Primary aliphatic alcohols (C7, C8): Human health tier II assessment

07 February 2014

Chemicals in this assessment

Chemical Name in the Inventory	CAS Number
1-Heptanol	111-70-6
1-Octanol	111-87-5

Preface

This assessment was carried out by staff of the National Industrial Chemicals Notification and Assessment Scheme (NICNAS) using the Inventory Multi-tiered Assessment and Prioritisation (IMAP) framework.

The IMAP framework addresses the human health and environmental impacts of previously unassessed industrial chemicals listed on the Australian Inventory of Chemical Substances (the Inventory).

The framework was developed with significant input from stakeholders and provides a more rapid, flexible and transparent approach for the assessment of chemicals listed on the Inventory.

Stage One of the implementation of this framework, which lasted four years from 1 July 2012, examined 3000 chemicals meeting characteristics identified by stakeholders as needing priority assessment. This included chemicals for which NICNAS already held exposure information, chemicals identified as a concern or for which regulatory action had been taken overseas, and chemicals detected in international studies analysing chemicals present in babies' umbilical cord blood.

Stage Two of IMAP began in July 2016. We are continuing to assess chemicals on the Inventory, including chemicals identified as a concern for which action has been taken overseas and chemicals that can be rapidly identified and assessed by using Stage One information. We are also continuing to publish information for chemicals on the Inventory that pose a low risk to human health or the environment or both. This work provides efficiencies and enables us to identify higher risk chemicals requiring assessment.

The IMAP framework is a science and risk-based model designed to align the assessment effort with the human health and environmental impacts of chemicals. It has three tiers of assessment, with the assessment effort increasing with each tier. The Tier I assessment is a high throughput approach using tabulated electronic data. The Tier II assessment is an evaluation of risk on a substance-by-substance or chemical category-by-category basis. Tier III assessments are conducted to address specific concerns that could not be resolved during the Tier II assessment.

These assessments are carried out by staff employed by the Australian Government Department of Health and the Australian Government Department of the Environment and Energy. The human health and environment risk assessments are conducted and published separately, using information available at the time, and may be undertaken at different tiers.

This chemical or group of chemicals are being assessed at Tier II because the Tier I assessment indicated that it needed further investigation.

For more detail on this program please visit:**www.nicnas.gov.au**

Disclaimer

ACRONYMS & ABBREVIATIONS

Grouping Rationale

This group covers two primary aliphatic alcohols within a carbon chain length range of C7–C8. Members of this group have a common structural feature of a primary alcohol and have similar absorption, metabolism, distribution, and excretion patterns. Given the close structural similarities of the chemicals in this group and their similar molecular weights, an identical hazard profile for human health is expected. Limited data are available for both chemicals and information on n-hexanol (CAS No. 111-27-3), is used as surrogate data (NICNAS).

The chemicals in this group have similar reported uses.

Import, Manufacture and Use

Australian

The following Australian industrial uses were reported under previous mandatory and/or voluntary calls for information:

N-octanol (CAS No. 111-87-5) has reported use as a surface-active agent. This use may be commercial or domestic.

The total volume introduced into Australia, reported under previous mandatory and/or voluntary calls for information, was less than 100 tonnes for n-octanol (CAS No. 111-87-5).

No specific Australian use, import, or manufacture information has been identified for n-heptanol (CAS No. 111-70-6).

International

The following international uses have been identified through the European Union Registration, Evaluation and Authorisation of Chemicals (EU REACH) dossiers; the Organisation for Economic Cooperation and Development Screening information data set

International Assessment Report (OECD SIAR); Galleria Chemica; the Substances and Preparations in the Nordic countries (SPIN) database; the European Commission Cosmetic Ingredients and Substances (CosIng) database; the United States (US) Personal Care Product Council International Nomenclature of Cosmetic Ingredients (INCI) Dictionary; and eChemPortal: OECD High Production Volume chemical program (OECD HPV); and the US National Library of Medicine's Hazardous Substances Data Bank (HSDB).

