

DRAFT

BEST PRACTICE GUIDELINE

FOR THE

SAFE USE OF TIMBER

PRESERVATIVES &

ANTISAPSTAIN

CHEMICALS

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GUIDELINE FOR THE SAFE USE OF TIMBER PRESERVATIVES & ANTISAPSTAIN CHEMICALS

FOREWORD

The Guideline describes the requirements for the preferred design and layout of treatment plants and practices for the use of timber preservatives and antisapstain chemicals.

The document is applicable to employers, employees and others with duties under the Health & Safety in Employment (HSE) Act 1992, the Hazardous Substances & New Organisms (HSNO) Act 1996 and the Resource Management Act (RMA) 1991.

The Guideline provides a means of achieving health and safety requirements and for protecting the environment under the above Acts. It has been developed by an industry committee with the support of the Department of Labour H&S and the Environmental Risk Management Authority (ERMA).

This Guideline replaces the Code of Practice which had been approved by the Minister of Labour under the HSE Act in 1994. While this document is not an approved Code of Practice under that Act, the Guideline is endorsed by the Department of Labour as a statement of preferred practice for compliance with the legislation. In addition, ERMA may recognise components of the Guideline as Codes of Practice under the HSNO Act. Those components of the Guideline so recognised by ERMA will be notified to all users as such recognition takes place.

This Guideline could not have been developed without extensive input from the industry and related organisations.

In particular we acknowledge the contributions of representatives of:

- The New Zealand Timber Preservation Council and its licensees
- Preservative supply companies
- ERMA New Zealand
- Department of Labour H&S
- Local Government New Zealand
- Council of Trade Unions
- MWH NZ Ltd

Deputy Secretary of Labour (Workplace)
Chief Executive of ERMA

Messages to be inserted by ERMA and Department of Labour H&S

June 2005

1. ABOUT THIS GUIDELINE

1.1 PURPOSE

- 1.1.1 This Guideline describes the safe working practices and other controls to be followed in order to maintain health and safety and environmental protection when using plant to treat timber with wood preservatives and antisapstain chemicals.
- 1.1.2 It describes the responsibilities of owners and operators of plant, employers, employees, contractors and others involved in the timber treatment process.

1.2 APPLICATION OF THE GUIDELINE

- 1.2.1 The Guideline describes recommended safe practices for employers, employees and others with duties under:
 - (i) The Health & Safety in Employment (HSE) Act 1992
 - (ii) The Hazardous Substances & New Organisms (HSNO) Act 1996.
 - (iii) The Resource Management Act (RMA) 1991, in certain aspects.
- 1.2.2 In general, conformity with the Guideline will mean compliance with the requirements of the legislative requirements of (i) and (ii) above and assist in achieving compliance with resource consents issued under the RMA.
- 1.2.3 At the time of publication the Guideline provides a comprehensive description of the application of the HSE and HSNO Acts to timber treatment processes and chemicals. However, where new hazardous chemicals, plant or other hazards are introduced – or the Guidelines are silent or ambiguous on any aspect of the process – reference should be made to the legislation.

1.3 HOW THE GUIDELINE IS ARRANGED

- 1.3.1 The Guideline describes all stages of the timber treatment process. Parts are arranged in the order in which the treatment process is carried out.
- 1.3.2 As was the case with the former Approved Code of Practice, the timber treatment process is described in terms that are consistent with the hazard management regime of the HSE Act. Where at any point in the process the HSNO Act requires more specific controls for particularly hazardous substances, detail may be provided in the appendices – with cross-referencing from the relevant part of the Guideline.

1.4 INTERPRETATION

- 1.4.1 In this Guideline **shall** and **must** indicate that a provision is mandatory for compliance with the Guideline.
- 1.4.2 **Should** and **may** suggest that a recommendation be adopted where practical.

DEFINITIONS

A glossary of terms used in the timber preservation industry and in various pieces of legislation affecting the industry is included in this Guideline as Appendix 11: Glossary of Terms.

1.5 REVIEW

- 1.5.1 This Guideline will be subject to review to ensure content and practices reflect the changes in industry, regulations or requirements for safe use of hazardous substances.
- 1.5.2 It is intended that the contents of the Guideline will be reviewed **within three years** of publication.

2. HEALTH & SAFETY IN EMPLOYMENT ACT 1992

2.1 INTRODUCTION

2.1.1 The object of the HSE Act 1992 is to prevent harm to all people at work and people in, or in the vicinity of, a place of work.

To do this the HSE Act:

- promotes excellence in health and safety management
- defines harm and hazards in a comprehensive way
- imposes duties on those who are responsible for work, or do work
- sets requirements for taking all practical steps to ensure health and safety and ensures they are flexible to cover different circumstances
- encourages employee participation in health and safety management and that the process is conducted in good faith by all those involved.

2.1.2 The HSE Act covers all people connected with places of work – employers, employees, people gaining work experience and sellers and suppliers of plant, the self-employed, contractors and principals, visitors and volunteer workers.

2.2 REGULATIONS

2.2.1 Regulations are promulgated from time to time under the HSE Act. Regulations may, among other things, impose duties on employers, employees, designers, manufacturers and others relating to health and safety. These regulations may apply with respect to places of work, plant, processes or substances and may deal with particular problems that have arisen.

2.2.2 The HSE Regulations 1995 require the provision of toilets, first aid and places for washing of hands and body, and the provision of wholesome and sufficient drinking water. They also set a range of general health and safety requirements in addition to the Act and restrict or require notification of particular types of hazardous work.

2.2.3 The HSE (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999 contain particular requirements for controllers, designers, manufacturers and suppliers of pressure equipment – including pressure vessels used for timber treatment.

2.3 APPROVED CODE OF PRACTICE

2.3.1 Approved Codes of Practice are provided for in the HSE Act. They are statements of preferred work practice or arrangements and may include procedures which could be taken into account when deciding on the practical steps to be taken.

2.3.2 Compliance with Codes of Practice is not mandatory. However, compliance with such codes may be used as evidence of good practice in a court of law.

2.4 EMPLOYERS' DUTIES

- 2.4.1 Employers have the duty to ensure the health and safety of employees at work.
- 2.4.2 Employers have a general duty to take all practical steps to ensure the safety of employees while at work. In particular they are required to take all practical steps to:
- provide and maintain a safe working environment
 - provide and maintain facilities for the health and safety of employees at work
 - ensure the machinery and equipment is safe for the employees
 - ensure that working arrangements are not hazardous to employees
 - provide procedures to deal with emergencies that may arise while employees are at work.

Taking “all practical steps” means doing what is reasonably able to be done in the circumstances, taking into account:

- the severity of any injury or harm to health that may occur
- the degree of risk or probability of that injury or harm occurring
- how much is known about the hazard and the ways of eliminating, reducing or controlling it; and the availability, effectiveness and cost of the possible safeguards
- circumstances that people know or ought reasonably to know about
- the need to ensure staff are aware of environmental implications.

2.5 HAZARD MANAGEMENT

- 2.5.1 Employers must identify and regularly review hazards in the place of work (existing, new and potential) to determine whether they are significant hazards and require further action. If an accident or harm occurs that requires particulars to be recorded, employers are required to investigate this to determine if it was caused by, or arose from, a significant hazard.
- 2.5.2 “Significant hazard” means a hazard that is an actual or potential cause or source of:
- serious harm (defined in a schedule to the Act); or
 - harm (being more than trivial) where the severity of effects on any person depend (entirely or among other things) on the extent or frequency of the person’s exposure to the hazard; or
 - harm that does not usually occur, or usually is not easily detectable, until a significant time after exposure to the hazard.
- 2.5.3 Where the hazard is significant, the HSE Act sets out the following steps employers must take.
- Where practical, the hazard must be eliminated.
 - If elimination is not practical, the hazard must be isolated.
 - If it is impractical to eliminate or isolate the hazard completely, then employers must minimise the likelihood that employees will be harmed by the hazard.
- 2.5.4 Where the hazard has not been eliminated or isolated, employers must, where appropriate:
- provide protective clothing and equipment and ensure that it is accessible and used
 - monitor employees’ exposure to the hazard
 - seek the consent of employees to monitor their health
 - with informed consent, monitor employees’ health.

The Act also includes sections covering the following topics:

- information for employees and Health & Safety representatives
- training and supervision of employees
- employers to provide opportunities for employee participation
- other people with duties under the Act.

2.6 ACCIDENTS & SERIOUS HARM (RECORDING & NOTIFICATION)

- 2.6.1 The HSE Act requires employers, the self-employed and principals to contracts to keep a register of work-related accidents and serious harm.
- 2.6.2 For employers this includes every accident that harmed (or might have harmed):
- any employee or self-employed person at work
 - any person in a place of work under the employer's control.
- 2.6.3 Employers are also required to investigate all accidents, harm and "near misses" to determine whether they were caused by a significant hazard.
- 2.6.4 "Serious harm" is defined in Schedule 1A of the HSE Act.
- 2.6.5 Any occurrences of **serious harm** of a kind that must be recorded, must also be notified to the Secretary of Labour (in practice, the nearest Department of Labour H&S office) as soon as possible after the occurrence. In addition the accident must also be reported on the prescribed form within seven (7) days. (Forms are available from some stationers or from the Department of Labour H&S website).
- 2.6.6 If a person suffers serious harm, the scene of the accident must not be disturbed unless to:
- save life or prevent suffering
 - maintain public access for essential services, for example electricity, gas
 - prevent serious damage or loss of property.
- 2.6.7 The Department of Labour H&S office will advise whether it wishes to investigate the accident and what action may be taken in the meantime.

3. HAZARDOUS SUBSTANCES & NEW ORGANISMS ACT 1996

3.1 INTRODUCTION

- 3.1.1 The purpose of the HSNO Act 1996 is to protect the environment and the health and safety of people by preventing or managing adverse effects of hazardous substances (and new organisms). The Act provides a co-ordinated and integrated approach to managing the risks posed by hazardous substances, replacing the Dangerous Goods Act 1974, the Explosives Act 1957, the Pesticides Act 1979 and the Toxic Substances Act 1979.
- 3.1.2 The HSNO Act established the Environmental Risk Management Authority (ERMA). Anyone wishing to manufacture or import a new hazardous substance (or new organism) into New Zealand requires an approval from ERMA.
- 3.1.3 Wood preservatives and antisapstain chemicals approved under the Pesticides Act prior to 2 July 2001 were transferred to the HSNO Act effective 1 July 2004. Provision has been made for some controls under HSNO to be gradually introduced.
- 3.1.4 Under HSNO, a substance is considered to be a “hazardous substance” if it triggers any one of the threshold levels for any one of the following hazardous properties:
- explosiveness
 - flammability
 - oxidising capacity
 - corrosiveness
 - toxicity
 - ecotoxicity

3.2 HSNO PROCESS

- 3.2.1 When an application is made to ERMA to import or manufacture a hazardous substance (for release) each hazardous property of the substance is assessed, and if it triggers a HSNO threshold, it is assigned a hazard classification. Each hazard classification triggers a set of “default” controls from the control regulations, the aim of which is to manage the hazards associated with the substance throughout its lifecycle. Controls are assigned in accordance with the level of hazard; that is, more hazardous substances attract more comprehensive controls. Where the substance has more than one hazard classification all the relevant controls for each classification apply.
- 3.2.2 If ERMA considers that the positive effects of the substance (benefits) outweigh any negative effects (risks and costs) an application is approved, subject to controls. Under certain circumstances ERMA may decide to vary the default controls if it considers they are either too stringent or insufficient to manage the adverse effects of the substance. In assigning controls to a hazardous substance, ERMA’s approach is to achieve the most cost-effective management of risks for the applicant and the community.
- 3.2.3 When existing substances are transferred from the transitional provisions of the Act to the HSNO framework, hazard classifications are similarly assigned on the basis of the hazardous properties of the substance, triggering relevant default controls as appropriate.

However, ERMA must take into account the controls that applied to the substance under the predecessor legislation and, if necessary, the default controls may be varied accordingly.

3.3 REGULATIONS

Detailed explanation and interpretation of these regulations can be found in the ERMA NZ User Guides to the HSNO thresholds, classifications and control regulations (see www.ermanz.govt.nz/resources/publications/pdfs or contact ERMA NZ at 04-916 2426).

The HSNO Act provides for a series of regulations. Those most relevant to Timber Preservatives and Antisapstain chemicals are:

3.3.1 HAZARDOUS SUBSTANCES (CLASSES 1 TO 5 CONTROLS) REGULATIONS 2001.

These regulations specify controls for substances with physical hazards (explosiveness, flammability, oxidising capacity) and are primarily aimed at preventing the hazard from actually occurring; for example, keeping ignition sources away from flammable substances.

3.3.2 HAZARDOUS SUBSTANCES (CLASSES 6, 8 & 9 CONTROLS) REGULATIONS 2001.

These regulations specify controls for substances with biological hazards (toxicity, biological corrosiveness and ecotoxicity) and are primarily aimed at limiting the exposure of people or the environment to hazardous substances to levels where adverse effects will not occur.

3.3.3 HAZARDOUS SUBSTANCES (PACKAGING) REGULATIONS 2001.

Adequate packaging is the key to preventing the exposure to both people and the environment of hazardous substances. The Packaging Regulations are divided into three main parts and generally follow the packaging requirements of the United Nations system for the transport of dangerous goods.

Part 1 defines the scope of packaging and the boundary with specifications for other containers.

Part 2 prescribes general packaging requirements such as the requirement that the package must contain the substance and be compatible with the substance.

Part 3 prescribes packaging requirements specific to substances with specific hazard classifications.

3.3.4 HAZARDOUS SUBSTANCES (IDENTIFICATION) REGULATIONS 2001.

The Identification Regulations are focused on ensuring that sufficient information is available with hazardous substances to enable their safe use and management. The Regulations are divided into three main parts.

Part 1 prescribes the information that is required to be “immediately available” with a hazardous substance, such as its identification, the nature and degree of its hazard and any precautions necessary for safe management of the substance. This type of information is most commonly provided by way of a product label.

Part 2 covers documentation information that is required to be available in the workplace to enable effective management of the hazardous substance. This would normally be achievable by way of a material safety data sheet (MSDS) but other forms of documentation such as product safety cards could be used if they contain all the information required by the regulations.

Part 3 covers areas such as signage and advertising. The regulations also include requirements on the presentation of the information; that is, it is accessible, comprehensible, clear and durable.

3.3.5 HAZARDOUS SUBSTANCES (EMERGENCY MANAGEMENT) REGULATIONS 2001.

The Emergency Management Regulations prescribe requirements to manage emergencies involving hazardous substances so that when incidents and emergencies occur their effects are minimised both in severity and extent. The Regulations provide for three levels of emergency management.

Level 1 emergency management relates to the provision of emergency management information that is required to be “immediately available” with a hazardous substance and is normally provided by way of information on the product label.

Level 2 emergency management is essentially focused on the workplace and provides for documentation requirements (e.g. MSDS) and fire-fighting requirements. Situations requiring Level 2 emergency management are those that affect several people and/or a localised area of the environment (including both property and ecosystems).

Level 3 emergency management provides for the provision of emergency response plans, secondary containment and site signage. This level is required for managing an emergency where the effects are able to extend to large numbers of people and/or significant parts of the environment.

3.3.6 HAZARDOUS SUBSTANCES (DISPOSAL) REGULATIONS 2001.

The Disposal Regulations prescribe requirements relating to the disposal of hazardous substances; the aim is prevention of contamination of land, air or water and minimising the exposure of people to the substance. There is considerable overlap in intent between the HSNO disposal controls and those set under the RMA.; the HSNO Disposal Regulations have been designed to be flexible enough to allow for more stringent controls to be applied under the RMA if necessary. The Disposal Regulations are divided into two parts.

Part 1 prescribes the various disposal requirements for substances of specific hazard classifications as well as disposal requirements for packages and containers contaminated with any hazardous substances.

Part 2 relates to the provision of disposal information that must be provided with hazardous substances (e.g. on labels and MSDS).

3.3.7 HAZARDOUS SUBSTANCES (TRACKING) REGULATIONS 2001.

The Tracking Regulations prescribe requirements for the tracking of highly hazardous substances to ensure that they are effectively managed during their entire lifecycle. The Tracking Regulations assist in achieving this aim by prescribing controls that reduce the risk of the substance going astray, through the requirement to provide accurate records at all stages of a substance’s lifecycle. Substances that require tracking are also required to be under the control of an approved handler.

3.3.8 HAZARDOUS SUBSTANCES (PERSONNEL QUALIFICATION) REGULATIONS.

These regulations specify competency requirements for approved handlers, test certifiers and enforcement officers.

3.3.9 HAZARDOUS SUBSTANCES (TANK WAGONS & TRANSPORTABLE CONTAINER) REGULATIONS 2004.

These Regulations apply to any tank, tank wagon, tank trailer or transportable container used to carry hazardous substances, and prescribes controls relating to their design, construction and operation.

3.3.10 HSNO CONTROLS FOR STATIONARY CONTAINER SYSTEMS.

These controls have been issued by ERMA in Schedules 8, 9 & 10 of the Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2004, in a supplement to the New Zealand Gazette (Issue No. 35 – 25 March 2004). This document is available in electronic format from the ERMA website www.ermanz.govt.nz/resources/publications/pdfs/consolidatedGN35and128.pdf

Stationary container controls apply to both above and below ground stationary tanks or process vessels, with a capacity greater than 250 litres, which are used to contain liquids or gases classified as hazardous under HSNO. Various controls are prescribed to ensure that substances are in containers of sufficient strength and resilience to prevent the occurrence of any incidents involving hazardous substances. Other controls are designed to minimise any adverse effects if an incident does occur, for example, secondary containment requirements. The controls also apply to any associated equipment, fittings and pipe work and include any components necessary for the container to perform its containment function safely (e.g. any lids or covers, integral heating coils and lightning conductors). These controls apply to both new and existing stationary containers but facilities in service or designed prior to April 2004 can meet requirements by a “grandfathering” or transitional process.

In some situations, such as those listed below, the stationary container may require test certification.

- All underground storage tanks over 250 litres will require test certification.
- All aboveground tanks containing 3.1A or 3.1B and which are larger than 2,000 litres require test certification.
- All other aboveground tanks larger than 5,000 litres, require a test certification (e.g. copper-chrome-arsenic – CCA).
- Gas cylinders over 500 litres water capacity (e.g. LPG over 250kg cylinder) require test certification.
- All tanks in residential areas of Regular Habitation require test certification.

3.4 TEST CERTIFICATION REQUIREMENTS

3.4.1 Test certificates provide for a formal means of verifying that required HSNO specifications have been met. Test certificates must be issued by an approved test certifier and must demonstrate compliance with a number of specified controls. Test certifiers are independent third party auditors that verify all test certificate requirements have been met. A list of test certifiers is available on the ERMA website.

3.4.2 Test certificates can be issued:

- To a specific site or location – to certify compliance with certain safety and procedural requirements (refer 3.4.3 – 3.4.5).
- For equipment such as certain stationary container systems or tank wagons (refer 3.3.11).
- To a person – to certify competence as an approved handler (refer 3.5).

LOCATION TEST CERTIFICATES

3.4.3 A location test certificate is required when certain flammable substances are stored or used above certain quantities (as specified in Tables 3 and 4 of Schedule 3, Classes 1 to 5 Controls Regulations). Most Light Organic Solvent Preservatives (LOSP) chemicals are 3.1C substances and therefore trigger the requirement for a location test certificate.

