

ASBESTOS GUIDE 1984

Revision of 1982 edition

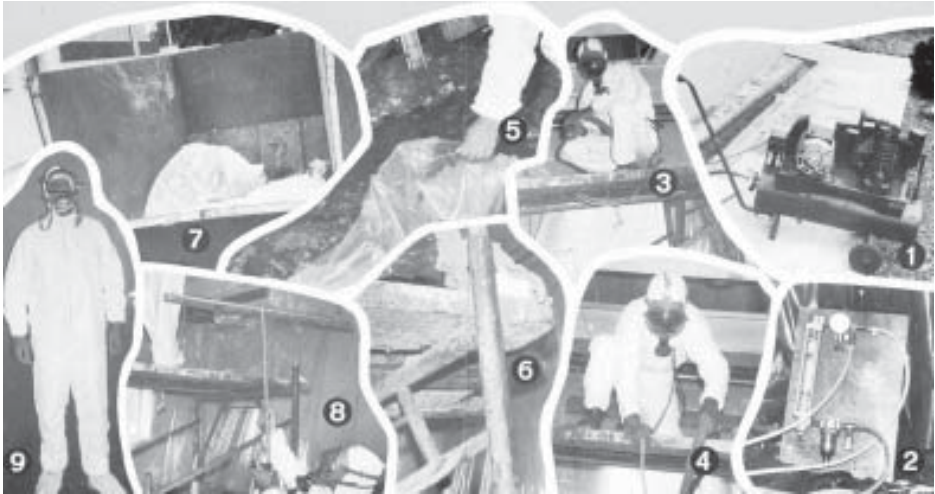
Important Note:

All the publications in the Publications Archive contain the best guidance available at the time of publishing. However, you should consider the effect of any changes to the law since then. You should also check that the Standards referred to are still current.



**Department of Labour,
Wellington New Zealand**

Archive



Illustrations show removal of crocidolite asbestos. 1–Air compressor; 2–Air pressure regulators and filters; 3, 4–Worker using vacuum hose; 5–Collecting asbestos waste; 6–Collection of asbestos scrapings; 7–Storage of asbestos waste prior to disposal; 8–Broom water jet used for wetting asbestos material; 9–Worker wearing safety equipment including an air-fed mask.

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GLOSSARY

Asbestos means actinolite, amosite, chrysolite, crocidolite, fibrous anthophyllite or tremolite, or any mixture containing these minerals.

Asbestos dust, for the purposes of the regulations, is:

- (a) more than one crocidolite fibre in each 10 millilitres of air on average over a 4-hour period; or
- (b) more than one fibre of any other asbestos type in one millilitre of air on average over a 4-hour period; or
- (c) more than six fibres of any other asbestos type in one millilitre of air on average over a 10-minute period.

These amounts may be changed from time to time by notice in the *New Zealand Gazette*.

Asbestos fibre means a particle of asbestos that is between 0.02 mm and 0.1 mm long. Its width is less than 0.003 mm and its length to width ratio is not less than 3 to 1.

Working with asbestos means the handling or processing of asbestos in any way. It includes the demolition of buildings containing asbestos, disposing of asbestos, and cleaning up after asbestos has been worked on or handled.

1. GENERAL

Regulations

The Asbestos Regulations 1983 prescribe minimum requirements for work involving asbestos and are jointly administered by the Departments of Labour and Health.

Guidance on construction work involving asbestos may be sought from a construction safety inspector.

Likely Areas of Asbestos Work

The following list represents some areas where asbestos, in its many forms, may be encountered on construction work:

- (a) Lagging around pipes and furnaces;
- (b) Sprayed coatings on ceilings and structural steel work;
- (c) Firebreaks in ceiling ducts;
- (d) Acoustic and insulation panels;
- (e) Water, sewerage and storm water pipe reticulations.

Types of Asbestos

The most common types of asbestos encountered are:

- (a) Chrysolite (or white asbestos), a curly white to grey fibre which is difficult to separate into individual fibres;
- (b) Amosite (grey asbestos), which consists of colourless to grey to brown straight fibres;
- (c) Crocidolite (blue asbestos), which is similar to amosite but which has a blue colour.

Visual inspection is only a rough guide, as fading and colour changes may occur with age and exposure to high temperatures.

Identification

Before carrying out any work with material which may contain asbestos it is essential that the suspect material be analysed to establish its identity.

Have a construction safety inspector or inspector of health take samples for analysis.

