Asbestos

AUGUST 1986
SHELL SAFETY COMMITTEE

Recommendations for the Safe Handling of Asbestos and Materials containing Asbestos

This publication is issued as a revision to "Recommendations for the Safe Handling of Asbestos and Materials containing Asbestos" (Shell Safety Committee - June 1981) which it now supersedes.

LAM 027392

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ABS-009236

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1 Foreword

Since repeated and prolonged inhalation of airborne asbestos fibre, even at relatively low concentrations, can pose a serious hazard to health, care should be taken to reduce exposure to the lowest reasonably practicable level.

The recommendations given in this publication are intended as a guide to Group companies on the safe handling of asbestos and materials containing asbestos. They provide guidelines with which the management of each company can assess its own procedures and practices and should be read in conjunction with statutory regulations. In those countries where more stringent statutory regulations exist, the latter should apply. The recommended precautionary measures may serve as a basis for the drafting of standing orders of a company specific to its local conditions and circumstances.

Additional information concerning the handling of asbestos may be obtained from the publications listed at the end of this guide and from HSE/2, SIPM, The Hague.

2 Introduction

The types of asbestos fibres most commonly encountered in industry are:

1. **Crocidolite** (blue asbestos)
2. **Amosite** (brown asbestos)
3. **Chrysotile** (white asbestos)

The other forms, i.e. tremolite, actinolite and anthophyllite, have only limited commercial application.

The properties of asbestos which are of practical value are incombustibility, strength and resistance to chemicals.
Crocidolite (blue asbestos) has been largely used in textiles, packings, thermal and acoustic insulation material, and as a filler in plastic components.
Amosite (brown asbestos), which has been used least, is sometimes employed in fire-resistant boards and insulation material.
Chrysotile (white asbestos) has been used chiefly in asbestos cement, insulation and other building materials, and in road surfacing.

In the context of this publication "**asbestos**" refers to raw materials, both virgin and waste, and to all other materials containing asbestos.

3 Hazards to Health

The health hazard from the inhalation of asbestos fibre has been recognized for many years with the observation that pulmonary fibrosis, a debilitating disease known as asbestosis, could result from exposure. Afterwards an association was shown between asbestosis and bronchial carcinoma, and this was followed some years later by the observation that exposure to asbestos could lead to the development of mesothelioma, a rare form of cancer arising in either the pleura or peritoneum. The risk of developing such diseases largely depends on both level and duration of exposure and is considerably increased in combination with the smoking of cigarettes. The diseases may develop as many as 20 to 30 years after exposure has ceased. Overall, exposure to crocidolite (blue asbestos) is considered most dangerous, followed by amosite and chrysotile in that order. The difference in hazard is thought to be related to differences in physical properties (i.e. diameter, length, length to diameter ratio). Although there is evidence of differences in risk between the different types of asbestos, there is no firm scientific basis for different exposure limits.

It is therefore prudent to realize that:

Repeated and prolonged inhalation of any form of airborne asbestos fibre may cause irreversible lung disease and cancer.

4 Limitation of Exposure

There is an increase in risk of asbestos-related disease with exposure to increasing airborne concentrations of fibres of all types of asbestos. Since no generally accepted safe level of exposure has been identified, the exposure limits issued by various governments and other authoritative bodies do not necessarily represent a no-risk level. These limits take into account the effort and cost needed to reduce exposure levels further in relation to the reduction of risk of ill health. Those exposure limits which are published are based on different national criteria and are subject to different interpretations. See Appendix 1.

It is therefore not realistic to recommend a single exposure limit for asbestos fibre concentrations in air which can be applied to all Group activities.

It should be the policy in all Group operations not to introduce asbestos, and when practicable to replace existing asbestos with a suitable alternative.

Exposures should be reduced by process control with minimal dependance on personal protective equipment. Substitute materials should be chosen wherever possible. (Appendices 2 and 3).

Although substitute materials such as man-made mineral fibres (MMMF) are generally regarded as a low hazard they should not be assumed to be free of risk. No human health effects have been reported but evaluation of the potential hazards of MMMF is not yet available. Good industrial hygiene practice should be followed in order to keep exposures as low as practicable. It is recommended that the manufacturers guidelines for the individual product be followed until more specific information is available.

5 Organizational Aspects

Marking

In the event that the use of asbestos is essential, and where it is already present in existing situations, it should be clearly marked "ASBESTOS" as a warning.