The chemicals are included in CosIng database and US Personal Care Products Council INCI directory with the identified functions as:

- solvents and basic materials for the perfume/fragrance industry and/or for cosmetic formulations; and
- antifoaming, surfactant, and viscosity controlling agents.

However, there is currently no documented use of the chemical in cosmetic products in the United States (Personal Care Products Council, 2011).

Chemicals of this group have reported domestic uses including in:

- adhesives (binding agents);
- cleaning/washing agents;
- paints, lacquers and varnishes;
- odour agents;
- surface treatments; and
- surface-active agents.

Chemicals of this group have reported domestic uses in the SPIN database. However, it should be noted that SPIN does not distinguish between direct use of the chemical or use of the materials that are produced from chemical reactions involving the chemical. Available North American databases do not give evidence for use of these chemicals in consumer products, indicating that chemicals are not likely to be widely available for domestic uses.

Chemicals of this group have reported commercial uses including as:

- solvents in various industrial products such as paints, printing inks, textiles, resistant coatings, and linings;
- flotation agents;
- lubricants;
- Anti-set-off and anti-adhesive agents;
- frothing agents (bubbling promoters) in flotation (of coal);
- defoamer or antifoaming agents in aqueous drilling muds to prevent frothing during drilling for oil and gas; and
- laboratory reagents.

Chemicals of this group have reported site-limited uses including:

- as intermediates in the manufacture of other substances, including phthalates or adipates for use as plasticisers.

Chemicals of this group have the following reported non-industrial uses including as:

- agricultural pesticides;
- non agricultural pesticides and preservatives; and
- synthetic food/feedstuff flavouring and nutrients.

Restrictions

Australian

N-octanol (CAS No. 111-87-5) is listed in the Poisons Standard (Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP, 2013)) in Appendix B (Part 3). These are substances considered not to require control by scheduling.

International

No known restrictions have been identified.

Existing Worker Health and Safety Controls

Hazard Classification

Chemicals of this group are not listed on the Hazardous Substances Information System (HSIS) (Safe Work Australia).

Exposure Standards

Australian

No specific exposure standards are available.

International

The following exposure standards are identified (Galleria Chemica):

N-heptanol (CAS No. 111-70-6) has an exposure limit of 10 mg/m^3 time weighted average (TWA) in Russia and Latvia.

N-octanol (CAS No. 111-87-5) has an exposure limit (TWA) of 10 mg/m^3 in Russia, 106 mg/m^3 (20 ppm) in Germany, and 50 ppm in the United States of America.

Health Hazard Information

Toxicokinetics

Although aliphatic alcohols are expected to be absorbed by all common routes of exposure, an inverse relationship between dermal absorption potential and chain length has been shown in hairless mice. Dermal absorption decreased with increasing carbon chain length and was affected by solvent and concentration. Dermal absorption of undiluted n-octanol (CAS No. 111-87-5) has been stated to be 50 %. Approximately 65 % of the absorbed dose was excreted as CO_2 in the expired air for this chemical. Even though chemicals of this group have been shown to form glucuronic acid conjugates in rabbits, this formation was only 5.3 % for n-heptanol (CAS No. 111-70-6) and 9.5 % for n-octanol (CAS No. 111-87-5) of the administered dose. Glucuronic acid conjugates are excreted in the urine (OECD, 2007; REACH).

Acute Toxicity

Oral

Chemicals of this group have low acute toxicity in animal tests following oral exposure. While there are no data for n-heptanol (CAS No. 111-70-6), the median lethal dose (LD50) for n-octanol (CAS No. 111-87-5) in rats is >2000 mg/kg bw, indicating that a similar result would be seen for n-heptanol (CAS No. 111-70-6).

Observed sub-lethal effects were reported for n-octanol (CAS No. 111-87-5) and included slight sedation and piloerection during the first 24 hours after dosing (OECD, 2007; HSDB; REACH).

