Ministry of Transport
TE MANATŪ WAKA

NOTE: This document was published in 2008 to provide technical information for shippers and the transport industry. As various details are now out of date, operators should make direct contact with the relevant regulatory agencies for the latest information.

Transporting Dangerous Goods Safely

An industry guide

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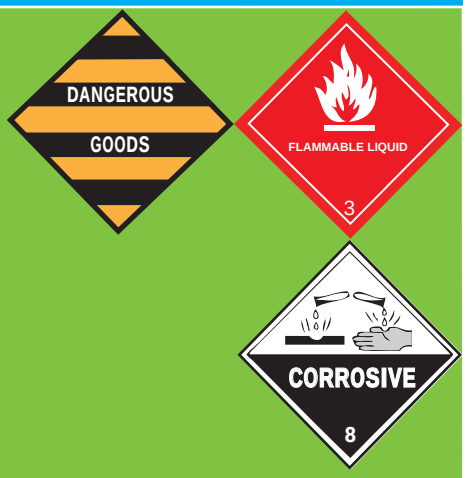

See cover page note. Some detail may be out of date.

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FOREWORD

'Dangerous Goods' refers to items that are potentially dangerous during transportation.

They include a wide range of solids, liquids and gases that have explosive, flammable, toxic (poisonous), infectious, radioactive, corrosive or environmentally hazardous (ecotoxic) properties. Dangerous goods have special transport requirements to eliminate or minimise the risk of injuring people or damaging property and the environment.

Requirements for air, rail, road and sea are not the same. Similarly, the requirements of one country may not necessarily be the same as another. This document identifies some of the differences and is intended as a guide for consignors (shippers) and the transport industry. This guide will also help manufacturers, packers, consignors and transport operators understand the requirements when transporting dangerous goods by more than one mode.

This is particularly important in New Zealand where many goods have to travel by more than one mode, eg transport between the North and South Islands involves land transport and either air or sea transport.

This document was compiled by the Ministry of Transport, with the assistance of Phillip Tse of Chemie-Tech Ltd. Words or terms that are capitalised in this guide have defined meanings within certain codes and regulations.

An electronic copy of this document can be downloaded from the Ministry of Transport's website at www.transport.govt.nz

SCOPE

This guide deals primarily with the multi-modal transport requirements for packaged (non-bulk[1]) dangerous goods, Intermediate Bulk Containers (IBCs), large packages and portable tanks. The transport of explosives and radioactive materials have special requirements and are not dealt with specifically in this guide.

IN THIS EDITION

This edition contains a section on export, including details on the revised Australian Dangerous Goods Code (ADG7). It also takes into account the IMDG Code, 2006 edition, and the IATA Dangerous Goods Regulations 49th Edition. Both of these documents became effective on 1 January 2008.

The Hazardous Substances and New Organisms (HSNO) Act 1996 is now fully in force. This guide discusses the effects of this legislation on the transport industry.

DISCLAIMER

This guide is an overview and is not intended as a substitute for the formal acts, regulations, rules, codes and standards to which it refers. While this guide reflects these legal requirements at the time of writing (August 2008), it must not be relied upon to fulfil legal obligations.

[1]Bulk means more than 450 litres for liquids or 400 kg for solids in a single container or package. For gases, bulk means more than 450 litres of water capacity. Pressure equipment must comply with the Health and Safety in Employment (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999.

TERMINOLOGY AND USAGE

‘Code’ includes the relevant act, regulation or transport rule.

In previous versions of the guide, ‘Class’ was used to describe both the UN Class (eg Class 6) and Division (eg Division 6.1 of Class 6). While this may not be strictly accurate, it makes for easier reading. However, as some requirements only apply to a specific Division within a Class, we have, where appropriate, specified a Division rather than the Class.

Other terms are listed in the Glossary of Terms at the end of the document.

For land transport, the term ‘Dangerous Goods’ replaced the previously used term of ‘Hazardous Substances’, with the introduction of the Land Transport Rule: Dangerous Goods 1999. This rule has now been updated and replaced by the Land Transport Rule: Dangerous Goods 2005 with effect from 27 June 2005.

Dangerous goods for transport are a subset of hazardous substances as defined in the Hazardous Substances and New Organisms Act 1996, for explosive, flammable, oxidiser, toxic, corrosive and ecotoxic (environmentally hazardous) properties. For example, substances classified as HSNO 3.1D (low hazard flammable liquids that are classified as **combustible liquids**) are not flammable liquids for transport. In addition, dangerous goods for transport include radioactive material and infectious substances (HSNO does not regulate radioactive and infectious substances).

INTRODUCTION

UN Recommendations

A wide range of requirements apply when transporting dangerous goods. Most are imposed by international conventions and codes to which New Zealand is a signatory. The most significant is the United Nations Recommendations on the Transport of Dangerous Goods – Model Regulations (the UN Recommendations). These recommendations aim to eliminate or minimise risks, promote safety and facilitate the transport of dangerous goods.

Prior to the UN Recommendations of 1957, each nation developed its own regulations for identifying, classifying and transporting dangerous goods. This caused several problems for international transport. The UN Recommendations take into account land, sea and air transport and form the basis for uniform national and international regulations. The UN Recommendations are updated every two years.

The term 'Dangerous Goods' is used internationally to describe the goods covered by the UN Recommendations. These goods are divided into nine classes based on their hazardous properties:

Class 1	Explosives
Class 2	Gases
Class 3	Flammable Liquids
Class 4	Flammable Solids
Class 5	Oxidising Substances
Class 6	Toxic and Infectious Substances
Class 7	Radioactive Material
Class 8	Corrosives
Class 9	Miscellaneous Dangerous Substances

The UN Recommendations also include procedures and requirements for marking[2], labelling[3], packaging, segregation[4], special marks (such as the environmentally hazardous mark and orientation arrows) and documentation. The next section includes examples of some common dangerous goods within each Class.

Common dangerous goods

Common dangerous goods include the following goods listed by UN Class and Division:

- **Class 1 Explosives** - rifle ammunition, fireworks, flares, blasting explosives and toy caps.
- **Class 2.1 Flammable Gases** - disposable cigarette lighters and refills for gas lighters, acetylene (for oxy-acetylene welding and brazing), ethylene (for ripening fruit) and hydrogen (for university and some industry use).

[2]Marking goods with UN number and Proper Shipping Name.

[3]Applying Class and Subsidiary Risk labels (if required).

[4]Separating incompatible materials eg those that could react in an undesirable way. Section 7.1.2 of the UN Recommendations specifies the general criteria for segregation. Specific segregation requirements are detailed in the modal codes.

- **Class 2.2 Non-Flammable Non-Toxic Gases** - carbon dioxide (found in soft drink dispensing machines), oxygen (for hospitals and oxy-acetylene welding), compressed air, freons (for refrigeration, air conditioning and polyurethane manufacture), compressed nitrogen and argon (for welding). Also, liquid oxygen and liquid nitrogen (for industrial applications).
- **Class 2.3 Toxic Gases** - methyl bromide and ethylene oxide (for fumigation), chlorine (for commercial swimming pool water sanitation) and ammonia (for industrial freezing works).

  Aerosols - fly sprays, room fresheners, aerosol deodorants and some oven cleaners etc are assigned to Division 2.1 or 2.2 depending on their properties.
- **Class 3 Flammable Liquids** - petrol, mineral turpentine, kerosene, methylated spirits, enamel paints, car lacquers, polyurethane varnish, two-pot polyurethanes and their solvents, most varnishes and some dry-cleaning fluids, methanol, methyl ethyl ketone and polyester resin kits.
- **Class 4.1 Flammable Solids** - fire lighters (Little Lucifers etc), matches, sulphur powder, synthetic camphor and naphthalene (moth balls).
- **Class 4.2 Substances Liable to Spontaneous Combustion** - white or yellow phosphorous, copra and unstabilised fish meal.
- **Class 4.3 Dangerous When Wet** - sodium and potassium metals and calcium carbide - used to produce acetylene gas.
- **Class 5.1 Oxidisers** – calcium hypochlorite (pool chlorine HTH), some home bleaches and nappy sanitisers, hydrogen peroxide for swimming pool treatment and some fertilisers such as ammonium nitrate. Products used for stripping printed circuit board.
- **Class 5.2 Organic Peroxides** - the hardeners from products such as Plastibond, Bondofill etc. Larger quantities are used in manufacturing industries.
- **Class 6.1 Toxic** - some pesticides (eg most agricultural insecticides and some weed killers), and industry products such as sodium cyanide for metal treatment. Several metal degreasers are poisons, such as chromium salts in electroplating and copper chrome arsenate mixtures for timber preservatives. There are many, many more examples in this class.
- **Class 6.2 Infectious** – examples are blood samples from people with infectious and/or notifiable diseases, septic tank effluent wastes, cultures containing pathogen(s) which may cause infection, needles and syringes under the 'needle and syringe programme'.
- **Class 7 Radioactive materials** - used in industrial thickness measuring devices, for the sterilisation of medical products and as a treatment for cancer.
- **Class 8 Corrosives** – car and truck batteries, glacial acetic acid used for peeling processed fruit, caustic soda (sodium hydroxide) and caustic potash (potassium hydroxide), and acids such as hydrochloric, sulphuric and nitric used in many industrial processes. Many dairy sanitisers and industrial cleaners are corrosive.
- **Class 9 Miscellaneous dangerous goods** - a diverse range of substances or articles that have dangerous properties not covered by Classes 1 to 8. The 15th edition of the UN Recommendations lists 34 entries. Class 9 should not be regarded as presenting a lower risk than Classes 1 to 8. It includes blue, brown and white asbestos (cancer hazard), PCBs (environmental and health hazards), some ammonium nitrate fertilisers and environmentally hazardous substances, and lithium ion batteries. Aquatic environmentally toxic substances equivalent to HSNO ecotoxic classification 9.1A and 9.1B are classified as UN Class 9 packing group III for transport. UN Class 9 also includes substances transported at elevated temperature and genetically modified organisms.

Air and Sea Dangerous Goods Codes

International air transport is regulated by the International Civil Aviation Organization (ICAO) Technical Instructions at government level and the International Air Transport Association (IATA) Dangerous Goods Regulations at the industry level. The ICAO Technical Instructions are incorporated by reference in New Zealand Civil Aviation Rules, Part 92, Carriage of Dangerous Goods. The Civil Aviation Authority acknowledges that compliance with the IATA Dangerous Goods Regulations will result in compliance with the ICAO Technical Instructions.