3.4.4 A location test certificate must demonstrate that the following requirements have been met.

- Notification to relevant enforcement officer of hazardous substance location
- Approved handler requirements.
- Security requirements.
- Hazardous atmosphere zone requirements, including controls on electrical systems and electrical equipment
- Segregation of incompatible substances
- Signage requirements
- Emergency management requirements

- Fire-fighting equipment
 - Secondary containment
- 3.4.5 Test certificates for locations must typically be renewed yearly, but ERMA can, on request by the persons required to obtain the test certificate, extend the time period to three (3) years. However, a number of transitional provisions have been established for timber treatment sites during the initial phase of the HSNO regime. For timber treatment sites that have a current Dangerous Goods Licence (as at 30 June 2004) for storage of 3.1C flammable liquids, that licence is “deemed” to be a HSNO test certificate. These “deemed” approvals will be valid for a maximum period of two (2) years, depending on the total quantity of flammable substances present at the site and on name of the licence holder as detailed below.
- For sites storing **greater than 50,000 L** of 3.1C substances, you must have had a HSNO location test certificate since 31 March 2005. A later date may be agreed to by the Authority upon receipt and approval of an implementation plan.
 - For sites storing **less than 50,000 L** of 3.1C substances, an application to a test certifier must be made by June 2006, depending on the name of the licence holder, as detailed in Schedule 4, clause 6 of the New Zealand Gazette Notice of Thursday, 3 June 2004, Issue Number 65, Hazardous Substances (Timber Preservatives, Antisapstains and Antifouling Paints) Transfer Notice 2004. An alternative date may be agreed to by the Authority upon receipt and approval of an implementation plan.

3.5 APPROVED HANDLER REQUIREMENTS

- 3.5.1 Under HSNO, when substances of particular hazard classifications are held or used above certain quantities, they must be under the control of an approved handler or locked up (see Appendix 5 for a list of the hazard classifications triggering this requirement and their respective trigger quantities). This requirement is intended to ensure that substances of high hazard are safely and effectively managed through being under the control of a knowledgeable and responsible person. Such substances may be handled by a person who is not an approved handler if the approved handler has provided guidance to the person in respect of handling, and the approved handler is available at all times to provide assistance if necessary.
- 3.5.2 A list of timber treatment chemicals required to be under the control of an approved handler (as at 1 October 2004) is provided in Appendix 7. These are generally those products that have high acute toxicity to humans (i.e. are classified as 6.1A, 6.1B or 6.1C).
- 3.5.3 Approved handlers are required to obtain a test certificate to demonstrate they have met the competency requirements specified by the Hazardous Substance (Personnel Qualifications) Regulations. The test certificate provides for a formal means for approval and a means for amending or terminating such approval. To be certified as an approved handler of restricted hazardous substances, the person must demonstrate they fulfil the competency requirements prescribed below.
- Be able to explain the hazard classifications and the adverse effects that could be caused by any of the hazardous substances or properties, know and describe the controls imposed under the Act that are relevant to the hazardous substances handled.
 - Generally explain their obligations and liabilities under the Act, explain which regulations and Codes of Practice apply, and know how to access the relevant information. Know and describe any conditions of their approved handler certification.

- Explain the precautions required to prevent injury to a person or damage to the environment and the procedures to respond to an emergency.
- 3.5.4 In addition the person must have comprehensive practical experience and have demonstrated the practical skills to be able to handle hazardous substances. This includes being able to demonstrate a working knowledge of the operating procedures (including use of protective clothing and equipment) necessary to manage those hazardous substance(s) relevant to their approved handler certification.
- 3.5.5 Generally a test certificate as an approved handler will remain valid for a period of five (5) years from the date of issue. However, during the initial phase of the HSNO regime, there is a transitional provision whereby a person with two (2) years' experience and competence under certain previous legislation will be "deemed" to be a HSNO approved handler. This "deemed" approval will be valid until 1 January 2007 after which time a 5-year HSNO test certificate as an approved handler will need to be obtained
- 3.5.6 Before renewing test certificates at the end of the 5-year period, the test certifier will need to be assured that the approved handler meets the listed competency requirements with respect to any changes in relevant working practices, regulations or Codes of Practice which have occurred since the previous certificate was issued.
- 3.5.7 A list of training providers is available on the ERMA website, (www.ermanz.govt.nz/hs/hs-comp-test-certifiers).

3.6 TRACKING REQUIREMENTS

- 3.6.1 Under HSNO, highly hazardous substances are required to be tracked irrespective of the quantity of substance present. A list of the hazard classifications that trigger tracking requirements is provided in Appendix 6. With respect to timber treatment chemicals, the tracking requirement is generally triggered by those products that have high acute toxicity to humans (i.e. are classified as 6.1A, 6.1B or 6.1C). A list of timber treatment chemicals required to be tracked (as 1 October 2004) is provided in Appendix 7.
- 3.6.2 The Hazardous Substances (Tracking) Regulations prescribe in detail the requirements that must be met for tracked substances. In brief, the person in charge of any place where tracked substances are present is responsible for keeping a record of the location and movement of those substances. The record must be accessible within 10 minutes, be comprehensible and clear and must be kept for a period of 12 months after the substance has been transferred to someone else. If a substance is discharged into the environment or otherwise used or disposed of, the record must be kept for three (3) years. Information collected by a tracking system may be inspected upon request by an enforcement officer.
- 3.6.3 The following information must be recorded for each tracked substance.

The identity of the approved handler

The approved handler shall be identified by:

- their name, residential and work contact information
- the hazard classifications and lifecycle phases of the hazardous substances for which that person has a test certificate as an approved handler and the date on which the test certificate lapses or must be renewed.

Substance information

The following information must be provided. This could be achieved by use of the registered trade name, common name, or HSNO approved number (provided this is not used for any other substance).

Quantity of the substance

The record shall accurately reflect the total amount of the tracked substance that is under the control of the approved handler at any one time; that is, as quantities of substances enter and leave the person's control the record shall be updated.

Location of the substance

Information about a location must be provided to enable an enforcement officer to identify the location of the substance within two (2) minutes of having obtained the record. To verify the record an enforcement officer at the location described in the record must be able to physically locate the substance and sight it or its container within one (1) hour of arriving at the location.

For managing an emergency, the substance must be able to be physically located by an enforcement officer (including emergency services personnel) or any other person required by the emergency plan to manage the substance either within the time specified in any emergency plan or, where no plan is required, within sufficient time to allow the officer exercising emergency powers to take action to stabilise the situation.

Transfer of the substance

If a tracked substance is transferred to the control of another person, the following information must be recorded:

- the unequivocal identification and amount of the substance transferred
- the address of the place and the identity of the approved handler to whom the substance is passed and the position of that approved handler within their organisation
- the date on which the transfer occurred.

Disposal of the substance

Record that the substance has been:

- processed, used or otherwise consumed in a way that changes the substance and its hazardous properties
- intentionally or unintentionally discharged into the environment, or
- otherwise disposed of.

The person in charge of the substance must record the

- the manner of disposal
- the date on which the disposal occurred
- the amount of substance disposed of
- location of the place of disposal of the substance (see 3.7.1 for definitions).

Any relevant WES, TEL or EEL values should also be listed on product MSDS.

3.7 EXPOSURE LIMITS

3.7.1 The HSNO legislation provides for three different types of exposure limits.

1. Workplace Exposure Standards (WESs);
2. Tolerable Exposure Limits (TEs); and
3. Environmental Exposure Limits (EELs).

The ERMA New Zealand website maintains a list of the WES, TEL and EEL values that have been set (www.ermanz.govt.nz/hs/hs-comp-tels-eels.asp).

Refer to product MSDS for information on WESs, TELs and EELs.

3.7.2 **WESs**

WESs are designed to protect persons in the workplace from the adverse effects of toxic substances. WESs only apply to places of work that the public does not have access to. A WES is an airborne concentration of a substance (expressed as mg substance/m³ of air or ppm in air) which must not be exceeded in a workplace. The maximum WES levels that can be set for any substance are 10,000 mg/m³ or 1,500 ppm. If the substance is a mixture a WES may be set for the substance or one or more components based on the assessment of the available toxicological and hygiene data. This means that WESs can be set for not only “active” components but also for solvents etc.

With respect to WES values for timber treatment products, where a value exists for any substance as listed in the DEPARTMENT OF LABOUR H&S *Workplace Exposure Standards* (2002) (www.Department_of_Labour_H&S.dol.govt.nz/order/catalogue/pdf/wes2002.pdf), these values will apply as HSNO WES values.

3.7.3 **TELS**

A TEL establishes the maximum concentration of a substance (or toxic component of a substance) legally allowable in a particular environment medium (e.g. air, water or soil).

For those timber treatment chemicals previously registered under the Pesticides Act and transferred to the HSNO regime on 1 July 2004 the setting of TELs has been deferred to a later date. However, for those “new” timber treatment chemicals approved since the introduction of HSNO on 2 July 2001, TELs have been set by ERMA for some components where appropriate (www.ermanz.govt.nz/hs/hs-comp-tels-eels.asp).

3.7.4 **EELs**

An EEL establishes the maximum concentration of a substance (or ecotoxic component of a substance) legally allowable in a particular (non-target) environmental medium (e.g. soil or sediment or water) and includes deposition of a substance onto surfaces.

For those timber treatment chemicals previously registered under the Pesticides Act and transferred to the HSNO regime on 1 July 2004 the setting of EELs has been deferred to a later date. However, for those “new” timber treatment chemicals approved since the introduction of HSNO on 2nd July 2001, EELs have been set by ERMA for some components where appropriate (www.ermanz.govt.nz/hs/hs-comp-tels-eels.asp).

Refer to product label (e.g. as primary identifier) **and** MSDS.

3.8 APPROVED CODES OF PRACTICE

- 3.8.1 The HSNO Regulations are, for the most part, designed to be performance based. They specify the outcomes that are desired, but do not prescribe how to achieve those outcomes. This gives flexibility to use a range of existing and new methods without being constrained by regulation. For users who require some degree of prescription and assistance in meeting the control requirements, the HSNO Act allows for approved Codes of Practice (COP) that indicate how compliance may be achieved. Compliance with a HSNO COP is not mandatory, but may be used as a defence in a court of law. ERMA may recognise elements of this Guideline as Codes of Practice. When this occurs users of those elements will be notified by public notice.

3.9 HSNO – APPROVED TIMBER TREATMENT CHEMICALS

- 3.9.1 All HSNO-approved substances are listed on the ERMA New Zealand Register (www.ermanz.govt.nz/search/registers.html). The Register provides, amongst other things, details of the hazard classification and HSNO controls that apply to each substance.

- 3.9.2 You can search the register in a number of different ways, including by trade name (“Alternative Name” field). Information on the hazard classification and controls is located in the “controls” document.
- 3.9.3 For those timber treatment chemicals previously registered under the old Pesticides Act and transferred to HSNO on 1 July 2004 this information is also provided in two summary documents – www.ermanz.govt.nz/hs/pesticides/tpcc.pdf (for timber preservatives) and www.ermanz.govt.nz/hs/pesticides/acc.pdf (for antisapstain). These two documents provide a list of all trade name products transferred, along with their respective HSNO hazard classification and controls, as shown by the two examples below.

Substance Description	Hazard Classification	HSNO Controls*
An oil miscible liquid containing 11g/litre permethrin	3.1C 6.1E 6.3B 6.5A 6.5B	Flammable F1, F2, F3, F5, F6, F11, F12, F14, F16 Toxic T1, T2, T4, T5, T7 Ecotoxic E1, E5, E6
This includes the following trade name products: P004381 Protim LCWR	6.9B 9.1A 9.4B	Identification I1, I3, I5, I8, I9, I11, I13, I16, I17, I18, I19, I21, I23, I25, I28, I29, I30 Packaging P1, P3, P5, P13, P15 Packing Group PG3 Disposal D2, D4, D5, D6, D7, D8 Emergency Management EM1, EM4, EM6, EM7, EM8, EM9, EM10, EM11, EM12, EM13
A soluble concentrate containing 674 g/litre CCA	6.1B 6.5A 6.5B 6.6A 6.7A 6.8A 6.9A 8.1A 8.2B 8.3A 9.1A 9.1B 9.3A 9.4C	Toxic T1, T2, T3, T4, T5, T6, T7 Ecotoxic E1, E5, E6 Identification I1, I2, I3, I8, I9, I10, I11, I16, I17, I18, I119, I20, I21, I22 I23, I28, I29, I30 Packaging P1, P3, P13, P14, P15 Packing Group PG2 Disposal D4, D5, D6, D7, D8 Emergency Management EM1, EM2, EM6, EM7, EM8, EM11, EM12, EM13 Tracking & Approved Handler AH1, TRI
This includes the following trade name products: P004301 Tanalith C Oxide 60%		

*The control codes as listed in the third column of the above table relate to one or more specific HSNO Regulations. A list of the regulations that each of these control codes refers to, along with a brief description of their content, is provided in Appendix 8.

4. RESOURCE MANAGEMENT ACT 1991

4.1 INTRODUCTION

- 4.1.1 The RMA 1991 is the cornerstone of New Zealand's environmental legislation. It sets out how we manage our environment, including air, water, soil, biodiversity, the coastal environment, noise, subdivision and land use planning in general.
- 4.1.2 The Act's purpose is to promote the sustainable management of natural and physical resources.
- 4.1.3 Sustainable management is defined to mean ".....managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural well being and for their health and safety while –
- (a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
 - (b) Safeguarding the life supporting capacity of air, water, soil and ecosystems; and
 - (c) Avoiding, remedying or mitigating any adverse effects of activities on the environment".
- 4.1.4 The Act's focus is on the environmental effects of activities rather than on the activities themselves. (Environment and effects are given wide definitions in section 2 and 3 of the Act respectively).
- 4.1.5 Local authorities (regional, city and district councils) are the main bodies charged with ensuring these resources are used in a sustainable manner.
- 4.1.6 The Act controls and administers the rights, duties and restrictions relating to different aspects of the use of land, air and water such as prohibiting the discharge of contaminants to the environment unless authorised by a regional plan, regulation or resource consent.
- 4.1.7 The Act makes employers and individuals responsible for ensuring that in undertaking their activities adverse effects on the environment are avoided, remedied or mitigated. Every individual must take responsibility for his or her actions. Employers must ensure that all staff and contractors are aware of this responsibility.
- 4.1.8 The Act requires councils to prepare plans to help them manage the environment in their area. It is these plans that outline what can or cannot be done as of right. Regional policy statements set the basic direction for environmental management in the region. Regional plans tend to concentrate on particular parts of the environment, like the coast, a river or the air. District plans set out the policies and rules that a council will use to manage the use of land in its area. By looking at these plans employers can find out what restrictions are in place and what authorisations are needed for undertaking timber treatment activities.
- 4.1.9 Generally the treating of timber will require some form of resource consent from your local city or district council (land use consent) and/or your regional council (discharge consent).
- 4.1.10 Where applicable, the Guidelines are consistent with the environmental protection requirements of the Resource Management Act 1991. However, the Guidelines do not provide a complete description of the requirements of this legislation and users should refer to the materials published by, or for the use of, territorial and regional councils as appropriate. This particularly applies to the parts of the Guideline concerned with the design, commissioning and operation of plant and the discharge of contaminants to the environment (including disposal of wastes) where the resource consent process of the Act will apply.

4.2 OTHER LEGISLATION

- 4.2.1 In addition, some provisions in these Guidelines may have potential impact on other legislation including the parts of the Building Act 2004 or transport legislation aimed at improving health and safety in the building or transport sectors.

5. DESIGN COMMISSIONING & OPERATIONAL REQUIREMENTS FOR ALL TIMBER PRESERVATION & ANTISAPSTAIN TREATMENT PLANTS

5.1 GENERAL

This section covers principles of the design (including siting and construction) and operation (including storage of preservatives and treated timber) of all treatment plants and establishes the precautions necessary to protect the natural environment from treatment chemicals.

Readers wishing to obtain more detail about treatment plant design and operation as distinct from the environmental protection and health and safety aspects of timber treatment plants should refer to AS/NZS 2843.1:2000 *Timber preservation plant safety code – Plant Design*. This standard sets out for the siting, design and layout of timber preservation plants are outlined in AS/NZS 2843.1:2000.

This Guideline deals with these elements in general terms in a manner intended to reduce the occupational health risk to plant operators and lower the potential for environmental pollution. It does not endeavour to cover the mechanical safety of plant and equipment but all machinery must comply with the requirement of the law.

Under HSNO there is a requirement to establish a hazardous substances location wherever flammable substances are present in quantities above certain trigger levels as specified in Hazardous Substances (Classes 1 to 5 Controls) Regulations (see Appendix 4 to this Guideline). This requirement is only necessary where hazardous substances are held for periods exceeding 18 hours (for substances that do not require tracking) or exceeding two (2) hours (for substances that do require tracking).

In such situations a HSNO test certificate will be required for the site. Further information on test certificates is provided in section 3.4 of this Guideline.

Regional councils are responsible for controlling the discharge of all contaminants to land, air or water. If the discharge of any contaminants can cause adverse effects, regional councils can adopt standards in regional plans, or may control discharges of the contaminants by conditions placed in resource consents. While all sites will need to meet a minimum standard, the conditions placed on the resource consents for some sites may be more restrictive if classified receiving environments require a higher standard. City and district councils are to ensure that land use planning and hazardous substances control requirements are met.

While the Guideline sets out the details and methods that will enable employers to comply with the pertinent legal requirements, employers are not constrained to use only these methods. An employer is required to take all practical steps that a reasonable and prudent person would do in all the circumstances. Another method and/or design which achieves the same or better standard of safety and environmental protection may be used in place of that specified in the Guideline.

Environmental enforcement and compliance provisions are prescribed by both the RMA and the HSNO Act. The RMA requires people or companies carrying out the activity at new and existing sites: to meet the conditions of a rule in a regional plan expressly allowing the activity; or apply for resource consent from the regional council, which may set limits on contaminants discharged to air, land or water. Accordingly, the Guideline sets out criteria designed to prevent water, soil and air pollution, to assist regional councils in the determination of resource consents. Employers will also require a land use consent from the city or district council for all new developments on both existing

and new sites where the scope of the activity is changed, otherwise existing rights apply. The HSNO Act provides for the setting of EELs and TELs for certain hazardous substances. These are essentially the maximum concentration of a substance legally allowable in a particular environmental medium (e.g. air or water) and must not be exceeded in any discharges from the site. Further information on these exposure limits are provided in 3.7 of this Guideline. The use of new chemicals in an existing plant may require further additions or amendments to resource consents.

5.1.1 Person in charge

- 5.1.1.1 The HSNO Act requires that many of the controls for hazardous substances are under the responsibility of a “person in charge”. A person in charge is the person who is in control of a site managing hazardous substances. This may be the owner, lessee, sub lessee, occupier or just the person in possession. (It is similar to the person in control of a place of work under the health and safety legislation) Having a nominated “person in charge” is a legal requirement – it is an offence not to comply and penalties may occur for non-compliance.
- 5.1.1.2 The person in charge is responsible for ensuring that the hazardous substances are managed correctly on that site. This may include the requirement for obtaining a Test Certificate for a site or for ensuring that there is an approved handler. Since most of the HSNO controls depend on the substance (the classification), the person in charge will need to establish the requirements before the HSNO controls can be determined (see 3.4 and 3.5).