Dermal

Chemicals of this group have low acute toxicity in animal tests following dermal exposure. The LD50 for n-octanol (CAS No. 111-87-5) in rats is >2000 mg/kg bw. While there are no data for n-heptanol (CAS No. 111-70-6), the LD50 value for n-hexanol (CAS No. 111-27-3) is also >2000 mg/kg bw, indicating that a similar result would be seen for n-heptanol (CAS No. 111-70-6). Observed sub-lethal effects were reported for n-octanol (CAS No. 111-87-5) including generalised weakness and inactivity. These signs persisted and/or intensified in animals that died (OECD, 2007; HSDB; REACH).

Inhalation

The chemicals in this group are expected to have low acute toxicity in animal tests following inhalation exposure, with a reported median lethal concentration (LC50) for n-octanol (CAS No. 111-87-5) of >5.6 mg/L in rats. Observed effects including salivation and gasping or rapid respiration were observed during and/or immediately after each exposure. Other signs of intoxication included inactivity, rales, coldness, redness around the eyes and nose, ocular opacity, exophthalmus, and anogenital staining (OECD, 2007).

Corrosion / Irritation

Skin Irritation

The chemicals in this group are reported to slightly irritate skin in animal studies. The effects were not sufficient to warrant a hazard classification.

In a skin irritation study conducted in accordance with OECD Test Guideline (TG) 404, 0.5 mL n-heptanol (CAS No. 111-70-6) was applied (semi-occlusive) to the intact and abraded skin of six rabbits for four hours, with reactions assessed at 24 and 72 hours. While mean scores for erythema and oedema were zero for intact skin over the 24- and 72-hour assessment period, scores for erythema and oedema were 0.75 and 0.25 for abraded skin over the same time intervals, respectively. Based on these scores, the chemical was considered a slight skin irritant in rabbits (OECD, 2007; REACH).

In another skin irritation study conducted in accordance with OECD TG 404, 0.5 mL n-octanol (CAS No. 111-87-5) was applied (semi-occlusive) to the skin of three rabbits for four hours and reactions assessed at 1, 24, 48, and 72 hours and then on days 7, 10, 13, and 16. Mean group scores for erythema and oedema were 1.43 and 0 at 24, 48, and 72 hours, respectively, and erythema was fully reversible within seven days. Exfoliation was observed in all test animals from day seven until the end of the observation period (day 16). As the mean values for erythema and oedema did not equal or exceed the values considered to indicate a significant inflammatory response to treatment, the chemical was considered as a slight skin irritant in this study (OECD, 2007; REACH).

Eye Irritation

Chemicals of this group were reported to produce irritant effects in several eye irritation studies in rabbits. While the severity of these effects varied, the persistence of iritis (one rabbit) and conjunctivitis (two rabbits) to day 22 in one study, supports the need for classification (refer to **Recommendation** section). This classification is also supported by information on n-hexanol (CAS No. 111-27-3), as the chemical produced irritant effects in several eye irritation studies in rabbits (NICNAS).

In an eye irritation study (OECD TG 405), 0.1 mL n-octanol (CAS No. 111-87-5) was applied to the conjunctival sac of one eye of three New Zealand White rabbits and reactions were assessed at 24, 48, 72 hours and on days 8, 15, and 22. The eyes were not subsequently rinsed. Iritis, slight to moderate conjunctivitis, and areas of very slight to slight corneal opacity were observed during the first 72 hours. Very slight conjunctivitis persisted in all three animals at days eight and 15 and in two animals until termination on day 22. Iritis also persisted in one of these rabbits until day 22. Mean scores calculated over 24, 48, and 72 hours were 1.3 for corneal opacity, 1 for iris lesions, 1 for chemosis, and 1.8 for redness of the conjunctiva. Iritis (one rabbit) and very slight conjunctivitis (two rabbits) persisted to day 22 (OECD, 2007; REACH).