International sea transport is regulated by the International Maritime Organisation's (IMO) International Maritime Dangerous Goods (IMDG) Code. The IMDG Code is incorporated by reference in Maritime New Zealand Rules, Part 24A.

These organisations publish Dangerous Goods Codes based on the UN Recommendations which outline the requirements for safely transporting dangerous goods by sea and air. The ICAO Technical Instructions and the IMDG Code are now closely aligned with the UN Recommendations with the text for classification, identification, marking and labelling reproduced from the UN Recommendations. However, there are still some significant differences between the codes, especially in packaging and segregation requirements. These differences are due to the different conditions encountered during transport. This guide identifies these differences.

ICAO and IATA have almost identical requirements. However ICAO recognises state variations while IATA recognises state and operator variations. An example of a state variation is USG 12, which requires all consignments passing through the USA to have emergency response information on the dangerous goods declaration. This information must include a 24-hour emergency contact phone number that provides immediate access to a knowledgeable person. An example of an operator variation is Qantas variation QF-02. The IATA Regulations permit passengers and crew to carry safety matches on ones' person, which include book matches. QF-02 prohibits book matches.

All signatory countries to the IMDG Code have almost identical requirements[5].

New Zealand Transport Legislation

HSNO regulates hazardous substances in all parts of the lifecycle, including transport. In most instances HSNO accepts compliance with the relevant transport rule as providing compliance with HSNO. Not all hazardous substances are dangerous goods for transport, and some dangerous goods for transport (Radioactive Substances and Infectious Substances) are not HSNO hazardous substances.

Maritime Transport Rule 24a regulates the transport of dangerous goods by sea and incorporates by reference the IMDG Code.

Civil Aviation Rule Part 92 regulates the transport of dangerous goods by air and incorporates by reference the ICAO Technical Instructions. Civil Aviation accepts that compliance with the IATA Dangerous Goods Regulations will result in compliance with ICAO.

Land Transport Rule: Dangerous Goods 2005 (Rule 45001/1) incorporates by reference specific parts of the UN Recommendations on the Transport of Dangerous Goods – Model Regulations, the IMDG, ICAO Technical Instructions, IATA Dangerous Goods Regulations and New Zealand Standard - NZS 5433: 2007.

As the specific detail is mandated in the incorporated codes, this document will refer to those codes.

The ICAO and IMDG Codes apply to both domestic and international transport.

[5]Exemptions to the IMDG code may be given by the flag state of the vessel carrying the dangerous goods, the sending country's competent authority or the receiving country's competent authority. However, this is done only on a case-by-case basis where an equivalent standard of safety can be demonstrated. Any issued exemption must be communicated to and accepted by all the authorities involved prior to shipment (and also sent to the IMO).

The Land Transport Rule requirements (based on the UN Recommendations) have much in common with the IMDG Code. However, there are many significant differences, especially in relation to the size and style of packaging that is acceptable, and some differences in segregation, placarding and documentation requirements. These differences are dealt with in more detail later in this guide.

The HSNO Act and Regulations only apply within New Zealand and on New Zealand aircraft and ships.

Table 1 provides a summary of the codes, regulations and rules that apply to the transport modes.

Table 1: Summary – Jurisdiction of Codes

Classes	Mode	Code	Terminology	Jurisdiction
1 to 9*	Sea	Maritime Rule 24A and IMDG	Dangerous Goods	New Zealand and international
1 to 9*	Air	Civil Aviation Rule Part 92, ICAO	Dangerous Goods	New Zealand and international
1 to 9*	Rail	Land Transport Rule 45001/1 and NZS 5433	Dangerous Goods	New Zealand
1 to 9*	Road	Land Transport Rule 45001/1 and NZS 5433	Dangerous Goods	New Zealand
1 to 6, 8 and 9*	All	Hazardous Substances and New Organisms Act 1996 and Regulations	Hazardous Substances	New Zealand
6.2	All	Health Act 1956 Medicines Act 1981	Infectious Substances affecting humans	New Zealand
6.2	All	Biosecurity Act 1993	Infectious Substances affecting animals	New Zealand
7	All	Radiation Protection Act 1965 and Regulations	Radioactive materials	New Zealand
1 to 9*	All	Health and Safety in Employment (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999	Pressure Equipment	New Zealand

* Class 9 under HSNO is ‘Ecotoxic Hazardous Substances’. There are differences between Class 9 Miscellaneous dangerous goods for transport and HSNO Class 9.

Hazardous Substances and New Organisms Act

The Hazardous Substances and New Organisms (HSNO) Act 1996 manages the introduction of new hazardous substances and new organisms (including genetically modified organisms) into New Zealand and manages hazardous substances through their whole lifecycle. From this point on we will only be referring to the hazardous substances part of the legislation.

The Act requires a hazardous substance to be approved by the Environmental Risk Management Authority before it is imported or manufactured. Once an approval is granted, it is generally available for anyone to use to import or manufacture the substance. However, there are some exceptions. Proprietary agricultural compounds and medicines require an

additional approval from the appropriate authority. In the case of explosives, each importation of an approved explosive requires a HSNO import certificate.

The HSNO classification criteria are very closely aligned with the criteria specified in the Globally Harmonised System of Classification and Labelling of Chemicals (GHS). In addition to the criteria adopted by the GHS, HSNO sets criteria for terrestrial ecotoxicity, which are largely based on USA criteria.

Transport constitutes only part of a substance's lifecycle. During this phase of the lifecycle a substance is contained in some form of containment (such as packaging). Because HSNO takes account of all stages of the lifecycle, including those parts where the hazardous substance is taken out of its packaging and used, there are several HSNO classifications that are not considered to present a danger during transport. HSNO classifications that are not regulated in the transport codes include:

- Category 2.1.1B (medium hazard flammable gases)
- Category 3.1D (low hazard flammable liquids)
- Category 4.1.2G (self-reactive flammable solids, type G)
- Category 5.2G (organic peroxides, type G)
- Categories 6.1D & E (low acute toxicity)
- Classes 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9 (irritants, sensitisers, chronic toxicity)
- Category 9.1C & D (low aquatic ecotoxicity)
- Classes 9.2, 9.3, 9.4 (terrestrial ecotoxicity).

Compliance with IATA, Civil Aviation Rule Part 92, IMDG, Maritime Rule 24a or the Land Transport Dangerous Goods Rule and NZS 5433 generally ensures compliance with HSNO for packaging, marking, labelling and documentation while being transported.

Note: HSNO labelling, documentation and segregation requirements may apply outside transport modes at transit depots (including ports and airports), and the standard of the inner or consumer package[6].

Aerosols

The definition of a flammable aerosol under HSNO is now significantly different from the definition applicable for all modes of transport. Many aerosols classified as non-flammable under HSNO will be flammable aerosols for transport, therefore HSNO classifications must not be relied upon for transport classification.

Significant Changes In Dangerous Goods Codes

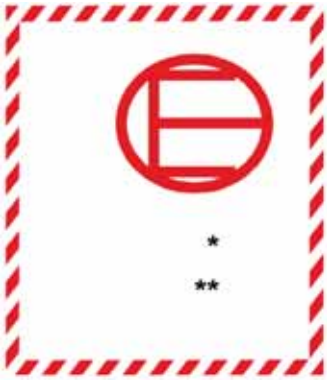
This section highlights the significant changes that have occurred in the Dangerous Goods Codes in recent years.

The 15th revised edition of the UN Recommendations 2007

This includes numerous amendments, corrections and additions. These changes will appear in the subsequent editions of the IMDG and IATA Dangerous Goods Regulations. It is vital to check the relevant modal code to determine when these changes become effective.

1. Dangerous goods in 'Excepted Quantities' have been added in a new Chapter 3.5. Excepted Quantities have been available in air transport for many years. The introduction into the UN Model Regulations and the proposed adoption into the IMDG is another step toward harmonising multi-modal transport requirements.

[6] For full information on the HSNO requirements – see the entry for the hazardous substance in the ERMA register of approvals at: http://www.ermanz.govt.nz/search/registers.html. Note that the controls on an individual substance are generally the same as those in the HSNO regulations but may have been varied in the particular case when the substance was approved – hence the substance approval contains the definitive list of HSNO requirements for the substance.



Excepted Quantities Mark

***** The Class or Division
****** Name and address, or the consignor or consignee, if not shown elsewhere on the package

Excepted Quantities are not available for some dangerous goods eg Class 1, 2.1, 2.3, 5.2, 6.2 and 7 may not be transported as Excepted Quantities. There are also numerous specific items that may not be transported as Excepted Quantities. You must refer to the specific modal transport codes for full details.

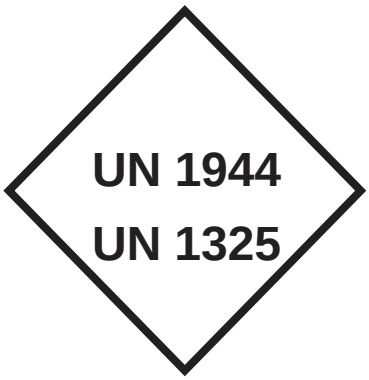
2. Changed requirements for Lithium Batteries in SP 188.

The 14th revised edition of the UN Recommendations 2005

This includes numerous amendments corrections and additions. The 2006 edition of the IMDG Code, ICAO Technical Instructions 2007-2008 and IATA Regulations 2008 reflect these changes.

Some significant changes include:

- Division 6.1 Packing Group III definition aligned with Category 3 in the GHS
- definitions of Diagnostic Specimens, Biological Products and packaging requirements for Infectious Substances. A test report for Infectious Substances packaging has been introduced
- introduction of the optional dangerous goods 'Limited Quantities' mark. This consists of a line forming a diamond (minimum thickness 2mm), enclosing the UN numbers of all of the dangerous goods in Limited Quantities. Minimum sizes are specified for the lettering.



Limited Quantities Mark

- This replaces the requirement to mark the Proper Shipping Name and UN number of each dangerous good.

- The quantity limits for inner packages of dangerous goods in Limited Quantities (Ltd Qty) have been increased as follows:

4.1 PG II	from 500 g to 1 kg
4.1 PG III	from 3 kg to 5 kg
5.1 PG II	from 500 ml or g to 1 litre or kg
5.1 PG III	from 1 litre or kg to 5 litres or kgs
6.1 PG III	from 3 litre or kg to 5 litres or kgs
8 PG II	from 500 ml or g to 1 litre or kg
8 PG III	from 1 litre or kg to 5 litres or kgs

Note that some products with these classifications are not permitted to be transported as dangerous goods in Limited Quantities. You must refer to the list of dangerous goods in the UN Recommendations on the Transport of Dangerous Goods or appropriate modal code for details.

