to prevent the dust from getting into the air.

2 Wear the protective clothing provided.

3 Clean up thoroughly immediately the job is finished.

Make full use of the special equipment—mechanical air supply, vacuum cleaners, dust-sheets, polythene curtains—that has been provided to help you both to keep down the dust and to remove it. And do not forget to follow the proper working practices, such as dampening

the asbestos against dust when cutting it. If you have a respirator, you must make sure it fits well, and it should be cleaned and inspected and the filter changed at least every fourteen working days.

Personal responsibility

The management will do their utmost to ensure that everyone is aware of, and protected from, the potential dangers in working with asbestos. But remember, the final responsibility for a man's health rests with himself, and if he is to be properly protected, he must be sure to follow instructions and to observe all the precautions laid down. Although asbestos dust can be effectively controlled in factories where asbestos is processed, it is much more difficult to control it in ships being built or repaired. To be safe, those who work in these conditions must wear the proper protective clothing and breathing apparatus. *If you are in doubt about what you should do, ask your supervisor.*

Working precautions

The precautions to be taken when asbestos work is in progress are given fully in Table 1 on the following pages.

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TYPE OF WORK	NOTICES TO BE DISPLAYED	PROTECTION		
		Registered Asbestos Worker	*Neighbourhood Worker*	*Management Visitor*
Sprayed limpet asbestos	SPRAYED LIMPET ASBESTOS WORK ENTRY PROHIBITED	Fully protected with impervious suit, gloves, boots. Issued 'underclothing'. Air-fed hood. Shower at end of forenoon and afternoon.	Not allowed entry (if vital, as for registered asbestos worker).	Visit to be of less than half hour (if longer, as for registered asbestos worker). Impervious suit, gloves, boots, skull-cap. Approved respirator.
Major de-lagging	ASBESTOS DE-LAGGING NO ENTRY	Fully protected with nylon overall, gloves, boots, skull-cap. Issue 'underclothing'. Air-fed hood or approved respirator. Shower on completion of day or night shift.	As for sprayed limpet asbestos.	Visit to be of less than half hour (if longer, as for registered asbestos worker). Nylon overall, skull-cap. Approved respirator.
Major lagging/ cutting of asbestos materials	ASBESTOS LAGGING NO ENTRY	As for major de-lagging.	As for sprayed limpet asbestos.	As for major de-lagging.
Minor lagging/ de-lagging	ASBESTOS WORK IN PROGRESS	Nylon overall, skull-cap. Issued 'underclothing'. Approved respirator. Shower on completion of day or night shift.	No restriction on entry. Respirators available on loan.	No restriction on entry. Respirators available on loan.
Lagging shop (covered by own regulations)	ASBESTOS SHOP NO UNAUTHORIZED ENTRY	As for minor lagging/de-lagging.	Respirators available on loan.	No restrictions on entry. Respirators available on loan.
Asbestos stores	ASBESTOS STORE NO UNAUTHORIZED ENTRY	As for minor lagging/de-lagging.	Respirators available on loan.	No restriction on entry. Respirators available on loan.

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The risks to health

Risks to health are caused because the breathing of asbestos dust can lead to diseases of the lungs. Two of these diseases are asbestosis and cancer.

Asbestosis

Asbestosis is a scarring or fibrosis of the lungs and causes shortness of breath, coughing and heart strain, rather in the way that chronic bronchitis does. It develops over the years as a result of continued exposure to asbestos dust. It is not yet known how much dust has to be breathed to cause it, nor whether the advance of the disease can be stopped by removing the patient from exposure to asbestos dust. However, there is evidence that many people—about a quarter of those living in industrial countries—have asbestos in their lungs without showing any signs or symptoms of asbestosis.

Cancer

Cancer of the lung can arise as a complication of asbestosis. It is not common and occurs only after the asbestosis has been present for some years. There is one special kind of cancer, called mesothelioma, which affects the covering of the lung or the lining of the abdominal cavity. This is mainly caused by exposure to the form of asbestos named crocidolite or 'blue asbestos'. Mesothelioma takes between 20 and 30 years to develop after the dust has first been inhaled. It is at present a fatal disease but, although several hundred cases have occurred in Great Britain, it is not a common disease. Crocidolite is no longer being put into ships of the Royal Navy.

Neighbourhood workers

The health of employees who are not working directly with asbestos, but only in the neighbourhood of such work, may be affected when they have, without knowing it, breathed in asbestos dust. This is why employees who are classified as neighbourhood workers should follow very carefully the precautions laid down for their protection.

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Medical prevention of disease due to asbestosis

There is reason to believe that the onset of asbestosis can be detected by X-ray and lung-function tests, often before any symptoms have occurred. This means that men can be removed early from further risk of exposure to asbestos dust at work and their progress watched. It is most important to avoid further exposure to the dust in the hope that the disease will not become established, because, once established, it gets progressively worse and there is at present no cure for it.

Owing to the time the disease takes to develop, we expect that new cases will be discovered for some time yet. We hope, however, to discover them as early as possible and we are confident that the regulations introduced by the Navy Department—before they were in fact laid down by Parliament—will have reduced to the absolute minimum any dangerous exposure of Navy Department personnel to asbestos dust and so to the risk of disease.

Research

The Navy Department is helping with national research into asbestosis and runs a research unit at H.M. Dockyard, Devonport, in association with the Medical Research Council.