Do not start work until the results of the analysis are available and appropriate precautions are taken to protect the health of workers and others likely to be affected.

2. CROCIDOLITE ASBESTOS

Work Involving Crocidolite

Before undertaking any construction work involving crocidolite (blue asbestos), an employer must obtain the joint written approval of the Chief Construction Safety Engineer and the Director-General of Health.

Application forms for approval to carry out this type of asbestos work can be obtained from any Department of Labour office.

Each completed application form must be accompanied by a comprehensive statement setting out in detail the proposed work method and the safety measures which will be used. It should state:

- (a) Why the involvement with the crocidolite is unavoidable.
- (b) How the work area is to be isolated from surrounding areas.
- (c) How the asbestos-contaminated area is to be cleaned.
- (d) The type of clothing and the type and model of respiratory equipment to be used.
- (e) How the asbestos waste is to be disposed of.
- (f) What provision is to be made for changing areas, showering of workers and accommodating contaminated clothing.

- (g) Any other aspect important to the health and welfare of workers and persons in the vicinity.

If the information supplied is inadequate, or if it seems that the workers will be exposed to undue risk, the application may be declined, or the applicant may be required to have a fresh proposal prepared by a registered engineer. Such a proposal must be supported by the engineer's statement that it complies with the requirements of the Asbestos Regulations 1983.

Emergency Approvals

In an emergency, where there is an immediate danger to the health of any person from crocidolite asbestos, a construction safety inspector may give written approval, subject to any conditions he thinks necessary, to handle the asbestos and eliminate that immediate danger only.

3. REMOVAL PRECAUTIONS

The spread of asbestos fibres outside the work area must be minimised. Carry out preparatory work with this in mind.

Work Area Preparation

Important steps when preparing areas for work with asbestos are:

- (a) Clean if necessary and remove all movable items from the working area.
- (b) Cover all fixtures with an impermeable cover such as polythene sheeting.
- (c) Cover the floor and walls with an impermeable cover, where this will assist clean-up.
- (d) Ensure that changing areas, showers and clothing and protective equipment are as close as possible to the work area in order to minimise asbestos fibre contamination of outside areas.
- (e) If wet stripping, ensure that water or asbestos material does not find its way into electrical equipment, or to areas where the moisture can evaporate and release asbestos fibres into the air.
- (f) Ensure that any air conditioning systems are isolated from the asbestos removal area, or alternatively closed down, to prevent the circulation of asbestos dust throughout the building.

Enclosure of the Work Area

All openings including doors, windows and vents should be sealed to prevent the escape of asbestos dust to places outside the working area. Care should be taken to ensure that dust cannot escape at points where pipes and conduits pass through partitions. Where it is not possible to make use of existing partitions and walls, use impervious sheeting to form or complete the enclosure. Once erected, the enclosure should be properly maintained.

Notices should be posted at each entrance to the asbestos working area to warn people that entry without suitable protective equipment is prohibited. Only workers wearing suitable personal protective equipment should be allowed to enter.

In some situations it may not be reasonably practicable or necessary to enclose the working area to prevent the escape of dust. If so, discuss the matter with a construction safety inspector. Physical barriers will need to be erected to mark the boundaries of the working area. Arrangements will need to be as follows:

- (a) The barriers should be placed where it can be reasonably anticipated that the people outside them do not need respiratory protective equipment and protective clothing. This would normally not be less than 5 metres from the asbestos work face.
- (b) Notices should be placed along the barriers to warn people that entry into the asbestos work area without suitable protective clothing is prohibited.
- (c) Where the job duration makes it practicable, asbestos fibre levels at the barrier and in the general vicinity should be monitored to ensure that the maximum allowable asbestos dust levels are not exceeded.

Air Extraction Equipment

It has been found that asbestos dust finds its way past sealed enclosures. Where reasonably practicable, air extraction equipment should be used in an enclosure in order to:

- (a) Reduce levels of asbestos dust and improve environmental conditions; and
- (b) Provide a slight negative air pressure which will reduce the risk of dust escaping through imperfections in the enclosure.

Where air extraction equipment is provided:

- (a) Equipment should be fitted with an absolute filter so that people near the discharged air will not need respiratory protective equipment or protective clothing.
- (b) The filtered exhaust air should, where reasonably practicable, be vented to a point outside the building.

- (c) The equipment should remain in operation after completion of the work for a period sufficient to ensure that airborne asbestos fibres are removed.
- (d) Filters should be checked regularly for cleanliness, particularly in areas where sealant is sprayed.