NZS 5433

The 2007 edition of NZS 5433 was published in December 2007. There have been a number of amendments and additions since the 2001 revised edition. These include:

- re-structuring of the Standard into two volumes
- new information explaining the relationship between HSNO and the dangerous goods Rule (Introduction, Section 2.0.6 and Table 4)
- revised summary of requirements of the DG Rule (Section 1.4)
- updated classification information (Section 2)
- guidance on the use of empty packagings (Section 5.6)
- information about tracked substances (Section 6.5)
- new list of segregation groups (extract from IMDG) (Section 8.5)
- updated segregation table (Table 25)
- new information on transport procedures for self-reactive substances and organic peroxides (section 10.1)
- new section on training (Section 12)
- updated information on the Hazchem code (Appendix A)
- updated information on labels eg new Table C1 (Appendix C)
- updated dangerous goods declaration form (Appendix D)
- revised information on infectious substances (Appendix F)
- complete re-formatting and update of the list of dangerous goods by UN Number, including reference to UN packing instructions (Section 1, Part 2)
- updated list of special provisions (Section 2, Part 2).

REQUIREMENTS COMMON TO ALL TRANSPORT CODES

Consignment Procedures – Key Points

The following general procedures apply to all modes of transport:

1. Classify the goods according to criteria specified in the relevant code or confirm the classification with the manufacturer or importer of the goods.
2. Identify the Proper Shipping Name[8] from the general index or alphabetical list of dangerous goods in the appropriate code.
3. Check if the goods can be transported and if special conditions apply – some goods are prohibited under all circumstances. Others may require different packaging or the code may only allow smaller quantities. It may be necessary to comply with more than one modal code or domestic legislation.
4. Check if different items can be placed in the same packaging, cargo transport unit (CTU), or large package (segregation). Segregations requirements can be significantly different between the different transport modes.
5. Select the correct packaging based on the Packing Instruction or Class and Packing Group[9] (when applicable) if the code does not provide Packing Instructions.
6. Mark and label the goods in accordance with the appropriate code (usually UN number or Proper Shipping Name[10], Class label[11] and Subsidiary Risk label[12] (if required), Packing Group (if applicable) plus any additional marks required by the code (such as marine pollutant, environmentally hazardous or elevated temperature marks).
7. Provide a dangerous goods declaration stating the UN number, Proper Shipping Name, Class, the Packing Group where applicable and the number and kind of packages. Also provide flash point[13] and Marine Pollutant[14] if required. If not specifically required elsewhere on the document, this information may be placed in the 'additional information' section. Provide any additional information required by the specific code. Under the Land Transport Rules the consignor must advise of any special requirements for the safe carriage of the goods. The rules also require loaders and carriers to implement any special requirements indicated in 'additional information'.

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[8]**Proper Shipping Name** - describes a dangerous item in the numbered list of dangerous goods in chapter 2 of the UN Recommendations. It is considered to be the most appropriate name where synonyms or alternative names exist for the same item. Where a choice of names is permitted by the code, the Proper Shipping Name is the name that most accurately describes the goods. It is also recognised internationally. Also see Proper Shipping Name in the section titled 'Differences between modes'.

[9]**Packing Group** - Classes 3, 4, 5.1, 6.1, 8 and 9 have been divided into three Packing Groups (PG): I, II or III. The Packing Group indicates the degree of danger within the Classes and specifies the standard of packaging. Packing Group I denotes high danger and therefore requires the highest standard of packaging; II denotes medium danger; and III denotes low danger.

[10]**UN Number** - this is the number assigned to an item in the list of dangerous goods in Chapter 3.2 of the UN Recommendations, and identifies the item by Proper Shipping Name and Class. It is always prefixed by the letters UN.

[11]**Class label** - distinctive diamond-shaped labels (a square set at an angle of 45 degrees) to identify the Class by a combination of colour, Class number (in the bottom angle) and distinctive pictograms.

[12]**Subsidiary Risk label** - label or labels denoting additional significant risks. These are identical to class labels.

[13]The lowest temperature at which there is sufficient vapour to form an explosive mixture, when tested by the prescribed method.

[14] Identified in the IMDG list of dangerous goods by P, PP or • (indicates the substance may contain a Marine Pollutant).

8. Pack cargo transport units[15] according to segregation requirements. Document container/vehicle eg manifest (list goods) and provide a container/vehicle packing certificate[16]. Provide any additional information required by the specific code.
9. Label Cargo Transport Unit with Class placards[17] and UN number if required[18].

Identifying Dangerous Goods – Key Points

1. Dangerous goods are classified based on their properties. Many pure dangerous goods can be easily identified and classified using the relevant Code's 'general index' or 'alphabetical list'.
2. If a substance or product is not listed by name, it must be assigned a Class, Division (if applicable), Subsidiary Risk (if any) and Packing Group (if applicable). This is done by comparing the chemical, physical, biological or infectious properties of the substance with the criteria for each Class or Division found in the classification section of the relevant code.
3. When the substance has more than one risk, the primary and subsidiary risk(s) are determined using the code's precedence of risk rules.

Once this has been done, the Proper Shipping Name can be chosen from 'generic' type names. Use the following list of questions to guide you through the identification and classification procedure:

- Is the product a pure substance or is it a mixture containing only one dangerous substance?
- Is the substance listed by name or synonym in the list of dangerous goods?
- Is the product a mixture of dangerous goods, and is this mixture specifically listed?
- Is it listed under a 'generic chemical family' name (eg BUTANOLS or OXALATES)?
- Is it listed under a 'generic non-chemical' name (eg BATTERY FLUID, ACID, ADHESIVES, PAINT, SAFETY MATCHES etc)?
- Is it listed under a generic N.O.S (Not Otherwise Specified) name (eg ALCOHOLS, N.O.S. or FLAMMABLE LIQUIDS N.O.S., or PESTICIDES LIQUID, TOXIC, FLAMMABLE, N.O.S.)?

Proper Shipping Name

The Proper Shipping Name (PSN) is the name in the 'List of Dangerous Goods' that most accurately describes the product and has traditionally been written in upper case letters (or bold face lettering for ICAO and IATA). Any additional text in lower case is descriptive and used to select the appropriate Proper Shipping Name (it does not form part of the Proper Shipping Name).

- The Proper Shipping Name of a mixture of a dangerous substances with one or more non-dangerous substance(s) should have the word 'SOLUTION' or 'MIXTURE' added after the appropriate PSN of the substance (provided that the mixture or solution of dangerous properties are not altered to the extent that the classification changes, or the mixture or solution has a separate entry in the Dangerous Goods List). The percentage of the dangerous substance may also be added eg ACETONE 75% SOLUTION.

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[15]**Cargo Transport Unit** - either a road freight vehicle, a railway freight wagon, a freight container, a road tank vehicle, a railway tank wagon or a portable tank. Airlines will not accept cargo transport units packed by shippers or freight forwarders.

[16]A container/vehicle packing certificate is not required for bulk liquids or solids in tanks.

[17]Placards are large labels, minimum size of 250 x 250mm or 400 x 400mm (for bulk containers).

[18]Required for full container loads under IMDG section 5.3.2 Marking of Cargo Transport Units.

- If a product contains an unlisted flammable and toxic alcohol, it should be named 'UN1986 ALCOHOLS, TOXIC, N.O.S.', not the more general 'UN1992 FLAMMABLE LIQUIDS, TOXIC, N.O.S.'.
- If the Proper Shipping Name includes the term N.O.S., the technical or scientific name should be written in brackets after N.O.S eg 'ALCOHOLS, TOXIC, N.O.S. (allyl alcohol)'.
- Some generic Proper Shipping Names that do not include N.O.S as part of the name also require the addition of the technical name. These are indicated by special provisions. Examples of generic proper shipping names that require the addition of the technical name of the dangerous goods are those used for self-reactive substances, organic peroxides, pesticides and some explosives eg SELF-REACTIVE SOLID TYPE D (benzenesulphonyl hydrazide).
- If the substance is a mixture with more than one significant risk, provide the technical names of the substances contributing most significantly to the primary and secondary risk.

Packaging

Appropriate packaging is vital in safely transporting dangerous goods. The entire UN Recommendations are based on the philosophy that securely contained dangerous goods pose little, or acceptable risk, during transport. Based on experience, the UN developed the minimum performance requirements for packaging. During the last decade, the UN has been developing packing instructions which provide detailed specifications for packing specific dangerous goods.

New Zealand approvals

Infectious Substances

Land Transport Rule: Dangerous Goods 2005 (Rule 45001/1) allows several options for packaging infectious substances.

1. Packaging must be UN specification packaging (eg IMDG, NZS 5433, ICAO etc); or
2. For infectious substances affecting humans, packaging must comply with the requirements of the Director General of Health; or
3. For infectious substances affecting animals only, packaging must comply with the requirements of the Director General of Agriculture and Forestry; or
4. For routine diagnostic specimens or low risk biological products, packing that does not comply with 1, 2 or 3 above must comply with 3.2(5)(c) of the Rule.

HSNO Hazardous Substances

Substances approved as new Hazardous Substances under HSNO, or substances considered to be 'approved' when transferred from the transitional provisions, must comply with the requirements specified for the substance in the register of HSNO approvals at www.ermanz.govt.nz/search/registers.html. Approvals from ERMA are not required for packaging of imported goods. However, packaging manufactured in NZ and empty packaging imported for use must have been test-certified as complying with UN packaging standards.

Land transport

Section 3.2(1) of the Land Transport Rule requires packaging to be 'type-tested' against the performance requirements outlined in any one of:

- UN Recommendations
- IMDG
- ICAO Technical Instructions
- IATA Dangerous Goods Regulations
- NZS 5433
- packaging that complies with the requirements of the relevant regulatory authority.

Packaging for Limited Quantities and Consumer Commodities does not have to be type-tested but must meet the general safety requirements of section 3.1 of the Land Transport Rule.

Air transport

Except for Class 7 Dangerous Goods, which are approved by the National Radiation Laboratory of the Ministry of Health, the Civil Aviation Rule Part 92 states packaging must be approved by the Director of the CAA. **This approval is in addition to any other regulatory approval**.