5.1.2 Siting and layout of treatment plants

- 5.1.2.1 The most important safety feature in the plant and equipment layout is the containment of the chemical solutions and any associated vapours or mists within the perimeter of the plant.
- 5.1.2.2 All plants shall be laid out so that any discharge of treatment chemicals to the soil, surface water or ground water systems, or the atmosphere, shall be avoided or, if this is not practical, minimised. In all cases the discharge limits set by the regional council shall not be exceeded and should also not exceed EEL or TEL set under HSNO. The holding pads shall be roofed over. Spouting and culverts shall be directed to the storm water drains to prevent excess rainwater overloading the collection sump and recycling plant during periods of heavy rainfall.
- 5.1.2.3 New sites shall be chosen with due regard to the presence of surface and underground water and soil type. It is recommended that advice on the siting of plants is sought from the regional and city/district councils which will require resource consents.
- 5.1.2.4 New sites should not be subject to surface flooding or other known hazards. Before development drainage plans showing the isolation of treatment, dripping and storage areas from overload storm water flows shall be submitted to the regional council for approval.
- 5.1.2.5 The plant design should also be mindful of noise requirements at boundaries both in construction in accordance with NZS 6803P:1984 *The measurement and assessment of noise from construction, maintenance and demolition work* and during operation in accordance with council requirements and in accordance with NZS 6801:1999 *Acoustics – measurement of sound* and NZS 6802:1999 *Acoustics – assessment of environmental sound*.
- 5.1.2.6 Consideration of the site location should further take into account presence of archaeological sites in the vicinity, noting the provisions of the Historic Places Act 1993.

- 5.1.2.7 In addition, consideration shall be given to the problem of air emissions and the direction of prevailing winds in relation to actual or planned centres of habitation.

5.1.3 Storm water discharge outlets

- 5.1.3.1 Where the regional council is satisfied that the risk of chemical contamination is negligible, those areas may be drained so that any rainwater enters storm water drains. Such discharges may require a discharge permit from the regional council. Check with your regional council.
- 5.1.3.2 Storm water discharge outlets from the treatment plant site shall be provided with appropriate systems and this equipment/infrastructure should be maintained to ensure compliance with any conditions of the discharge set by the regional council.
- 5.1.3.3 Outlets discharging off site should be capable of being isolated to manage/control emergency events.

5.2 STORAGE AREAS FOR PRESERVATIVES, ANTISAPSTAIN CHEMICALS AND FRESHLY TREATED TIMBER

5.2.1 Antisapstain and preservative deliveries

5.2.1.1 Antisapstain and Preservative deliveries

- a) All deliveries of treatment chemicals shall be made to the bunded area (see 5.3).
- b) For bulk tanker deliveries the transfer hose connection must be within the bunded area to ensure that any accidental spillages are contained, but the vehicle itself may be stationed outside the bund. However, in such cases measures must be in place to prevent any spills from discharging into the environment; for example by providing a sealed tanker discharge area with sump or drainage back into the bunded area or recycling tank. Ideally, the whole vehicle should be parked within the bunded area.

Such areas may be in the open or under cover in secure, well ventilated enclosures or buildings. The bunded area(s) shall be designed and sealed in accordance with section 5.3 below.

- c) IBCs, drums, pails and similar containers shall be delivered to a point within the bunded area.
- d) Deliveries of all tracked substances shall be recorded on the appropriate form.

5.2.1.2 Antisapstain and Preservative storage areas

- a) All ERMA approved antisapstain chemicals and timber preservatives shall be stored within the bunded area and be labelled with signage in compliance with HSNO requirements. MSDS for each individual formulation shall be kept in an easily accessible part of the storage location.
- b) Flammables of Classes 2, 3 and 4 shall be stored in an isolated area in compliance with HSNO requirements (see 5.2.4 of this Guideline).

- c) The transfer of substances from portable containers into mixing containers shall comply with the requirements for mixing given in 7.5 of this Guideline.
- d) All storage areas for ERMA approved antisapstain chemicals and timber preservatives shall incorporate site safety measures as set out in 5.7 of this Guideline.

5.2.2 Holding pads

- 5.2.2.1 The holding pad shall be sufficiently large so that the timber does not need removing during the dripping process (refer 5.2.3).
- 5.2.2.2 Holding pads shall be designed and sealed to the requirements of AS/NZS 2843.1:2000 *Timber preservation plant safety code – Plant design* and the regional council. To this end the following minimum requirements shall be met.
 - The holding pad shall be constructed of impervious concrete (or similar suitable material approved by the regional council) if possible with no joints. The surface must be sealed or coated with an impermeable material for leak prevention and cleanability.
 - Any joints in the concrete shall be moisture and chemical proof.
 - The holding pad shall be maintained free of cracks or deterioration that could lead to leakage.
 - For all new holding pads, an impermeable membrane shall be used beneath all concrete work.
- 5.2.2.3 The holding pad shall be laid out so that drips from timber, bogies and loading equipment will drain to a sump for either recycling or waste disposal in a manner that minimises the risk of chemicals being tracked off the holding pad by vehicle movements. The sump shall be designed and sealed in accordance with AS/NZS 2843.1:2000 and to the requirements of the regional council. The sump should be constructed from a suitably chemical resistant material fitted within a secondary sump constructed of impervious concrete that meets the specification detailed in 5.2.2.2.
- 5.2.2.4 To reduce the possibility of contaminated yard dust, chemicals and other contaminants from being discharged into the environment holding pads shall be designed to be hosed down and the washings collected. Sumps that collect washings shall be constructed as per 5.2.2.3.
- 5.2.2.5 If the design of the holding pad could result in chemical being tracked off the pad by vehicle movement the design of the pad shall include a wheel-washing facility to prevent this. The washings from the wheel washings facility shall drain to a sump or be isolated and disposed of appropriately.

5.2.3 Holding times and fixation

- 5.2.3.1 Treated timber shall not be moved from the drip pad until the timber surface is drip free.
- 5.2.3.2 Treated timber shall be held in the treatment plant yard so as to minimise the risk of ground water contamination in such a way that any potential yard water discharge from the treated timber stock does not exceed the emission limits set by the relevant regulatory environmental authorities.

- 5.2.3.3 CCA treated timber shall be allowed to leave the treatment plant yard only after the preservative is well fixed. (AS/NZS 2843:2000 Part 1 defines "well fixed" as "1.5.1 In the copper chrome arsenic (CCA) treatment, this refers to treated timber with at least 99% of chromium fixed or which gives a result of less than 0.5 ppm Cr using a field test kit such as Merck Aquaquant Test Kit 14441 or equivalent").
- 5.2.3.4 The process of chemical fixation of CCA in wood begins during the treatment process and consists of complex chemical reactions which are strongly influenced by temperature.
- 5.2.3.5 Timber subjected to sludging effects shall be washed on the drip pad before transfer to under-cover storage. The contaminated washings shall be disposed of in accordance with the requirements of environmental or local council authorities.
- 5.2.3.6 Boric treated timber shall be stored under cover when not on the holding pad.
- 5.2.3.7 To reduce the health risks posed by residual solvent in timber packets following treatment, LOSP treated timber shall be held in fillet (every layer) for a minimum of four (4) days in a well ventilated area. Alternative methods may be used to reduce residual solvent to equivalent levels. Plastic wrap shall be left off timber during this period to ensure solvent dissipation.
- 5.2.3.8 LOSP treated timber should be stored in a building ventilated (open at opposite sides) to ensure air movement across the timber, or in a building equipped with suitable air extraction fans.

5.2.4 Storage areas for flammable materials

- 5.2.4.1 Storage areas for flammable materials shall comply with the controls specified in Schedule 10 relating to the adverse effects of unintended ignition of Class 2 and 3.1 hazardous substances of the NZ Gazette Notice of Thursday 25 March 2004, Issue Number 35, Hazardous Substances (Dangerous Goods & Schedules Toxic Substances) Transfer Notice 2004. This includes a requirement to establish a controlled zone and to maintain separation distances in accordance with the type of construction of the storage location and volume of material stored in these storage areas. Controlled zones are required to be established at hazardous substance locations where hazardous substances are present above certain trigger quantities (see Appendix 4).
- 5.2.4.2 The Hazardous Substances (Classes 1 to 5 Controls) Regulations also give a number of requirements that must be complied with, such as those relating to the control of ignition sources, the segregation of incompatible substances and the protection/insulation of electrical systems and electrical equipment.

5.3 BUNDING

5.3.1 Construction

- 5.3.1.1 All treatment plants shall be designed to contain the maximum total volume of all liquids present or stored in all vessels, pipes and tanks within the plant area (including the chemical mixing area) by bund(s) in the event of an accident, sabotage or corrosion. The bunds must be roofed over and capable of holding 110% of the maximum volume of all liquids that might be present.
- 5.3.1.2 The banded area shall be designed to withstand, without cracking:

- static and dynamic loads that would be exerted by the escape of liquid through a failure of primary containment
- the weight of primary containment when filled with liquid and any other forces that arise from activities carried out within the bunded area and acting on the base of the bund, including timber loading on the bogies and rail track
- stress induced by ground conditions, for example differential settlement and aggressive ground materials
- thermal and shrinkage stresses (e.g. fire and climate weathering).

5.3.1.3 The bunded area shall be constructed with a sealed base surrounded by impermeable levee banks or other means of containment that shall, as a minimum, be to an engineering design as specified in AS/NZS 2843.1:2000 and approved by the regional council.

To this end the following minimum requirements shall be met.

- The bunded area shall be constructed of impervious concrete (or similar suitable material approved by the regional council), if possible with no joints. The surface must be sealed, coated or covered with an impermeable material for leak prevention and cleanability.
- Any joints in the concrete shall be chemical and moisture proof.
- The bunded area shall be maintained free of cracks or deterioration that could lead to leakage.

5.3.1.4 Bund walls (levees) should be constructed using reinforced concrete, shuttered and poured in situ, at least 200mm high and constructed integrally with the slab. All joints shall be moisture proof.

5.3.1.5 The design of the bunded area shall minimise the possibility of leaking tanks, pipes, pumps or fittings discharging a jet beyond the bund wall.

5.3.1.6 An impermeable membrane liner shall be used beneath all concrete work forming the bunded area. A monitoring/leak detection system shall also be installed between the concrete base of the bunded area and the liner to provide for leak detection.

5.3.1.7 Where incompatible preservatives may be used in a single treatment vessel systems/mechanisms shall be put in place to prevent any cross contamination.

5.3.1.8 Bunds suitable for dip plants may be designed in the shape of a shallow basin to facilitate truck access to and from the dipping tank.

5.3.1.9 Some dip tanks are elevated, not in shallow basins. Design must provide for peripheral drainage and sump collection and re-use, or safe disposal.

5.3.1.10 For spray operations, bunds shall be designed to contain 110% of the maximum volume of all liquids in the storage and supply tanks and pipelines. The bunded area shall be designed to cover all the area below the storage and supply tanks, pipelines and spray nozzles and include provision for accidental spray or jet of liquid under pressure.

5.3.1.11 Bunds shall be designed to eliminate the need for vehicle traffic within the bunded area, or accommodate a dedicated forklift, or provide wheel washing facilities to prevent chemical being tracked off away from the bunded area/holding pad.

5.3.1.12 Bunds that may contain waterborne chemicals shall be designed so that they can be hosed down and the washings drained to the recycling sump. All recycling sumps shall be designed in accordance with section 5.2.2.3 of this document.

5.3.1.13 If a collection sump or other open tank can pose a risk to plant employees or other people, employers shall take all reasonable steps to ensure no person falls into it. Such precautions may include covering a sump or open tank with a protective grid or fencing it off to a height of at least a metre.

5.3.1.14 An isolation point for water supplies shall be provided outside the bunded area.

5.3.2 Isolation distances

5.3.2.1 Where flammable liquids may be present the bund location must also comply with the isolation distances required.

Refer to HSNO Regulations 2001 and Transfer Notice 35, Part 3 of New Zealand Gazette Notice of 25 March 2004.

It is possible, but unlikely, that solvent vapour may collect within the bunded areas. Should this occur, a suitably protected, strategically placed fan will generate sufficient air movement to prevent vapour build-up.

5.3.2.2 Where flammable liquids are stored in underground tanks, reference should be made to the Code of Practice for the design, installation and operation of underground petroleum storage systems.

5.3.3. Operation

5.3.3.1 Bunded areas should be maintained in a dry, clean condition.

5.3.3.2 The integrity of bunds, in ground tanks and treatment pits shall be maintained so unauthorised discharge of contaminants is prevented.

5.3.3.3. The integrity of the bunded area shall be visually checked on a regular basis (at least monthly) for cracks. Any cracks identified shall be sealed immediately. The outcomes and observations of all inspections shall be appropriately documented.

5.3.3.4 An annual audit shall be undertaken to assess compliance with the provision of this Guideline. The results of the audit shall be documented and retained.

5.3.4 Existing plants

5.3.4.1 Where it is not possible for bunds in existing plants to meet all the requirements the employers must negotiate an acceptable level of protection with the regional council.

5.4 HAZARDOUS AREAS FOR FLAMMABLE SOLVENTS – ELECTRICAL REQUIREMENTS

5.4.1 Classification of the hazardous areas for LOSP plants and drying sheds depends on many factors including the amount, type and properties of the solvent used, type of equipment and its reliability and the amount of ventilation provided.

5.4.2 For LOSP plants and buildings the following guideline for the hazardous area classification can be applied.

Zone 1:

The treatment cylinder and 2m in all directions from the vessel door.

Zone 2:

All other areas within the bund and extending to 2m above the highest point.

Non-hazardous:

All areas beyond Zone 2.

Only modified types of forklift trucks and other vehicles are to be used within Zones 1 and 2. Unmodified vehicles may be used in the non hazardous zone.

- 5.4.3 All electrical equipment shall be of a design compatible with the hazardous area classification in which it is used and comply with the current Electricity Act 1992 and Regulations.
- 5.4.4 Other sources of ignition such as flames, sparks or hot surfaces shall not be permitted within the hazardous area.

5.5 WARNING SIGNS

- 5.5.1 Hazchem signages for each hazardous chemical present on site shall be displayed on all storage tanks and buildings in which the chemicals are either used or stored and at the site entrance. The Hazardous Substances [Identification] Regulations 2001 prescribe a range of generic signage requirements; for example the information provided in all signage needs to be understandable over a distance of 10 metres and follow the prescriptions below.
- Advise that the location contains hazardous substance.
 - Describe the general type and nature of the hazard.
 - Where the signage is immediately adjacent to the hazardous substance storage areas, describe the precautions needed to safely manage the substance.
- 5.5.2 Warning notices stating FLAMMABLE LIQUIDS AREA – NO SMOKING shall be prominently displayed in easily-read capital lettering at all places of work where flammable liquids are stored or used.
- 5.5.3 The ERMA New Zealand approved Code of Practice *Signage for Premises Storing Hazardous Substances and Dangerous Goods* contains further information on signage requirements and includes a comprehensive list of hazardous substances. It is available from ERMA New Zealand.

5.6 TANKS & FITTINGS

- 5.6.1 All tanks and fittings shall be fabricated from materials compatible with the stored treatment chemicals. For example, corrosive preservatives such as CCA concentrates must be stored in tanks constructed from stainless steel with stainless steel fittings or similar inert materials such as polyethylene.
- 5.6.2 Tanks with a capacity of 250 litres or greater and used to contain liquids or gases classified as hazardous substances under the HSNO Act shall meet the requirements for fixed bulk containers set out in Schedules 8, 9 and 10 of the Hazardous Substances (Dangerous Goods & Schedules Toxic Substances) Transfer Notice 2004, New Zealand Gazette (Issue number 35 – 25 March 2004). Further information on stationary tank controls is provided in 3.3.11 of this Guideline.
- 5.6.3 Where underground storage tanks are present, reference should be made to the DEPARTMENT OF LABOUR H&S *Code of Practice for the Design, Installation & Operation of Underground Petroleum Storage Systems* (1992).

- 5.6.4 All other tanks, valves and ancillary equipment used in LOSP shall comply with the provisions of the Hazardous Substances Regulations 2001.
- 5.6.5 **Level Indicators.** Storage tanks used for preservative concentrates or working strength solutions shall be fitted with level indicators. These should be designed to minimise the possibility of accidental damage resulting in leaks or spills.
- 5.6.6 All valves, gauges and level indicators shall be readily accessible, legibly labelled and located in positions that do not pose a hazard.
- 5.6.7 **Labelling.** Every storage tank should have an appropriate Hazchem label affixed to it. In the case of enclosed or below ground tanks, the riser pipe shall display a separate label clearly stating the common, chemical and/or trade name of the treatment chemical(s) it contains. The label shall also state the approximate concentration, or range of concentrations, of the treatment chemical(s) present using units such as % w/v or % w/w .

5.7 SITE SECURITY

- 5.7.1 Employers shall establish security precautions appropriate to the site and treatment plant layout to prevent entry by unauthorised persons. HSNO security provisions and HSE Act emergency procedure requirements [Section 7.6] meet the specific provision of Hazardous Substances (Emergency Management) Regulations 2001 for hazardous chemicals stored and processes generating HSNO identified hazards. Note the test regime for the plan.
- 5.7.2 Every manually operated valve controlling the discharge of treatment solutions from storage tanks shall be secured by a locking device when the plant is not in operation. This provision shall not apply if the valves are contained in a secure lock-up building.
- 5.7.3 If the site contains certain (highly hazardous) substances required to be under the control of an approved handler these must be locked up when not in use (see Appendix 5).

5.8 NOISE

- 5.8.1 All plants shall be designed and operated to comply with the requirements of the Health and Safety in Employment Act 1992; HSE Regulations 1995 and HSE (pressure equipment, cranes and passenger rope-ways) Regulations 1999.

5.9 SAFEGUARDING THE WATER SUPPLY

- 5.9.1 All water entry points from external sources to the mixing and storage tanks shall be protected so that treatment solutions cannot flow back into the water supply if there is a fall in supply pressure. Protection must be provided in accordance with Regulation 10 of the Water Supplies Protection Regulations 1961. Prior approval for the system chosen must be obtained from the water supply authority. This requirement also shall apply to any other non mains supply.
- 5.9.2 There must be a minimum 150mm clearance between the top of the mixing tank and the outlet end of the supply line which also should incorporate an isolating valve and a backflow prevention valve.

5.10 FIRE FIGHTING EQUIPMENT

- 5.10.1 **Fixed Installations**

Where sufficient water supplies are available, hose reels conforming to AS/NZS 1221:1997 *Fire hose reels* should be provided and installed throughout the premises in accordance with NZS 4503:1993 *Code of Practice for the distribution, installation and maintenance of hand operated fire fighting equipment for use in buildings*.

Every place where flammable substances are held above certain quantities must have either one (1) or two (2) fire extinguishers (as specified in Schedule 3 of the Hazardous Substances (Emergency management) Regulations). Each fire extinguisher must be located within 30m of the substance, or, in a transportation situation, in or on the vehicle. The extinguisher must be capable of extinguishing a fully ignited pool of flammable liquid (50mm deep and at least 6 m² in area) before the extinguisher is exhausted and must be able to be used by one person. Alternatively, the extinguishers shall be selected and positioned according to the recommendations contained in NZS4503:1993.

Portable fire extinguishers of the appropriate type should also be provided for all waterborne preservative and antisapstain processes. The extinguishers shall be located in easily accessible positions and comply with the recommendations contained in NZS4503:1993.

5.10.2 ***Automatic Sprinkler System***

These have been proven over the years to be an effective tool for detecting and controlling fires in the very early stages of development. The Fire Service strongly recommends that employers install automatic fire sprinkler systems in areas where flammable solvents are used. The installation of these systems should comply with NZS4541:2003, *Automatic fire sprinkler systems*.