Work Area Cleaning

The work area must be thoroughly cleaned upon completion of the work. This should include all surfaces, ledges, machines and equipment. A dustless method of cleaning, such as vacuum cleaning with an appliance fitted with an absolute filter, should be used.

Before handing the area over for normal use, check it thoroughly to make sure there is no asbestos material remaining and get the Department of Health to check asbestos dust levels to ensure that they are acceptable.

Asbestos Waste Disposal

Before disposing of asbestos waste, obtain advice from a construction safety inspector or an inspector of health.

Asbestos waste must be put into a container or containers that can be sealed shut and will not let asbestos fibres escape either through the seal or the container itself.

Every container holding asbestos waste must be clearly labelled with the words: ASBESTOS HAZARD—WEAR RESPIRATOR AND PROTECTIVE CLOTHING WHILE HANDLING CONTENTS.

Containers for asbestos waste must be so constructed that they will not damage or spill under normal handling and transportation.

Asbestos waste must be disposed of as soon as possible. It may be dampened and tipped at a place approved by the Medical Officer of Health, provided it is immediately covered by at least 250 mm of soil, or else it must be disposed of in a way approved by a construction safety inspector.

All sacks, bags or similar containers contaminated by asbestos waste must be disposed of as for asbestos waste.

4. PERSONAL PROTECTION

Respiratory Protective Equipment

Effective respiratory protective equipment must be provided for any person who is exposed to, or is liable to be exposed to, asbestos dust. Only equipment approved by the Director-General of Health may be used.

Construction safety inspectors and inspectors of health have up-to-date lists of approved respirators. Different methods of work and types of asbestos

need different types of respirators, so always consult an inspector on the most appropriate one for the proposed job. Always use a respirator that is on the approved list and one that fits securely on to your face and provides an airtight seal.

Respirators do not provide workers with beards with an airtight seal against their face. Bearded workers can be protected if they use positive pressure respirators, provided that air is continuously expelled from around the face-piece. This is the only acceptable type of respirator for these workers. If there is any doubt about the adequacy of protection, bearded workers must not be permitted to work in asbestos work areas.

Respiratory protective equipment must be thoroughly cleaned and disinfected after use. It must be regularly checked and serviced to ensure that it remains in good condition.

Protective Clothing

Protective clothing must provide the wearer with adequate protection from airborne asbestos. Suitable clothing comprises overalls or similar full-body protective clothing, without pockets or cuffs, that is close fitting around the neck, wrists and ankles, together with head covering and gumboots. Such clothing must be disposable, reusable and washable, or alternatively suitable wet weather gear which can be hosed down.

Where reuse of protective clothing is proposed, it should be laundered at least once a week to ensure its cleanliness and to avoid future underclothing contamination. It should be sent to a launderer who is aware of the risk to health from asbestos and is equipped to deal with the clothing. The clothing should be dampened and sent to the laundry in a closed container marked: ASBESTOS CONTAMINATED CLOTHING.

Contaminated protective clothing which is not to be cleaned and reused should be treated as asbestos waste and be disposed of accordingly.

5. HYGIENE REQUIREMENTS

People working with asbestos materials must observe a high standard of personal hygiene and housekeeping to ensure that asbestos dust does not find its way from the asbestos working area to other areas.

Changing rooms, showers, lockers and toilets must be made available for the exclusive use of asbestos workers. Where possible they should adjoin the asbestos work area to prevent the contamination of other areas. In many situations the only satisfactory method of providing facilities close to the work area is by incorporating them in a mobile unit.

Before leaving a work area, workers must ensure that asbestos dust on protective clothing and footwear is thoroughly removed by vacuum cleaning or, where applicable, by hosing down with water. Dust must not be removed from clothing with compressed air or by shaking. Where possible, remove respiratory protective equipment after protective clothing is removed.

Workers should shower before changing back into their own clothing. Contaminated clothing and protective equipment must be left in lockers in the “dirty” area. After showering, workers should proceed to a separate “clean” area where street clothes are stored. Showers should have an adequate supply of warm water, soap, a nailbrush and clean towels. All facilities should be cleaned daily.

Workers should not eat, drink or smoke inside the asbestos work area. Suitable accommodation for this should be provided. Before eating or drinking, workers should remove all asbestos dust from their overalls, take them off, and thoroughly wash their faces and hands.