In an eye irritation study (OECD TG 405), 0.1 mL n-octanol (CAS No. 111-87-5) was applied to the conjunctival sac of one eye of six New Zealand White rabbits and reactions assessed at 24, 48, 72 and at 96 hours. The eyes were not rinsed after administration of the chemical and only mean scores were reported for each time interval. Mean scores at 24, 48, and 72 hours were 2.23 for corneal opacity, 0.7 for iris irritation, 2.57 for conjunctival redness, and 1.9 for chemosis. Although eyes were only observed up to 96 hours, evidence was presented that indicates the effects may be reversible. At 96 hours, mean group scores were reduced for all parameters and scores were 2 for corneal opacity, 0.5 for iris irritation, 2 for conjunctival redness, and 1 for conjunctival chemosis. Corneal damage (mean surface) also reduced from a maximum of 75 % at 24 hours to 5 % at 96 hours (OECD, 2007; REACH).

In another eye irritation study (OECD TG 405), 0.1 mL n-octanol (CAS No. 111-87-5) was applied to the conjunctival sac of one eye of three New Zealand White rabbits and reactions assessed at 24, 48, and 72 hours. The eyes were not rinsed after administration of the chemical. Average scores at 24, 48, and 72 hours were 1.7 for corneal opacity, 0.7 for iris irritation, 2.2 for conjunctival redness, and 2.5 for chemosis. Individual scores reported were 1, 2, 2 for corneal opacity; 0, 1, 1 for iris irritation; 1.7, 2.3, 2.7 for conjunctival redness; and 1.7, 3, and 2.7 for chemosis. There was complete reversal of all eye lesions for all three animals within 14 days (OECD, 2007; REACH).

In another eye irritation study (OECD TG 405), 0.1 mL n-heptanol (CAS No. 111-70-6) was applied to the conjunctival sac of one eye of six New Zealand White rabbits and reactions were assessed at 24, 48, 72 hours and on days four and seven. The eyes were not rinsed after administration of the test item. Mean scores calculated over 24, 48, and 72 hours were 0.22 for chemosis, 0.94 for redness of the conjunctiva, 0 for iris lesions and 1.16 for corneal opacity. The maximum irritation of the eye was at 72 hours and progressively abated. The scores for eye irritation were not sufficient for classification as an eye irritant, although redness of the conjunctiva and corneal opacity were still present in two animals at day seven (OECD, 2007; REACH).

Observation in humans

Although specific details were not available, the chemicals in this group have been reported as irritating to the eyes and respiratory tract, and mildly irritating to the skin. However, at lower concentration of 1 %, chemicals of this group are not likely to be skin irritants (OECD, 2007; HSDB).

Sensitisation

Skin Sensitisation

Although n-heptanol (CAS No. 111-70-6) was not found to induce dermal sensitisation when tested according to OECD TG 406, the chemical was considered as a weak sensitiser in a local lymph node assay (LLNA) with an EC_3 value of 38 %. Information on the skin sensitisation potential of n-octanol (CAS No. 111-87-5) was not available. In general, aliphatic alcohols have no skin sensitisation potential (OECD, 2007). Considering that the chemical, n-heptanol, was found to be negative in a sensitive guinea pig maximisation test and was only weakly sensitising in a mouse LLNA, the weight of the evidence indicates that chemicals of this group are not potential skin sensitisers.

In a guinea pig maximisation test (OECD TG406), Hartley guinea pigs were administered with intradermal injections of n-heptanol (CAS No. 111-70-6) at 1 % on the first day followed by topical application of the chemical for 48 hours at 100 % on day eight. The induction period was followed by a 14-day rest period. On day 22, animals were challenged with topical application of the chemical at 10 % for 24 hours. Cutaneous reactions were evaluated before treatment and at 24 and 48 hours following application of the chemical. As the cutaneous reactions observed in treated animals were similar to the control group, the chemical was not considered to be as skin sensitising (REACH).