5.10.3 ***Fire Control Training***

Besides providing fire-fighting equipment as described above, employers should establish a liaison with the local area commander of the New Zealand Fire Service and follow their recommendations concerning the size and training of fire crews, the provision of emergency evacuation plans and other related matters.

6. SAFETY & HEALTH REQUIREMENTS FOR ALL PRESERVATION & ANTISAPSTAIN PLANTS

6.1 GENERAL

6.1.1 The Guideline requires that good industrial hygiene principles shall apply. Thus, wherever practical, the exposure of employees to hazardous substances shall be minimised, preferably by:

- the substitution of a chemical by one that is less hazardous; or
- where this is not possible, by the adoption of appropriate technical and engineering methods or improvements; and
- applying engineering controls before relying solely or principally on the provision of protective clothing and equipment.

The application of these principles is also a requirement of the Resource Management Act.

6.2 MATERIAL SAFETY DATA SHEETS

6.2.1 The Hazardous Substances (Identification) Regulations prescribe a number of requirements relating to the provision and content of MSDSs. Under HSNO the requirement for workplace documentation is triggered when hazardous substances are present in quantities above those specified in Schedule 2 of the Identification Regulations. The primary responsibility for preparing and supplying the workplace documentation rests with the hazardous substance manufacturer or importer (or supplier). However, ensuring that the documentation is readily available (i.e. within 10 minutes) to all relevant employees is the responsibility of the workplace management.

6.2.2 The MSDS must follow the prescriptions listed below.

- The substance must be unequivocally identified, including its chemical name, common name(s), trade name(s), UN number and CAS registry number (as applicable).
- Describe the physical characteristics of the substance, including physical state and colour and characteristics specific to hazardous properties that need consideration to ensure appropriate use and handling. For flammable substances this includes flammability limits, while for toxic or ecotoxic substances it includes a summary of toxicity or ecotoxicity data as relevant.
- Provide information to enable the New Zealand manufacturer or importer of the substance to be contacted.
- State the date on which the document was prepared and include emergency management and disposal information.
- State the general degree and type of hazard(s), which the substance possesses.
- Provide details on the precautions that should be taken to prevent injury to a person or damage to the environment during the substance's lifecycle.
- If the substance increases in hazard over time or develops additional or different hazardous properties, give a description of how the hazard increases/changes and an expiry date for the substance.

- Where a substance has highly toxic or corrosive ingredients, identify the ingredients and their proportion within the substance. This identification must also include any CAS number allocated to the ingredient. However, generic names may be used to identify corrosive ingredients.
- List any exposure limits (WESs, TELs or EELs).

6.2.3 The Code of Practice for “Preparation of Safety Data Sheets” contains useful guidance material on MSDSs. This is available from the New Zealand Chemical Industry Council.

6.3 VENTILATION – GENERAL CONSIDERATIONS

6.3.1 Where employees are likely to be exposed to harmful vapours, fumes or dusts which cannot be adequately contained by enclosing the source, suitable mechanical extraction or ventilation shall be provided to reduce the concentration to the lowest practical level below the Workplace Exposure Standard (WES) (see Appendix 2). Where a WES does not exist the permitted level of exposure shall comply with the requirements of DEPARTMENT OF LABOUR H&S. In addition, the ventilation system must include any filters or scrubbers necessary to reduce the atmospheric discharge of toxic materials as per rules set by the regional council.

6.3.2 The cleaned air shall be discharged clear of all working, storage and process areas in accordance with National Air Quality Standards and any TELs set under the HSNO Act and is also subject to the requirements of the Resource Management Act 1991.

6.3.3 Alternatively any other means of controlling the emission of harmful vapours, fumes or dusts shall be acceptable, provided the standards discussed in section 5.3.2.1 are met.

6.4 HOUSEKEEPING

6.4.1 All holding pads and other areas subject to the build-up of chemical deposits (except LOSP) must be kept clean by regular hosing down with water into collection sumps for re-use or appropriate treatment and disposal (see Section 10). The use of vacuuming, sweeping equipment with appropriate filtration is acceptable. LOSP deposits shall be cleaned up as described in Section 10.6 for spillages.

6.4.2 Dry sweeping is permissible so long as correct personal protection equipment is worn.

6.5 USE OF CHANGING ROOMS AND SHOWERS

6.5.1 Even though the employer shall meet the requirements of this Guideline and provide a safe working environment for employees there remains the possibility that an employee’s protective clothing, skin and hair will become contaminated with traces of highly toxic chemicals. To meet their obligations not to endanger themselves or others (Section 19 of the Health and Safety in Employment Act) employees shall:

- leave all protective equipment and clothing in the lockers provided (Section 6.6.2); and
- use the washing or showering facilities before eating, smoking or leaving the site.

6.6 PLANT ENTRY, CHANGING AND TOILET FACILITIES

6.6.1 For good hygiene, all new plants should be laid out so that personnel working with treatment chemicals and processes can enter and leave the work area via the changing room. (A second exit from the work area also must be available to staff in emergency situations).

- 6.6.2 The changing room, shower, hand-washing and toilet areas shall meet the requirements of the Building Act and HSE Act. They shall be available for the use of persons working with treatment chemicals and processes. Provisions shall be made for staff to remove protective clothing and wash before using the toilet facilities. The changing room in CCA treatment plants shall have separate clean area and working area sections with a clothes locker in each section for every employee.

6.7 EMERGENCY SHOWERS AND EYE-WASHING FACILITIES

- 6.7.1 Emergency showers, wash basins and eye-washing facilities that can provide continuous flushing of the eye for 15 minutes shall be provided for each treatment plant at appropriate locations throughout the treatment site. Access to the emergency facilities must be kept clear of any obstruction and the areas conspicuously marked.

6.8 EATING AND SMOKING FACILITIES

- 6.8.1 The consumption of food and drink shall be permitted only in an administrative or other uncontaminated area specifically set aside for that purpose.
- 6.8.2 Smoking shall only be permitted in areas designated under the Smoke-free Environments Act 1990.

6.9 PROTECTIVE CLOTHING

- 6.9.1 All personnel working with timber preservatives, antisapstain or handling freshly treated timber shall be provided with, free of charge, and shall wear, the appropriate level of protective clothing and equipment for the operation(s) carried out. It is recommended that the following items are supplied.
- (a) Full length overalls made from cotton, cotton/polyester blends or other absorbent fabrics. These materials can absorb small splashes of liquids and prevent penetration to underclothes or skin. Two (2) pairs of overalls shall be supplied to each employee.
- Full length overalls made from impervious fabrics such as PVC should be specified for non routine or emergency situations if there are real risks of personal exposure to preservatives or antisapstain solutions or their sludges.
- Green table employees may be exempted from the requirement to wear full length overalls provided they comply with the other provisions in this section and those contained in the manufacturer's MSDS.
- (b) A waterproof PVC or neoprene apron of the bib type and extending below the knees for operations where contact with treatment solutions and antisapstained or freshly treated timber is likely. Where gumboots are worn, apron to extend to below the top edge of the gumboots.
- (c) PVC gloves for all operations that may involve contact with waterborne treatment chemicals and neoprene gloves for solvent borne operations. Elbow-length gloves are recommended whenever contact with liquid preservatives or antisapstains is likely. Two (2) pairs of gloves shall be provided for each employee.

- (d) Safety footwear for all employees. Where wet conditions exist the footwear also shall be waterproof. Note: only synthetic rubber or PVC footwear is suitable for use with CCA preservatives.
- (e) Safety glasses or splash-proof goggles to provide protection whenever there is a possibility of exposure to liquid splashes, mists or chemical dusts. This requirement applies to all open situations and also for totally enclosed plant where the preservatives are under pressure and leaks might occur. A full face shield shall be provided for situations where liquid splashes can be expected. Full face mask to be used in repair of pumps at pressure. All pressure should be bled from any system before any repairs are undertaken.
- (f) A suitable respirator must be worn whenever toxic substances may be inhaled in harmful concentrations. Note: a gas or particulate respirator will only be effective when fitted with the correct filter(s) and the oxygen level is not depressed. Compressed air-fed respirators are recommended for use when confined spaces are entered unless an adequate supply of fresh air can be guaranteed by other means. The DEPARTMENT OF LABOUR H&S publication *A Guide to Respirators and Breathing Apparatus* (1992) contains helpful advice on the proper selection and care of respirators and is available from DEPARTMENT OF LABOUR H&S office. It refers to the appropriate standards (AS/NZS 1715:1994 *Selection, use & maintenance of respiratory devices* and AS/NZS 1716.2003 *Respiratory protective devices*).
- (g) Hearing protection devices should be worn whenever noise levels are likely to impair an employee's hearing. They must be of a type approved for the degree of protection required. (See AS/NZS 1270:1999 *Hearing Protectors*).

6.9.2 All protective clothing and equipment shall be issued for the exclusive use of an individual.

6.10 CARE OF PROTECTIVE CLOTHING

- 6.10.1 Laundering of protective clothing shall be conducted at least weekly and more often if obviously contaminated. The person in charge shall be responsible for this requirement to be followed. Employees should not wash overalls at home. They should preferably be washed at the plant but may be laundered commercially provided laundry personnel are fully aware of the possible hazards. The employer is responsible for providing this information. Torn clothing or clothing that contains holes shall be repaired or replaced.
- 6.10.2 Protective gloves should be examined daily for signs of cracking or other deterioration and replaced if found defective. At the end of each day employees should wash the gloves inside and out and hang them up to dry.
- 6.10.3 Cartridge filters or canisters used in respirators shall be replaced when:
 - the life of the device has lapsed (as recommended by the supplier), or
 - users have difficulty in breathing, or
 - the wearer detects the taste or smell of the contaminant, or
 - the cartridges or canisters show any sign of damage.

6.11 FIRST AID

- 6.11.1 If any accident involving treated timber chemicals occurs the following emergency procedures are recommended.
 - (a) **Inhalation**

Remove the person to fresh air. Clear the air passages. Start artificial respiration if person is not breathing.

(b) **Skin Contact**

Wash affected area with soap or specialist cleansers and cold water but do not rub harshly or scrub. Where clothing has been drenched use the emergency showers provided and remove all contaminated clothing while under the shower. Affected clothing must be laundered or disposed of if severely contaminated.

(c) **Eye Contact**

Immediately flush with water for at least 15 minutes. Have the patient blink as much as possible while flooding the eye. Seek medical attention for all incidents involving corrosive chemicals and if pain or discomfort persists following any chemical contact.

If the patient wears contact lenses, immediately flush the eye and contact lens with water for 15 minutes. If the lens does not wash out of the eye, as sometimes happens, it must be removed when practical either by the patient or by trained personnel. Note, no additional damage will occur to the eye if the lens is left in it for several hours.

(d) **Swallowed**

Seek medical assistance immediately and refer to relevant sections of MSDS. For urgent medical advice call National Poisons Centre **0800 POISON (0800 764 766)** which provides a 24-hour emergency service. In emergency dial 111, Ambulance.

6.12 EMPLOYEE TRAINING

6.12.1 The training of employees in the safe use of timber treatment chemicals is an important safety measure that must be undertaken by every employer. Such training must be completed before the employee undertakes any work unless the employee is to be supervised by an experienced person. At all times during operation each site shall be under the supervision of an approved handler as required under the HSNO Act (see Appendix 7 for a list of timber treatment chemicals required to be under the control of an approved handler). Approved handlers are also expected to provide guidance to other people handling the substances and be available to assist them if required. For further details on approved handler requirements see 3.5.

6.12.2 The training shall include the following aspects:

- (a) Safe work procedures, methods and practices. Reference should be made to the following information.
 - MSDS (where available) and technical data sheets or manuals available from the chemical suppliers
 - DEPARTMENT OF LABOUR H&S publications. See list in Appendix 10.
- (b) The correct procedures to be followed if a spillage occurs (see 7.7).
- (c) The hazards and symptoms of overexposure to the treatment chemicals used. This should cover the possibility of contact with the skin, eyes and inhalation of dusts, aerosol mists or fumes (see 6.11).
- (d) The necessity for wearing the appropriate protective clothing provided for the task undertaken and care of the same.
- (e) First aid procedures and the location of the emergency showers and eye-wash facilities.

- (f) The importance of good hygiene practices.
- (g) The reporting of defects in safety devices and equipment.

6.12.3 Retraining shall be carried out periodically and whenever significant changes are made to the plant operation”.

6.12.4 A record shall be kept with dates of the training provided to each person employed in the preservative or antisapstain treatment of timber and be available to the inspector on request.

6.13 MEDICAL SURVEILLANCE

6.13.1 Medical surveillance is recommended for employees who have the potential for exposure to timber preservative or antisapstain chemicals. This relates mainly to the employees applying the treatment chemicals and would not normally apply to those working with dry treated timber. Specific advice on the appropriate type of surveillance may be obtained from any DEPARTMENT OF LABOUR H&S office.

6.13.2 Treatment plant managers should advise a local doctor(s) of the nature of the treatment chemicals used in the plant so that appropriate medical attention may be readily available if accidents occur.

6.14 MANAGEMENT & EMPLOYEE RESPONSIBILITIES

6.14.1 Employers have a duty to provide and maintain safe and healthy working environments and work practices so that the risks arising from working with timber treatment chemicals and the treated timber are minimised.

6.14.2 Employees have a responsibility while performing their work to:

- take care of their safety and that of other persons who may be affected by their acts or omissions
- co-operate with their employer to ensure that the provisions of this Guideline are followed
- comply with instructions and procedures for their safety and health and those of others
- report immediately to their supervisor any situation that they believe could present a risk which they cannot themselves correct
- be familiar with the information contained on the labels of all treatment chemicals they use and the MSDSs
- wear the appropriate protective equipment for the job and ensure that it is correctly selected and fitted.

7. PLANT OPERATIONS

7.1 PRESSURE PLANT, DESCRIPTION OF PROCESS

7.1.1 Timber may be conditioned by air-drying, steaming or kiln drying before preservative treatment. The dried untreated timber is placed in a steel vessel of cylindrical or rectangular shape. An initial vacuum may be drawn before the introduction of the relevant waterborne solution. This is followed by the application of pressure until the required uptake of chemicals is achieved. After draining, a final vacuum is normally applied to remove surplus solution and minimise post-treatment drip.

Prior to treatment, timber shall be as clean as possible to minimise sludge formation. This is also important for LOSP plants- LOSP treatment does not generate sludge, however any wood shavings or saw dust allowed to remain on timber will provide a significant source of toxic contamination.

7.1.2 LOSP schedules have been developed specifically to minimise fluid uptake (typically 30 litres/m³) and ensure that resulting treated timber is drip-free.

7.2 PRESSURE PLANT, DESIGN & OPERATION

7.2.1 General

7.2.1.1 The safe operation of treatment plants depends upon sound design, regular maintenance and correct operation by trained employees. Failure to attend to any of these aspects can lead to accidents. Equipment coming within the scope of the Health and Safety in Employment Act (PEPR) Regulations 1999 shall be designed, manufactured and certified, operated and maintained in accordance with the Health and Safety in Employment Act (PECPR) Regulations 1999. These regulations relate to pressure vessels. In addition AS/NZS 3788:2001 *Pressure equipment – in-service inspection*, provides requirements for inspection, repair and alteration of in-service pressure vessels.

7.2.1.2 Pressure vessels used to pressure treat timber with steam are required to be inspected and certified to a recognised industry standard by an accredited inspection body (Regulation 25, HSE [Pressure equipment, cranes and passenger ropeways] Regulations 1999).

Fully flooded vessels used for timber treatment at pressure and/or vacuum are not required to have certificates of inspection to HSE (PCPR) requirements, however they should be routinely inspected to ensure they are safe to operate.

7.2.2 Treatment vessel door

7.2.2.1 If the treatment vessel door is not closed and locked fully before starting the treatment process, it may be dislodged and blown open, either by internal pressure or by the weight of the preservative solution behind it.

7.2.2.2 Before closing the vessel door, employees must ensure that the door seal is in position and wash or wipe the seal clean of any debris.

7.2.2.3 Where an overhead crane or davit is used to lift the door into place a safety chain must be attached to prevent the door dropping should the swivel break.

- 7.2.2.4 The door must be equipped with an interlock that prevents the treatment cycle starting unless the door is fully closed and locked.
- 7.2.2.5 A mechanism shall be provided to ensure that pressure is released and only very small amounts of residual fluids remain in the treatment vessel prior to opening the door. This may be accomplished by the installation of a gated valve at the base of the treatment cylinder that is checked prior to opening the treatment cylinder door to ensure the cylinder is empty. Any other means of achieving the same degree of safety will also be accepted.
- 7.2.2.6 For LOSP treatment vessels only, the vessel door shall be interlocked with a means for exhausting preservative mists or vapours within the vessel by partially opening the door following a treatment cycle. This exhaust may be affected by the vacuum pump and timing mechanism. Full opening of the door shall not occur until the mist has been removed.
- 7.2.2.7 The door should be kept closed when the treatment plant is not in use.
- 7.2.2.8 For those vessels with bolted doors, the process shall include an initial vacuum stage. While pulling the initial vacuum at the beginning of the treatment cycle all bolts must be fully tightened and remain so until completion of the process.
- 7.2.2.9 A device should be fitted that will break the liquid seal before all the bolts are removed. This should be attached to one or more of the bolts, preferably opposite the door hinge so that the door will remain captive until the seal is broken, generally when the door is opened about 3mm.

7.2.3 Treatment vessel working pressure

- 7.2.3.1 The treatment vessel shall be equipped with a pressure indicator.
- 7.2.3.2 The treatment vessel shall be appropriately maintained for the pressures under which it operates and shall be inspected by an appropriately qualified person to certify this, on a regular basis.
- 7.2.3.3 If the pump can deliver a pressure greater than the safe working pressure of the treatment vessel, two (2) pressure relief valves shall be included in the system. The first, acting as a pressure regulator, shall be set just above the normal treatment pressure, while the second is to be set at the designated safe working pressure of the vessel. The total flow from both pressure relief valves shall be at least equal to the volumetric output of the pump. Any variable speed pumps used, and ancillary pressure relief valve usage, warrant special coverage.
- 7.2.3.4 Where fitted, the discharge from both pressure regulators shall be to a safe area within the bunded area of the treatment plant.

7.2.4 Pressure pumps

- 7.2.4.1 Pressure pumps associated with the vessels used for waterborne preservatives may develop leaking glands under normal operating conditions (1300-1400 kPa). Rotating pump shafts that may generate mists or sprays of preservative solutions shall be provided with appropriate shields to contain the mist and protect employees. Where shields either do not or cannot provide effective protection the pump must be taken out of service for maintenance or replacement.
- 7.2.4.2 In LOSP plants where operating pressures are less than 100 kPa, all pumps and valves shall be maintained so that leaks of flammable liquid do not occur. Pumps used on LOSP plants shall be fitted with electrical suppressers.

7.2.5 Vacuum pumps

7.2.5.1 Where applicable, condensing traps shall be fitted to vacuum pump exhausts to remove preservative mists or vapours. The collected contaminants shall be transferred to mixing or waste tanks in the treatment plant for recycling or disposal.

7.2.5.2 Any contaminated water discharged from rotary ring pumps shall be collected by the sump or other means for re-use.

7.2.6 Emergency repairs

7.2.6.1 Where it is essential to effect emergency repairs on items such as leaking pump glands while the plant is operating, employees and maintenance staff shall wear full face shields and respirators in addition to their normal protective clothing to prevent the possible inhalation of mists (see 6.9.1 (e) and (f)).