6. WORK PROCEDURE SUMMARY

Procedures for working with asbestos can be summarised as follows:

- (a) Arrange for the Department of Health to test a sample of the asbestos in order to establish its type.
- (b) If the sample contains crocidolite asbestos, then the requirements set out in section 2 of this booklet apply.
- (c) Clearly establish the asbestos work area and isolate it from all other areas.
- (d) Make sure all equipment, tools, personal safety equipment and disposable containers are provided.
- (e) Place the workers’ showers and changing rooms as close as possible to the work area.
- (f) Thoroughly clean the area after the work has been completed using a vacuum cleaner fitted with an absolute filter.
- (g) Make arrangements for the safe disposal of waste asbestos in an area approved by the Department of Health.
- (h) After the final clean up, open the work area up for general use only after a check by the Department of Health has shown that asbestos dust levels are acceptable.
- (i) Instruct all workers on every aspect of the work that could affect their safety or health or that of others.

7. TREATMENT OF ASBESTOS INSULATION

General

Common forms of asbestos insulation are sprayed asbestos, pipe lagging, and low-density asbestos sheets or mouldings. The danger from such materials is that the surfaces may become damaged by impact or abrasion, or that they may become friable or lose adhesion with the subsurface. In all cases asbestos fibres may be released into the surrounding air.

Two methods may be used to reduce the risk of airborne asbestos. One is to remove the asbestos completely; the other is to effectively seal the surface so that fibres cannot escape into the air. This sealing is known as “encapsulation”.

In considering whether to remove or treat the asbestos, an in-depth assessment of the following is required:

- (a) What is the nature of the insulation and the asbestos type?
- (b) Is the insulation damaged or friable and is it breaking away from the parent structure?
- (c) Is the insulation likely to be rubbed or otherwise damaged during the work?
- (d) Is the insulation accessible or would it require major structural work to remove?
- (e) What are the comparative costs of removal and effective sealing? These will include provisions for isolation of the work area while the work is done, disruption of normal work and the evacuation of the building where necessary.
- (f) Has the insulation been provided for statutory fire protection and will it require replacement by other suitable materials?

Encapsulation Systems

There are many proprietary substances available for encapsulation. Selecting a system for a particular job will depend on:

- (a) Durability and surface toughness required e.g., the area may be vulnerable to impact damage or abrasion.
- (b) Type of surface e.g., certain treatments may impair the acoustic properties or adversely affect the required flamespread characteristics.
- (c) The condition of the original asbestos coating.

Treatments Available

The materials used for encapsulation may be divided into three main classes:

(a) *Polymeric or Bituminous Coatings*

Polymeric or bituminous coatings are normally applied by spray as water-based emulsions but they may be solvent based. The finished surface has a low to medium strength. Thicker polymeric coatings used in conjunction with glass fibre fabric can provide good impact resistance. The coatings may have some effect on flamespread characteristics. Manufacturers should be able to advise on the properties of their specific sealing systems.

(b) *Inorganic Cementitious Materials*

Cementitious materials are normally in the form of fibrous or particulate filled cements activated on site by water. These materials are normally trowelled on to the surface of asbestos and provide a rigid, hard-wearing surface which can be additionally strengthened with expanded metal mesh to give a high-impact resistance.

(c) *Rigid Sheets*

Rigid sheeting may be used to clad asbestos-sprayed surfaces or to provide false ceilings and walls. All joints should be properly made and sealed to provide total enclosure of the sprayed asbestos surface.

After the insulation has been sealed or treated it should be marked to show the presence and type of asbestos beneath the coating and should be regularly inspected and maintained to a high standard.

Encapsulation Precautions

The precautions needed will depend on the type, extent and condition of the surface to be sealed off. Dust must be prevented from escaping into the surrounding area. The working area may need to be totally enclosed and sealed off:

- (a) If any surface contains crocidolite asbestos;
- (b) If the surface is friable and liable to cause dust while the sealant is applied;
- (c) If the surface has to be broken e.g., to remove previous sealant, to remove loose debris, or to provide an anchorage for new cladding or fixtures.

Where the work is minor or the surface is not being disturbed, it may be sufficient to erect physical barriers and warning notices at least 5 metres from the job.

Where the surface is to be sealed by spraying, use an airless sprayer in order to minimise disturbance of the material.

Any accidental damage which occurs during the job must be repaired without undue delay.