In a mouse LLNA (OECD TG429), CBA/J mice were treated with n-heptanol (CAS No. 111-70-6) at the concentration of 5, 10, 25, 50 and 100 %. While the positive control group was treated with hexyl cinnamic aldehyde (CAS No 101-86-0), the negative control group received the vehicle, a mixture of acetone and olive oil (4/1; v/v). The induction phase consisted of applying the chemical, positive control, or vehicle over the ears (25 µL/ear) for three consecutive days (days one, two and three). After two rest days, the proliferation of lymphocytes in the lymph node draining the application site was measured by incorporating tritiated methyl thymidine (day six). The obtained values were used to calculate stimulation indices (SI). An SI of 4.25 and 3.58 were obtained for the chemical at a 50 % and 100 % concentration, respectively. The EC_3 value obtained was equal to 38 %.

According to the EC_3 value obtained, the test item should be considered as a weak sensitiser (REACH).

Observation in humans

N-heptanol (CAS No. 111-70-6) was reported to be a non sensitiser in a human patch test at 1 % in petrolatum. Similarly, n-octanol (CAS No. 111-87-5) was also reported not to be sensitiser in a human patch test at 2 % in petrolatum (HSDB). It has also been concluded that aliphatic alcohols have a very low potential for skin sensitisation in humans (OECD, 2007).

Repeated Dose Toxicity

Oral

Based on the information available, the chemicals in this group are not considered to cause serious damage to health from repeated oral exposure. The category of long-chain alcohols (C6–C22) are also indicated to have a lower order of toxicity from repeated exposure (OECD, 2007).

In a combined repeated dose and reproductive/developmental toxicity study (OECD TG 422), Sprague Dawley (SD) rats (10 animals/sex/dose) were administered (gavage) n-heptanol (CAS No. 111-70-6) at doses of 100, 300, and 1000 mg/kg bw/day (see **Reproductive and developmental toxicity**). The chemical was administered to male animals two weeks before mating, during mating, and until sacrifice (at least five weeks in total); female animals two weeks before mating, during mating, throughout gestation, and until day five post-partum (at least nine weeks in total). While hypoactivity, loud/abdominal breathing, and dyspnoea were noted in males at 1000 mg/kg/day, only hypoactivity was noted in one female of this group during the lactation period. As these clinical signs are transitory in nature, they were not considered adverse. The treatment had no effect on clinical parameters, body weight, food consumption, haematology, blood chemistry, or neurobehavioural investigations. Therefore, a no observed adverse effect level (NOAEL) of 1000 mg/kg/day, the highest tested dose, was established for the study (REACH).

Dermal

No data are available.

Inhalation

No data are available.

Genotoxicity

Members of the aliphatic alcohols category (C6-C12 alcohols) generally contain no structural elements that may be of concern for potential mutagenic activity (OECD, 2007). This is supported by the available data, which indicates that chemicals of the present group have no mutagenic or genotoxic potential.

N-heptanol (CAS No. 111-70-6) tested negative in several in vitro tests (Ames assays; mouse lymphoma assay using mouse lymphoma L5178Y cells; and chromosomal aberrations assay using human lymphocytes). N-octanol (CAS No. 111-87-5) also tested negative in Ames assays (OECD, 2007; REACH).

Carcinogenicity

Although limited data are available for carcinogenicity for members of this group and also for the category of the long chained alcohols (C6-C12 alcohols), chemicals of this group are not likely to have carcinogenic potential (OECD, 2007; REACH).

Chemicals of this group are not expected to have genotoxic potential (see **Genotoxicity**) and long chained alcohols (C6-C12 alcohols) also lack the structural elements of concern for interaction with DNA. The tumour-promoting activity of n-octanol (CAS No. 111-87-5) was also investigated on the skin of mice treated with an initiating dose of 7,12-dimethylbenz(a)anthracene. Following initiation, a 20 µL solution of the chemical dissolved in cyclohexane (20 g chemical in 100 mL of cyclohexane) was applied to the treated mouse skin three times a week for 60 weeks. It was concluded that the chemical has a limited potential to promote local skin tumours upon repeated dermal application at or above the maximum tolerated (irritant) dose.

In another limited carcinogenicity study, mice were injected with n-octanol (CAS No. 111-87-5) thrice weekly at up to 500 mg/kg bw for eight weeks (providing a total dose of up to 12 g/kg bw) and observed for a further 16 weeks. The study did not indicate any potential for the chemical to increase the incidence of lung tumours (OECD, 2007; REACH).