Identification

In cases where it is not certain that the insulating material is asbestos precautions should be taken by handling it as if it were asbestos. As an alternate, testing of the bulk material can be conducted prior to handling to determine if the material is asbestos.
Details are available from HSE/2, SIPM, The Hague.

Asbestos removal

The presence of existing asbestos insulation may not in itself be a significant risk to health when it is coverd or encapsulated. Dangers arise if asbestos fibres are released when the material is damaged, either accidentally or during maintenance or repair work. The decision to remove or encapsulate existing asbestos should be preceded by an assessment of perceived risks and benefits.

For detailed guidance on asbestos removal, see Reference 2.

Procedures

Each company and location where asbestos is or may be handled should have their own written "Asbestos Procedures", specifying safe methods of handling, removal and disposal.

Both personal and workplace air sampling may be required in surveys of exposure. Workplace sampling would be required for clearance of work areas after completion of e.g. stripping of asbestos insulation prior to allowing re-entry of personnel, and for monitoring the spread of contamination outside a restricted area.

All persons handling asbestos should be adequately informed of the hazards and should be fully trained in hygiene and work practices.

Reference is made in this respect to "Work Permits", a Shell Safety Committee publication.

Register

A Register should be kept of all persons currently or previously involved in work with asbestos. This Register should contain the names of such persons, jobs held and dates, length of exposure, and details of personal protective equipment used. It should be kept up to date and be available for inspection.

Contractors

Contractor personnel engaged in asbestos work on Company premises should observe both statutory regulations and Company procedures. This should be stated as a condition in the contract.

The responsibility for agreed work practices rests with the contractor, the overall supervision with the Operating Company. In case of failure to meet his obligations the contractor should be instructed to take remedial action. If failure continues or recurs, formal steps should be taken to ensure compliance is achieved.

Reference is made to "Contractor Safety", a Shell Safety Committee publication.

Air sampling

Where air sampling is required to determine the level of exposure to fibrous asbestos dust, it should be carried out and supervised by a competent person who has had appropriate experience and specific training. Personal sampling by the membrane filter method should be used and fibres should be counted by the phase contrast optical technique.

Details of these techniques are given in References 3 and 4.

For advice on sampling and counting procedures HSE/2, SIPM, The Hague, may be contacted.

6 Sources of Exposure

Exposure to appreciable levels of fibrous asbestos may be expected in any activity generating loose dry fibre.
Examples of some typical exposure levels for various operations are given in Appendix 4.

The following situations are of particular concern:

Spraying asbestos fibres

The application of asbestos fibre coatings by spraying has been shown to create a high risk of exposure and should never be permitted.

Bulk Handling

The potential for significant and repeated exposures exists during the handling of bulk asbestos materials such as during 'Flintkote' or similar manufacturing operations.

De-lagging

Exposure to high concentrations of fibrous asbestos dust in air can arise during the removal of dry dusty asbestos insulation material.

Machining

Exposure to high concentrations may result from cutting, breaking, drilling or machining dry dusty materials particularly where high speed tools are used.

Brake lining

The maintenance and replacement of brake linings can create high levels, particularly when using compressed air for blowing away the dust.

Waste

Significant exposures may arise from handling dry asbestos waste, from contaminated work room surfaces, or from contaminated protective clothing.

Table. **Types of respiratory protection**

Type	MESC No.	Nominal Protection Factor
Self-contained breathing apparatus, full face mask	96.58.20.150.1	2000
Compressed air line breathing apparatus, full face mask	96.58.20.178.1	1000
Positive-pressure air supplied hood	96.58.10.125.1	1000
Full-face filter respirator (high efficiency filter)	96.58.20.516.1	1000
Positive-pressure filtered air full-face respirator (powered air purifying)	not available	20
Half-face filter respirator (high efficiency filter)	96.58.30.102.1 96.58.30.310.1	7
Disposable filtering facepiece respirator	96.58.30.085.1	7

For more information on respiratory protection, reference should be made to References 5, 6 and the "Personal Protection Equipment Guide", a Shell Safety Committee publication and local regulations.

Clothing

Impervious coveralls or similar whole body clothing, without pockets, close-fitting at the neck, ankles and wrists, and equipped with dust tight fastners such as zips, should be worn at all times when working with asbestos. The overalls, made of closely woven Terylene/cotton mixture, or equivalent, should preferably be fitted with a hood, which should be worn. Alternatively, plastic overalls, which can be washed down before removal, or impermeable disposable types may be used. The use of personal underwear should not be permitted. In addition impervious hand and footwear e.g. rubber boots and gloves should be worn.