Sea transport

Maritime Rule Part 24A states packaging must comply with the IMDG requirements. The Director of Maritime NZ approves New Zealand-manufactured packaging, and also recognises approvals granted by the CAA, Department of Labour and the Ministry of Health.

The following organisations have delegated authority for the approval, inspection and testing of all portable tanks, tank containers and freight containers:

- American Bureau of Shipping
- Bureau Veritas
- Det Norske Veritas
- Germanischer Lloyd
- Lloyd's Register of Shipping

HSNO

Under HSNO, approvals for packages are not required from ERMA. However, packaging manufactured in NZ and empty packaging imported for use must have a Test Certificate issued by a HSNO Test Certifier. This will be obtained by the manufacturer or importer of the packaging, and certifies the packaging complies with UN packaging specifications.

Packaging Selection – Key Points

The following key points should be considered when selecting packaging:

1. Does it comply with the relevant code's specific requirements?
2. Is the substance compatible with the packaging? It is the packer's and shipper's responsibility to ensure the substance is compatible with the proposed packaging. It is important the substance does not react dangerously, weaken or cause the packaging to become brittle.

3. Has the packaging been tested to the correct test specification? This is most important where UN specification packaging is purchased to package dangerous goods eg 20 litre pails are purchased to package flammable liquids.

To select packaging, check the following factors:

- **Solids or inner packages:** Does the substance adequately fill the packaging and is the total weight less than or equal to the test specification for the proposed packaging?
- **Liquids:** The specific gravity (SG) of the substance must be equal to or less than the test specification of the packaging. If the test specification SG is not marked, the packaging has been approved for liquids with SGs up to 1.2.
- Is sufficient head space (ullage) available?
- Can the packaging withstand internal pressure generated by the substance when the temperature increases under normal transport conditions?
- A package intended to retain liquids must be able to withstand pressure from either:
  - the expansion of the contents (filled to 95% capacity at 15°C and heated to 55°C); or
  - the vapour pressure generated when the contents are heated to 55°C (whichever is higher).
- Each code provides formulas to calculate the minimum hydrostatic test pressure required for a particular liquid. Flammable liquids in particular have a wide range of vapour pressure (100-250kPa).
- It is the shipper's (or consignor's) and packer's responsibility to ensure the packaging has been tested to the required test pressure for the substance being packed.
- Is the cushioning or absorbent material compatible with the substance? Polystyrene beads are not suitable cushioning material for many hydrocarbon solvents - a small leak will dissolve the beads and reduce cushioning.
- Refer to the relevant code for the full requirements.

Marking and labelling

All codes have similar marking and labelling requirements.

Labelling specifically refers to Class label(s) and Subsidiary Risk labels.

Marking refers to the UN number (preceded by the letters 'UN') and corresponding Proper Shipping Name eg 'UN 2902 PESTICIDE, LIQUID, TOXIC, N.O.S. (contains 80% drazoxolon)'.

Marks
These include special marks such as the orientation, marine pollutant, environmentally hazardous and elevated temperature marks.

Segregation

The physical separation of incompatible goods helps safeguard against accidents by reducing the probability of an adverse reaction between incompatible dangerous goods if containment is lost. The UN Recommendations recognise the need to segregate incompatible materials; however no specific guidelines are given as these are specified in the modal codes.

There are some significant differences between the codes. These differences reflect the different stresses and strains encountered in the various modes, as well as the quantities of dangerous goods involved. (See Segregation under 'Differences between Modes' on page 28.)

Documentation – Key Points

Information required on transport documentation is essentially the same for all transport modes, although some codes require a specific form.

The following information requirement is common for all modes and should be included for each dangerous substance, material or article:

1. UN number (preceded by the letters ‘UN’).
2. The Proper Shipping Name.
3. The goods’ Class or Division (when assigned). Substances and articles of Class 1 (explosives) should be followed immediately by the compatibility group letter.
4. The Packing Group (if assigned).
5. Number and type of packages.
6. Total quantity of dangerous goods covered by the description (by volume, mass, or net explosive content, as appropriate).

All codes require additional information when using generic Proper Shipping Names containing N.O.S. as part of the name, eg drazoxolon is a toxic liquid which is used as a pesticide but is not listed by name in the index or alphabetical list. The correct Proper Shipping Name to use is ‘UN 2902 PESTICIDE, LIQUID, TOXIC, N.O.S. (drazoxolon)’.

The additional information required is usually limited to stating the two most dangerous components. If the mixture has a primary and subsidiary risk, the components mainly responsible for these risks should be listed, eg an emulsifiable concentrate of azinphos-ethyl, which is toxic and has a flammable solvent would be named as ‘UN3017 ORGANOPHOSPHOROUS PESTICIDE, LIQUID, TOXIC, FLAMMABLE, N.O.S. (80% azinphos - ethyl, 15% xylene)’. The qualifying words ‘contains’ or ‘containing’ may be added to the technical name, eg ‘UN3017 ORGANOPHOSPHOROUS PESTICIDE, LIQUID, TOXIC, FLAMMABLE, N.O.S. (containing 80% azinphos-ethyl, 15% xylene)’.

All codes allow multiple entries and a mixture of dangerous/non-dangerous goods on the same declaration; however, the dangerous goods must be listed first.

All of the codes also require a signed declaration that the goods have been prepared for transport in accordance with relevant requirements. Most codes permit the use of electronic data interchange and an electronic signature.

Comparison of the documentation requirements

A comparison of the documentation requirements is shown in Table 2.

Table 2: Comparing document information requirements

	Land	Sea	Air
	Rule 45001/1	IMDG	IATA
UN Number	Yes	Yes	Yes
Proper Shipping Name	Yes	Yes	Yes
Additional information required for N.O.S. and generic Proper Shipping Names	Yes	Yes	Yes
Packing Group required	Yes	Yes	Yes
Hazchem Code	No [1]	No	No
Packing instruction	No	Yes	Yes
Indicate number and kind of packages	Yes	Yes	Yes
Indicate mass per outer package	No	Yes (G)[2]	Yes (N)[2]
Indicate the total quantity	Yes	Yes	No
Required for any quantity	Yes[3]	Yes	Yes
Require emergency procedure guide	No	No	No
Multiple entries allowed on declaration	Yes	Yes	Yes
Non-dangerous goods allowed on declaration - listed after Dangerous Goods	Yes	Yes	Yes
Indicate Marine Pollutant	No	Yes	No
Flashpoint	No	Yes	No

1 Required only for marking bulk containers.

2 (N) – Net weight, (G) – Gross weight (net mass for explosives).

3 Not required for small packages (ie up to 50 kg/l of dangerous goods in Limited Quantities.

Dangerous Goods in Limited Quantities

All codes provide for transporting Limited Quantities of medium and low-danger dangerous goods, recognising they often present a reduced level of risk during transport.

The requirements are:

- Packing Group I substances are not generally permitted, but there is a small number of exceptions eg 500 ml of UN 1263, PAINT, packing group I.
- Flammable, toxic, corrosive or oxidising gases are not permitted (aerosols UN1950 are permitted).
- Some Classes or Divisions of dangerous goods are not permitted eg Class 1, Division 6.2 and Class 7.
- The goods must be packaged in combination packaging ie an inner and outer package.
- The maximum quantity permitted per inner package is prescribed and depends on the Class, Packing Group and whether it is solid or liquid.

- The maximum gross mass of the combination package cannot exceed 30 kg.
- Shrink or stretch-wrapped trays meeting certain conditions may be regarded as outer packaging and the package shall not exceed 20 kg gross. Inner packages that are liable to break or be easily punctured (eg glass, porcelain, stoneware or certain plastics) cannot be transported by this packaging method nor is it accepted for air transport.
- Packaging needs to be good quality, but does not have to be type-tested or marked in accordance with the UN performance standards. Air transport packaging still needs to meet certain standards (see ‘Differences between modes’ on page 25).
- Some requirements for marking, labelling, segregation and documentation are also reduced.
- The Classes and quantities of goods that can be transported under these provisions for land and sea are almost identical. The Land Transport Rule allows lighters or lighter refills UN1057 and compressed non-flammable gases (excluding oxidising or corrosive gases) to be transported under the requirements of Dangerous Goods in Limited Quantities (DGLQ). See Land Transport Rule Schedule 2 and Schedule 2A for size restriction details.
- Table 3 summarises the modal differences for marking and labelling dangerous goods in Limited Quantities.

Table 3: Dangerous Goods in Limited Quantities
Summary of identification requirements for outer packaging

	Land	Sea	Air
Package marking	• Proper Shipping Name and UN number for each dangerous good **or** •'DANGEROUS GOODS IN LIMITED QUANTITIES' plus the Class and Division – including any subsidiary risk **or** • The UN number(s) of the dangerous goods in the package, placed within a diamond	The UN number(s) of the dangerous goods in the package, placed within a diamond	• 'LIMITED QUANTITY' **or** • 'LTD QTY'
Package Class label	Not required	Not required	Class label(s) required
Cargo Transport Unit[19] markings	Not required	'LIMITED QUANTITIES' or LTD QTY (for full load in the cargo transport unit)	Not applicable
Cargo Transport Unit placards	• Primary Risk Class(es), **or** • 'Hazardous' or 'Dangerous' placard	Not required	Not applicable

For detailed information:

Sea transport IMDG Code, Chapter 3.4, Dangerous Goods in Limited Quantities and Part 24A of the Maritime Rules.

Land transport Land Transport Rule, section 2.3.

Air transport IATA Dangerous Goods Regulations, section 2.8.

Note: The Land Transport Rule limits the gross amount that may be loaded into a transport unit (vehicle or vehicle combination) to 1,000 kg or 1,000 litres, whereas sea and air transport rules do not (See 'Differences between modes' on page 24).

[19] A Cargo Transport Unit includes a road freight vehicle, a road tank vehicle, a rail freight vehicle rail tank wagon or a freight container, or a portable tank.

Consumer Commodities

Consumer Commodities are dangerous goods in Limited Quantities that are intended for personal or household use and are packaged and distributed to retailers.

Consumer Commodity packages do not need to be marked with the UN number or Proper Shipping Name or labelled with a Class label, although a Class label and Proper Shipping Name are one of the alternatives permitted by the Land Transport Rule (see section 2.3(1)(g)).

