Chapter 3: Classification of Hazardous Substances

3 Classification of Hazardous Substances

Key Points

- For the purpose of land use planning under the RMA, hazardous substances are classified in accordance with the HSNO legislation.
- The HSNO classification system establishes a series of hazard categories, with more stringent controls placed on substances with higher hazards.
- The HSNO classification system is generally based on the United Nations (UN) classification system for the transport of dangerous goods, but includes additional categories for some hazardous substances, including toxic and ecotoxic substances.
- The RMA definition of hazardous substances includes those substances classified under HSNO, but may also include radioactive and environmentally damaging substances.

3.1 Background

Hazardous substances are generally classified according to their hazardous properties and the degree of hazard. Substances of greater hazard are classified in higher hazard categories than substances of lower hazard. An example is flammable liquids which are, among other criteria, classified according to their flash point. Substances with a low flash point, i.e. those substances which can easily be ignited, are considered highly hazardous. Substances with a high flash point are less hazardous.

In New Zealand, HSNO provides for regulations which specify a classification system for hazardous substances. The principles of this system have not changed significantly since they were first published (MfE, 1994). The classification applies to all types of hazards generally controlled, apart from radioactivity and infectious substances (refer Section 3.2.2).

3.2 The HSNO hazard classification system

3.2.1 Purpose of classification

HSNO provides for hazardous substances to be classified so that appropriate controls may be allocated according to their hazard. Substances classified as highly hazardous are more tightly controlled through their entire life than less hazardous substances.

3.2.2 Hazardous substance categories and thresholds

The HSNO Hazard Classification System has been established under section 74(a) for the following hazardous properties:

- explosiveness
- flammability
- oxidising capacity
- corrosiveness
- toxicity

- ecotoxicity
- substances which, upon contact with water or air, develop any of the above hazard properties.

The system provides minimum hazard threshold levels below which substances are not covered by the legislation (HSNO section 74(b)). It also establishes between one and seven hazard categories for the various hazards (plus some sub-categories), allowing for more stringent controls to be placed on substances with higher hazards.

HSNO classification criteria are specified in regulations to provide transparency and to enable people to establish the likely classification of a substance themselves. For the precise definitions of the hazard categories and thresholds the relevant HSNO Regulations should be consulted.

3.2.3 Linkage with United Nations Recommendations for the Transport of Dangerous Goods

The HSNO classification system is closely linked to the United Nations Recommendations for the Transport of Dangerous Goods (UNRTDG, 1997; 11th edition). It also introduces criteria not part of the UNRTDG. These cover different aspects of toxicity (particularly chronic toxicity) and ecotoxicity. The criteria are based on work of the Organisation of Economic Co-operation and Development (OECD) and the United States Environmental Protection Agency (USEPA).

In terms of the labelling of packaging and containers imported into and/or transported in New Zealand, hazardous substances will be mostly identified in accordance with UNRTDG compatible classifications. However, it is important to note that UNRTDG labelling often only provides information on the identification of the primary hazard and sometimes the secondary hazard of a substance.

In contrast, HSNO requires a hazardous substance to be assessed and managed according to all the hazardous characteristics it identifies (refer Section 3.2.2). Therefore, a substance with multiple hazardous properties or with properties outside the UNRTDG criteria will need to comply with the controls placed on it under HSNO. This may include the identification (including labelling) of all the hazards of the substance within New Zealand.

Appendix A shows how some of the HSNO classification criteria relate to particular UN classes.

3.2.4 Linkage with the Resource Management Act 1991

The RMA defines hazardous substances as including, but not being limited to, the substances classified in accordance with the HSNO system. From a land use perspective, this is generally understood to include, in addition to the HSNO substances, radioactive materials and environmentally damaging substances.

Environmentally damaging substances include substances that can have adverse effects on ecosystems and wildlife but are not considered ecotoxic under HSNO as they are below the ecotoxicity threshold. Such properties include a high biochemical oxygen demand (BOD) leading to rapid depletion of oxygen if the substance (such as milk) is released into natural waters, or smothering effects (e.g. by some oils).

The RMA also defines the term 'contaminant' which is likely to include most hazardous substances for the purpose of controlling discharges to the environment. This is a function of regional councils and is therefore not specifically addressed in this document.