Facilities

A special decontamination facility which may be in the form of a portable unit located adjacent to the asbestos work area should be provided for the exclusive use of asbestos workers. "Clean" lockers for personal clothing should be segregated by a shower from the "dirty" lockers for the storage of protective clothing and equipment. This decontamination facility should contain its own WC, urinal, showers, washing facilities, water point, vacuum cleaner and individual lockers, exclusively for the protective equipment and clothing used by asbestos workers. All surfaces in the facility should be impervious and smooth and easy to clean.

7 Control of Exposure

Engineering methods

The best way to eliminate the health risk from use of asbestos is to replace it with a less hazardous material. When substitution is not feasible, engineering controls should be implemented. These controls may include enclosure, isolation, local exhaust ventilation and wet techniques. For assistance contact HSE/2, SIPM, The Hague.

Respiratory protection

When engineering controls cannot reduce exposures to airborne asbestos fibre to an acceptable level, respiratory protection should be used. The selection of appropriate respiratory protective devices depends upon the expected concentration of asbestos fibre in the ambient air, the duration of exposure, and the nature of the work to be performed.

In selecting respiratory protection, consideration should be given to the likely fibre concentration as listed in Appendix 4 and to the duration of exposure. A balanced assessment is required between recommending devices with a high protection factor and the physiological strain and restriction of movement associated with such devices.

The highest potential for exposure to asbestos is bulk handling and stripping and removal of asbestos insulation (i.e. de-lagging). Concentrations of up to 100 fibres per ml may be expected when such operations are performed dry. These situations require the use of effective respiratory protection such as that afforded by self contained breathing apparatus or compressed air line breathing apparatus. However, such devices are heavy and cumbersome to wear and restrict freedom of movement. Where the duration of exposure is for minutes rather than hours a full face, positive pressure filtered air respirator or a positive pressure air supplied hood could be considered.

For operations which give rise to lower fibre concentrations in air, full face or half mask air purifying respirators can be used depending on the concentration and the protection factor.

When asbestos operations give rise to low levels of exposure, i.e. up to 0.1 fibres per ml, an approved disposable face mask respirator may be suitable depending on the nature of the operations and local/national regulations.

The effectiveness of respiratory protection depends on proper use of the equipment which should be issued and fitted on a personal basis. Facial fit and care by the user are important aspects and it is therefore essential that users are instructed and trained and undergo regular re-training. The use of respirators requires careful selection, supervision and maintenance with cleaning and servicing after each day of use. These tasks should be undertaken by a nominated person who has a good understanding of what is required. In some countries authorities have issued lists of respirators which are approved for use when working with asbestos and these provide useful general guidance. Where applicable, only those respirators on the official list should be used.

Cleaning

Contaminated work clothing and footwear should be vacuum cleaned, using a machine-fitted with HEPA (High Efficiency Particulate Air) filters, before it is taken off, and then stored in the "dirty" lockers provided. Overalls visibly contaminated should not be re-used in the dirty state. Respirators should continue to be worn until the vacuuming is completed.

Contaminated equipment and clothing should be placed in sealed plastic bags labelled: "ASBESTOS CONTAMINATED - WET BEFORE HANDLING", before being sent for cleaning or laundering. Under no circumstances should contaminated clothing, underclothing or footwear be taken home.

The decontamination room should be kept free of asbestos fibre, clean and orderly at all times, and be vacuum-cleaned with a HEPA unit after each day of use.

Smoking, eating or drinking should not be permitted while working with asbestos, or in areas where asbestos is handled or manipulated or in contaminated areas. Before meals and at the end of the working day workers should take a shower before putting on their personal clothing.

Collected dust should be disposed of as described in Section 9: "WASTE DISPOSAL".

8 Working Procedures for Asbestos Operations

When carrying out work involving asbestos the following procedures should be applied:

Large scale operations

— Asbestos removal

As this activity is regarded as a high risk job, it is strongly recommended that work of this type be carried out by contractors specialized in the field. In some countries they may be required to be licensed.

The working area within which contamination is likely to occur should be segregated (e.g. roped off) and sign-posted.