7.2.7 Loading equipment

7.2.7.1 If a forklift truck, or similar, is used to push the loaded timber bogies into the treatment vessel, the link between the two should be a rigid metal bar. Rolling stock and towing equipment must be maintained in good working condition. This arrangement is acceptable for use with all non flammable preservative solutions.

7.2.7.2 In LOSP plants the hazardous area for forklift trucks powered by fossil fuels may exceed that for the electrical requirements set out in 5.4.2. This is possible if solvent vapours can enter the air intake of the engine when the treated timber is removed from the treatment vessel. To avoid this hazard the bogies shall be loaded into and removed from the treatment cylinder either manually or with a winch or an unmodified electric forklift truck provided it remains outside the Zone 1 area, as defined in 5.4.2.

7.2.7.3 See *A Guide to Forklift Truck Hazard Protection* (1989).

7.2.8 Treatment vessel identification

7.2.8.1 Information to be marked on new or reconditioned vessels shall include all of the following where possible:

- design code
- safe working pressure
- safe working temperature
- name of manufacturer or reconditioner
- drawing number
- date of manufacture
- date of hydraulic test and test pressure
- vessel manufacturer's unique identification number or identifier issued by the inspection body.

For older installations the above information may not be readily available. Where possible the manufacturer should be contacted for assistance.

(Vessels coming within the scope of the HSE Act (PEPR) Regulations 1999 shall be marked in accordance with those Regulations. Non HSE Act (PEPR) vessels are subject to Hazardous Substances (Tank Wagons & Transportable Containers) Regulations 2004 and controls.)

7.2.9 Entry into confined spaces

7.2.9.1 Circumstances may arise when entry is required into treatment vessels or tanks that may contain dangerous fumes or lack of oxygen. Special precautions must be taken in such instances, such as:

- the completion of an ENTRY PERMIT of the type shown in Appendix 3 whenever employees are required to carry out maintenance within such spaces or enter any vessel, or
- the provision of an extra person who shall remain outside the chamber to co-ordinate rescue procedures in case of an emergency. This provision applies whenever any confined space is entered including those situations not requiring an ENTRY PERMIT.

The booklet *Safe Working in a Confined Space* contains additional information on this subject. It is available from any DEPARTMENT OF LABOUR H&S office.

7.3 DIP & SPRAY PLANTS, DESCRIPTION OF PROCESS

7.3.1 Untreated timber may be momentarily dipped or passed through a ring of spray nozzles to provide an envelope treatment for the application of antisapstain chemicals or preservative systems which provide protection from borer and decay in interior applications.

7.3.2 Some proprietary spray systems incorporate a second conditioning step so that penetration can be achieved.

7.3.3 All spray systems, including conveyor belts, should incorporate trays or similar collection devices beneath them of sufficient capacity to collect the excess solution from the spray nozzles plus any timber drippage for recycling into the storage or working tanks. Curtains and mist extraction systems should also be fitted to prevent discharge of mist into surrounding work areas.

7.3.4 All storage tanks and working tanks shall be bunded as per requirements in 5.3.

7.3.5 All operators shall wear personal protection equipment (PPE) (eye protection, gloves, neoprene aprons and gumboots) as appropriate.

7.3.6 Where treatment is stopped for any reason all pumps and conveying equipment shall be turned off before any necessary remedial or repair work is undertaken. The spray system need not necessarily be shut down if adjacent systems; for example planer outfeed, stop.

7.3.7 Dip tanks shall incorporate a concrete apron to enable any drip from charges taken from tanks to be recovered and recycled. Aprons shall be constructed in a plane that permits the collection of drippage into a drain.

7.4 MIXING OF TREATMENT CHEMICALS

7.4.1 General

7.4.1.1 The practice of delivering timber treatment chemicals in liquid or emulsion form offers major safety and health advantages by eliminating most of the handling and dust problems inherent in dry mixing processes.

7.4.2 Supply of chemicals

- 7.4.2.1 All preservative deliveries must comply with the requirements of NZS5433:1999, *Code of Practice for the transport of dangerous goods on land* and in some cases Hazardous Substances (Tank Wagons & Transportable Containers) Regulations 2004.

7.5 GENERAL PROVISIONS FOR MIXING

7.5.1 Mechanical/manual handling

- 7.5.1.1 Research has shown that the risk of injury resulting from manual handling increases when loads of more than 4.5kg sitting and 16kg standing are handled. These figures should not be regarded as fine lines between safe and unsafe but should be used as a guide when assessing the overall risk of any manual handling task.
- 7.5.1.2 To minimise the risk of physical injury to employees, DEPARTMENT OF LABOUR H&S recommends that mechanical handling equipment such as forklift hoists be provided to move drums and bags of chemicals.
- 7.5.1.3 Forklift hoists can be hazardous if employees do not observe safe operating procedures. Advice is contained in the DEPARTMENT OF LABOUR H&S publication *Safety Code for Forklift Operators, No. 1 Front Loading Forklift Trucks* (1985).
- 7.5.1.4 Manual handling methods may be employed provided attention has been given to the principles of minimising the risks of physical injury. Detailed advice on risk assessment and control is contained in the DEPARTMENT OF LABOUR H&S publication *Code of Practice for Manual Handling* 2001.
- 7.5.1.5 Appropriate PPE should be worn at all times when mixing and handling timber preservatives and antisapstains.

7.5.2 Chemical mix areas

- 7.5.2.1 Particular attention shall be paid to the layout and design of chemical areas, including bunding. For example, mix areas should have a minimum of ledges where dust particles may accumulate and shall be capable of being hosed down and/or vacuum cleaned using portable equipment. The washings from such areas must be drained to a suitable collection sump for recycling or waste disposal.
- 7.5.2.2 As a minimum requirement mix areas shall be supplied with good natural ventilation to remove fumes and dust as far as practical below the corresponding WES limit (Appendix 2). In situations where fumes and dust remain a problem, exhaust ventilation hoods shall be provided with a capture velocity of at least 0.6 m/sec. (see 6.3.1 for additional requirements).

7.5.3 Mixing of bulk liquid concentrates

- 7.5.3.1 Dilution mixing of bulk liquid concentrates with water or other solvent is the safest method of providing working strength formulations.

7.5.4 Mixing of packaged liquid concentrates

- 7.5.4.1 Manufacturers may supply packaged liquid concentrates in containers of 20-200 litres capacity. In situations where less than whole 200 litre drum quantities are required, employees must be able to measure the required amount without hazard.
- 7.5.4.2 All 200 litre drums shall be used with either a suitable pump inserted into the larger bung opening or, alternatively, a drum tap or valve with the drum supported on a tipping stand.
- 7.5.4.3 The preferred method of transferring the drum contents to the mix tank is by pump and flowmeter device. The use of plastic or rubber buckets is acceptable for transferring small quantities.

7.5.5 Mixing of flowable suspensions

- 7.5.5.1 Once mixed, flowable suspensions usually require periodic agitation to prevent suspended solids from settling. This may be achieved with paddles, mechanical stirring, hydraulic pump by pass or gently with compressed air. Over-aeration can cause excessive frothing leading to the release of foam containing preservatives and/or antisapstain chemicals into the atmosphere and must be avoided.

7.5.6 Mixing of dry chemicals

- 7.5.6.1 Dry chemicals should be mixed in purpose-built plant located in a mix room. To minimise the formation of dust, opened bags of chemicals shall be carefully up-ended into a hopper which can be situated either above the enclosed mix tank or at ground level. In the latter case the hopper should be provided with a water supply and its exit connected to a medium diameter pipe (approximately 100mm ID) with a centrifugal pump to transfer the solids and water to the mix tank. This arrangement has the advantage of reducing the handling and lifting operations to a minimum.

7.6 EMERGENCY PROCEDURES

7.6.1 Emergency planning

- 7.6.1.1 All timber preservation plants shall have in place an emergency response plan designed to evaluate and respond to emergencies including fire, chemical or hazardous substances spills, injury and site evacuation. Such emergency response plans are mandatory under both HSE and HSNO. Under HSNO an emergency response plan is required at any place where hazardous substances are held in quantities greater than those specified in Schedule 4 of the Hazardous Substances (Emergency Management) Regulations. The plan must describe all of the likely emergencies that may arise from any breach or failure of controls and must be tested at least annually.

NOTE:

Those responsible for the operation of a timber preservation plant should refer to the relevant local authority for fire, chemical or hazardous substances spills and injury for their particular requirements.

Plans shall be developed together with the relevant authorities, emergency services and staff representatives and collected together in an emergency manual.

7.6.2 Response development

7.6.2.1 Responses suitable for each emergency shall be prepared. These responses shall include the required emergency contact numbers and technical data on substances used or stored, including Technical Data Sheets and MSDSs. Procedures to contain and clean up spilt chemicals shall be formulated in consultation with chemical suppliers.

7.6.3 Site diagrams

7.6.3.1 A site diagram shall be prepared to include:

- (a) access points to sites
- (b) thoroughfares
- (c) chemical and hazardous substances storage areas, including chemical type and quantities
- (d) staff work stations
- (e) building access points
- (f) power isolation points
- (g) pipelines
- (h) evacuation meeting points
- (i) first aid, clean up and safety equipment storage
- (j) fire fighting equipment and water access
- (k) site diagram (displayed at locations identified to be important to personnel responsible for responding to an emergency)
- (l) site drainage plans.

7.6.4 Staffing

7.6.4.1 Personnel and/or departments shall be appointed to carry out specific tasks in the event of an emergency. Site evacuation procedures shall be developed and all staff shall be trained appropriately. Training records shall be kept.

7.6.5 Local emergency services

7.6.5.1 Local emergency services shall be advised as to the chemicals stored on site and the procedures to be followed in case of an emergency.

7.6.6 Access points

7.6.6.1 All access points and emergency exits shall be kept clear and Health and Safety Regulation requirements complied with.

7.6.7 Signs

(Also see 5.5)

7.6.7.1 To complement the knowledge of emergency procedures, signs, listing the following information shall be erected in all working areas:

- (a) areas where hazardous chemicals are used
- (b) preservatives in use and hazardous components
- (c) actions to be taken in an emergency
- (d) contact telephone numbers in case of accidents. These shall include the following:
 - (i) **for poisoning**
 - National Poisons Centre 0800 764 766
 - ambulance service
 - local doctor

- (ii) **for fire**
 - fire service
 - ambulance service (where necessary)
- (iii) **for spills or other incidents which could harm the environment**
 - fire service
 - local government authorities (including after hours response number).
- (e) first aid action to be taken in case of poisoning (see 6.11).
- (f) a pictorial “no smoking and no eating” sign.

7.6.7.2 All exit points shall be marked.

7.6.7.3 Emergency shower/eye wash facilities shall be sign-posted.

7.7 MANAGING PRESERVATIVE SPILLS

7.7.1 General

7.7.1.1 Site-specific spill procedures should be developed and documented. Staff shall be trained in the use of the spill procedures. The development of the spill procedure should identify the appropriate type and quantity of spill response equipment. Regional councils may be able to provide some assistance/documentation to help with the development of spill procedures.

7.7.2 Warning of spills

7.7.2.1 Bystanders shall be warned of the hazardous nature of the spills and, if possible, shall be kept away. Unauthorised persons shall not be permitted to enter the contaminated area.

7.7.3 Containment of spills

7.7.3.1 Any spills shall be prevented from flowing into drains and watercourses or from blowing away. It may be necessary to construct levee banks with soil and/or cover the spills with soil, sand or suitable absorbing material. The plant shall have available an appropriate stock of materials suitable for containing and/or absorbing chemicals as per the MSDS for the appropriate chemical.

7.7.4 Re-drumming of spills

7.7.4.1 As much of the spilt chemical as possible shall be re-drummed and this material shall be either used or treated as waste, as outlined in section 10.

7.7.5 Cleaning of spilled area

7.7.5.1 Contaminated areas shall be dealt with as outlined in section 10.

7.7.6 Decontamination of vehicles and containers

7.7.6.1 Spilled containers and/or the associated transport vehicles may need to be decontaminated. Where practical, the chemical solutions recovered shall be

reused in preservative make-up. Otherwise, they shall be treated as waste in accordance with section 10.

7.7.7 Decontamination of workers' clothes

7.7.7.1 All workers involved in clean-up operations shall be made aware of the hazardous nature of the chemicals involved and contaminated clothing shall be removed and treated separately. All workers involved in the clean-up operations shall wash thoroughly after removal of the contaminated clothing. It is essential that this shall be done before, for instance, eating, drinking or smoking, or leaving the plant.

7.7.8 Marking of contaminated containers

7.7.8.1 All drums and containers holding preservative-contaminated materials shall be clearly marked as such with a description of the contents.

7.7.9 Fire precautions

7.7.9.1 Precautions shall be taken to prevent fire when organic solvent-based preservatives are spilled. If the danger of fire necessitates the use of large volumes of water the local authority shall be advised of possible contamination of the drainage area.

7.8 WORKER OPERATION SAFETY

7.8.1 General

7.8.1.1 Staff responsible for the plant operation shall be trained and instructed in their duties and shall be informed that a timber preservation plant is a chemical operations plant. Knowledge of the hazards inherent in, and arising from, handling chemicals and using plant, as well as understanding of the need for good personal hygiene, are absolutely essential for safe working conditions. Work procedures shall be formulated and placed as notices in prominent positions in the treatment plant and other strategic locations throughout the treatment plant. Such rules shall include the requirements given in 7.6 and 7.7. At all times during operation each site shall be under the supervision of an approved handler as required under the HSNO Act.

7.8.2 Access to unauthorised persons

7.8.2.1 Unauthorised persons shall not be admitted to the storage, loading, mixing or treatment areas.

7.8.3 Personal protective equipment (PPE)

7.8.3.1 Personnel involved in the operation of a plant shall wear protective clothing and personal safety equipment as required. See 6.14.2.

7.9 EQUIPMENT OPERATION

7.9.1 Fire fighting equipment

(See 5.10)

7.9.2 Safety shut-down system

- 7.9.2.1 Where the operator is not in attendance continuously a safety shut-down system shall be provided in case of system failure.

7.10 ENVIRONMENTAL MANAGEMENT PLANS/SITE AUDITING

7.10.1 Environmental management plans

7.10.1.1 An environmental management plan (EMP) is a document outlining the operating procedures of the proposed activity, along with management options to avoid, remedy or mitigate effects on the surrounding environment. All sites should establish an environmental management plan to address all potential environmental effect of the operations. The management plan should be available to all staff and should be reviewed regularly.

7.10.1.2 The main elements of an environmental management plan are set out in Appendix 9.

7.10.2 Commissioning audits

7.10.2.1 All sites, after commissioning, should undergo independent auditing by a qualified auditing body such as the New Zealand Timber Preservation Council (NZTPC). (All WOODmark® licensees shall have their audit conducted by NZTPC). To ensure that the site is operating in accordance with the best practice guideline, the audit should identify areas where compliance has and has not been achieved and put into place a programme to address any shortfalls.

7.10.3 Self auditing

7.10.3.1 All sites should establish their own auditing system to monitor their own performance; this should include environmental and operational performance. An audit should be undertaken annually, but preferably every six (6) months. These audits should be documented and made available to relevant inspectors/authorities. Examples of issues to be checked during a site audit are listed below.

- All corrective actions raised in previous audits have been addressed.
- All legislative requirements are being met, including resource consent conditions and HSNO requirements.
- The integrity of the site/bunds/tanks are maintained.
- Plant maintenance is undertaken in accordance with plant manufacturers instructions and that all plant is inspected at regular intervals.
- Monitoring of the effects of the site's operations on the environment.
- Usage of chemicals.
- Waste generation and disposal.

Note: there are also requirements to have and test an emergency response plan see 7.6.1.1.

8. TYPES OF PRESERVATIVES

A list of timber treatment preservatives currently registered and approved for use in New Zealand are listed on the ERMA New Zealand Register (<http://www.ermanz.govt.nz/search/substance1.cfm>). This list includes those products transferred to the HSNO regime in July 2004, as well as any new products approved since the introduction of HSNO in July 2001.

8.1 WATERBORNE, LEACH RESISTANT TYPE

8.1.1 General

8.1.1.1 A leach-resistant waterborne preservative becomes chemically insoluble during or following the treatment process so that the timber is permanently protected for use in exposed or wet situations. The most common preservatives of this type are copper-chrome-arsenic (CCA) formulations. Refer to NZS 3640:2003 *Chemical Preservation of Round and Sawn Timber* for approved preservative specifications.

8.1.2 Health & environmental hazards

8.1.2.1 The major risk to employees' health arises from contact with arsenic or chromium compounds. Poisoning may be caused by:

- Swallowing (usually through transfer onto food or smoking materials from hands or dirty clothing)
- inhalation of contaminated dusts or aerosol mists
- direct contact with the skin.

Contamination may arise from poor housekeeping or unsatisfactory work practices, which this Guideline addresses elsewhere. Section 6 considers the requirements for this Guideline.

8.1.2.2 Copper salts are also toxic but to a much lesser extent than either arsenic or chromium. Provided adequate precautions are taken to prevent arsenic and chromium poisoning, employees should experience no additional risk from exposure to copper salts. Appendix 2 and relevant MSDS contains specific information on the toxicity of arsenic, chromium and copper compounds.

8.1.2.3 The potential risk of exposure to employees by CCA chemicals is in direct proportion to the CCA concentration in dusts and solutions. Liquid concentrates; for example 110%, are much more hazardous than working strength solutions, which typically vary from less than 1% to about 6% depending on the process and the degree of protection to be afforded the timber. CCA therefore varies from being aggressively to mildly corrosive in contact with skin depending on the solution concentration.

8.1.2.4 In certain instances green deposits may appear on the surface of treated timber. These are a form of copper arsenate, which is toxic. If there is a possibility of inhaling hazardous amounts of dust from these deposits; that is, above the WES Limit (see Appendix 2 and relevant MSDS) employees must wear canister type respirators in addition to their normal protective clothing. The respirators must be fitted with particulate filters appropriate for the removal of arsenic. Chemical sludging causes these deposits, which can be minimised by adopting sound plant management practices (see 8.1.5). Timber subjected to sludging shall be washed before transfer to under cover storage.

8.1.3 Minimisation of timber dripping

8.1.3.1 The amount of drip from pressure treated timber needs to be minimised in order to reduce the cost of meeting the requirements set out in 5.2.2. and 5.2.3. This is best achieved through the use of accelerated fixation techniques which eliminate drippage. Other measures to minimise drippage are outlined below.

- (a) Before removing the treated charge from the treatment vessel, a final vacuum of at least minus 85 kPa should be drawn for not less than 10 minutes.
- (b) Packets of sawn timber should be tilted using suitable bolsters to help the run-off of excess solution within the treatment cylinder.
- (c) Use treatment processes designed to reduce drip after treatment.

8.1.4 Sludge formation in CCA plants

8.1.4.1 There are least three sources of suspended solids, known as sludge, in CCA working solutions.

- (a) Impurities present in the preservative concentrate.
- (b) Foreign matter washed from the wood, such as bark, sawdust and soil.
- (c) Insoluble precipitates formed by chemical reactions between CCA components and wood extractives.

8.1.4.2 Suppliers of CCA bulk concentrates should take steps to reduce the solids present to very low levels, consistent with good preservation practices so that the contribution of (a) to the total sludge is unlikely to cause concern.

8.1.4.3 Any working solution will contain a certain amount of type (b) sludge, which if not removed can cause significant wear to pumping equipment and increase the possibility of blockages. Thus, timber awaiting treatment should be kept clean, free of dirt and dust and contact with the ground (avoided by using bearers or skids).

