Australian Government
Australian Maritime Safety Authority

Independent Human Health and Environmental Hazard Assessments of Dispersant Chemicals in Australia, produced by NICNAS and CSIRO

AMSA/National Plan preamble to the three independent reports by:

NICNAS (April 2014)	*Chemicals used as oil dispersants in Australia: Stage 1. Identification of chemicals of low concern for human health*
NICNAS (October 2014)	***Chemicals used as oil dispersants in Australia: Stage 2. Summary report of the human health hazards of oil spill dispersant chemicals***
CSIRO (August 2015)	*A review of the ecotoxicological implications of oil dispersant use in Australian waters.*

The Australian National Plan Dispersant Strategy

The Australian National Plan for Maritime Environmental Emergencies has had a longstanding dispersant response strategy that is transparent, fit for purpose and effective, and safe to use for people and the environment. At all stages of dispersant management: acceptance and purchase; storage and transport; and application in spill, the National Plan requires transparency. These requirements, results and processes are all published on the AMSA website. To ensure that Australia has suitable information to undertake all these steps, AMSA has always sought the best independent advice it could find. Most recently AMSA addressed questions of human health hazards and environmental hazards.

Health hazard assessment by National Industrial Chemicals Notification and Assessment Scheme (NICNAS)

NICNAS comprehensively addressed the question of dispersant health hazard in two stages. The first stage assessment identified 2 of 11 chemicals to be of low concern for human health. The second stage was a more full assessment that concluded that 7 of the 11 chemicals were of no concern. The remaining four were considered hazardous based on Safe Work Australia's Approved Criteria for Classifying Hazardous Substances. Of these three were already in the Safe Work Australia Hazardous Substances Information System (HSIS) and the fourth will be added to HSIS by NICNAS for completeness, now the assessment has been completed.

Environmental hazard assessment by CSIRO

CSIRO reported on the state of knowledge of the environmental hazards from dispersant use worldwide and within Australian waters. CSIRO noted that modern dispersants are much less toxic than spilled oil. However, their use can increase localised oil toxicity, but this is very short-lived due to the dilution effects and will result in much lower exposure and dosage than without dispersant use. They noted that some areas, some species groups and some organism life-stages are more susceptible to oil and oil/dispersant exposure than others. AMSA has addressed this in National Plan and AMSA policies.

AMSA response to the independent reports

AMSA has for many years been aware of the chemical constituent of dispersants, and has in place rigorous procedures and safeguards for purchase, storage, handling and use of dispersants, that minimize human exposure at all phases of the dispersant cycle. These were reviewed and revised in light of the new information.

AMSA accepts low environmental toxicity dispersant formulations that are also readily biodegradable. The rigorous requirements for secure storage and transport ensure no inadvertent release. Pre-use assessment through a rigorous and robust expert NEBA also ensures the right dispersant is used on the right oil at the right time in the right location and for the right duration. When specific knowledge gaps cannot be addressed during a response, a precautionary approach is taken to the NEBA and use approval. Any time a dispersant is used, real-time and post-application monitoring occurs to assess its effectiveness and effects.

Any questions or comments, please use the AMSA contact us page on the AMSA website.