Entry should be restricted to persons wearing protective clothing and respiratory protection. This restriction should include all visitors.

Where practicable the plant or equipment to be de-lagged should be enclosed on all sides. All surfaces within the enclosure and the floors should be covered with impervious sheets, e.g. polythene. All joints should be sealed for the duration of the job. Items of plant, equipment or materials within the area should be temporarily removed or covered and sealed.

Entry to the enclosure should be via a number of air locks (i.e. a series of at least three interconnecting chambers) constructed of impervious sheet. These chambers allow for the change-over from clean and contaminated clothing and other equipment.

The material to be removed should be soaked with water thoroughly prior to removal, as the primary means of control of airborne fibres.

In order to maintain a negative pressure inside the enclosure, a portable extraction unit with an HEPA filter should be located outside and connected by trunking to the enclosure.

The exhaust ventilation should be sufficient to maintain a positive flow of air into the enclosure via the entrance. This should be confirmed by the use of a smoke generator.

Contaminated clothing and equipment should be cleaned by vacuum cleaner inside the contaminated chamber of the air lock.

Waste should be collected in sealed plastic bags inside the work area and the bags decontaminated, e.g. by damp cloth or vacuum cleaner in the air lock. The bags should then be placed inside a second labelled bag and removed. The first and second set of bags should be colour-coded to facilitate identification.

Residual fibre on pipework should be removed by wet scraping and wire brushing. After that all surfaces inside the enclosure should be vacuum cleaned using an approved vacuum-cleaner.

Finally, all internal surfaces should be sprayed with polyvinyl acetate (PVA) solution to fix any residual fibre, where practicable.

The area should then be inspected and, if found satisfactory, the enclosure should be dismantled and all used materials disposed of as toxic waste.

If considered necessary, a clearance test can be carried out while the cleaned surfaces are disturbed (e.g. by brush) to simulate the effects of occupancy.

Small-scale operations

Personal protective equipment should be issued and worn wherever there is a risk of contamination of clothing or inhalation of fibres.

The collected dust should be disposed of as described in Section 9 - "WASTE DISPOSAL".

Wherever possible all operations should be carried out "wet".

— Asbestos removal

The principles described for large operations should be applied also to smaller operations, where necessary scaled down to meet local conditions.

— Asbestos product handling

The areas in which asbestos components and materials are handled should be sign-posted and should be fitted out so as to facilitate containment and cleaning. Components should be stored in impervious packages labelled "ASBESTOS". Working surfaces should be impervious and kept clean. Dustless cleaning methods should be used.

— Machining of asbestos

Cutting, drilling and similar work on asbestos products should be carried out in designated areas which are sign-posted and fitted out with impervious working surfaces. Airborne dust should be avoided by using manual or low-speed methods on non-dusty products. If airborne dust is generated, a local exhaust ventilation system should exhaust the contaminated air via an HEPA filter outside the place of work, at least at roof height. The ventilation system should be interlocked to ensure that it operates when the machine is in use. It should be inspected daily and tested at monthly intervals.

— Plant maintenance

Employees who carry out maintenance and repairs are likely to be potentially exposed on installations where asbestos is present. No work should be undertaken on any equipment where asbestos is present without a permit to work being issued and the appropriate precautions being followed (Sections 5 and 7).

— Vehicle maintenance

Exposure to asbestos from the dust of brake linings should be minimized by using a vacuum cleaner to clean the drums and shoes before handling.

For detailed guidance on asbestos operations see Reference 2.

9 Waste Disposal

Asbestos waste of any sort, e.g. dust, loose fibre, offcuts, contaminated packages, is regarded as a potential hazard and should be disposed of following strict procedures (see Reference 10).

Collection

Waste should be placed either in impervious plastic bags or in dedicated containers. The bags and containers should be labelled "DANGER - ASBESTOS - DO NOT INHALE DUST - HANDLE WITH CARE" and should be sealed or covered.

Blue and brown asbestos may need to be labelled specifically to meet national requirements.

Storage

Waste bags and receptacles should be kept separate from non-asbestos materials in an area designated for the purpose.

Transport

Waste bags and receptacles should be transported in a sealed condition to prevent the release of fibre. Waste must not be transported in a loose state. The tyres and surfaces of vehicles should be kept clear of loose fibre.

Disposal

Waste bags and receptacles containing the loose fibre should be disposed of by deep burial at a clearly marked place and in accordance with national regulations, or otherwise as advised by local authorities.