Reproductive and Developmental Toxicity

Results of reproductive and developmental toxicity studies conducted in animals indicate that the chemicals do not show specific reproductive or developmental toxicity (OECD, 2007; REACH). Categories of long chain aliphatic alcohols (C6-C22) have also been shown not to have any adverse reproductive effects (OECD, 2007).

In a combined repeated dose and reproductive/developmental toxicity study (OECD TG 422), SD rats (10 animals/sex/dose) were administered (gavage) n-heptanol (CAS No. 111-70-6) at doses of 100, 300, and 1000 mg/kg bw/day (see **Repeated dose toxicity: oral**). No adverse affects were observed in the parental animals (see **Repeated dose toxicity: oral**). Treatment-related effects were also not observed in reproductive as well as in developmental parameters. As no treatment-related effects were observed at the highest tested dose, a NOAEL of 1000 mg/kg/day has been determined for parental toxicity, reproductive performance (mating and fertility) and for developmental effects (REACH).

In a developmental toxicity study (OECD TG414), n-octanol (CAS No. 111-87-5) was administered (gavage) to Wistar rats at doses of 130, 650, 975, and 1300 mg/kg bw/day on days 6–15 of gestation. Increasing severity of clinical signs, including lateral and abdominal position, unsteady gait, salivation, piloerection, nasal discharge, and pneumonia were observed in all treatment groups. Food consumption and body weight gain were also slightly decreased in females at 650 mg/kg bw/day and above. There were deaths (2/10) in animals receiving the chemical at 650, 975 and 1300 mg/kg bw/day. A lowest observed adverse effect level (LOAEL) of 130 mg/kg bw/day (the lowest dose tested) was determined for maternal toxicity, based on the observed effects. As the treatment had no developmental/teratogenic effects up to the highest tested dose, a NOAEL of 1300 mg/kg bw/day has been determined for developmental/teratogenic effects (OECD, 2007; REACH).

Other Health Effects

Neurotoxicity

In a combined repeated dose/reproductive/neurotoxicity toxicity study (OECD TG 422), SD rats (10 animals/sex/dose) were administered (gavage) n-heptanol (CAS No. 111-70-6) at doses of 100, 300, and 1000 mg/kg bw/day (see **Repeated dose toxicity: oral**). The chemical was administered to animals for two weeks before mating, during mating, and until sacrifice (for

males) or throughout gestation and until day five post-partum (for females). The first five males and the first five females to deliver from each group were evaluated once for functional observation battery tests (FOB) at the end of the treatment period. Females were examined for FOB on day five post partum after the pups were sacrificed. No treatment-related effects were noted during the FOB examinations, nor on motor activity (REACH).

Risk Characterisation

Critical Health Effects

The main critical effect to human health is the potential for serious damage to the eyes.

Public Risk Characterisation

The use of this chemical in cosmetic and domestic products in Australia is not known. Even though the chemical has reported cosmetic and domestic uses overseas (see **Import, manufacture and use**), the available North American databases do not give evidence for use of the chemical in consumer products. Therefore, the use of the chemicals at high concentrations in consumer products is not anticipated in Australia.

Overall, the risk to public health is not considered to be unreasonable and further risk management is not considered necessary for public safety.

Occupational Risk Characterisation

During product formulation, dermal, ocular and inhalation exposure of workers to the chemical may occur, particularly where manual or open processes are used. These may include transfer and blending activities, quality control analysis, and equipment cleaning and maintenance. Worker exposure to the chemical at lower concentrations may also occur while using formulated products containing the chemical. The level and route of exposure will vary depending on the method of application and work practices employed.

Given the critical health effects, the chemical may pose an unreasonable risk to workers, particularly at high concentrations, unless adequate control measures to minimise ocular exposure to the chemical are implemented. The chemical should be appropriately classified and labelled to ensure that a person conducting a business or undertaking (PCBU) at a workplace (such as an employer) has adequate information to determine appropriate controls.