Paul Irving, Scientific Coordinator, AMSA. May 2016

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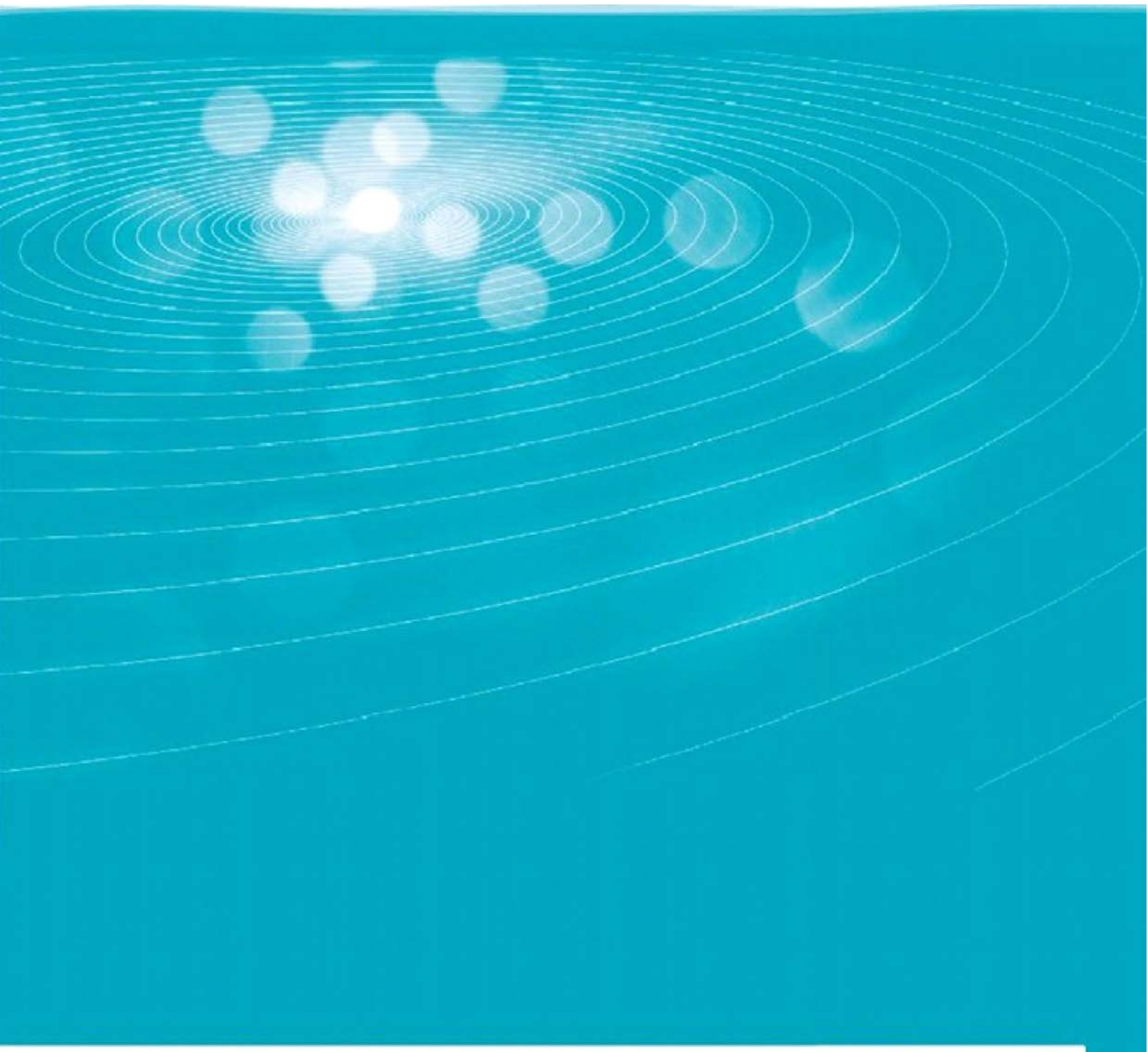
Australian Government
Department of Health
National Industrial Chemicals
Notification and Assessment Scheme

Chemicals used as oil dispersants in Australia:

Summary Report of the Human Health Hazards of Oil Dispersant Chemicals

OCTOBER 2014



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Chemicals used as Oil Dispersants in Australia:

Summary Report of the Human Health Hazards of Oil Dispersant Chemicals

Prepared by the
National Industrial Chemicals Notification and Assessment Scheme
(NICNAS)

October 2014

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Acronyms and Abbreviations

ADWG	Australian Drinking Water Guidelines
AICS	Australian Inventory of Chemical Substances
AMSA	Australian Maritime Safety Authority
ATSDR	Agency for Toxic Substances and Disease Registry
CAS	Chemical Abstract Service
CBI	Confidential business information
DSL	Domestic Substances List
FSANZ	Food Standards Australia New Zealand
GHS	Globally Harmonised System of Classification and Labelling of Chemicals
HSDB	Hazardous Substances Data Bank
HSIS	Hazardous Substances Information System
IARC	International Agency for Research on Cancer
IMAP	Inventory Multi-tiered Assessment and Prioritisation
IPCS	International Programme on Chemical Safety
IRIS	Integrated Risk Information System
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NHMRC	National Health and Medical Research Council
NICNAS	National Industrial Chemicals Notification and Assessment Scheme
NOAEL	No Observed Adverse Effect Level
NOHSC	National Occupational Health and Safety Commission
OECD	Organisation for Economic Co-operation and Development
OSHA	Occupational Safety and Health Administration
PEC	Priority Existing Chemical
PLC	Polymers of Low Concern
QSAR	Quantitative Structure-Activity Relationship
EU REACH	European Union Registration, Evaluation, Authorisation and Restriction of Chemicals
RED	Reregistration Eligibility Decision
RTECS	Registry of Toxic Effects of Chemical Substances
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
US EPA	United States Environmental Protection Agency

