Substance Profile for The Challenge
1,3-Butadiene, 2-methyl-
(Isoprene)
CAS No. 78-79-5

Introduction

The *Canadian Environmental Protection Act, 1999* (CEPA 1999) required the Minister of Health and Minister of the Environment to categorize the approximately 23 000 substances on the Domestic Substances List (DSL). Categorization involved identifying those substances on the DSL that are a) considered to be persistent (P) and/or bioaccumulative (B), based on criteria set out in the *Persistence and Bioaccumulation Regulations* (Government of Canada, 2000), and "inherently toxic" (iT) to humans or other organisms, or b) that present, to individuals in Canada, the greatest potential for exposure (GPE).

Further to this activity, the Act requires the Minister of the Environment and the Minister of Health to conduct screening assessments of substances that meet the categorization criteria. A screening assessment involves a scientific evaluation of available information for a substance to determine whether the substance meets the criteria set out in section 64 of CEPA 1999. Based on the results of a screening assessment, the Ministers can propose taking no further action with respect to the substance, adding the substance to the Priority Substances List (PSL) for further assessment or recommending the addition of the substance to the List of Toxic Substances in Schedule 1 of CEPA 1999 and, where applicable, the implementation of virtual elimination of releases to the environment.

A number of substances have been identified by the Ministers as high priorities for action based on the information obtained through the categorization process. This includes substances:

- that were found to meet all of the ecological categorization criteria, including persistence, bioaccumulation potential and inherent toxicity to aquatic organisms (PBiT), and that are known to be in commerce, or of commercial interest, in Canada, and/or
- that were found either to meet the categorization criteria for GPE or to present an intermediate potential for exposure (IPE), and were identified as posing a high hazard to human health based on available evidence on carcinogenicity, mutagenicity, developmental toxicity or reproductive toxicity.

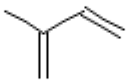
Based on a consideration of the ecological and/or human health concerns associated with these substances, and the requirement under section 76.1 of CEPA 1999 for the Ministers to apply a weight of evidence approach and the precautionary principle when conducting and interpreting the results of an assessment, sufficient data are currently available to conclude whether these substances meet the criteria under section 64 of CEPA 1999.

As such, the Ministers have issued a Challenge to industry and other interested stakeholders through publication in Canada Gazette Part I December 9, 2006 to submit, within the timelines stated in the Challenge section of this document, specific information that may be used to inform risk assessment and to develop and benchmark best practices for risk management and product stewardship.

The substance 2-methyl-1,3-butadiene (CAS No. 78-79-5; commonly known as isoprene) was identified as a high priority for action as it was determined to have a high potential for exposure to individuals in Canada (GPE), and is considered to present a high hazard to human health]. The technical human health and ecological information, that formed the basis for concern associated with this substance, is contained in Appendices I and II, respectively.

Substance Identity

For the purposes of this document, this substance will be referred to as isoprene. Inventory name an other names are listed in the Table below.

CAS Registry Number	78-79-5
Inventory names	1,3-Butadiene, 2-methyl-
Other names	Isoprene Isopentadiene 2-Methylbutadiene beta-Methylbivinyl 2-Methyldivinyl 2-Methyl-1,3-butadiene 1,3-Butadiene, 2-methyl-
Chemical group	Discrete organics
Chemical sub-group	alkenes, dienes
Chemical formula	C_5H_8
Chemical structure	
SMILES	C(C=C)(=C)C CC(=C)C=C
Molecular mass	68.12

Based on information submitted by the 7 companies that notified this substance to the Domestic Substances List, the quantity of isoprene reported to be in commerce in Canada during the calendar year 1986 was 11,020,000 kg. Reported uses include in the categories

of: Organic Chemical Intermediate, Fragrance/perfume/ deodourizer/flavouring agent, fuel/fuel additive, Monomer, Specialty Organic Chemicals, Petroleum and Natural Gas, and Soap and Cleaning Products. The primary use of isoprene is as an ingredient in plastic and rubber polymers used in many commercial products such as medical equipment, toys, baby bottles, sporting goods, tires and shoes. Isoprene is also used in adhesives and coatings, and in the production of agrochemicals and pharmaceuticals.