Removal by Stripping

Wet Stripping

This technique involves thoroughly saturating the asbestos before its removal. Care and experience are required to obtain adequate diffusion. The addition of a wetting agent to the water is helpful. This method requires consideration of the following points:

- (a) Where cladding has to be removed before access is possible to the asbestos material, remove it carefully and vacuum clean or spray with water the exposed surface during the removal process. Otherwise, vacuum clean loose surface dust before saturating the material.
- (b) Where the asbestos is thick or covered in impermeable material it may be necessary to cut the outer covering to allow saturation. Slow saturation from the inner surface outward is recommended.
- (c) Slurry containing asbestos may be produced. This should not be discharged to drains without first removing the gross material.
- (d) Slurry left on surfaces after stripping is difficult to remove. Unless a suitable “wet” vacuum cleaner is available, allow the material to dry out before cleaning.
- (e) Although less fibre is emitted in a wet process than when using dry techniques, suitable personal protective equipment will still be required.
- (f) Water must be prevented from entering electrical equipment in the working area.
- (g) When work is finished, have a competent person ensure that it is safe to restore the electrical supply.

Stripping by High-Pressure Water Jets

This is a highly specialised technique. Asbestos is removed by high-pressure water jets normally operating at pressures of 14 000 kPa or more. It is usually limited to situations where, because of the difficulty in getting at sprayed coatings, other techniques are not likely to work properly, and also where a complete building or large section can be vacated.

Dry Stripping

This technique involves removal of the asbestos from surfaces in the dry state without using water to reduce the dust. It requires consideration of the following points:

- (a) Because a high level of asbestos dust is raised in the process, a correspondingly high standard of approved respiratory protective equipment is required.

- (b) A high standard of separation is required between the asbestos work area and other parts of the site to prevent dust escaping.

Because the asbestos remains dry, cleaning the work area at the end of the job is much easier. This method is essential where it is necessary to remove asbestos near live electrical apparatus, where the use of water would create a risk of electrocution.

Surface Sealing

In some situations asbestos cannot be removed cleanly from a surface and wire brushing may be required. Any fibres remaining after brushing must be prevented from entering the atmosphere by sealing the surface with an approved sealer.

8. ASBESTOS CEMENT PIPE

Much of the asbestos cement pipe manufactured and used in New Zealand prior to 1970 contains crocidolite. Unless testing has shown otherwise, it should be assumed that all asbestos cement pipe installed up to 1970 contains crocidolite, and joint written approval must be obtained as outlined in section 2 of this booklet.

In order to facilitate maintenance work on this pipe, which is used extensively in water supply and some sewerage reticulations throughout the country, blanket joint approvals subject to specific conditions have been provided to local and government authorities and large companies.

Where an asbestos cement pipe has been clearly identified as having been installed since 1970, no specific cutting precautions need be taken. However, minimise the amount of dust produced when cutting asbestos cement pipes. Use handtools such as pipecutters and handsaws wherever practicable. If power cutting, use a machine with a water attachment.