UVCB	Unknown or Variable composition, Complex reaction products or Biological materials

Glossary of Terms

Adverse effect	Change in the morphology, physiology, growth, development, reproduction, life span of an organism, system, or (sub)population that results in an impairment of functional capacity, an impairment of the capacity to compensate for additional stress, or an increase in susceptibility to other influences
Analogue	A chemical similar in structure to another chemical but differing in some slight structural detail
Exposure assessment	Evaluation of the exposure of an organism, system, or (sub)population to an agent (and its derivatives)
Hazard	Inherent property of an agent or situation having the potential to cause adverse effects when an organism, system, or sub(population) is exposed to that agent
Hazard assessment	A process designed to determine the possible adverse effects when an organism, system, or sub(population) could be exposed. The process includes hazard identification and hazard characterization. The process focuses on hazard, in contrast to risk assessment, where exposure assessment is a distinct additional step
Hazard identification	The identification of the type and nature of adverse effects that an agent has an inherent capacity to cause in an organism, system, or (sub)population
Risk	The probability of an adverse effect occurring in an organism, system, or (sub)population caused under specified circumstances by exposure to an agent
Risk Assessment	A process intended to calculate or estimate the risk to a given target organism, system, or (sub)population, including the identification of attendant uncertainties, following exposure to a particular agent, taking into account the inherent characteristics of the agent of concern as well as the characteristics of the specific target organism
Toxicity	Inherent property of an agent to cause an adverse biological effect
Validation rules	Criteria used to determine if a chemical is of low concern for human health, or not.
Hazard characterisation	The qualitative and, wherever possible, quantitative description of the inherent property of an agent or situation having the potential to cause adverse effects

Executive Summary

Oil dispersants are chemical mixtures of surface active agents used to manage oil spills. They act by combining with large floating masses of oil and facilitating the dispersion of oil into small microscopic droplets that then disperse throughout the water column.

The Australian Maritime Services Authority (AMSA) identified eleven oil dispersant chemicals as being used in the treatment of oil spills in Australia.

This report provides:

- a description of the hazard assessment methodology used for the chemicals associated with oil dispersants in Australia that needed further assessment; and
- findings of the human health hazard assessments.

The report also provides a summary of the screening approach used for the identified chemicals to determine those of low human health concern.

Hazard assessment establishes the toxicity of a chemical and identifies the set of inherent properties that makes it capable of causing adverse effects. The eleven chemicals identified as being used in the treatment of oil spills in Australia were screened to identify chemicals of low hazard and therefore inherently of low human health concern. Two chemicals were identified as chemicals of low human health concern using a screening approach validated by national experts and nine chemicals were determined to require further assessment. Details of the screening approach are provided in the report titled *Chemicals used as oil dispersants in Australia: identification of chemicals of low concern for human health* (NICNAS, 2014).

The human health hazards assessed in this report for the chemicals requiring further assessment establish quantitative toxicity values such as Lowest Observed Adverse Effect Level (LOAEL), and/or No Observed Adverse Effect Level (NOAEL) for use in any future risk assessments of these chemicals.

Information on the human health hazards of the chemicals requiring further assessment was collated by a search of publicly available Australian and international information on the chemicals including commercial databases and databases containing peer reviewed information. Analogues (similar chemicals for which hazard data are available) were identified for use for those chemicals with limited data.

For each chemical, the information obtained through a comprehensive literature search was summarised based on toxicokinetics, acute toxicity, irritation/corrosivity, sensitisation, repeat dose toxicity, genotoxicity, carcinogenicity, reproductive toxicity, and other health effects. The critical health effects were characterised and quantitative toxicity values were identified for all the human health endpoints for each chemical where possible.

Comprehensive human health hazard assessments were finalised for a total of nine chemicals.

The current Australian regulatory controls in place for the chemicals such as listing in the Australian Drinking Water Guidelines (ADWG), Australian Food Standards, Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP), and the Hazardous Substances

Information System (HSIS) were also examined. The results for each human health endpoint were compared with the workplace classification criteria for health hazards. The hazard assessments were utilised to confirm current hazard classification/s or to recommend hazard classification/s for the chemicals for the protection of workers.