10 Medical Surveillance

All persons engaged in work which may give rise to exposure to fibrous asbestos dust should be considerd for medical surveillance at the discretion of the Company Medical Adviser.

The contents and frequency of both pre-placement and subsequent medical examinations should be determined by the Company Medical Adviser, taking into account the duration and regularity of the work.

For guidance on medical surveillance procedures HSE/2, SIPM, The Hague, may be contacted.

11 Training

Locations handling asbestos should ensure that staff are competent to identify the hazard from asbestos and to apply the safe working procedures effectively. The selection, use and maintenance of personal protective equipment is of particular importance as a primary means of prevention, as is the use of permits to work. Where airborne measurements are required, it is essential to employ individuals who, and procedures which, comply with national levels of competence and quality assurance.

12 References

1. "Working with Asbestos". A guide for supervisors and safety representatives. Asbestos Manufacturing Guidance Booklet 1. (1985) Health and Safety Executive, HMSO, London.

2. "Work with Asbestos Insulation and Asbestos Coating". Approved Code of Practice and Guidance Note. (Revised June, 1983). Health and Safety Commission, HMSO, London.

3. "Measurement of airborne Asbestos dust concentrations". Guidance note EH 10 (July 1984). Health and Safety Executive, HMSO, London.

4. "Reference method for the determination of Airborne Asbestos Fibre Concentrations at workplaces by light microscopy (Membrance Filter Method)". AIA Health and Safety Publication Recommended Technical Method No. 1 (RTM 1) (September 1979) - Asbestos International Association, 68 Gloucester Place, London W1H 3HL.

5. "BS4275. 1974 - Recommendations for the selection, use and maintenance of respiratory protective equipment" - British Standards Institution, 61 Green Street, London W1A 2BS.

6. "Respiratory protective equipment for use against asbestos". Guidance Note EH 41 (November 1985), Health and Safety Executive, HMSO, London.

7. "Final Report of the Advisory Committee on Asbestos" (1979) - Her Majesty's Stationery Office. London.

8. Asbestos. The control limit for asbestos. E.D. Acheson and M.J. Gardner. MRC Environmental Epidemiology Unit 1983, HMSO, London.

9. Asbestos - Control limits, measurement of airborne dust concentrations and the assessment of control measures. EH 10 1984, HMSO, London.

10. Asbestos Wastes - A technical memorandum on arisings and disposals and code of practice. Dept. of the Environment Waste Management Paper No. 18, HMSO, London.

11. "Occupational Exposure to Asbestos Tremolite, Anthophyllite, and Actinolite". Final Rules, US Dept. of Labor, OSHA: 29 CFR 1910 and 1926.

Exposure Limits

Exposure limits for airborne asbestos as number of fibres per ml of air, as time-weighted averages for periods up to 8 hours. Other jurisdictions may also have exposure limits.

Type of asbestos fibre	ACGIH TLV 1985-86	EEC draft directive 1983	NIOSH 1980	OSHA PEL 1986	U.K. Control Limit 1985	Federal Republic Germany TRK 1985
Crocidolite	0.2	0.5	0.1	0.2	0.2	1
Amosite	0.5	1	0.1	0.2	0.2	1
Chrysotile	2	1	0.1	0.2	0.5	1
Other	2	1	0.1	0.2	0.5	1

A countable asbestos fibre has the following characteristics under specified optical conditions of lighting and magnification:

— length equal to or greater than 5 μm, **and**
— diameter less than 3 μm, **and**
— length to diameter ratio of at least 3 to 1

The different forms of asbestos, i.e. crocidolite, amosite and chrysotile, are identified in the bulk material by optical microscopic dispersion staining or X-ray diffraction.

Notes on Materials containing Asbestos

The following comments concern asbestos items in common use in the petroleum industry.

— **Asbestos Gloves**
Suitable alternatives are aluminized glass fibre gloves, leather gloves, or tongs.

— **Asbestos Blankets**
Suitable alternatives are mineral wool or glass fibre blankets.

— **Fire Suits**
Aluminized asbestos suits are acceptable, but the old style uncovered asbestos suits should not be used. Suitable alternatives are aluminized fibre-glass suits.

— **Asbestos cement products**
These products such as roof sheeting, drain pipes etc. are acceptable provided precautions are taken to prevent the generation of dust during a dust-producing operation, e.g. machining, drilling etc., by means of wetting with water. If this is not practicable effective respiratory protection should be used.