Useful work has already been done towards the methods of early detection of the disease. Additionally, the records of men affected by the disease have been collected and the men will be given follow-up examinations for many years. The examination is an essential part of research and is necessary for finding out the natural history of asbestosis and the point at which no worsening of the disease is likely if no further exposure to asbestos dust occurs at work.

National Insurance benefits

If the Navy Department medical authorities think that an employee's health has been affected by asbestos dust, they will arrange for him to be examined by the Department of Health and Social Security Medical Board. Weekly benefits can be paid to those who are disabled. Quite apart from the arrangements made by the medical authorities,

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Escaping up asbestos waste

Note the 'impervious units' personal respirators sealed mail-wall sacks



any employee who thinks that his health has been affected by asbestos dust can ask for the D.H.S.S. to arrange for him to be examined by their Medical Board. Full details of the way in which the Pneumoconiosis Panel works can be obtained from the Department of Health and Social Security's booklet *Pneumoconiosis and Byssinosis* (N13).

Transfer to other work

Once it is known that an employee's health has been affected by asbestos, arrangements will be made to remove him from all further contact with the material by transferring him to other work. So far as possible, he will be transferred to work which will provide him with the same earnings as previously.

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But remember—

You can protect yourself from danger to health if you:

1 **Make as little dust as possible.**

2 **Wear the protective clothing and respirators provided.**

3 **Ensure proper ventilation.**

4 **Act sensibly at places where work is being carried out on asbestos; for example, do not eat or drink in a compartment where asbestos work is in hand and do not smoke where major lagging or de-lagging work is in progress.**

5 **In the dockyards, use all the facilities available in the amenity centre.**

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APPLICATION	ASBESTOS MATERIAL	PROGRESS IN INTRODUCTION OF SUBSTITUTE MATERIALS
Thermal insulation in machinery spaces	Calcium-silicate sections and plastic	Now supplied asbestos-free and recognizable by its yellow or pink colour. All calcium-silicate should be cut off ship so far as is practicable. (*Note*—Calcium-silicate containing up to 14% asbestos is coloured white.)
	Amosite-asbestos sections and plastic	No longer used, replaced by calcium-silicate. A large number of existing ships are insulated with Amosite; de-lagging operations will involve the full implementation of D.C.I. 510/69.
	Self-setting finishing cement for high-temperature insulation—BD2 cement	An asbestos-free substitute is now specified.
	New-tempheit	Deleted from specifications. Replaced by calcium-silicate.
	Asbestos cloth	Glass-cloth is now specified. Dust emitted from this cloth is an irritant but not a health hazard. Work is continuing to make this cloth less objectionable to handle.
	Asbestos rope and twine	Deleted from specifications. Glass is now specified.
	Asbestos mattresses	Mattresses of rocksil fibre covered with glass-cloth are now approved and in supply.
Local protection against fire	Asbestos millboard (very little used)	Deleted from specifications.
	Asbestos cloth (more frequently used)	Dust-suppressed cloth is now specified. No prospect seen of finding a substitute fire-resistant material. Main applications are hangar fire-curtains, curtains in magazines, and protection in way of welding and burning operations. Magazines will be separately compartmented in new construction and at long refits of existing ships. Glass-cloth is not acceptable for these usages.
Fire protection in magazines where jet efflux presents a potential hazard	Durestos (resin-bonded asbestos fibre)	No substitute material suitable for this purpose. Material is supplied by manufacturer to exact sizes required. There is therefore no health hazard in shipyard application.
Thermal insulation of hull structure	Sprayed limpet asbestos; Blue-block asbestos or Amosite board	Deleted from specifications. Mineral fibre marine board, which is asbestos-free, is now specified. Any ships still insulated with sprayed limpet asbestos will require full implementation of D.C.I. 510 69 for de-lagging operations.
	Asbestos fibre and cloth for pipe covering	Deleted from specifications. Replaced by polyurethane or mineral fibre preformed sections with canvas covering, which are all asbestos-free.
Acoustic insulation of hull structure	Pantiles, Panfelt, Paxmarine	Deleted from specifications. Existing stocks are being kept for small repairs only. Replaced by mineral fibre resin bonded slab, which is asbestos-free.
	Amosite asbestos	Deleted from specifications. Replaced by mineral fibre marine board.
	Limpet asbestos board	Deleted from specifications. Replaced by perforated PVC sheet (Darvic).

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Table 2 - continued

APPLICATION	ASBESTOS MATERIAL	PROGRESS IN INTRODUCTION OF SUBSTITUTE MATERIALS
High-temperature jointing and packing materials	Asbestos fibre Compressed asbestos fibre	No substitute heat-resistant material. No health hazard in forms used in shipyard applications.
Bearing materials, brake-linings	Asbestos reinforced plastics	No substitute wear-resistant material. No health hazard except if these materials are ground or worked (no known requirement for this).
Bathroom and galley deck-coverings	Neoprene terrazzo	Asbestos-free neoprene terrazzo now available. Dockyards and overseers have been informed that this is the only acceptable material.
Partition bulkheads	Compressed asbestos sandwiched between metal, plywood, plastic sheets, etc., e.g. Marinite, Solastos	Deleted from specifications, which now state that materials containing asbestos are not to be used. Steel, aluminium or plywood will generally be used, pending investigations into alternative asbestos-free materials.
Covers to bunk, settee and seat-locker cushions and matresses in submarines	Asbestos cloth (untreated, i.e. not dust-suppressed)	Deleted from specification. Fire-retardant foam mattresses now approved.

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