The hazard assessments of these chemicals indicated that four chemicals are hazardous based on Safe Work Australia's Approved Criteria for Classifying Hazardous Substances. A review of the regulatory controls indicated that three of the four chemicals are currently classified as hazardous and listed in the Hazardous Substances Information System (HSIS). The hazard assessments confirmed the current hazard classifications. For the chemical not currently listed in the HSIS, a hazard classification will be recommended to Safe Work Australia.

Recommendations will only be made to Safe Work Australia since the HSIS listing is based on the hazards of a chemical. Hazard assessment alone will not result in recommendations to the ADWG and SUSMP as the drinking water guidelines and scheduling are based on the risk (and not only hazard) of a chemical.

1. Introduction

Oil dispersants are chemical mixtures of surface active agents used to manage oil spills. They act by combining with large floating masses of oil and facilitating the dispersion of oil into small microscopic droplets that then disperse throughout the water column. Oil dispersants are surfactant – solvent formulations that are sprayed (often from crop-spraying aircraft) onto oil slicks to promote more rapid dispersal into and dilution throughout the water column, prior to biodegradation by microorganisms. A majority of the less viscous oils dissolve and disperse in seawater to some extent under local wave and wind energy. Human exposures to oil dispersants may represent exposures to complex mixtures of the specific ingredients, as well as to mixtures of these ingredients with chemicals in the oil spills to which they have been applied. However, identification of specific ingredients in oil dispersants allows some estimation of their potential toxicity.

The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) was contracted by the Australian Maritime Safety Authority (AMSA) in 2013-14 to screen the chemicals used in oil dispersant products. Data provided by AMSA indicated that currently seven oil dispersant products are used in Australia. The data further indicated that eleven chemicals, mostly surfactants and solvents, are commonly present in these products.

The overall objective of the project was to screen the 11 chemicals used as oil dispersants to:

- determine the listing of the chemicals in the Australian Inventory of Chemical Substances (AICS);
- identify those chemicals that are of low human health concern; and
- characterise any potential short and longer-term adverse effects on human health caused by the chemicals excluded from the low concern category.

In 2014-15, NICNAS conducted hazard assessments of nine chemicals that were identified through the screening process as needing further assessment.

This report provides:

- a summary of the screening approach used to determine chemicals of low human health concern;
- a description of the hazard assessment methodology used for the chemicals that needed further assessment; and
- the results of the human health hazard assessments.

2. Screening of Chemicals of Low Human Health Concern

The 11 chemicals identified as being used in oil dispersants in Australia were screened to identify chemicals of low hazard and therefore of inherently low concern for human health (chemicals of low human health concern). This screening process represented the most efficient way to identify those chemicals that warranted further assessment.

The approach used to identify chemicals of low human health concern is based on the NICNAS Inventory Multi-tiered Assessment and Prioritisation (IMAP) Framework (NICNAS, 2014). The IMAP Framework was established to identify and rapidly assess chemicals on the Australian Inventory of Chemical Substances (AICS) that had not been subject to previous assessment. This validated approach was adapted for chemicals associated with oil dispersants and is considered to be applicable for identifying the chemicals of low human health concern. The same approach was utilised for both discrete chemicals and polymers. However, different validation rules were applied to chemicals and polymers used in coal seam gas to identify those of low concern for human health. Details of the approach, the validation rules, and results can be found in the report titled *Chemicals used as oil dispersants in Australia: identification of chemicals of low concern for human health* (NICNAS, 2014).

A summary of the approach is provided below.

The approach to identifying chemicals of low concern to human health utilises six steps:

1. Identifying existing national or international lists of substances considered to be of low concern under the IMAP Framework;
2. Analysing these lists for their applicability to identify oil dispersant chemicals of low concern to human health;
3. Comparing oil dispersant chemicals with the lists;
4. Applying validation rules developed by NICNAS;
5. Applying expert judgement to review chemicals identified as being of low human health concern; and
6. Using further validation rules to identify polymers of low concern.

The 11 chemicals, three of which are polymers, were compared with the lists of chemicals of low concern identified above (Step 3). Three chemicals were identified as potentially of low concern based on their entries on these lists (Step 3) and eight chemicals were identified as requiring further assessment.