- **Filter mats and gauzes**
These products cause little hazard. Alternatives to gauze are open-mesh metal gauzes or ceramic fibre equivalents.

— **Asbestos packing and insulating materials**
Alternatives are ceramic and other asbestos-free materials which should be used wherever technologically acceptable.

— **Gooch crucibles**
There is minimal risk if dry asbestos is handled within a fume cupboard.

— **Pre-formed gaskets and packings**
The hazard is minimal, provided no further cutting or shaping takes place.

— **Asbestos rope and string**
Suitable alternatives are ceramic fibre materials.

— **Brake lining**
Suitable alternative for some situations is Kerlon.

APPENDIX 4

Measured Concentrations of Countable Asbestos Fibres in Work Place Air during various Operations

Because of the variability in work situations and in the conditions of use, and friability of asbestos material no firm figures for dust levels can be given. Some indications of levels that could be expected in typical operations are shown in the following table.

OPERATION	ASBESTOS FIBRES (fibres per ml) up to:
Sprayed asbestos	
— spraying	1000
Stripping and removal of asbestos lagging	
— de-lagging	
• dry	100
• with water sprays	40
• with thorough soaking	5
— removal of insulating board and tiles	
• breaking and ripping out	20
• unscrewing and careful removal	2
Asbestos cement products	
— machine drilling	1
— machine sawing with exhaust ventilation	2
— hand sawing	4
Asbestos insulation board and tiles	
— drilling, vertical structure	5
— drilling overhead	10
— sanding and surforming	20
— scribing and breaking	5
— hand sawing	12
— machine sawing without exhaust ventilation	20
— machine drilling or sawing with exhaust ventilation	4
— handling and unloading	
• standard sheets	5
• cut pieces	15
Handling compressed asbestos fibre products	0.1
Use of asbestos gloves	0.5
Firefighting aluminized asbestos-lined suits	1

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Measured Concentrations of Countable Asbestos Fibres in Work Place Air during various Operations

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— spraying	1000
Stripping and removal of asbestos lagging	
— de-lagging	
• dry	100
• with water sprays	40
• with thorough soaking	5
— removal of insulating board and tiles	
• breaking and ripping out	20
• unscrewing and careful removal	2
Asbestos cement products	
— machine drilling	1
— machine sawing with exhaust ventilation	2
— hand sawing	4
Asbestos insulation board and tiles	
— drilling, vertical structure	5
— drilling overhead	10
— sanding and surforming	20
— scribing and breaking	5
— hand sawing	12
— machine sawing without exhaust ventilation	20
— machine drilling or sawing with exhaust ventilation	4
— handling and unloading	
• standard sheets	5
• cut pieces	15
Handling compressed asbestos fibre products	0.1
Use of asbestos gloves	0.5
Firefighting aluminized asbestos-lined suits	1

SHELL SAFETY COMMITTEE PUBLICATIONS

(Including publications issued by the former Group Industrial Safety Committee)

Safety Incentive Schemes (1974)

Gas-freeing and Cleaning of Oil Storage Tanks (1975)

Safety Policy Statements (1975)

Static Electricity (1976)*

Welding and Cutting (1976)

The Secondary Use of Containers (1978)

Asphyxiation - The Hidden Danger (1979)

Personal Protection Equipment Guide (1980)*

Contractor Safety (1980)*

Safety Signs and Colour Coding (1981)

Work Permits (1981)

Noise Guide (1981) with Addendum (1984)

Hand Tools and Sparking Hazards (1969, re-issued 1982)

Oxygen - A Hazard (1982)

Visual Display Units (1982)

Seat Belts (revised 1982)

Safety at Berths and Jetties Handling Bulk Liquids (1983)

Ionizing Radiation Safety Guide (1983)

Protection of Passengers in Cold Water Following a Helicopter Ditching (1984)

The Use of Contact Lenses in Industry (1984)

Enhanced Safety Management (1985)

Electrical Safety (1986)

Asbestos (1986)

Guide for Reporting Accidents and Safety Performance Statistics (1986)

SHELL PRODUCT SAFETY AND OCCUPATIONAL HEALTH COMMITTEE PUBLICATIONS

Safe Handling of Benzene (revised March 1980)

Safe Handling and Disposal of PCBs (1985)

*Under revision