The term Consumer Commodities is not used for sea transport - these are regarded as a special type of dangerous goods in Limited Quantities and you do not need to display the Class label, Proper Shipping Name or UN number.

Requirements for Small Quantities

- The 15th revised edition of the UN Recommendations has introduced dangerous goods in Excepted Quantities for all modes of transport. (See 'Significant changes in Dangerous Goods Codes' on page 10)
- Sea transport – currently there are no exemptions, however the IMDG 34-08 is expected to include provisions for dangerous goods in Excepted Quantities.
- Air transport - extremely small quantities are exempt (up to 30 g or ml depending on the risk - IATA section 2.7 Excepted Quantities).
- Land transport - provisions for small packages (see Land Transport Rule sections 2.4 and 2.5). The Land Transport Rule also allows for dangerous goods in Excepted Quantities that are transported in accordance with the requirements of ICAO or IATA (See 1.4(1) of the Dangerous Goods Rule).

Empty Containers

All modes require empty containers that have not been purged and freed of all traces of dangerous goods to be consigned as dangerous goods. The Proper Shipping Name should be amended by 'EMPTY UNCLEANED' or 'RESIDUE LAST CONTAINED' before the Proper Shipping Name of the last contents of the empty container or package.

Aerosols

Until recently there have been subtle but significant differences in aerosol classification. The 13th revised edition of the UN Recommendations adopted a new definition for Flammable Aerosols. This was subsequently adopted by ICAO, IATA and the IMDG resulting in uniform classification criteria for aerosols.

Regrettably there is now a significant difference between the definition of a flammable aerosol in the Transport Codes versus HSNO. The HSNO classification of 2.1.2A should not be relied upon to classify aerosols as flammable for transport. Some aerosols that do not meet the classification criteria of 2.1.2A may be flammable for transport. This potentially creates an unsafe situation. It is intended that the HSNO classification will be amended to align it with the GHS and UN Recommendations.

EXPORTED DANGEROUS GOODS

In addition to complying with the requirements of either the IMDG or IATA, exporters of dangerous goods must comply with land transport requirements for New Zealand and the destination country. Fortunately most land transport codes permit dangerous goods that fully comply with ICAO or the IMDG to be transported by road to the original consignment destination, without having to fully comply with the applicable land transport code. However, in many cases additional conditions apply. If goods are re-consigned they must fully comply with the local requirements.

Understanding and complying with the different requirements improves both compliance and safety, and can minimise delays and prevent additional costs, such as repackaging or re-labelling.

Australia

The ICAO Technical Instructions apply to air transport of dangerous goods and the IMDG Code applies to sea transport. The Australian Dangerous Goods Code 6th edition (ADG6) was based on the ninth revised edition of the UNRTDG. It is currently being replaced by ADG7, however, each state and territory has to adopt ADG7 independently. At the time of writing ADG6 is still the legal document in many states, and specifies the requirements for land transport. ADG6 permits imported goods to be transported to the initial destination within Australia (providing they comply with either the IMDG Code or ICAO Technical Instructions). The full requirements of the ADG Code apply if goods are reconsigned from a distribution centre or warehouse.

The seventh edition of the ADG Code was published October 2007, however, apart from Western Australia it has yet to be adopted by the states and territories. The seventh edition is closely aligned with the UN Recommendations on the Transport of Dangerous Goods and adopts for the first time 'Dangerous Goods in Limited Quantities'. This will facilitate the land transport of imported goods. A summary of the major changes can be viewed on the Australian National Transport Commission's (NTC) website at:

www.ntc.gov.au/FileView.aspx?page=A02321403400540020/ or

www.chemie-tech.com/DG_Trans.htm

It is anticipated that the ADG7 will be adopted by the remaining states and territories in late 2008.

North America

The multimodal dangerous goods requirements are included in the Code of Federal Regulations, Title 49, Subtitle B, parts 100 to 185. These can be viewed at www.access.gpo.gov/cgi-bin/cfrassemble.cgi?title=200749

Canada

The multi-modal dangerous goods requirements are included in the Transport Dangerous Goods Act and Regulations. These can be viewed at www.tc.gc.ca/tdg/clear/menu.htm

Europe

The European Agreement on the International Carriage of Dangerous Goods by Road (ADR) is effective across the European continent, with 40 countries adopting the 2007 edition of the ADR. There has been significant harmonisation with the UNRTDG over recent years, and this is an ongoing process.

Other European Dangerous Goods Codes include the RID governing international rail transport and the AND governing the transport of DG on inland waterways.

DIFFERENCES BETWEEN MODES

All transport modes have adopted essentially the same standard for packaging, marking and labelling. Differences between the codes are discussed below.

PACKAGING INSTRUCTIONS

UN Recommendations

These specify the packaging which may be used for each dangerous good. These packing instructions restrict the style (drum, box, jerrican etc), material (plastic, steel, fibreboard etc) and maximum permitted capacity for a particular style/material combination, or the maximum capacity per single packaging.

Air and sea

As well as complying with UN specification packaging, air and sea modes may further restrict the quantity of dangerous goods that can be shipped in a particular type of inner packaging and the total quantity per outer packaging (combination packaging) or a single packaging (ie a closed head drum). The quantity limits imposed in the air and sea modes can be lower than those specified in the UN Recommendation Packing Instructions. It is vital to check the requirements specified in the relevant modal code.

Land

The Land Transport Rule incorporates by reference NZS 5433, which refers to the UN packaging instructions.

Comparison of package size limitations

Table 4 compares the allowable quantities that can be packed into a glass bottle inner packaging and a wooden box outer packaging for acetaldehyde.

Table 4: Packaging requirements for UN1089 ACETALDEHYDE

	UN	NZS 5433	IMDG	ICAO & IATA	
				Passenger aircraft	Cargo aircraft
Packing Instruction	P001	P001	P001	Forbidden	304
Maximum capacity glass bottle/jar ‘inner’	10 L	10 L	10 L (N)	Forbidden	0.5 L (N)
Maximum capacity wooden box ‘outer’	150 kg	150 kg	75 kg (G)	Forbidden	30 L (N)
Steel Drum (closed head)1A1 (as single packaging)	250 L	250 L	250 L	Forbidden	30 L
N = net, G = gross					

Small Packages – land transport only

Dangerous goods transported as small packages must comply with inner package quantity limits in Schedule 2 of the rule (Dangerous Goods in Limited Quantities and Consumer Commodities). The packaging must comply with clause 3.2(2) and 3.2(3) of the rule.

Dangerous Goods in Limited Quantities

Land and sea transport use the same quantity limits, type and style of packaging. The requirements for air transport are substantially different (refer to ICAO Technical Instructions or IATA Dangerous Goods Regulations for details).

The Land Transport Rule allows the abbreviation 'DGLQ' for dangerous goods in Limited Quantities. However, IMDG, ICAO and IATA do not recognise this abbreviation - their terminology is 'Limited Quantities' or 'Ltd Qty'. 'Ltd Qty' is also acceptable for land transport.

Packaging

Packaging for the land and sea transport of dangerous goods in Limited Quantities has to meet the general requirements specified in the relevant code, but does not have to pass the UN performance tests (ie drop test, stack test etc).

Air transport requires packaging for dangerous goods in Limited Quantities to be able to pass the stack test and withstand a drop of 1.2m onto the point that is most likely to sustain damage. This is a similar standard to Packing Group II requirements (minus the need for official testing in an approved laboratory).

Shrink or stretch-wrapped trays are not acceptable for air transport.

Consumer Commodities

These are dangerous goods in Limited Quantities for personal use or household use that are packaged and distributed in a form suitable for retail sale. The term Consumer Commodities is used by IATA in their Dangerous Goods Regulations and in the Land Transport Rule: Dangerous Goods 2005, Rule 45001/1.

Land transport offers reduced requirements for goods defined as Consumer Commodities. Its definition of Consumer Commodities includes goods intended for recreational use. The rule limits the quantity to 1,000 kg per load. Any part of the load that exceeds 1,000 kg must fully comply with the rule.

The IATA regulations recognise **Consumer Commodities** as a proper shipping name and assigns it to ID number 8000 (as opposed to a UN number), **Consumer Commodities**, and is classified as Class 9 Dangerous Goods. Products that are packaged and identified as ID 8000, **Consumer Commodities**, Class 9 in accordance with aviation requirements may be transported on land in New Zealand under the Small Packages provisions of the Dangerous Goods Rule. This enables IATA Consumer Commodities to be transported without any changes to the packaging or identification of the goods.

The term 'Consumer Commodities' is not used by the UN Recommendations or IMDG, however, reduced requirements for marking and labelling apply to dangerous goods in Limited Quantities for personal use or household use that are packaged and distributed in a form suitable for retail sale.

Special Provisions

The UN Recommendations, IMDG Code, IATA Regulations, ICAO Technical Instructions and NZS 5433:2007 provide additional information as special provisions for some substances.

These special provisions contain very important information and must be read. They specify additional or reduced requirements for certain circumstances and provide definitions for terms used.

The special provisions are usually listed in a table within the code. In all codes a reference to the applicable special provisions is given in the list of dangerous goods. For example, UN2465 DICHLOROISOCYANURIC ACID, DRY or DICHLOROISOCYANURIC ACID SALTS has the special provision that the dihydrated sodium salt is considered non-dangerous. Thus the dihydrated sodium salt of dichloroisocyanuric acid is not a dangerous good for transport.

The IMDG Code includes an additional set of special provisions numbered from 900. This numbering identifies them as being unique and is applicable to maritime transport only.

Proper Shipping Name

The UN Recommendations, IMDG and NZS 5433:2007 have traditionally written the Proper Shipping Name in upper case. Anything written in lower case is considered to be additional information. ICAO and IATA show the Proper Shipping Name by using bold typeface, rather than capital letters.

Goods Too Dangerous To Transport

Some goods are considered too dangerous to transport. The IATA Regulations show these as being FORBIDDEN in the list of dangerous goods.

In special circumstances, the Regulatory Authority may approve the transport of certain forbidden dangerous goods.