The set of validation rules developed by NICNAS to identify chemicals requiring further assessment was applied to the three chemicals (Step 4) for confirmation of their potential low health concern. One chemical was identified through application of these rules as requiring additional assessment and was removed from the list of low concern.

Further validation rules, developed by NICNAS, based on expert judgement, were applied to

the eight chemicals identified as requiring further assessment (Step 3) to determine chemicals of low concern among these chemicals (Step 5). Based on the expert application of these validation rules, no chemicals were identified as of low concern for human health. Two chemicals were confirmed as being of low concern for human health based on this approach.

The set of validation rules to identify polymers of low concern was applied to the three polymers among these chemicals (Step 6). The reactive functional groups (RFGs) in the three polymers were identified and screened against RFGs considered low concern as described in the NICNAS Polymer of Low Concern (PLC) criteria. No polymers were identified as PLCs by application of this validation rule. The three polymers are therefore considered as needing further assessment.

Figure 1 provides a schematic representation of the application of the approach and the validation rules, and the results.

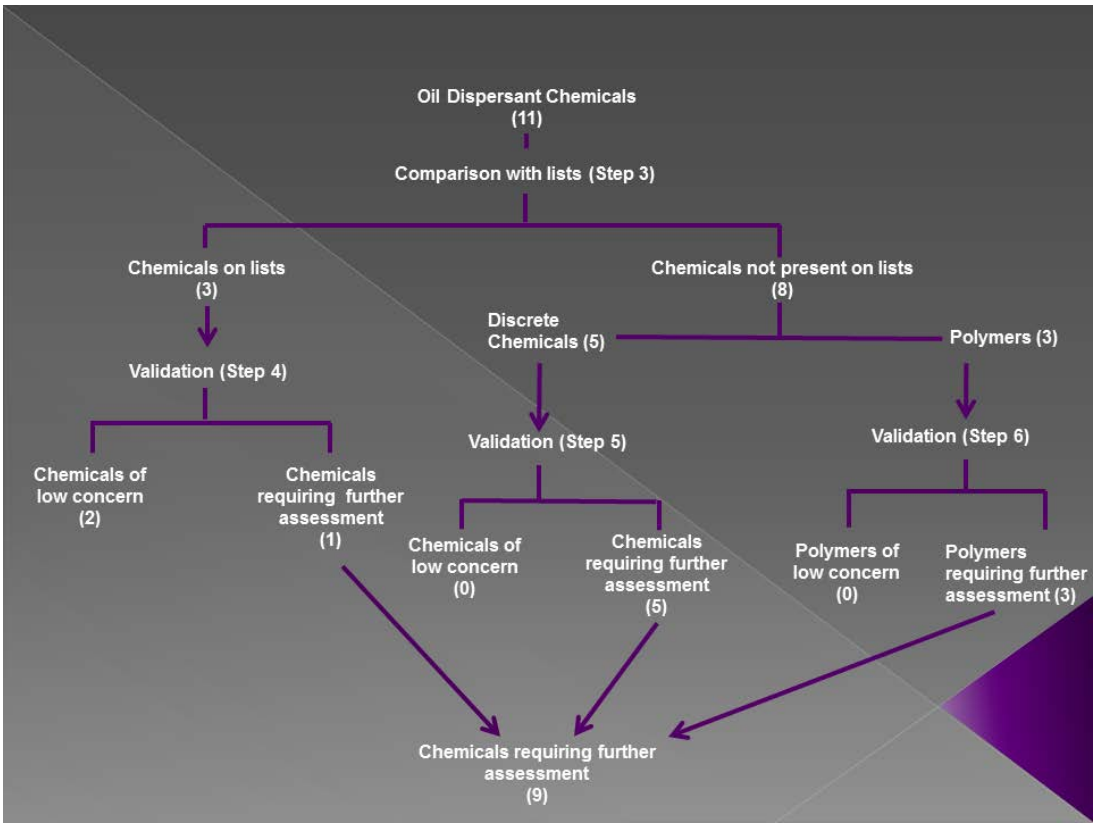

Figure 1: Results from the application of the six-step screening approach and the validation rules to the 11 chemicals

The two chemicals of low health concern, listed by their CAS numbers, chemical names and common names, are presented in Table 1.