8.1.4.4 Type (c) sludge is bright green in colour and toxic. Wood that is hot from exposure to the sun or steam seasoning before immersion in the preservative solution may aggravate the formation of chemical sludge.

8.1.5 Sludge minimisation

8.1.5.1 The sludge present in treatment solutions can be reduced by adopting one or more of the following procedures.

- (a) Use a settling tank or sump to separate the solids from the preservative solution.
- (b) Regularly use a treatment process that has a high solution uptake.
- (c) Install a properly designed filtering system to remove particles with the filter located so that it is easily accessible for cleaning.
- (d) pH Control

8.2 WATERBORNE, NON FIXED TYPE

8.2.1 General

8.2.1.1 This group of chemicals is used to preserve timber that is completely protected from the weather and not in contact with the ground. The most common formulations

are of the boron type that contain solutions of boric acid and borate salts normally in concentrations of between 7.5% and 25% boric acid equivalent.

8.2.2 Sludge in other situations

8.2.2.1 Information on the health effects of boron are set out in Appendix 2 and relevant MSDS.

8.3 LIGHT ORGANIC SOLVENT PRESERVATIVES (LOSP)

8.3.1 General

8.3.1.1 Light organic solvent preservatives are solutions of fungicides that may also contain insecticides and water-repellent waxes or resins dissolved in an organic solvent. These formulations are designed primarily for the treatment of fully machined timber components or Engineered Wood Products.

8.3.1.2 Current approved LOSP fungicides include bis (tri-n-butyl tin) naphthenate (TBTN) bis (tri-n-butyl tin) oxide (TBTO), copper naphthenate and a 50:50 mix of propiconazole and tebuconazole. Some fungicides may be used in combination with synthetic pyrethroid insecticides; for example, permethrin. Refer to NZS3640 for approved fungicides and insecticides and to ERMA website for approved substances.

8.3.1.3 In a well operated plant timber treated with LOSP solutions should be surface dry and drip free on removal from the treatment vessel.

8.3.2 Ventilation – additional requirements for LOSP

8.3.2.1 LOSP treatment plants shall be designed and sited (as far as practical) with good air flow in the open to minimise the risk of high concentrations of flammable solvent vapour (normally white spirit) if a chemical spillage or leak occurs. Where this is not possible the building structure should be light construction with at least two (2) sides open to the atmosphere to improve the natural ventilation.

8.3.2.2 The covered drying area used to store the LOSP treated timber shall be well ventilated by providing good natural air circulation or, if this is not practical, by mechanical means. As the solvent vapours are much heavier than air it is suggested that the buildings contain large air vents located close to the ground and near roof level to maximise the effectiveness of the natural ventilation (see 5.2.3.8, 5.2.3.9 and 6.3.)

8.3.3 Health hazards of LOSPs

8.3.3.1 LOSP preservatives are usually supplied as Ready To Use (RTU) solvent (white spirits) solutions of varying active ingredient concentration, dependent upon application and treatment specification. All timber treatment chemicals should be regarded as potentially hazardous and users should make themselves aware of the hazards by reading the relevant material safety data sheets.

8.3.3.2 Precautions must be taken to avoid skin and eye contact with LOSP RTU solutions and concentrates and to avoid breathing the vapours in poorly ventilated areas.

Section 6 considers the specific safety requirements in detail. Information on the

toxicity of some LOSP formulations is contained in the relevant MSDS (see Appendix 2).

- 8.3.3.3 Insecticides may be added to LOSP formulations and some of these can be moderately toxic.

8.3.4 Fire hazards

- 8.3.4.1 The organic solvent used in LOSP, usually white spirit, is a flammable liquid (typically 3.1C). It is rated as a moderate fire risk both in its pure state and when used in timber preservative formulations.

8.3.4.2 **SOLVENT FLASHPOINT SPECIFICATION:**

The flashpoint of the solvent used in LOSPs shall be 31°C or higher – typically 35-37°C (closed cup method). It should be noted that solvent mists, which may be present when the treatment vessel door is open, can be combustible.

8.3.4.3 **BRANDING OF TIMBER:**

The practice of hot iron branding of timber within a few days of treatment process can result in ignition of residual white spirit. Vapours can cause a substantial fire. All burn branding of timber treated with LOSP shall be applied before treatment.

8.3.5 Static electricity

- 8.3.5.1 Organic solvents are poor conductors of electricity and can develop static charges when pumped through metal or plastic pipes (especially at speeds above 5m/sec) causing sparking and ignition.

The following precautions must be taken against this possibility.

- (a) All metal components of the plant, including the treatment vessel, trolley rails, storage tanks, pumps and associated pipe work, are continuously bonded and earthed according to NZS/AS 1020:1995 *The control of undesirable static electricity*.
- (b) The white spirit solvent contains antistatic additives to produce a minimum conductance of at least 100 picomho/m at 20°C. The employer should place responsibility for meeting this requirement on the supplier.
- (c) The LOSP solutions shall enter all vessels, preferably through a bottom filling device that prevents the issuing jet of liquid splashing on the tank surfaces but otherwise by using a standpipe extending almost to the bottom of the tank.

9. ANTISAPSTAIN CHEMICALS

A list of timber treatment preservatives currently registered and approved for use in New Zealand are listed on the ERMA New Zealand Register (<http://www.ermanz.govt.nz/search/substance1.cfm>). This list includes those products transferred to the HSNO regime in July 2004, as well as any new products approved since the introduction of HSNO in July 2001.

9.1 INTRODUCTION

- 9.1.1 Whilst heartwood provides a variable degree of natural durability, sapwood of all timber is susceptible to mould, sapstain and fungal degradation, especially during air seasoning or storage. Sapstain develops when air or insect borne spores germinate on the surface of logs and sawn timber. Without appropriate early treatment, the thread-like sapstain fungus will rapidly penetrate the entire sapwood, eventually producing a characteristic dark blue colouration. In addition, timber undergoing boron diffusion storage is susceptible to sapstain and mould.
- 9.1.2 Sapstain infestation can be controlled with fungicidal chemicals; however, to be fully effective logs should be treated within three (3) days of felling. Boards must be cut from uninfected logs and treated at the earliest opportunity. Antisapstain chemicals may be applied in a bath through which all timber passes on the “green chain”, in a dip tank or in a spray tunnel into which packets of timber are briefly immersed.
- 9.1.3 Antisapstain formulations contain one or more chemicals dependent upon local conditions and specific properties required. It should be noted that any mixing of timber treatment chemicals that is done other than at the point of use is not sanctioned by ERMA New Zealand.

9.2 HEALTH & ENVIRONMENTAL HAZARDS

- 9.2.1 Antisapstain products are usually supplied as concentrates for on site dilution and mixing. They are potentially hazardous to health and the environment and, as such, it is most important that the manufacturer's label, mixing and application instructions are closely followed. The handling of antisapstain chemicals should be performed by (or under the supervision of) a HSNO “approved handler” (see Appendix 7 for a list of trade name products required to be under the control of an approved handler). MSDS for all products to be handled should be available at all times.
- 9.2.2 Every precaution should be taken to avoid contact with skin and eyes or inhalation of mist and fumes during mixing and application. Operators should be supplied with appropriate protective clothing and safety equipment; that is, impervious gloves, goggles/face shield and barrier cream.
- 9.2.3 Insecticides, such as permethrin, may be incorporated into any antisapstain product and may increase the total toxicity of the formation. Whilst synthetic pyrethroids present low toxicity to mammals and birds, they will significantly increase risk to bees and fish.
- 9.2.4 Sapstain formulations are potentially hazardous to the environment, therefore product mixing should be undertaken in a designated area designed to contain accidental spillage and possible contamination of waterways.

- 9.2.5 Empty concentrate containers should be triple pressure rinsed with washings added to the bulk working tank. Disposal of containers should be in accordance with local government regulations or returned to supplier.

10. DISPOSAL OF WASTES

10.1 INTRODUCTION

- 10.1.1 All timber preservation/antisapstain chemicals are by their very nature hazardous to health and/or environment due to their inherent toxicity or ecotoxicity. The disposal of the chemicals, treated wood and waste from the treatment process will be required to meet national and local government regulations, although landfill acceptance criteria may vary between regions due to the differences in landfill siting and design standards. See if you will need to check with your local authority or landfill operator to see whether they can accept your waste.
- 10.1.2 The Ministry for Environment (MfE) and Environmental Risk Management Authority (ERMA) are currently producing National Environmental Standards, Landfill Acceptance Criteria, Tolerable Exposure Limits (TELs) and Environmental Exposure Limits (EELs) to control the release of hazardous chemicals to the environment.
- 10.1.3 The proposed standards will result in changes to the options/methods currently used for the disposal of timber preservation/antisapstain chemicals, chemical containers, waste sludges and treated timber off-cuts and sawdust.
- 10.1.4 The burning of treated timber may result in the release of contaminants to air; in particular, when CCA treated timber is burnt the highly toxic arsenic is released into the atmosphere as smoke. Therefore the burning or incineration of some types of antisapstained or treated timber cannot be considered best practice. Operators should contact their regional council to discuss whether incineration is an appropriate disposal methods.
- 10.1.5 The HSNO legislation provides for a specific set of regulations relating to disposal, the Hazardous Substances (Disposal) Regulations 2001. In addition to specifying the type of disposal information required on product labels and MSDSs, these regulations describe methods of disposal appropriate for substances according to their specific hazardous properties.
- 10.1.6 When any timber treatment chemical subject to HSNO tracking requirements is disposed of (see Appendix 7 for a list of these products) you must record:
- (a) the manner of disposal, and
 - (b) the date on which the disposal occurred, and
 - (c) the amount of the substance disposed of, and
 - (d) the location of the place where the substance was disposed of.
- 10.1.7 It is important that you find out that a facility is appropriately licensed before giving them your waste. Note that the waste generator can be liable for waste disposed of at an unauthorised facility.

10.2 METAL OR PLASTIC DRUMS

- 10.2.1 All drums that have contained timber preservatives/antisapstains should be rinsed and returned to the supplier for re-use or disposal in accordance with the HSNO disposal regulations and/or regional council consent.
- 10.2.2 Drums that have contained water-based treatment chemicals must be thoroughly flushed and triple rinsed with water before they leave the site. All washings shall be returned to the mix tank. Cleaned drums should be returned to the supplier for refilling or disposal,

accompanied by written documentation stating that the drums may contain pesticide residues.

10.3 UNWANTED PRESERVATIVES OR ANTISAPSTAIN CHEMICALS

- 10.3.1 All unused unwanted chemicals shall be returned to the supplier for re-use or disposal. The chemicals shall be properly packed and provided with written documentation accompanying any such consignment stating that the drums contain residues of pesticides (and, if applicable, flammable solvents).

10.4 PLASTIC OR PAPER BAGS

- 10.4.1 Packaging materials must be disposed of in appropriate manner, for example, in accordance with Hazardous Substances (Disposal) Regulations and/or regional council consent.

10.5 SLUDGE

- 10.5.1 Chemical and contaminated material sludges shall be stored in drums within an appropriately bunded area until disposed of at an authorised hazardous waste treatment facility. Records shall be kept of all sludge that is removed for disposal.
- 10.5.2 Transportation of the waste shall be undertaken in accordance with the Liquid and Hazardous Waste Operators Code of Practice (published by the New Zealand Water & Waste Association). The hazardous waste facility with the appropriate resource consents will immobilise the chemicals within a stable matrix. The waste can then be disposed of at a consented landfill once testing shows it meets the landfill acceptance criteria.
- 10.5.3 Information on the disposal of timber treatment wastes to landfill is also provided in the Ministry for the Environment publications *Health & Environmental Guidelines for Selected Timber Treatment Chemicals* (June 1997) and *Hazardous Wastes Guidelines: Module 2 – Landfill Waste Acceptance Criteria & Landfill Classification* (May 2004).

10.6 DISPOSAL OF SPILLAGES

- 10.6.1 Contaminated absorbent material shall be disposed of to a hazardous waste facility. Refer to supplier's MSDS for guidance/instructions specific to product.
- 10.6.2 It should be noted that the regional council may require a site spillage contingency plan as a condition of the resource consent, and the method for disposal of any waste generated should be identified in this plan.

10.7 OFF-CUTS & SAWDUST

- 10.7.1 When disposing of treated timber, shavings and sawdust, this shall occur at a landfill that has regional council resource consent to receive such materials and meets the local authority landfill acceptance criteria.

- 10.7.2 Incineration of treated off-cuts, chips, sawdust and shavings is not permitted, except in plants specifically designed for that purpose and operating in accordance with a regional council resource consent.
- 10.7.3 Off-cuts, chips, sawdust and shavings from antisapstained treated timber must not be used as mulch or animal bedding.

10.8 STEAMING & KILN RESIDUES

- 10.8.1 Condensates from steaming and kiln drying may contain hazardous substances. These condensates may be disposed of in accordance with city or district council trade waste discharge permit conditions. Other disposal options for the liquid condensate may require regional council consent. The solid waste shall be disposed of at a facility authorised to receive these wastes.
- 10.8.2 Any liquid residues associated with accelerated fixation or the re-drying of treated timber shall be returned to the treatment vessel or disposed of in a manner authorised by the regional council.

10.9 DISCHARGES TO AIR

- 10.9.1 Discharges to air from timber drying kilns/steamers must comply with regional council plans and air tolerable/environmental exposure limits; for example, the discharge of arsenic, copper and boron from the re-drying of treated timber and timber products.

10.10 DISPOSAL OF UNDERGROUND STORAGE TANKS

- 10.10.1 When underground tanks are no longer required they should be removed from site in accordance with the DEPARTMENT OF LABOUR H&S *Code of Practice for the Design, Installation & Operation of Underground Petroleum Storage Systems* (1992). To determine any residual contamination present around the tank the walls of the excavation should be sampled in accordance with the Ministry for the Environment publication *Guideline for Assessing & Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand*. Another Ministry for the Environment publication *Contaminated Land Management Guideline No 5 – Site Investigation & Analysis of Soils* (2004) contains useful information on sampling and analysis strategies. A copy of the results of the sampling should be forwarded to the regional council and territorial authority.

11. MISCELLANEOUS TOPICS

11.1 GRADING OF TIMBER

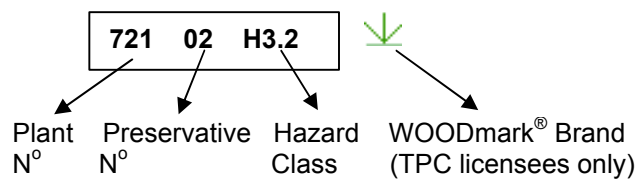
- 11.1.1 To reduce the contact and handling of wet treated timber by employees the timber should be sorted and graded, where practical, before any application of chemicals.
- 11.1.2 Where handling of wet antisapstain or treated timber is unavoidable correct PPE must be used.

11.2 SAWDUST & SHAVINGS

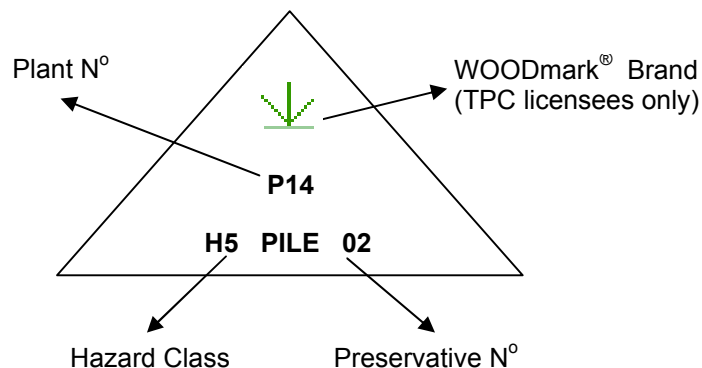
- 11.2.1 When treated or untreated wood is machined or sanded a dust mask or respirator fitted with the appropriate filter must be worn if there is any doubt concerning the effectiveness of the dust extraction or containment system. Dust masks and respirators shall comply with standards AS/NZS 1715:1994 *Selection, use and maintenance of respiratory protective devices* and AS/NZS 1716:2003 *Respiratory protective devices* and must be adequate for the particular hazard.

11.3 BRANDING TREATED TIMBER

- 11.3.1 The branding requirements for preservative treated timber are set out in the New Zealand Standard NZS 3640:2003 *Chemical preservation of round and sawn timber*, Section 5.
- 11.3.2 Information contained in the brand is to inform those who need to know (builders, merchants, building officials, arbitrators, consumers) the identity of the treater, the preservative used and the hazard class to which the timber was treated. A numbering system is used to identify the treater and preservative:



Due to their critical end use house piles (round and square) are required, under NZS 3605:2001 *Timber piles and poles for use in building* to carry a special brand. In addition to numbers identifying the treatment plant and preservative used and the hazard class number, piles are marked with a **P** to indicate that they may be used as a pile and where they may be used as an anchor an **A** is added.



- 11.3.3 Treaters who are licensed by the New Zealand Timber Preservation Council are required to affix the WOODmark® symbol. A register of plant identification numbers is maintained by the New Zealand Timber Preservation Council. Treaters who are not registered by the Council and who are therefore not licensed to the WOODmark® quality assurance programme may use their company name rather than a registered number.
- 11.3.4 NZS3640:2003 includes in Section 5.1.4 9c a list of preservative code numbers to be used as appropriate in the brand.
- 11.3.5 The brand may be applied by burning, indelible ink, paint, incision or by a plastic tag, stapled to the wood. Plastic tags may contain other health and safety information such as PPE advice and disposal methods.
- 11.3.6 Generally speaking the brand should be positioned at one end of each piece or on a broad face 150mm from the end or repetitively along the length of each piece at spacings no longer than 1500mm.

Exceptions are listed below.

- (a) Small cross section timbers <math><1250 \text{ mm}^2</math> (<math><50\text{mm} \times 25\text{mm}</math>) and mouldings for which branding is not required.
 - (b) Bundled fence palings, pickets and battens may be packet branded.
 - (c) Piles or poles for use in buildings and covered by NZS 3605:2001 *Timber piles* and poles for use in building require a special identifying brand applied at a point one-third along the length of the piece.
 - (d) Utility poles are branded as required by the purchaser.
- 11.3.7 Because some framing timbers may be untreated, it is necessary to be able to readily distinguish between treated and untreated framing. Treated framing to H1.2 should be colour coded, blue where it is LOSP treated and pink where it is boric treated. Framing treated to H3.1 is coloured green where it does not carry a running face brand.

11.4 STACKING TIMBER

- 11.4.1 All timber should be stacked and transported in accordance with the DEPARTMENT OF LABOUR H&S Safety Code Part 5: *Timber Stacking, packaging and transportation* (1994).

11.5 REGISTERED PRESERVATIVES

- 11.5.1 An up-to-date list of all registered preservatives is maintained on the ERMA website www.ermanz.govt.nz.
- 11.5.2 Reference should be made to each preservative or antisapstain supplier including their website for a list of chemicals registered by trade names.