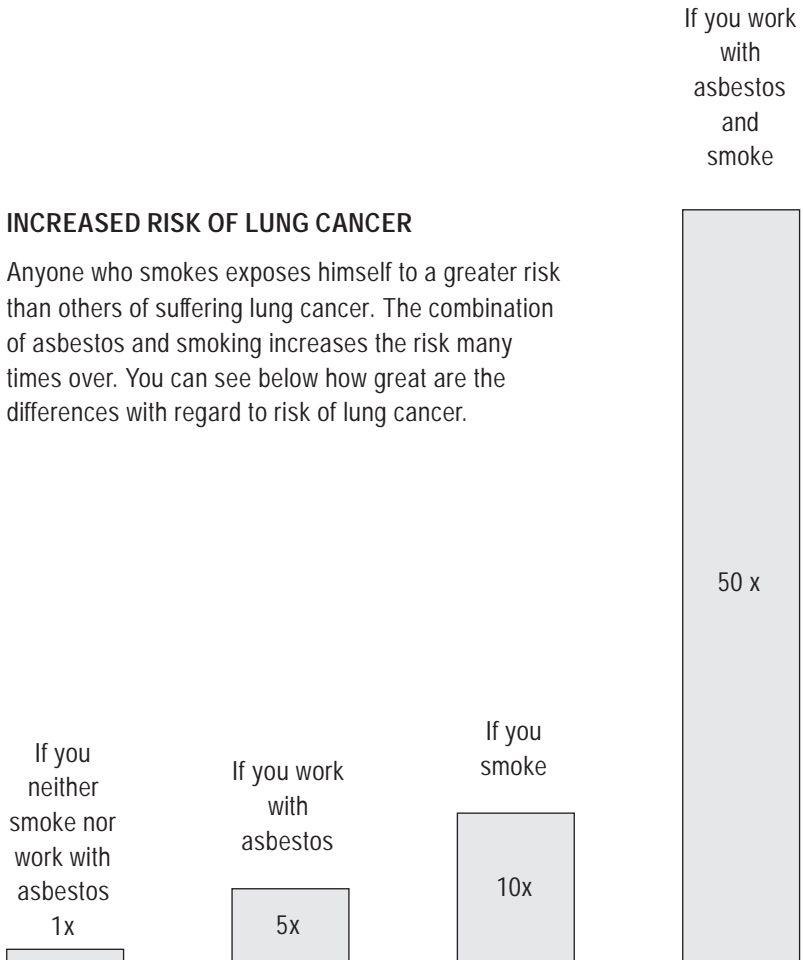
9. RESPONSIBILITIES

Employers

Employers must ensure that their workers are made aware of the dangers of working with asbestos and the precautions necessary to minimise these dangers. They must ensure that the requirements of the Asbestos Regulations 1983 are complied with in all respects.

Instruction should cover:

- (a) The health risks associated with asbestos.
- (b) The reasons for and nature of the precautions to be observed.
- (c) The safe operation and use of machinery and safety equipment.
- (d) The dangers of smoking if working with asbestos. Statistics show that smokers are more susceptible to ill effects from asbestos than nonsmokers. Employees must be warned of the particular danger to their health if they smoke and work with asbestos—see diagram.



Workers

Workers must comply with any lawful instruction given to them by an authorised person for the purpose of securing the observance of the Asbestos Regulations 1983.

10. MEDICAL EXAMINATIONS

Where the Medical Officer of Health believes that a person may be adversely affected by asbestos dust in the course of his work, he may direct that the person be medically examined.

In order to provide for the adequate surveillance of workers involved in the encapsulation and/or removal of asbestos, the Department of Health has compiled a list of employers who have made adequate provision for the medical surveillance of their employees and who have demonstrated competence in work methods.

11. SPECIFIC APPROVALS

People working with asbestos on construction work are required to obtain:

- (a) Approval to work with crocidolite.
- (b) Approval of respiratory protective equipment. The Director-General of Health has prepared a list of approved respirators that may be used by persons working with asbestos. The advice of an inspector of health or a construction safety inspector should be obtained in order to select the most suitable respirator for the type of work and the type of asbestos involved.
- (c) Approval of protective clothing.
- (d) Approval of the manner and the place of disposal of asbestos waste.

SAFETY IN CONSTRUCTION PUBLICATIONS

The following publications are obtainable from any Department of Labour office:

- No. 1 *A Short Guide to the Construction Act 1959*
- No. 3 *Scaffolding Code of Practice*
- No. 4 *Blasting Code of Practice*
- No. 5 *Excavation Code of Practice*
- No. 6 *First Aid Practice on Construction Work*
- No. 7 *Falsework Guide*
- No. 15 *Underwater Diving Code of Practice*
- No. 16 *Powder-Powered Tool Guide*
- No. 18 *Work in Compressed Air Code of Practice*
- No. 19 *Safety Supervisor's Guide*
- No. 20 *Safe Use of Electricity*
- No. 21 *Portable Mechanically-Powered Nailers and Staplers Guide*
- No. 22 *Asbestos Guide*
- No. 23 *Safety in Demolition Work*
- No. 24 *Code of Practice for Cranes and Lifting Appliances*
- No. 25 *Road Works Safety Guide*
- No. 26 *Code of Practice for Rigging Work*

DISTRICT OFFICES OF THE DEPARTMENT OF LABOUR

WHANGAREI

AUCKLAND

MANUKAU

HAMILTON

TAURANGA

ROTORUA

GISBORNE

NAPIER

Hastings

NEW PLYMOUTH

WANGANUI

PALMERSTON NORTH

LOWER HUTT

Masterton

WELLINGTON

NELSON

Blenheim

Greymouth

CHRISTCHURCH

TIMARU

DUNEDIN

INVERCARGILL

District offices shown in capitals are headquarters of construction safety inspectors appointed under the Construction Act 1959. These inspectors serve in addition the other districts grouped above with their headquarters.