Table 1: Oil dispersant chemicals found to be of low human health concern following screening

CAS No.	Chemical Name	Common Name
8002-26-4	Tall oil	Tall oil
1338-43-8	Sorbitan, mono-(9Z)-9-octadecenoate	Sorbitan Monooleate

The nine chemicals that were identified as requiring further assessment of the hazards are presented in Table 2, listed by their CAS numbers and common names.

Table 2: Oil dispersant chemicals requiring further assessment of hazards following screening

	CAS No.	Chemical Name
1	103991-30-6	Fatty acids, fish oil, ethoxylated
2	111-76-2	2-Butoxyethanol
3	112-34-5	Butyldiglycol; Diethylene glycol monobutyl ether; 2-(2-butoxyethoxy)ethanol
4	29911-28-2	Dipropylene glycol, monobutyl ether
5	57-55-6	Propylene glycol
6	577-11-7	Dioctyl sodium sulfosuccinate
7	64742-47-8	Petroleum distillates, hydrotreated light fraction
8	9005-65-6	Polyoxy-1,2-ethanediyl derivatives of sorbitan, mono-(9Z)-9-octadecenoate
9	9005-70-3	Polyoxy-1,2-ethanediyl derivatives of sorbitan, tri-(9Z)-9-octadecenoate

Exclusion of the nine chemicals from the current low human health concern list does not imply that these chemicals represent a proven health hazard, as some of these chemicals may have not been previously evaluated by the agencies that developed the existing national or international lists of substances considered to be of low concern. Further analysis of the hazards may result in a conclusion of low concern to human health for some chemicals.

3. Hazard Assessment Methodology

Following the identification of chemicals of low human health concern, the nine chemicals requiring further assessment of hazards were evaluated using the methodology described in this section.

An efficient search strategy was used to identify publicly available Australian and international information on the human health hazards of the chemicals using commercial databases and databases containing peer-reviewed information. In addition, international reviews on chemicals from reputable organisations published in the last 10 years, where available, were used rather than identifying and reviewing individual publications. Where reviews were not available, journal articles, industry reports, and other publications were evaluated. The databases accessed were:

- Galleria Chemica;
- Registry of Toxic Effects of Chemical Substances (RTECS);
- ChemIDplus;
- Hazardous Substances Data Bank (HSDB); and
- Organisation for Economic Co-operation and Development (OECD) eChemPortal.

The national and international reviews that were used were:

- NICNAS Priority Existing Chemical (PEC) and new chemical assessment reports;
- Reports from the Canadian Categorisation of the Domestic Substances List (DSL) and the Challenge Program;
- Reports from European Union (EU) Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and EU Classification and Labelling Program;
- Scientific Opinions on Cosmetic Substances by European Commission committees;
- Reports available through several Programs in the United States (US) such as US Environmental Protection Agency‘s (EPA) High Production Volumes Program, US EPA Action Plans, Agency for Toxic Substances and Disease Registry (ATSDR) reports, US EPA Integrated Risk Information System (IRIS) and the US EPA Reregistration Eligibility Decision (RED);
- OECD High Production Volume Programme and Cooperative Chemical Assessment Programme Reports;
- International Programme on Chemical Safety (IPCS) Publications; and
- International Agency for Research on Cancer (IARC) Monographs on the Evaluation of Carcinogenic Risks to Humans.

Current Australian and international regulatory controls in place for each of the chemicals were identified. The Australian regulatory controls examined were:

- Australian Drinking Water Guidelines (ADWG);
- Australian Food Standards;

- Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP); and
- Hazardous Substances Information System (HSIS).

These regulatory controls were examined as the ADWG, SUSMP and Food Standards provide protection for the public. The ADWG and SUSMP list chemicals based on their risks. The classifications of chemicals on the HSIS provide worker protection and the criteria used for the listing are hazard based.

The information obtained through the comprehensive literature search process was summarised for each chemical. The health hazards were characterised by analysing the following:

- Toxicokinetics (absorption, distribution, metabolism, and excretion);
- Acute oral, dermal, and inhalation toxicity;
- Irritation/Corrosivity;
- Sensitisation;
- Repeat oral, dermal, and inhalation dose toxicity;
- Genotoxicity;
- Carcinogenicity;
- Reproductive toxicity; and
- Other health effects.