Pollutants and Environmentally Hazardous Substances

The UN Recommendations has adopted the GHS classification criteria for Acute Aquatic Toxicity category 1 and 2 and Chronic Aquatic Toxicity Category 1 for environmentally hazardous substances. Special Provision 179 permits the designation of 'ENVIRONMENTALLY HAZARDOUS' to be used with substances and mixtures which are dangerous to the aquatic environment, or which are marine pollutants, and that do not meet the classification criteria of any other class, or another substance within Class 9. This designation may also be used for wastes not otherwise subject to these regulations but which are covered under the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal,* and for substances designated to be environmentally hazardous substances by the competent authority of the country of origin, transit or destination which do not meet the criteria for an environmentally hazardous substance according to the relevant transport code or for any other hazard

The IMDG lists many substances as pollutants in the general index or alphabetical list. These are identified by a P for Marine Pollutant and PP for Severe Marine Pollutant or • for substances that are marine pollutants if they contain 1% or more of a Severe Marine Pollutant or 10% or more of a Marine Pollutant. The Maritime Rule 24A and the IMDG currently require a special mark (triangular label depicting a fish with a cross through it) on packaging with the words 'Marine Pollutant' after the UN number on documents. There are additional stowage requirements and reporting requirements in the event of a spillage or loss. The marine pollutant mark will change with the introduction of revision 34-08 of the IMDG to a black diamond with the dead tree & fish symbol.

PACKAGING

Internal Pressure (Hydrostatic) Test

Packaging intended to contain liquids must be capable of passing an internal hydrostatic pressure test. The required test pressure is dependant on the liquid being packed and must be determined on a case-by-case basis. The various codes specify the acceptable means of calculating and measuring the hydrostatic test pressure. They also specify minimum test pressures. When selecting packaging, it must be able to withstand either the determined test pressure or the relevant minimum test pressure, **whichever is higher**.

There are some significant differences in the minimum test pressures permitted by the various transport codes. Air transport requires a higher standard.

International Air Transport Association

For single packagings, the requirements are:

- When using the actual liquid that the packaging is designed to contain, the minimum test pressure is 95kPa for all hazard classes, except for PG III of Class 3 and Division 6.1 where 75kPa is allowed. The reference for this is ICAO Part 6;4.5.3(a) and IATA 6.3.5.3.1.

- When using the vapour pressure as an indicator, then the minimum test pressure for all hazard classes is 100kPa. References ICAO Part 6;4.5.3(b) and (c) and IATA 6.3.5.3.2 and 6.3.5.3.3.
- For PG I liquids the minimum test pressure is 250kPa and ICAO Part 6;3.5.4.

For all inner packagings intending to contain liquids, the packaging must be capable of withstanding a pressure differential of not less than 95kPa for all hazard classes, except for PG III of Class 3 and Division 6.1 where they allow 75kPa, or, if using the vapour pressure as a standard, then the minimum pressure differential for all hazard classes and packing groups is 95kPa. The references are ICAO Part 4;1.1.6 and IATA 5.0.2.9.

Absorbent material: IATA requires absorbent material to be used with some goods (section 5.0.2.12.2). This should be compatible with the substance.

UN Recommendations, IMDG and NZS5433

The minimum test pressure to take account of vapour pressure is 100kPa for PG II & III liquids and a minimum of 250kPa for Packing Group I liquids.

NON UN TYPE-TESTED PACKAGING

Excepted Quantities

The 15th revised edition of the UN Recommendation (Chapter 3.5), ICAO Part 1, Chapter 2, section 2.5 and IATA 2.7 allow very small quantities of some Classes of dangerous goods to be shipped as 'Excepted Quantities'. The packaging does not have to be UN certified packaging but it must be of good quality combination packaging, capable of withstanding the normal conditions of transport, and must be compatible with the dangerous goods. Incompatible dangerous goods must not be included in the same package.

IATA imposes additional labelling requirements.

Limited Quantities

Limited Quantities of some less-hazardous dangerous goods (eg those that are allowed to be carried on passenger aircraft) may be transported in non-UN specification packaging provided special provisions are met. These provisions are detailed in IATA's section 2.8. The packaging does not have to be officially tested in an approved laboratory to UN specifications, but it must meet the requirements of the relevant Packing Instruction specified in the relevant code.

The package must be capable of passing the stacking test and be able to withstand a drop of 1.2 m onto solid concrete in the position most likely to cause damage. IATA denotes limited quantity Packing Instructions by a capital letter 'Y' in front of the Packing Instruction number.

ICAO and IATA Packing Instruction 910 allows cosmetics, drugs and medicines (packaged for retail sale or distribution for personal or household consumption) to be packed in non-UN specification packaging to a total gross mass of 30 kg. Stretch or shrink-wrapped trays are not acceptable.

The IMDG Code allows limited quantity shipments of up to 30 kg per package. Quantity per inner package is restricted. No requirements are specified for strength, other than the package must be of good quality and capable of withstanding normal transport conditions.

The Land Transport Rule also provides dispensation for packaging dangerous goods in Limited Quantities and Consumer Commodities (Rule section 3.1 and 3.2(2)).

NZS 5433 and the Land Transport Rule allow Dangerous Goods in Limited Quantities and Consumer Commodities up to 30 kg per package to be in packages that meet the general safety requirements of section 3.1 of the Land Transport Rule (see sections 2.3 and 3.2(2)).

Segregation

It is not possible to deal with this subject in any depth in this document, other than to point out that some combinations allowable on land are not allowable at sea and vice versa. Consignors and freight forwarders involved in the land and sea consignment of dangerous goods must comply with the requirements of both modes. This includes vessels and roll-on/roll-off ferries operating on the New Zealand coast.

The IMDG Code introduced segregation groups which list substances with similar properties. In addition to the general segregation requirements by Class or Division, the IMDG may specify addition segregation requirements for specific dangerous goods. The additional segregation requirements are specified in the list of dangerous goods (part 3 of the IMDG). Cyanides of division 6.1 must be segregated '**away from acids'**. Acids refer to any substance in the 'Acid Segregation Group'. **Note:** The 'away from acids' does not apply to all acids; it applies only to those listed in the Acid Segregation Group. Many weaker organic acids are not included in the Acid Segregation Group. The Segregation Groups have been reproduced in NZS 5433:2007

Table 5 shows the differences between segregation requirements for land and sea transport.

The Land Transport Rule and NZS 5433 make allowance for segregation devices on board vehicles. These are not accepted under the IMDG Code unless specifically permitted by Maritime NZ.

The IMDG Code requires that dangerous goods that require 'Away from' segregation (3m separation), or 'Separated from' segregation (6m separation) should not be packed in the same Cargo Transport Unit (CTU)[20].

The IATA Dangerous Goods Regulations include segregation requirements for dangerous goods within packages and stowage segregation on board aircraft. Airlines will not accept cargo transport units packed by consignors or freight consolidators.

[20] CTU includes ISO containers, rail wagons and vehicles without competent authority approval. Maritime NZ will consider applications on a case-by-case basis.

Table 5: Combined land and sea segregation requirements

This table specifies the general segregation requirements – the IMDG Code may specify additional segregation requirements under stowage and segregation for individual goods.

Bold italic underlined numbers indicate that land transport segregation is more restrictive. ***Bold italic numbers*** indicate marine transport is more restrictive.

Column A **Class or Division and name of dangerous goods**	**Column B** **Must not be loaded in the same freight container or on the same vehicle**	**Column C** **Must not be loaded in the same freight container; and must be separated horizontally by at least three metres unless all but one are packed in separate freight containers**
1 Explosives (except 1.4)	2.1, 2.2, 2.3, 3, 4.1, 4.2, 4.3, 5.1, 5.2, 6.1**,** 6.2, 7, 8, ***9***	-
1.4 Explosives	2.1, 3, 4.1, 4.2, 4.3, 5.1, 5.2, 6.2, 7, 8,	2.2, 2.3
2.1 Flammable gases	1, 3, 4.2, 5.1, 5.2, 7, ***6.2***	4.1***, 8***
2.2 Non-flammable, non-toxic gases	1, ***6.2***	4.2, 5.2, ***3, 7***
2.3 Toxic gases	1, 3, 4.2, 5.2, food items, ***6.2***	***7***
3 Flammable liquids	1, 2.1, 2.3, 4.2, 5.1, 5.2, 7, ***6.2***	4.3, ***2.2***
4.1 Flammable solids	1, 5.2, 7***, 6.2***	2.1, 4.2, 5.1***, 8***
4.2 Spontaneously combustible	1, 2.1, 2.3, 3, 5.1, 5.2, 7, ***6.2***	2.2, 4.1, ***4.3, 6.1, 8***
4.3 Dangerous when wet	1, 5.1, 5.2, 7, ***6.2***	3, 8, ***4.2, 8***
5.1 Oxidising substances	1, 2.1, 3, 4.2, 4.3, 5.2, 6.2, 8	4.1, 6.1, 7
5.2 Organic peroxides	1, 2.1, 2.3, 3, 4.1, 4.2, 4.3, 5.1, 6.2, 7, 8	2.2, 6.1
6.1 Toxic substances	1, food items, note 1	5.1, 5.2, ***4.2, 6.2***
6.2 Infectious substances	1, 5.1, 5.2, food items, ***2.1, 2.2, 2.3, 3, 4.1, 4.2, 4.3, 5.1, 5.2, 7, 8***	***6.1***
7 Radioactive materials	1, 2.1, 3, 4.1, 4.2, 4.3, 5.2, ***6.2***, 8	5.1***, 2.2, 2.3***
8 Corrosives	1, 5.1, 5.2, ***6.2,*** 7, food items, note 1, note 2	4.3, ***2.1, 4.1, 4.2, 4.3***
9 Miscellaneous dangerous substances and articles	***1*** (except 1.4)	-

Note 1: Cyanides (Class 6.1) must not be loaded in the same freight container or on the same vehicle with acids (Class 8).

Note 2: Strong acids must not be loaded in the same freight container or on the same vehicle with strong alkalis. (All Class 8 Corrosives in packing group I or II should be considered to be strong acids and alkalis. Some exemptions have been granted by Maritime NZ).

Note 3: Segregation devices may be used as specified in 6.4 of Land Transport Rule 45001/1. Segregation devices have not been approved for sea transport.

Labelling and placarding

Labelling and placarding principles are common to all codes. The use, number, location and size of the placards varies, however all modes require all outer packagings to be labelled with Class labels.

Class and Subsidiary Risk labels: Subsidiary Risk labels are identical to Class labels.

Quantity: All dangerous goods transported by air or sea must be labelled. The same requirements apply to land transport, except a vehicle carrying small packages in an aggregated quantity less than 50 kg or 50 litres does not need to be placarded.