12. RELATED LEGISLATION & STANDARDS

New Zealand Legislation

Health Act 1956
Health and Safety in Employment Act 1992
Hazardous Substances and New Organisms Act 1996
Resource Management Act 1991
Water Supplies Protection Regulations 1961
Hazardous Substances (Identification) Regulations 2001
Hazardous Substances (Emergency Management) Regulations 2001
Hazardous Substances (Packaging) Regulations 2001
Hazardous Substances (Tracking) Regulations 2001
Hazardous Substances (Classes 1 to 5 Controls) Regulations 2001
Hazardous Substances (Classes 6, 8 and 9 Controls) Regulations 2001
The Hazardous Substances (Minimum Degree of Hazard) Regulations 2001
Hazardous Substances (Classifications) Regulations 2001
New Zealand Gazette Notice of Thursday, 25 March 2004, Issue Number 35, Hazardous Substances (Dangerous Goods & Schedules Toxic Substances) Transfer Notice 2004.
New Zealand Gazette Notice of Thursday, 3 June 2004, Issue Number 65, Hazardous Substances (Timber Preservatives, Antisapstain and Antifouling Paints) Transfer Notice 2004

New Zealand Standards

AS/NZS 1020:1995	<i>The control of undesirable static electricity</i>
AS/NZS 1200:2000	<i>Pressure equipment</i>
AS/NZS 1221:1997 & AS/NZS 1221:1997A1	<i>Fire hose reels</i>
AS/NZS 1715:1994	<i>Selection, use and maintenance of respiratory protective devices</i>
AS/NZS 1716:2003	<i>Respiratory protective devices</i>
AS/NZS 1841:1997	<i>Portable fire extinguishers</i> – there are several parts of this standard covering: Part 1:1997 General requirements Part 2:1997 Water type Part 3:1997 Wet-chemical type Part 4:1997 Foam type Part 5 :1997 Powder type Part 6 :1997 Carbon dioxide type Part 7 :1997 Vaporising-liquid type Part 8 :1997 Non-rechargeable type
AS/NZS 1850:1997	<i>Portable fire extinguishers</i> – Classification rating and performance testing.

AS/NZS 1851	Maintenance of portable fire protection equipment 1995 <i>Wheeled fire extinguishers</i> 1997 <i>Pyrogen aerosol systems</i>
AS/NZS 2161	Occupational protective gloves. Part 1:2000 <i>Selection, use and maintenance</i> Part 2:1998 <i>Protective gloves against chemicals</i>
AS/NZS 2210	Occupational protective footwear Part 1:1994 <i>Selection, care and use</i>
NZ/AS 2359	Powered industrial trucks Part 1: 1995 <i>General requirement</i> Part 2: 1985 <i>Operation</i>
AS/NZS 2430	Classification of Hazardous Areas Part 3.3:2004 <i>Flammable liquids</i> Part 3.4:2004 <i>Flammable gases</i>
AS/NZS 2843	Timber preservation plant safety code Part 1:2000 <i>Plant design</i> Part 2:2000 <i>Plant operation</i>
NZS 3605:2001	<i>Timber piles and poles for use in building</i>
NZS 4503:1993	<i>Code of practice for the distribution, installation and maintenance of hand operated fire fighting equipment</i>
NZS 4505:1977	<i>Specification for fire-fighting waterway equipment</i>
NZS 4512:2003	<i>Fire detection and alarm systems in buildings</i>
NZS 4521:1974	<i>Specifications for boxes for fire brigade connections</i>
NZS 4541:2003	<i>Automatic fire sprinkler systems</i>
AS/NZS 4681:2000	<i>The storage and handling of Class 9 (miscellaneous) dangerous goods and articles</i>
NZS 5433 A1:1999	<i>Transport of dangerous goods on land</i>
NZS 5433 F:1999	<i>NZ Dangerous Goods Declaration Forms</i>
NZS 5433 H.1:2001	<i>Haz-form Software, single user</i>
NZS 5433 H.2:2001	<i>Haz-form Software, network version</i>
NZS 5433 T:1999	<i>Compliance chart</i>
NZS 5433 W:1999	<i>Segregation wheel for the transport of dangerous goods on land</i>
NZS 5433 W:1999	<i>A pack of 5 Segregation Wheels</i>
NZS 6801:1999	<i>Acoustics - Measurement of sound</i>
NZS 6802:1999	<i>Acoustics - Assessment of environmental sound</i>
NZS 6803:1999	<i>Acoustics – Construction noise</i>
NZS 6803:1984	<i>The measurement and assessment of noise from construction, maintenance and demolition work</i>
NZS/API 650:1998	<i>Welded steel tanks for oil storage</i>

APPENDIX 1: HSNO CLASSIFICATIONS

The HSNO classification(s) applied to a product should be listed on the MSDS. The type of classification is due to a substance's toxic, ecotoxic or physical properties. The following tables list the HSNO classifications and their descriptions.

PHYSICAL PROPERTIES:

HSNO Classification

Flammable

2.1.1A

2.1.1B

2.1.2A

3.1A

3.1B

3.1C

3.1D

4.1XX

Oxidisers

5.1.1A – 5.1.1.C

5.1.2A

5.2A – 5.2G

Metallic Corrosiveness

8.1A

Classification Description

Extremely flammable gas

Flammable gas

Flammable aerosol

Extremely flammable liquid

Highly flammable liquid

Flammable liquid

Flammable liquid

Flammable solid (various sub-types)

Classification Description

Oxidiser (liquids/solids)

Oxidiser (gases)

Organic peroxides – various types

Classification Description

Corrosive to metals

TOXIC PROPERTIES:

HSNO Classification

Acute Toxicity

6.1A

6.1B

6.1C

6.1D

6.1E

6.3A

6.3B

6.4A

6.5A

6.5B

Classification Description

Extremely toxic to humans

Highly toxic to humans

Very toxic to humans

Toxic to humans

Harmful to humans

Skin irritant

Mild skin irritant

Eye irritant

Respiratory sensitiser

Dermal sensitiser

Biological Corrosiveness

8.2A – 8.2C

8.3A

Chronic or systemic toxicity

6.6A

6.6B

6.7A

6.7B

6.8A

6.8B

6.8C

6.9A

6.9B

Classification Description

Skin corrosive

Eye corrosive

Classification Description

Human mutagen

Possible human mutagen

Human carcinogen

Possible human carcinogen

Reproductive/development toxicant

Possible reproductive/development toxicant

Toxicant via lactation

Toxic to human target organs or systems

Harmful to human target organs or systems.

ECOTOXIC PROPERTIES:

HSNO Classification

Toxicity to Aquatic Life

9.1A

9.1B

9.1C

9.1D

Classification Description

Very ecotoxic to aquatic life

Ecotoxic to aquatic life

Harmful to aquatic life

Slightly harmful to aquatic life

Toxicity to Soil Life

9.2A

9.2B

9.2C

9.2D

Classification Description

Very ecotoxic to soil organisms

Ecotoxic to soil organisms

Harmful to soil organisms

Slightly harmful to soil organisms

Toxicity to terrestrial (vertebrates)¹

9.3A

9.3B

9.3C

Classification Description

Very ecotoxic to animals

Ecotoxic to animals

Harmful to animals

Toxicity to terrestrial invertebrates²

9.4A

9.4B

9.4C

Classification Description

Very ecotoxic to insects

Ecotoxic to insects

Harmful to insects

¹ Terrestrial vertebrates includes land mammals and birds.

² Terrestrial invertebrates include insects, spiders, slugs and snails.

Further information on classification of substances can be obtained from the ERMA New Zealand “*User Guide to HSNO Thresholds & Classifications*”, refer to ERMA homepage www.ermanz.govt.nz/index.asp for details.

APPENDIX 2: MATERIAL SAFETY DATA SHEETS

Material Safety Data Sheets for all preservatives and antisapstain chemicals used on site are to be inserted under Appendix 2

Up-to-date data on the toxicity and eco-toxicity of all approved timber preservatives and antisapstains is also set out in the ERMA website, www.ermanz.govt.nz/hs/hs-comp-tels-eels-asp.

APPENDIX 3: EXAMPLE OF AN ENTRY PERMIT

Place of work* _____

Description of work _____

SAFETY CHECK

STATE YES, NO OR NOT APPLICABLE (NA) – ALL SPACES MUST BE COMPLETED

- | | |
|---|---|
| <p>1. Has equipment been completely:</p> <p>(a) Depressurised? <input type="checkbox"/></p> <p>(b) Drained? <input type="checkbox"/></p> <p>(c) Isolated by: Blanking? <input type="checkbox"/></p> <p> Disconnecting? <input type="checkbox"/></p> <p> Valving? <input type="checkbox"/></p> <p>(d) Steamed? <input type="checkbox"/></p> <p>(e) Water flushed? <input type="checkbox"/></p> <p>(f) Ventilated: Naturally? <input type="checkbox"/></p> <p> Mechanically? <input type="checkbox"/></p> <p>2. Electrical equipment disconnected & tagged? <input type="checkbox"/></p> | <p>3. (a) Sewers, drains and trenches within 15m of workplace sealed <input type="checkbox"/></p> <p>(b) Combustible material cleared? <input type="checkbox"/></p> <p>(c) Fire protection sited? <input type="checkbox"/></p> <p>(d) Suitable access and egress provided? <input type="checkbox"/></p> <p>(e) Standby personnel detailed? <input type="checkbox"/></p> <p>(f) Lifebelts, ropes & breathing apparatus? <input type="checkbox"/></p> <p>4. Are repeat gas tests required? <input type="checkbox"/></p> <p>5. Excavations:</p> <p>(a) Sides safety shored? <input type="checkbox"/></p> <p>(b) Barriers erected? <input type="checkbox"/></p> |
|---|---|

	OXYGEN TEST			COMBUSTIBLE GAS TEST			TOXIC GAS TEST			PROTECTIVE EQUIPMENT REQD, INDICATE BY "X"			
	READING	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NONE	<input type="checkbox"/>	ACID CLOTHING
TIME	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	GOGGLES	<input type="checkbox"/>	CANISTER MASK	<input type="checkbox"/>
SIGNATURE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PVC GLOVES	<input type="checkbox"/>	FRESH AIR MASK	<input type="checkbox"/>
E	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	LIFELINE	<input type="checkbox"/>

Special instructions: _____

Electrical isolation by: _____ Certified by: _____ Designation: _____

I have personally checked the site and conditions, permission is granted for entry to be made.

Signature: _____ Superintendent

This permit must be held at the place of work, a duplicate (where required) is to be displayed in the service's supervisor's office. Completion and acceptance will be recorded on the third copy, which will be held by the superintendent.

* Provide sketch of the place of work on reverse if considered necessary.

Work completed at _____ on _____ Work accepted at _____ on _____

Signature _____ Signature _____

I/C work _____ Superintendent _____

APPENDIX 4: QUANTITIES OF FLAMMABLE SUBSTANCES THAT TRIGGER HAZARDOUS SUBSTANCE LOCATION REQUIREMENTS

Hazard Classification	Trigger Quantity (closed container)	Trigger Quantity (open container)
2.1.1A & B	100kg (or 100 m ³ where a permanent gas)	100kg (or 100 m ³ where a permanent gas)
2.1.2A	3000 L (aggregate water capacity)	3000 L (aggregate water capacity)
3.1A	20 L	20L
3.1B	100 L in containers greater than 5 L 250 L in containers greater up to & including 5 L	50L 50 L
3.1C	500 L in containers greater than 5 L 1500 L in containers up to & including 5 L	250 L 250 L
3.2A, B & C	1 L	1 L
4.1.1A	1kg	1kg
4.1.1.B	100kg	100kg
4.1.2A & B	1kg	1kg
4.1.2C & D	25kg	25kg
4.1.2E, F & G	50kg	50kg
4.1.3A, B & C	1kg	1kg
4.2A	1kg	1kg
4.2B & C	25kg	25kg
4.3A	1kg	1kg
4.3B	25kg	25kg
4.3C	50kg	50kg

APPENDIX 5: QUANTITIES OF HAZARDOUS SUBSTANCES THAT TRIGGER APPROVED HANDLER REQUIREMENTS

Hazard Classification	Trigger Quantity
2.1.1A	100kg (not permanent gases) 100m ³ (permanent gases)
2.1.2A	3000 L aggregate water capacity
3.1A	Any quantity
3.1B	100 L (closed) 25 L (decanting) 5 L (open occasionally) 1 L (open continuously)
3.2A	Any quantity
3.2B	100 L
4.1.1A	100kg
4.1.2A & B	Any quantity
4.1.2C & D	25kg
4.1.2E & F	59kg
4.1.3A	Any quantity
4.1.3B	100 kg
4.2A	Any quantity
4.2B	100kg
4.3A	Any quantity
4.3B	100kg
5.1.1A	Any quantity
5.1.1B	500kg or L
5.1.1C	1000kg or L
5.1.2A	250kg or 200m ³
6.1A, 6.1B 6.1C	Any quantity
6.7A	10kg or more, if solid 10 L or more, if liquid
8.2A	Any quantity
9.1A*, 9.2A* , 9.3A* or 9.4A*	Any quantity

*Where a substance has triggered tracking and approved handler controls solely on the basis of ecotoxic hazard, the Environmental Risk Management Authority has approved a policy that these controls should only be applied to substances that are used either in a wide dispersive manner, by commercial contractors or applied directly onto or into water. In accordance with this policy, given the non-dispersive use of antisapstains and timber treatment preservatives, the tracking and approved handler controls have been removed from these types of products where they were triggered solely on the basis of ecotoxic hazard. In practice, this means that the only timber treatment products that have retained tracking and approved handler controls are those that are highly toxic to humans; i.e. are classified either 6.1A, 6.1B or 6.1C. Such substances are required to be tracked and under the control of an approved handler at all times, irrespective of quantity. Appendix 7 contains a list of (trade name) timber treatment products and trigger these requirements (as at 1 October 2004).

APPENDIX 6: HAZARD CLASSIFICATIONS OF SUBSTANCES THAT REQUIRE TRACKING

<i>Intrinsic hazardous property</i>	<i>Hazard classification</i>
Explosiveness	All Class 1 Explosives, with a few exceptions as noted in Schedule 1 of the Hazardous Substances (Tracking Regulations) 2001.
Flammability	3.1A, 3.2A 4.1.2A, 4.1.2B 4.1.3A 4.2A 4.3A
Capacity to Oxidise	5.1.1A 5.2A, 5.2B
Toxicity	6.1A, 6.1B, 6.1C
Ecotoxicity*	9.1A, 9.2A, 9.3A, 9.4A

* Where a substance has triggered tracking and approved handler controls solely on the basis of ecotoxic hazard, the Environmental Risk Management Authority has approved a policy that these controls should only be applied to substances that are used either in a wide dispersive manner, by commercial contractors or applied directly onto or into water. In accordance with this policy, given the non-dispersive use of antisapstain and timber treatment products, the tracking and approved handler controls have been removed from these types of products where they were triggered solely on the basis of ecotoxic hazard. In practice, this means that the only timber treatment products that have retained tracking and approved handler controls are those that are highly toxic to humans; i.e. are classified as either 6.1A, 6.1B or 6.1C. Such substances are required to be tracked and under the control of an approved handler at all times, irrespective of quantity. Appendix 7 contains a list of (trade name) timber treatment products that trigger these requirements (as at 1 October 2004).

APPENDIX 7: LIST OF TIMBER TREATMENT CHEMICALS REQUIRING APPROVED HANDLER AND TRACKING

The following table contains a list of timber preservatives and antisapstains that trigger HSNO approved handler and tracking requirements due to either a 6.1A, 6.1B or 6.1C classification (as at 1 October 2004). These products are required to be under the control of an approved handler at all times, irrespective of quantity.

<i>Timber preservatives</i>	<i>Antisapstains</i>
Ayrton C Oxide	Antiblu CC
CCA Oxide	Antimould Booster
Imprect C	Antisapstain 550 CC
Imprect Oxide	Blue Control TCPN
Mokubo AAC	Busan 30 L
Organotect	Busan 30 WB
Permacure Oxide Liquor	Chlorocarb
Polesaver Rods	Cleanwood
Protim 235 WR	Hylite 109
Protim 95WR	Hylite Antimould
Rentokil CCA 60%	Nexgen
Sarmix 3	NP-1 (Kop-Coat)
Sarmix Oxcel C	NP-1 (Koppers Arch)
Tanalith Antimould	NP-1 Plus
Tanalith AWPA C 60%	Prosan 17
Tanalith C 60%	Sabre
Tanalith C Oxide 60%	Sentry
Tanalith E	Taratek 5F
Tanalith NCA 50%	Taratek CC
Taratek LVL	Taratek DC
TimTech C Oxide	Taratek GC
TimTech C Salt	Taratek GP
TimTech N	Taratek IG
Vacsol Antimould	Taratek PC
Vacsol Clear	Timber Antisapstain Guard
Vacsol N	Tolcide MW10
Woodserve Preservation Gel	Tuff Brite C

APPENDIX 8: KEY CONTROL CODES

Code	Regulation No.	
Flammables	Classes 1 to 5 Controls Regulations	Description
F1	Reg 7	General test certification requirements for hazardous substance locations
F2	Reg 8	Restrictions on the carriage of flammable substances on passenger service vehicles
F3	Reg 55	General limits on flammable substances
F4	Reg 56	Approved handler/security requirements for certain flammable substances
F5	Regs 58 & 59	Requirements regarding hazardous atmosphere zones for Class 2.1.1, 2.1.2 and 3.1 substances
F6	Regs 60 to 70	Requirements to prevent unintended ignition of Class 2.1.1, 2.1.2 and 3.1 substances
F7	Regs 71 & 72	Limits on ignition sources and temperature for Class 3.2 and 4 substances
F8	Reg 73	Requirements to prevent unintended ignition of Class 4.1.1 substances
F9	Reg 74	Requirements to prevent unintended ignition of class 4.1.2 substances
F10	Reg 75	Requirements to prevent unintended ignition of Class 3.2 and 4.1.3 substances
F11	Reg 76	Segregation of incompatible substances
F12	Regs 77	Requirement to establish a hazardous substance locations for flammable substances are present
F13	Regs 78 to 80	Controls on hazardous substance locations where Class 3.2 and 4 substances are present
F14	Reg 81	Test certification requirements for facilities were Class 2.1.1, 2.1.2 or 3.1 substances are present
F15	Reg 82	Test certification requirements for facilities where Class 3.2 or 4 substances are present
F16	Reg 83	Controls on transit depots where flammable substances are present

Code	Regulation No.	
Oxidising Substances	Classes 1 to 5 Controls Regulations	Description
O1	Reg 7	General test certification requirements for hazardous substance locations
O2	Reg 8	Restrictions on the carriage of oxidising substances on passenger service vehicles
O3	Reg 88	General limits on Class 5.11 and 5.12 substances
O4	Reg 89	Approved handlers/security requirements for certain Class 5.1.1 and 5.1.2 substances
O5	Reg 91	Requirements to prevent unintended combustion or explosion of Class 5.1.1 and 5.1.2 substances
O6	Reg 92	Requirements for protective clothing and equipment
O7	Reg 93	Requirements to control adverse effects of spills or failure of containers
O8	Regs 94 to 87	Controls on hazardous substance locations where class 5.1.1 or 5.1.2 substances are present
O9	Regs 98 to 100	Test certification requirements for hazardous substance locations where class 5.1.1 or 5.1.2 substances are present
O10	Reg 101	Controls on transit depots where class 5.1.1 or 5.1.2 substances are present
O11	Regs 102 & 103	Requirements to control adverse effects of intended combustion or explosion of class 5.1.1 or 5.1.2 substances, including requirements for protective equipment and clothing
Organic Peroxides	Classes 1 to 5 Controls Regulations	Description
OP1	Reg 7	General test certification requirements for hazardous substance locations
OP2	Reg 8	Restrictions on the carriage of organic peroxides on passenger service vehicles
OP3	Reg 106	General limits on Class 5.2 substances
OP4	Reg 107	Approved handler/security requirements for certain Class 5.2 substances
OP5	Regs 109 & 110	General requirements to prevent unintended combustion or explosion of Class 5.2 substances