For one of the nine chemicals, no data were available in the public domain. Extensive literature searches were conducted using additional databases such as the commercial database SciFinder for this data-poor chemical. Furthermore, the manufacturer of this chemical was contacted for toxicity data. However, no such information has been provided to date. The chemical was a substance of unknown or variable composition, complex reaction products or biological materials (UVCB). For this substance, data were obtained from a review of a limited number of likely components belonging to a related chemical category as well as Quantitative Structure-Activity Relationship (QSAR) modelling based on specific chain length components.

Following the analysis, conclusions were formulated for each of the human health endpoints for each chemical. Quantitative toxicity values were identified for the various health endpoints, where available. These values will allow quantitative risk assessments to be made, if required in future, using potential exposure pathways. The absorption or uptake rates were determined from analysis of the toxicokinetics data. The critical health effects were then identified. For acute effects, such as acute toxicity, the median lethal dose (LD50) or concentration (LC50) was identified. For the chronic effects, the most appropriate Lowest Observed Adverse Effect Level (LOAEL) or No Observed Adverse Effect Level (NOAEL) was determined for potential use in risk assessments.

The results for each human health endpoint were compared with the classification criteria set out in the Approved Criteria for Classifying Hazardous Substances (NOHSC, 2004) and the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) (2009). Where a chemical was currently classified as hazardous for a particular endpoint in the HSIS, the result of the hazard assessment was compared with the existing classification to

confirm the classification. Where a chemical is not currently classified as hazardous, NICNAS will make recommendations for the appropriate classification for particular endpoint/s based on the information reviewed. The hazard classification is important in the safe management of hazardous chemicals in the workplace. Physical hazards were not evaluated as physical hazards data are different from the hazard data evaluated for this report.

The determination for listing of chemicals in the ADWG and SUSMP are based on risk evaluations. Recommendations for inclusion of chemicals not currently listed in the ADWG and SUSMP, therefore, cannot be made on hazard assessments alone. Furthermore, the SUSMP lists chemicals or products available for use by the public and this assessment focuses on the use of the identified chemicals in oil dispersion (i.e. an industrial use).

4. Hazard Assessment Findings

This section provides the assessment findings from the hazard evaluations of the nine chemicals requiring further assessment.

In addition to the results of the hazard evaluations of the nine chemicals, details of some of the current and recommended regulatory controls for these chemicals are also described in this section.

Four of the nine chemicals were found to be hazardous either because of effects produced at the local point of contact (such as skin or eye irritation) or adverse effects at a location distant from the initial point of contact (systemic effects). The systemic effects for the chemicals were from effects on single exposures (acute effects) or adverse health effects on repeated exposures (chronic effects). One chemical produced a combination of adverse effects (both acute and chronic effects along with local effects). Based on the hazard assessment, regulatory controls in the form of hazard classifications have been recommended for these chemicals. The current and recommended regulatory controls for these five chemicals are described further in Sections 4.1.1 and 4.1.2, respectively.

Four of the nine chemicals were not currently listed in the HSIS and were not recommended for classification of hazards. These four chemicals, presented in Table 3, are also not listed in the ADWG and SUSMP; however, one of the four is listed in the Food Standards.

Table 3: Chemicals not currently listed in HSIS and not recommended for hazard classification

	CAS No.	Common Name
1	103991-30-6	Fatty acids, fish oil, ethoxylated
2	29911-28-2	Dipropylene glycol, monobutyl ether
3	9005-65-6	Sorbitan monooleate, polyoxyethylene derivatives
4	9005-70-3	Sorbitan trioleate, polyoxyethylene derivatives

4.1.1 Current Regulatory Controls

As indicated earlier, some specific Australian regulatory controls currently in place for the chemicals were investigated. The sections below provide an analysis of the regulatory controls for the nine chemicals.

4.1.1.1 Chemicals currently listed in the ADWG

The National Health and Medical Research Council's (NHMRC) ADWG includes health and aesthetic guideline values for contaminants that may be present in drinking water supplies (NHMRC, 2011). There are no ADWG values currently available for any of the nine chemicals.

4.1.1.2 Chemicals currently listed in the Australian Food Standards

The Australian Food Standards administered by Food Standards Australia New Zealand (FSANZ) include requirements for chemicals approved as additives in food and other food-related preparations (FSANZ, 2013). Three of the nine chemicals have existing food

standards for the approved use of the chemicals as a permitted food additive.