Location and number: A vehicle for sea transport must be placarded on two sides and the front and rear. For road transport, the same vehicle is required to be placarded front and rear. The minimum size for the placards is 250 x 250 mm. Bulk tankwagons are required to be placarded on both sides and the rear. The minimum placard size is 400 x 400 mm for land transport in New Zealand.

Dangerous placard: The black and orange striped ‘DANGEROUS’ placard used for land transport is not acceptable for air or sea transport. These modes require all Class and Subsidiary Risk labels/placards to be displayed. A vehicle placarded according to marine requirements is also acceptable under the Land Transport Rule. The converse, however, is not acceptable.

Container packing certificates

The Land Transport Rule section 5.2(7) requires a Container Packing Certificate or Vehicle Packing Certificate to be carried if the goods are in a closed, pre-packed freight container or vehicle. The certificate states the container and the goods have been inspected and that the packages are labelled and marked, segregated and secured in accordance with the Land Transport Rule.

The persons responsible for packing a freight container or vehicle must ensure that no dangerous goods which are required to be segregated under section 7.2 of the IMDG Code are packed within the same freight container or vehicle, intended for sea transportation, without the prior approval of Maritime NZ.

As Table 5 shows, a land transport Container or Vehicle Packing Certificate does not necessarily ensure compliance with maritime requirements, and vice versa. This is due to the differences in segregation requirements. Check columns A to C in Table 5 to ensure both land and sea segregation requirements are met.

Cargo Transport Units and Freight Containers

In addition to the placards, the IMDG Code requires full container loads of one dangerous good to be marked with the UN number. The number should be placed either in the lower-half of the Class placard or on a separate orange placard placed close to the Class placard (see IMDG section 8.7).

This code also specifies that dangerous goods that do not completely fill a freight container or cargo transport unit are to be placed immediately inside the doors of the container or be readily accessible in a transport unit (eg a vehicle).

It also requires those responsible for packing a container to provide a Container Packing Certificate declaring compliance with IMDG section 5.4.2 (also see ‘Container Packing Certificate’ above).

Standards New Zealand has published a guide for stowing dangerous goods in freight containers NZS HB 77:2008.

Bulk Shipments

The IMDG Code has special provisions for intermediate bulk containers (IBCs) and bulk containers. Under the Land Transport Rule, bulk containers other than IBCs must display an emergency information panel (section 7.2(5)).

Portable tanks for compressed or liquefied gases must comply with the Health and Safety in Employment (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999 (HSE 1999), administered by the Engineering Safety Department of Labour. Tanks meeting the requirements of IMDG or the UN Recommendations are also considered to be in compliance with the HSE.

PENALTIES

General

Penalties may apply to all persons involved.

Maritime

The Maritime (Offences) Regulations 1998 provide for offences which on summary conviction carry a maximum fine of $3,000 to $5,000 for individuals and $20,000 to $30,000 for a body corporate. These provisions and penalties apply to ship owners and masters. They also apply to harbourmasters, 'shippers' of dangerous goods, manufacturers of packagings, consolidators and packers and port operators.

Land

The Land Transport (Offences and Penalties) Regulations 1999 (as amended) provide for offences against the Land Transport Rule. These offences attract a wide range of instant fines up to $10,000 for a company and $2,000 for an individual. Fines for summary convictions include a maximum $50,000 for a company and $10,000 for an individual.

Air

The Civil Aviation (Offences) Regulations 1997 provide for offences for instant fines and 29 offences for which summary conviction results in a fine. The infringement fees for these offences range from $250 to $2,000 for an individual and $1,500 to $12,000 for a body corporate. The maximum fines resulting from a summary conviction range from $650 to $5,000 for an individual and $3,750 to $30,000 for a body corporate.

HSNO

The offence provisions of the HSNO Act that are most relevant to the transport sector are those in section 109(1)(e) to (g) and (j) to (m) of the HSNO Act. However, other provisions may apply in particular circumstances. The offences in section 109(1)(e) to (g) are strict liability (where it is not necessary to prove that the defendant intended to commit the offence, although certain defences apply). The penalties (section 114) range from maximum fines of $5,000 or $50,000 up to a maximum fine of $500,000 or three months' imprisonment. If the major offences are continuing ones, further fines of up to $5,000 or $50,000 may apply for every day the offence continues. The Court may also require a person convicted of an offence to mitigate or remedy any adverse effects on people or the environment or to pay the costs of doing so. Finally, the Act allows for enforcement officers to impose infringement notices (instant fines), but at the time of writing in August 2008, these were still being developed.

HSNO REQUIREMENTS IMPACTING ON TRANSPORT

Transit depots

A transit depot is defined in the Hazardous Substances (Classes 1 to 5 Controls) Regulations 2001 as:

A permanent place (excluding a means of transport, and excluding any place where the substances are held for sale or supply) used as a transport depot that is designed to hold hazardous substances in containers that remain unopened during the time that they are present at the depot for periods that are more than:

- 18 hours in the case of a substance that is not subject to the tracking provisions of the Hazardous Substances (Tracking) Regulations 2001
- two hours, in the case of a substance subject to the tracking provisions of those regulations;

but are, in no case, more than three days.

Requirements for transit depots

The requirements for transit depots are above specified thresholds. These requirements (and thresholds) are contained in Regulations 83, 101 and 124 of the Hazardous Substances (Classes 1 to 5 Controls) Regulations (for classes 2-4, 5.1 and 5.2, respectively). These include:

- the requirement to notify a Hazardous Substances Enforcement Officer of the maximum quantity and classification of each of the hazardous substances that the depot is designed to accommodate at least 30 days prior to establishing a transit depot
- the requirement for substances over certain quantities to be under the control and supervision of an Approved Handler or secured
- requirements for segregation, including segregation distances between vehicles and unloaded substances. The distances required are greater than those required under the IMDG Code or the Land Transport Dangerous Goods Rule.

Qualifications for Approved Handlers

These are contained in Regulations 5 of the Hazardous Substances and New Organisms (Personnel Qualifications) Regulations 2001.

However, a person who drives, loads and unloads a vehicle transporting packaged dangerous goods does not have to be an approved handler if they have a dangerous goods endorsement on their drivers licence. This does not apply to transport of explosives or dangerous goods in bulk. (See the Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2004, as amended, published in the *New Zealand Gazette*.)

Tracked substances

These are defined in the Hazardous Substances (Tracking) Regulations 2001. These regulations impose:

- a requirement that the place where tracked substances are stored has an Approved Handler and that when a tracked substance is transferred to another place, there is an approved handler there and it has the required HSNO test certificates
- significant record-keeping requirements (essentially so that the movement of the substance can be back-tracked if there is an incident or emergency).

UN Dangerous Goods classifications which require tracking under the HSNO Act are:

- All of Class 1, except 1.4S
- Class 3 PG I
- Division 4.1 desensitised explosives PG I
- Division 4.1 self-reactive substances Type B
- Division 4.2 PG I
- Division 4.3 PG I
- Division 5.1 PG I
- Division 5.2 Type B
- Division 6.1 PG I, II & III
- UN 3077 and UN 3082.

These environmentally hazardous classifications include all dangerous goods that are Marine Pollutants and severe Marine Pollutants in the IMDG. These UN numbers are only assigned to Environmentally Hazardous substances that are not classified in Classes 1 to 8. The UNRTDG recognises that goods classified in Classes 1 to 8 may be environmentally hazardous, but does not require the environmental hazard to be separately identified. The GHS and HSNO, on the other hand, identify all hazardous properties.

HSNO classification categories 9.1A (aquatic toxicity) & 9.2A, 9.3A and 9.4A (terrestrial ecotoxicity) are also tracked substances. They may arrive in New Zealand without being identified by any GHS or UN dangerous goods marking or labelling. Ports and airports will be reliant on shippers to notify them if a substance is subject to the HSNO tracking requirements. Without notification, they will not be able to fulfil their obligations under the HSNO tracking regulations. There are significant penalties for non-compliance.

Identification

The Hazardous Substances (Identification) Regulations 2001 apply to any hazardous substance within New Zealand. The requirements of these regulations are satisfied if the transport container or the outer packing complies with marking and labelling requirements of:

- Land Transport Rule: Dangerous Goods 2005 (Rule 45001/1); or
- Civil Aviation Act 1990 (Rule Part92); or
- Maritime Transport Act 1994 (Maritime Rule 24A).

If a sole package (ie no outer packaging, such as a 200 litre drum) is not in a transport container, the labelling and marking must comply fully with both the transport requirements and the Identification Regulations requirements.

Standard of packaging

These are contained in the Hazardous Substances (Packaging) Regulations 2001. Substances packed in accordance with the transport codes in UN Specification Packaging will generally meet the requirements of these regulations.

Inner or primary packaging must meet the requirements specified in Part 2 of these regulations. In particular, the packaging for substances specified in Schedule 5 must meet the test requirements of Schedule 4, or be labelled with a warning that the packaging may not withstand a drop of 0.5 m.

Documentation

While not explicitly requiring additional documentation to that usually provided by dangerous goods declarations, it will be necessary to identify Class 4.1 desensitised explosives PG I, which would not normally be identified on documentation as desensitised explosives.

There is a practical requirement to advise transport operators and transit depots that a substance is a tracked substance. It is possible that this could be included with the description of the goods or in the additional information box on the dangerous goods declaration. Alternatively this information could be provided on other transport documentation, however, it would be desirable for a standardised location to be agreed.

REGULATORY AUTHORITIES AND LEGISLATION IN NEW ZEALAND

Transporting dangerous goods within New Zealand is governed by five principal pieces of legislation covering the three transport modes. These acts, regulations and rules cover dangerous goods, including infectious and radioactive materials. All have transport-related compliance requirements.

The following competent authorities administer various aspects of dangerous goods transport and storage.

Environmental Risk Management Authority (ERMA New Zealand)

Website: www.ermanz.govt.nz

Phone (04) 916 2426

The Ministry for the Environment is responsible for the administration (essentially the design and content) of the HSNO Act and Regulations. The legislation covers all hazardous substances (except radioactive materials and infectious substances) throughout their lifecycle. ERMA New Zealand implements the legislation. It is also responsible for approving the importation and manufacture of hazardous substances and applying the controls regulating the transport, storage, use and disposal of those hazardous substances. ERMA New Zealand also has various monitoring and review roles, including the ability to inquire into incidents and emergencies involving hazardous substances.