Code	Regulation No.	
Organic Peroxides	Classes 1 to 5 Controls Regulations	Description
OP6	Reg 111	Limits on impact or pressure shock
OP7	Reg 112	Requirements for protective clothing and equipment
OP8	Reg 113	Requirements to control adverse effects of spills or failure of containers
OP9	Reg 114	Requirements to prevent unintended combustion or explosion of 5.2A substances
OP10	Reg 115	Requirements to prevent unintended combustion or explosion of Class 5.2B, 5.2C, 5.2D, 5.2E or 5.2F substances
OP11	Reg 116 to 119	Controls on hazardous substance locations where Class 5.2 substances are present
OP12	Reg 120 to 123	Test certification requirements for hazardous substance locations where Class 5.2 substances are present
OP13	Reg 124	Controls on transit depots where Class 5.2 substances are present
OP14	Regs 125 & 126	Requirements to control adverse effects of intended combustion or explosion of Class 5.2 substances, including requirements for protective clothing and equipment
Toxic Substances (incl biological corrosives)	Classes 6, 8 & 9 Controls Regulations	Description
T1	Regs 11 to 27	Limiting exposure to toxic substances through the setting TELs
T2	Regs 29 & 30	Controlling exposure in places of work through the setting of WESs
T3	Regs 5(1) & 6	Requirements for keeping records of use
T4	Reg 7	Requirements for equipment used to handle substances
T5	Reg 8	Requirements for protective clothing and equipment
T6	Reg 9	Approved handler/security requirements for certain toxic substances
T7	Reg 10	Restrictions on the carriage of toxic or corrosive substances on passenger service vehicles
T8	Reg 28	Controls for vertebrate poisons

Code	Regulation No.	
Ecotoxic Substances	Classes 6, 8 and 9 Controls Regulations	Description
E1	Regs 32 to 45	Limiting exposure to ecotoxic substances through the setting of EELs
E2	Regs 46 to 48	Restrictions on use of substances in application areas
E3	Reg 49	Controls relating to protection of terrestrial invertebrates; e.g. beneficial insects
E4	Regs 50 & 51	Controls relating to protection of terrestrial vertebrates
E5	Regs 5(2) & 6	Requirements for keeping records of use
E6	Reg 7	Requirements for equipment used to handle substances
E7	Reg 9	Approved handler/security requirements for certain ecotoxic substances
Identification	Identification Regulations	Description
I1	Regs 6 & 7, 32 to 35, 36(1) – (7)	Identification requirements, duties of persons in charge, accessibility, comprehensibility, clarity and durability
I2	Reg 8	Priority identifiers for corrosive substances
I3	Reg 9	Priority identifiers for ecotoxic substances
I4	Reg 10	Priority identifiers for explosive substances
I5	Reg 11	Priority identifiers for flammable substances
I6	Reg 12	Priority identifiers for organic peroxides
I7	Reg 13	Priority identifiers for oxidising substances
I8	Reg 14	Priority identifiers for toxic substances
I9	Reg 18	Secondary identifiers for hazardous substances
I10	Reg 19	Secondary identifiers for corrosive substances
I11	Reg 20	Secondary identifiers for ecotoxic substances
I12	Reg 21	Secondary identifiers for explosive substances
I13	Reg 22	Secondary identifiers for flammable substances
I14	Reg 23	Secondary identifiers for organic peroxides
I15	Reg 24	Secondary identifiers for oxidising substances

Code	Regulation No.	
Identification	Identification Regulations	Description
I16	Reg 25	Secondary identifiers for toxic substances
I17	Reg 26	Use of generic names
I18	Reg 27	Requirements for using concentration ranges
I19	Regs 29 to 31	Additional Information requirements including situations where substances are in multiple packaging
I20	Reg 36(8)	Durability of information for Class 6.1 substances
I21	Regs 37 to 39 & 47 to 50	General documentation requirements
I22	Reg 40	Specific documentation requirements for corrosive substances
I23	Reg 41	Specific documentation requirements for ecotoxic substances
I24	Reg 42	Specific documentation requirements for explosive substances
I25	Reg 43	Specific documentation requirements for flammable substances
I26	Reg 44	Specific documentation requirements for organic peroxides
I27	Reg 45	Specific documentation requirements for oxidising substances
I28	Reg 46	Specific documentation requirements for toxic substances
I29	Regs 51, 52	Signage requirements
I30	Reg 53	Advertising corrosive and toxic substances
Packaging	Packaging Regulations	Description
P1	Regs 5, 6 7(1) & 8	General packaging requirements
P2	Regs 7(2) & (3)	Specific criteria for Class 4.1.2 and 5.2 substances
P3	Reg 9	Criteria that allow substances to be packaged to a standard not meeting Packing Group I, II or III criteria
P4	Reg 10	Packaging requirements for explosive substances
P5	Reg 11	Packaging requirements for flammable liquids
P6	Reg 12	Packaging requirements for liquid desensitised explosives
P7	Reg 13	Packaging requirements for flammable solids
P8	Reg 14	Packaging requirements for self-reactive flammable substances.

Code	Regulation No.	
Packaging	Packaging Regulations	Description
P9	Reg 15	Packaging requirements for substances liable to spontaneous combustion
P10	Reg 16	Packaging requirements for substances that emit flammable gases when in contact with water
P11	Reg 17	Packaging requirements for oxidising substances
P12	Reg 18	Packaging requirements for organic peroxides
P13	Reg 19	Packaging requirements for toxic substances
P14	Reg 20	Packaging requirements for corrosive substances
P15	Reg 21	Packaging requirements for ecotoxic substances
PG1	Schedule 1	Packaging requirements equivalent to UN Packing Group I
PG2	Schedule 2	Packaging requirements equivalent to UN Packing Group II
PG3	Schedule 3	Packaging requirements equivalent to UN Packing Group III
PS4	Schedule 4	Packaging requirements as specified in Schedule 4
Disposal	Disposal Regulations	Description
D1	Reg 5	Disposal requirements for explosive substances
D2	Reg 6	Disposal requirements for flammable substances
D3	Reg 7	Disposal requirements for oxidising substances and organic peroxides
D4	Reg 8	Disposal requirements for toxic and corrosive substances
D5	Reg 9	Disposal requirements for ecotoxic substances
D6	Reg 10	Disposal requirements for packages
D7	Regs 11 & 12	Information requirements for manufacturers, importers and suppliers and persons in charge
D8	Regs 13 & 14	Documentation requirements for manufacturers, importers and suppliers and persons in charge
Disposal	Disposal Regulations	Description
EM1	Regs 6, 7, 9 to 11	Level 1 information requirements for suppliers and persons in charge

Code	Regulation No	
Disposal	Disposal Regulations	Description
EM2	Reg 8(a)	Information requirements for corrosive substances
EM3	Reg 8(b)	Information requirements for explosive substances
EM4	Reg 8(c)	Information requirements for flammable substances
EM5	Reg 8(d)	Information requirements for oxidising substances and organic peroxides
EM6	Reg 8(e)	Information requirements for toxic substances
EM7	Reg 8(f)	Information requirements for ecotoxic substances
EM8	Regs 12 to 16 & 18 to 20	Level 2 Information requirements for suppliers and persons in charge
EM9	Reg 17	Additional information requirements for flammable and oxidising substances and organic peroxides
EM10	Regs 21 to 24	Fire extinguisher requirements
EM11	Regs 25 to 34	Level 3 emergency management requirements; duties of person in charge, emergency response plans
EM12	Regs 35 to 41	Level 3 emergency management requirements; secondary containment
EM13	Reg 42	Level 3 emergency management requirements; signage
Tracking	Tracking Regulations	Description
TR1	Regs 4(1), 5 & 6	General tracking requirements
TR2	Reg 4(2)	Requirement to track explosive (Class1) substances
Approved Handlers	Personnel Qualifications Regulations	Description
AH1	Regs 4 to 6	Approved Handler requirements (including test certificate and qualification requirements)

APPENDIX 9: ENVIRONMENTAL MANAGEMENT PLANS – MAIN ELEMENTS

- Identifying those who have responsibility for environmental management, including senior managers.
- Identifying and documenting all known and suspected environmental effects associated with your operations.
- Preparing a plan which:
 - Defines your environmental performance objectives and a time frame for achieving them.
 - Clearly states the obligations and accountability of managers and staff for environmental performance.
 - Provides mechanisms for ensuring compliance.
- Establishing a process for regularly checking the adequacy of systems and procedures in relation to the environmental policy and management plan.
- Undertaking regular environmental audits to identify how well you are complying with your policy and meeting your objectives and areas that require corrective action.
- Reporting publicly on your environmental performance against your company's policies and environmental performance measures through an annual environmental or triple bottom line report.

An environmental management system will operate most effectively when incorporated into, or added to, your existing business management systems. It should be tailored to meet your needs. For example, the level of detail should be related to the nature and scale of environmental impacts arising from your organisation's activities, products and services.

To demonstrate that they are effectively managing their environmental responsibilities, some companies choose to be audited against a recognised standard by an independent auditor, to achieve formal certification.

APPENDIX 10: PUBLICATIONS

DEPARTMENT OF LABOUR H&S publications

- Working with Timber Treatment Chemicals (1994).
- Safety in Confined Spaces, Information Sheets.
- Approved Code of Practice for Training Instructors & Operators of Powered Industrial Lift Trucks: (1995),
- Approved Code of Practice for Pressure Equipment (2001).
- Code of Practice for the Design, Installation & Operation of Underground Petroleum Storage Systems.
- ACOP for Safety & Health in Forest Operations Part 5: Timber Stacking, Packeting and Transportation (July 1994).
- A Guide to Respiratory Protection (August 1999).
- Management of Substances Hazardous to Health (1997).
 - An introduction to the Guidelines for Workplace Health Surveillance.
 - Approved Code of Practice.

NZCIC publication

Publications

- Responsible Care™ Managers Handbook (6 vols) (1998)
- Dangerous Goods – Initial Emergency Response Guide SAA/SNZ HB76:1997
- Premises Inspection and Certification (PRINCE©) (1997).

Code of Practice

- Emergency Management: Approved Code of Practice Under the Hazardous Substances & New Organisms Act 1996 (draft: December 2003).
- Emergency Preparedness
- Handling Small Spills of Hazardous Substances
- Guidelines for Waste Management Practice in New Zealand
- Warning Signs for Premises Storing Hazardous Substances

ERMA publications

- Quick Guide to Approved Handlers.
- User Guide to Hazardous Substances & New Organisms Control Regulations.
- Compliance Guide Timber Industry.
- Quick Guide to Location Test Certificates
- Quick Guide – Person in Charge
- Quick Guide – Emergency Management
- Hazard Substances (Timber Preservatives, Antisapstains and Antifouling Paints) Transfer Notice 2004 (As amended).

MfE publications

- Health & Environmental Guidelines for Selected Timber Treatment Chemicals.
- Hazardous Waste Guidelines: Module 2 – Landfill Waste Acceptance Criteria & Landfill.
- Guideline for Assessing & Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand.
- Contaminated Land Management Guideline No 5 – Site Investigation & Analysis of Soils.

APPENDIX 11: GLOSSARY OF TERMS

APPLYING TO THE ACTIVITY

- **Treatment chemicals**

A formulation of active ingredients in a liquid carrier which, when applied to timber or wood by one of a number of processes such as pressure, dip or spray, enhances the natural durability of that timber or wood against fungal or insect attack.

- **Preservative chemicals**

A formulation of active ingredients in a liquid carrier which when applied to timber or wood by one of a number of processes such as pressure, dip or spray, enhances the natural durability of that timber or wood against fungal or insect attack.

- **Antisapstain chemicals**

A formulation of active ingredients in a liquid carrier which, when applied to freshly felled logs or freshly sawn timber provides a temporary prophylactic barrier to prevent staining of the wood by fungi. Usually applied by dipping or spraying.

- **Holding pad**

A properly bunded and sealed area, usually roofed, on which freshly treated timber is stored until drip free.

- **Drip free**

Freshly treated timber which is free of drippage of preservative.

- **Fixation**

A physical or chemical process whereby a wood preservative system is rendered leach resistant in both water and soil applications, such that the active ingredient(s) maintain fungal/insecticidal efficacy.

- **Accelerated fixation**

A process that is used to increase the rate of the fixation process.

- **Leaching**

The migration from wood of preservative components into the surrounding environment by the movement of water.

APPLYING TO THE HEALTH AND SAFETY IN EMPLOYMENT ACT & REGULATIONS

- **Controller**

Means a person who is the owner, lessee, sub lessee or bailee of any equipment in a place of work. This does not include a home occupied by that person.

▪ **Pressure equipment**

Includes a boiler, boiler piping, compressor, fired heater, gas turbine, hot water boiler, piping component, pressure fitting, pressure piping, pressure vessel, pump, steam engine or steam turbine.

▪ **Design verifier**

Means a person who is

- employed or engaged by an inspection body to carry out the functions referred to in Regulation 26; and
- is the holder of a relevant certificate of competence.

▪ **Design verification**

Means verification of compliance in every respect of safety with the ACOP for Pressure Equipment [Excluding Boilers] the appropriate design standards and contains every safety feature that is relevant, whether or not referred to in the code or standards including:

- design of pressure equipment
- alterations to design, affecting the structural strength or safety of equipment, made in the course of manufacture
- designs of a repair or alteration affecting the operational safety of equipment repaired or altered or any other equipment, and
- the fabrication and inspection requirements specified by the designer.

▪ **Certificate of inspection**

Means a certificate issued by an inspection body issued or renewed by an inspection body in accordance with Regulations 30 and 31 of the PECPR Regulations.

▪ **Pressure Vessel**

Means an unfired vessel, the purpose of which is to hold, process, store, transport or use all or any of the following:

- gases at pressures exceeding 50kPa, or
- liquids at pressure exceeding 50kPa; or
- Steam, and
- Includes all fittings, mountings, piping and supports necessary to maintain the safety of the pressure vessel, whether the pressure vessel stands alone or is part of an operating system, and
- includes vessels heated by electricity or by hot gas or liquid, but
- does not include fixed roofed or floating roofed storage tanks.

▪ **Serious harm**

Means death, or harm of a kind or description set out in the first schedule of the HSE Act. They include:

- any permanent loss of bodily function, or temporary severe loss of bodily function
- amputation of body part
- burns requiring referral to specialist registered medical practitioner or special outpatients clinic
- loss of consciousness from lack of oxygen
- loss of consciousness, or acute illness requiring treatment from a registered medical practitioner, from absorption, inhalation, or ingestion, of any substance
- any harm that causes the harmed to be hospitalised for a period of 48 hours or more, within seven (7) days of the harm's occurrence

- **Accident**

Means an event that causes any person to be harmed, or in different circumstances, might have caused any person to be harmed. It includes near misses as well as events that cause harm or illness.

APPLYING TO THE RESOURCE MANAGEMENT ACT

- **Resource consent**

A resource consent is needed where a regional or district plan specifies that a consent from a local authority must be obtained for an activity and where an activity cannot meet the conditions, standards and terms set out in the plan. Resource consents include land-use and subdivision consents, and coastal, water and discharge permits.

- **Land use consent**

A land use consent is a consent to use land in a manner that contravenes a rule in a regional or district plan.

APPLYING TO THE HAZARDOUS SUBSTANCES & NEW ORGANISMS ACT

- ***Above ground stationary tank***

Means a stationary tank that is:

- (a) fixed to or resting on the ground; or
- (b) fixed or attached to a structure that is fixed to or resting on the ground.

- ***Approved handler***

An approved handler is a person who holds a current test certificate certifying that they have met the competency requirements specified by the Personnel Qualification Regulations in relation to handling specific hazardous substances during specified parts of the lifecycle.

- ***Below ground stationary tank***

Means a tank that is situated below the surface of the ground and includes:

- (a) a tank over which ground has been raised to provide cover for the tank; and
- (b) a tank covered by material other than ground.

- ***Bunded area***

This is an area within which a treatment plant, including storage areas for antiseptics and preservative chemicals and treated timber, is sited (designed to contain any spillage or drippage of these chemicals).

- ***Ecotoxic***

An ecotoxic substance is one that is capable of causing ill health, injury or death to any living organism other than humans (HSNO Class 9 substances).

▪ ***Environmental exposure limit (EEL)***

An EEL is the (maximum) concentration of an ecotoxic substance (or ecotoxic component of a substance) in an environmental medium that will present a low risk of adverse environmental effects to organisms in non target areas.

▪ ***Environmental medium***

- In relation to a class 6 substance, this means air, water, soil or a surface that a hazardous substance may be deposited onto.
- In relation to a class 9 substance, this means water, soil or sediment where these are in the natural environment, or a surface that a hazardous substance may be deposited onto.

▪ ***Exposure route***

Means a route by which a person or other living organism can absorb a substance and includes ingestion, inhalation, dermal contact or contact with the eye or mucous membranes.

▪ ***Hazardous substance***

Any substance with one or more of the following intrinsic properties:

- Explosiveness
- Flammability
- Oxidising capacity
- Corrosiveness
- Toxicity
- Ecotoxicity

▪ ***Person in charge***

In relation to a place of work means a person who is:

- (a) The owner, lessee, sublessee, occupier or person in possession of the place, location or depot or any part of it; or
- (b) Any person who, at the relevant time, is in effective control or possession of the relevant part of the place, location or depot.

▪ ***Stationary container system***

Means a stationary tank or process container and its associated equipment, pipe work and fittings, up to and including all transfer points.

▪ ***Stationary tank***

Means a tank that is used or intended to be used for the storage of supply of one or more hazardous substances; and is normally located at a specific place and includes:

- All parts and materials (for example coatings) that contribute to maintaining the structural and functional integrity of the tank; and
- Any means of closing the tank (for example a lid or fitted cover); and
- Any component of the tank intended to protect the contents of the tank from harm (for example lightning protection); and
- Any other component that is an integral part of the tank (for example a liquid height indicator, heating coil or internal valve);

But does not include:

- Packaging to which the Hazardous Substances (Packaging) Regulations 2001 apply; or
- Packaging to which chapter 6.5, chapter 6.6 and chapter 6.7 of the UN Model Regulations apply; or

- A compressed gas container to which the Hazardous Substances (Compressed Gases) Regulations 2004 apply.

- **Tank**

Means a stationary container used for the storage of one or more hazardous substances.

- **Test certificate**

Test certificates provide for a formal means of verifying that required HSNO specifications have been met. Test certificates can be issued in the following situations:

- **Test certifier**

Test certifiers are individuals who are authorised under the HSNO Act by ERMA to issue test certificates.

- **Tolerable exposure limit (TEL)**

A TEL is the (maximum) concentration of a toxic substance (or toxic component of a substance) in an environmental medium that will present a low risk of a toxic effect occurring in people exposed to that substance.

- **Toxic**

A toxic substance is one that is capable of causing ill health in, or injury to, human beings (HSNO Class 6 substances).

- **Workplace exposure standard (WES)**

A WES is an airborne concentration of a substance (expressed as mg substance/m³ of air or ppm in air) which must not be exceeded in a workplace.

The WES is believed to be the level at which nearly all employees may be repeatedly exposed to airborne contaminants day after day without adverse health effects. Because of wide variation in individual susceptibility a few employees may experience discomfort from some substances at concentrations at or below the WES; a smaller number may be affected more seriously by aggravation of a pre-existing condition or by development of an occupational illness. Smoking of tobacco, taking certain types of medication and/or a genetic predisposition in some individuals may intensify the harmful effects of airborne contaminants in the place of work.

The WES-TWA is the Workplace Exposure Standard expressed as a time weighted average over an eight-hour workday.

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