4.1.1.3 Chemicals currently listed in the SUSMP

The SUSMP, managed under the Therapeutic Goods Act, includes the classification of poisons into Schedules, setting the recommended level of control on the availability of the poisons to the public (SUSMP, 2013). Three of the nine chemicals are currently listed in various Schedules. One of the listings is not specific to a particular chemical but exists for a group of substances to which the chemical belongs.

4.1.1.4 Chemicals currently listed in the HSIS

The HSIS includes information on the exposure standards and hazard classifications based on human health effects. The chemicals are classified in accordance with the Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(2004)] to ensure worker health and safety (Safe Work Australia, 2014).

Of the nine chemicals, three have existing hazard classifications for one or more human health endpoint/s and two have existing Australian exposure standards listed in the HSIS. One chemical is listed for both control measures (i.e. classification and exposure standard) and one chemical had an exposure standard assigned to it with no accompanying hazard classification.

The current regulatory control status of the nine chemicals is provided in Table 4. The HSIS listing consists of chemicals with existing exposure standards and hazard classifications.

Table 4: Current Australian regulatory controls of the chemicals

	CAS No.	Common Name	ADWG	Food Standard	SUSMP	HSIS Exposure Standard	HSIS Classified for Hazard*
1	103991-30-6	Fatty acids, fish oil,ethoxylated	×	×	×	×	×
2	111-76-2	2-Butoxyethanol	×	×	✓	✓	A, B
3	112-34-5	Diethylene glycol, monobutyl ether	×	×	✓	×	B
4	29911-28-2	Dipropylene glycol, monobutyl ether	×	×	×	×	×
5	57-55-6	Propylene glycol	×	✓	×	✓	×
6	577-11-7	Dioctyl sodium sulfosuccinate	×	✓	×	×	×
7	64742-47-8	Distillates, petroleum, hydrotreated light	×	×	✓	×	A
8	9005-65-6	Sorbitan monooleate, polyoxyethylene derivatives	×	✓	×	×	×
9	9005-70-3	Sorbitan trioleate, polyoxyethylene derivatives	×	×	×	×	×

✓ – listed
× – not listed
* The specific hazard classifications are grouped in the following legend:
A = acute oral, dermal, and/or inhalation toxicity
B = eye, skin and/or respiratory irritation

The current classifications in the HSIS for three chemicals were confirmed by the hazard assessments of the chemicals. The four chemicals listed in Table 3 have no current regulatory controls in Australia, consistent with the findings of this assessment.

4.1.2 Recommended Regulatory Controls

Based on the findings of the hazard assessments, the specification of regulatory controls for worker health and safety in the form of hazard classifications have been recommended in accordance with the Approved Criteria for Classifying Hazardous Substances (NOHSC, 2004) and the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) (2009).

Hazard classification is recommended for one chemical that is not currently classified for worker health and safety in the HSIS. A summary of the recommended classifications is presented in Table 5.

Table 5: Recommended hazard classifications for chemical

	CAS No.	Common Name	Recommended Hazard Classification*
1	577-11-7	Dioctyl sodium sulfosuccinate	B, C

* The specific hazard classifications are grouped in the following legend:
B = eye, skin and/or respiratory irritation
C = skin and/or respiratory sensitisation

5. Conclusions

The 11 chemicals identified as being used in oil dispersant products in Australia were assessed for their human health hazards. Following screening of the 11 chemicals using a validated NICNAS approach, two chemicals were found to be inherently of low human health concern while nine chemicals required further assessment of the hazards. Four of the nine assessed chemicals were found to be hazardous to human health.

Of the nine chemicals assessed:

- Three have existing hazard classifications for one or more human health endpoint/s and two have existing Australian exposure standards as listed in the HSIS, noting that there is an overlap of one chemical that has both hazard classification and exposure standard;
- One has an existing exposure standard but is not classified or recommended for classification for hazards;
- One is not currently classified for worker health and safety and will be recommended for classification and listing in the HSIS; and
- Four are not currently listed in HSIS and are not recommended for hazard classification.

It is important to recognise that four of the nine assessed chemicals are either currently controlled or are recommended for controls in the workplace environment.

6. References

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SUSMP (2014) Poisons Standard 2014. Standard for the Uniform Scheduling of Medicines and Poisons. Therapeutic Goods Administration.

Appendix – Individual human health hazard assessments

The individual human health hazard assessments of the nine chemicals are included in this Appendix [See separate document for the Appendix].