NZ Transport Agency

Website: www.nzta.govt.nz

Phone (04) 894 5400

The NZ Transport Agency (NZTA) is a Crown entity established on 1 August 2008, under the amended Land Transport Management Act 2003, and brings together the functions of Land Transport New Zealand and Transit New Zealand to provide an integrated approach to transport planning, funding and delivery.

NZTA administers the Land Transport Act, Regulations and Land Transport Rule which provides for licence endorsement, documentation, segregation and labelling (placarding) of vehicles and loads.

Land Transport Rule: Dangerous Goods 2005 (Rule 45001/1) sets out responsibilities for consignors, loaders and drivers/operators, and requirements for packaging (except packaging approvals), identification, documentation, segregation, transport procedures and training.

The Dangerous Goods Rule 2005, which is enforced by the Police on NZ Transport Agency's behalf, applies to anyone transporting dangerous goods on land (and includes items for personal or recreational use). Land Transport Rules can be viewed at www.landtransport.govt.nz/rules/

Maritime New Zealand

Website: www.maritimenz.govt.nz

Phone 0508 225 522

The Maritime Safety Authority became Maritime New Zealand on 1 July 2005 with wider responsibilities including maritime safety, security and marine environment protection. Maritime New Zealand administers the Maritime Transport Act 1994 and Maritime Rule Part 24A. It is responsible for all aspects of dangerous goods transport by sea. Requirements are set out in the Maritime Transport Act and the Maritime Rules, and include compliance with the IMDG Code. Training requirements are specified in Appendix 2 to MARITIME Rule Part 24A (see 'Training' on page 41). The dangerous goods Rule can be viewed at http://www.MaritimeNZ.govt.nz/rules/maritime_rules.asp

Civil Aviation Authority (CAA)

Website: www.caa.govt.nz

Phone (04) 560 9400

CAA administers the Civil Aviation Act 1990, and is responsible for all aspects of dangerous goods transport by air. Requirements are set out in CAA Rule Part 92. They include compliance with the ICAO Technical Instructions for the Safe Transport of dangerous goods by Air unless the Rule allows an alternative requirement.

Legal requirements are specified in the ICAO Technical Instructions. International, domestic and regional airlines operating in New Zealand generally comply with the IATA dangerous goods Regulations. These include requirements of the ICAO Technical Instructions but in some areas are more restrictive. Enquiries relating to air transport of dangerous goods should be directed to the relevant airline.

The dangerous goods Rule can be viewed at: www.caa.govt.nz/rules/Part_092_brief.htm

Ministry of Agriculture and Forestry

Website: www.maf.govt.nz

Phone (04) 474 4100

MAF is responsible for animal and plant infectious substances and administers the Biosecurity Act.

Phone 0800 809 966 to report suspected exotic diseases in animals and plants.

Department of Labour

Website: www.dol.govt.nz

Phone 0800 20 90 20 or (04) 915 4000

The Department of Labour is responsible for ensuring that the provisions of the HSNO Act (including any controls imposed or approvals granted under the HSNO Act) are enforced in any place of work.

Ministry of Health

Website: www.moh.govt.nz

Phone (04) 496 2000

The Ministry is responsible for classifying infectious substances affecting humans and providing packaging approvals if the packaging does not comply with the standard specified in section 3.2(5)(a) of the Land Transport Rule: dangerous goods 2004 (Rule 45001/1).

Ministry of Health (National Radiation Laboratory)

Website: www.nrl.moh.govt.nz

Phone (03) 366 5059

The National Radiation Laboratory administers the Radiation Protection Act 1965 and Regulations and is responsible for classification, storage, transport and packaging approval for Class 7 (radioactive material).

Regulation 3 of the Radiation Protection Regulations 1982 stipulates that radioactive material is transported in accordance with the International Atomic Energy Agency Regulations for the Safe Transport of Radioactive Material (IAEA Transport Regulations). The latest version is the 1996 edition (revised).These regulations are reproduced in the UN Recommendations on the Transport of Dangerous Goods, IMDG Code and the ICAO Technical Instructions and IATA Regulations. The National Radiation Laboratory publication '*Road Transport of Radioactive Materials: Requirements and Guidance Notes for Drivers and Handlers*' can be downloaded from the NRL website: www.nrl.moh.govt.nz/regulatory/transportbrochure.pdf

Class 9

Class 9 Miscellaneous Dangerous Substances may not all fall within the jurisdiction of any one authority. Asbestos is an example of a substance that has different controls imposed depending on the stage of its lifecycle and its use or location. Occupational exposure is regulated by the Department of Labour while the Ministry of Health is concerned with public health issues, which includes non-occupational exposure. Regional councils and territorial authorities may have an interest in its disposal.

A substance containing asbestos would be a hazardous substance under HSNO, however, a manufactured Asbestos Containing Material (ACM)) is not covered by HSNO. Several agencies are involved in the management of ACM.

ERMA is responsible for Environmentally Hazardous Substances.

Note: Competent Authority approvals may not be universal and more than one approval may be required.

DANGEROUS GOODS TRAINING

Road

Section 10 of the Land Transport Rule specifies responsibilities for anyone transporting dangerous goods by road (not just commercial carriers). Section 9 of the Rule requires training for all those involved (except for domestic use).

Drivers carrying dangerous goods must pass a training course, now a unit standard on the National Qualifications Framework, and obtain an endorsement on their licence which must be renewed every five years.

Sea

Maritime Transport Rule 24A requires training for anyone involved in handling dangerous goods (other than a passenger). The training requirements are specified in Appendix 2 to Maritime Rule Part 24A.The appendix specifies that areas of knowledge and specifies safety training shall be applicable to the person's duties.

Air

Civil Aviation Rule Part 92 requires training for people, as below, handling dangerous goods:

- regular shippers and their agents
- operators accepting dangerous goods
- handling agents
- agencies, organisations and people (other than operators) involved in processing or carrying either passengers or cargo
- agencies engaged in security screening passengers and their baggage.

A regular shipper is any commercial organisation that consigns dangerous goods by air transport.

Training courses must be conducted by someone with an aviation training certificate issued under Part 141 of the Civil Aviation Rule, or a current IATA dangerous goods training programme certificate of accreditation. IATA has training manuals. Retraining must be completed within two years.

Hazardous Substances and New Organisms Act 1996

Hazardous Substances (Classes 1 to 5 Controls) Regulations 2001, the Hazardous Substances (Tracking) Regulations 2001 and the Hazardous Substances (Classes 6, 8 and 9 Controls) Regulations 2001 specify a number of circumstances that require an Approved Handler.

Qualifications for an Approved Handler are set out in Regulation 5 of the Hazardous Substances and New Organisms (Personnel Qualification) Regulations 2001. These impose controls on the whole lifecycle of a substance, including transport.

For a driver who transports dangerous goods on land, ERMA will accept a dangerous goods driver's licence endorsement as an alternative to an Approved Handler certificate.

Masters and mates:

Where a Ship's Officer has custody of HSNO Hazardous Substances that require an Approved Handler, the STCW 21 certificate is recognised as an alternative to an Approved Handler certificate.

General

Health and Safety in Employment (HSE) Act 1992 requires hazards to be identified and all practicable steps taken to eliminate, isolate or minimise any significant hazards (sections 7 to 10). The Act also requires employees to be trained (section 13).

Crimes Act 1961: A requirement for training is implied under section 156 of the Crimes Act: "Duty of persons in charge of dangerous things - everyone who has in his charge or under his control anything whatever, whether animate or inanimate, or who erects, makes, operates, or maintains anything whatever, which, in the absence of precaution or care, may endanger human life is under a legal duty to take reasonable precautions against and to use reasonable care to avoid such danger, and is criminally responsible for the consequences of omitting without lawful excuse to discharge that duty."

Training Courses

Courses are available for all transport modes from independent training consultants and organisations. Courses usually range from one to five days.

BIBLIOGRAPHY

Biosecurity Act 1993

Civil Aviation Act 1990

Civil Aviation (Offences) Regulations 1997

Civil Aviation Rule Part 92, 1995

Crimes Act 1961

Explosives Authorisation Order 2001

Hazardous Substances (Classes 1 to 5 Controls) Regulations 2001

Hazardous Substances (Classes 6, 8 & and 9 Controls) Regulations 2001

Hazardous Substances (Packaging) Regulations 2001

Hazardous Substances (Tracking) Regulations 2001

Hazardous Substances and New Organisms (Personnel Qualification) Regulations 2001

Hazardous Substances and New Organisms Act 1996

Health and Safety in Employment (Pressure Equipment, Cranes and Passenger Ropeways) Regulations 1999

Health and Safety in Employment Act 1992

IATA Regulations: International Air Transport Association, dangerous goods Regulations, 49th (2008) or most recent edition

ICAO Technical Instructions: International Civil Aviation Organization, Technical Instructions for the Safe Transport of dangerous goods by Air, 2007-2008 or most recent edition

IMDG Code: International Maritime Organization, International Maritime dangerous goods Code – 2006 (amendment 33) became mandatory on 1 January 2008 — or most recent edition

Land Transport (Offences and Penalties) Regulations 1999

Land Transport Act 1998

Land Transport Rule: dangerous goods 2005 (Rule 45001/1)

Maritime (Offences) Regulations 1998

Maritime Transport Act 1994 and amendments

Maritime (Offences) Regulations 1998

Maritime Transport Rule Part 24A Carriage of Cargoes – dangerous goods

NZS 5433:2007 THE TRANSPORT OF DANGEROUS GOODS ON LAND, Standards New Zealand.

Radiation Protection Act 1965

Radiation Protection Regulations 1982

Railways Act 2005

Resource Management Act 1991

UN Recommendations: The United Nations Committee of Experts' Recommendations on the Transport of Dangerous Goods, 15th revised edition or most recent edition.

GLOSSARY OF TERMS

CAA	Civil Aviation Authority
DGLQ	dangerous goods in Limited Quantity – land transport
ERMA	Environmental Risk Management Authority
HSE	Health and Safety in Employment Act 1992
HSNO	Hazardous Substances and New Organisms Act 1996
IAEA	International Atomic Energy Agency
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMDG Code	International Maritime Dangerous Goods Code
IMO	International Maritime Organization
Ltd Qty	dangerous goods in Limited Quantity – air transport
Maritime NZ	Maritime New Zealand
MAF	Ministry of Agriculture and Forestry
N.O.S	Not Otherwise Specified
UN	United Nations
UNCETDG	United Nations Committee of Experts on the Transport of Dangerous Goods

See cover page note. Some detail may be out of date.