The data available support an amendment to the hazard classification in HSIS (refer to the **Recommendation section**).

NICNAS Recommendation

Assessment of the chemical is considered to be sufficient, provided that the recommended amendment to the classification is adopted, and labelling and all other requirements are met under workplace health and safety and poisons legislation as adopted by the relevant state or territory.

Regulatory Control

Work Health and Safety

The chemical is recommended for classification and labelling under the current approved criteria and adopted GHS as below. This assessment does not consider classification of physical hazards and environmental hazards.

Hazard	Approved Criteria (HSIS)[a]	GHS Classification (HCIS)[b]
Irritation / Corrosivity	Irritating to eyes (Xi; R36)	Causes serious eye irritation - Cat. 2A (H319)

[a] Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(2004)].

[b] Globally Harmonized System of Classification and Labelling of Chemicals (GHS) United Nations, 2009. Third Edition.

[*] Existing Hazard Classification. No change recommended to this classification

Advice for consumers

Products containing the chemical should be used according to the instruction on the label.

Advice for industry

Control measures

Control measures to minimise the risk from ocular exposure to the chemicals should be implemented in accordance with the hierarchy of controls. Approaches to minimise risk include substitution, isolation and engineering controls. Measures required to eliminate or minimise risk arising from storing, handling and using a hazardous chemical depend on the physical form and the manner in which the chemical is used. Examples of control measures which may minimise the risk include, but are not limited to:

- minimising manual processes and work tasks through automating processes;
- work procedures that minimise splashes and spills;
- regularly cleaning equipment and work areas; and
- using protective equipment that is designed, constructed, and operated to ensure that the worker does not come into contact with the chemical.

Guidance on managing risks from hazardous chemicals are provided in the *Managing risks of hazardous chemicals in the workplace—Code of practice* available on the Safe Work Australia website.

Personal protective equipment should not solely be relied upon to control risk and should only be used when all other reasonably practicable control measures do not eliminate or sufficiently minimise risk. Guidance in selecting personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

Obligations under workplace health and safety legislation

Information in this report should be taken into account to assist with meeting obligations under workplace health and safety legislation as adopted by the relevant state or territory. This includes, but is not limited to:

- ensuring that hazardous chemicals are correctly classified and labelled;
- ensuring that (material) safety data sheets ((m)SDS) containing accurate information about the hazards (relating to both health hazards and physicochemical (physical) hazards) of the chemical are prepared; and
- managing risks arising from storing, handling and using a hazardous chemical.

Your work health and safety regulator should be contacted for information on the work health and safety laws in your jurisdiction.

Information on how to prepare an (m)SDS and how to label containers of hazardous chemicals are provided in relevant codes of practice such as the *Preparation of safety data sheets for hazardous chemicals—Code of practice* and *Labelling of workplace*

hazardous chemicals—Code of practice, respectively. These codes of practice are available from the Safe Work Australia website.

A review of the physical hazards of the chemical has not been undertaken as part of this assessment.

References

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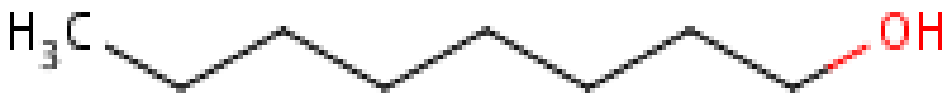
Last Update 07 February 2014

Chemical Identities

Chemical Name in the Inventory and Synonyms	**1-Heptanol** heptyl alcohol 1-hydroxyheptane n-heptanol heptan-1-ol Alcohol, C7
CAS Number	111-70-6
Structural Formula	

	
Molecular Formula	C7H16O
Molecular Weight	116.20

Chemical Name in the Inventory and Synonyms	**1-Octanol** octyl alcohol 1-hydroxyoctane n-octanol octan-1-ol Alcohol, C8
CAS Number	111-87-5
Structural Formula	

	
Molecular Formula	C8H18O
Molecular Weight	130.23

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