THE CHALLENGE

Respecting direction under section 76.1 of CEPA 1999, and in the absence of additional relevant information as a result of this Challenge, the Ministers are predisposed to conclude, based on a screening assessment, that this substance satisfies the definition of toxic under section 64 of CEPA 1999. As such, the Ministers are prepared to then recommend to the Governor in Council that this substance be added to the List of Toxic Substances in Schedule 1 of CEPA 1999, with the intent of initiating the development of risk management measures taking into account socio-economic considerations.

If it is determined that the substance meets the virtual elimination criteria in subsection 77(4) of CEPA 1999, then subsequent risk management activities will be based on the objective of eliminating the release of any measurable quantity of the substance to the environment. In the absence of further information on existing management practices for a substance, actions would be proposed based on the assumption of worst-case practices. The management actions being considered for such substances at this time include prohibition through regulations, of the manufacture, use, sale, offer for sale and import of this substance, except for those activities controlled under the *Pest Control Products Act* and/or the *Food and Drugs Act.*

Exceptionally, should no information be identified to indicate that this substance is in commerce in Canada, the Ministers will conclude, based on a screening assessment, that this substance does not satisfy the definition of toxic under section 64 of CEPA 1999. However, given the properties of this substance, there is concern that new activities for the substance that have not been identified or assessed under CEPA 1999 could lead to the substance meeting the criteria set out in section 64 of the Act. Therefore it would be recommended that this substance be subject to the Significant New Activity provisions specified under subsection 81(3) of the Act, to ensure that any new manufacture, import or use of this substance in quantities greater than 100 kg/year is notified, and that ecological and human health risk assessments are conducted as specified in section 83 of the Act prior to the substance being introduced into Canada.

Section 71 Notice

Under the Challenge, information deemed necessary for improved decision making may be gathered by the Minister of Environment using section 71 of CEPA 1999. This information may be used for the purpose of assessing whether a substance is toxic or is capable of becoming toxic as defined under section 64 of CEPA 1999, or for the purpose of assessing whether to control, or the manner in which to control a substance.

The information mandated through the notices may relate to, among other things; quantity of the substance imported, manufactured, used, or released, concentrations, suppliers, customers, as well as types of uses of the substance.

Copies of the section 71 notice and guidance on how to comply with it are available from the Government of Canada Chemicals Portal (www.chemicalsubstanceschimiques.gc.ca), or from the contact provided below.

Opportunity to Submit Additional Information to Inform Screening Assessment

The Ministers of Health and Environment are inviting the submission of additional information for consideration during screening assessment of this substance. Data of the types described in the following paragraphs are considered most relevant, although other submitted information will be considered.

Data on the persistence, bioaccumulation, and potential for toxicity of the substance to organisms in different environmental media – Through the categorization exercise, available experimental data were collected up to December 2005. Where acceptable experimental data were not available, Quantitative Structure Activity Relationships (QSARs) or read across data were used to fill the data gaps. Since experimental data are preferred, interested parties have an opportunity to provide new or additional relevant experimental study information on the persistence, bioaccumulation, and potential for toxicity of this substance to organisms in different environmental media (air, water, sediment, soil). Efforts should focus on providing data for the endpoints for which quality experimental data does not already exist, as demonstrated by the information summarized in Appendix II of this document. As submitted data will be evaluated for completeness and robustness, it is recommended that stakeholders follow the guidance for test protocols and alternative approaches for test data, as described in Section 8 of the "Guidelines for the Notification and Testing of New Substances: Chemicals & Polymers".[1]

Data on the toxicity of the substance to human health - Through the categorization exercise, the high health priorities for action were those substances identified by various agencies as representing a high health hazard on the basis of potential to induce cancer, and/or adversely affect reproduction and development, two critical determinants of the health of Canadians of all ages. The hazard classifications used were those developed by national or international agencies in which large numbers of substances have been classified for endpoint-specific hazard based on original review and critical evaluation of data, assessments of weight of evidence and extensive peer review. Interested parties have an opportunity to provide new or additional relevant experimental study information on the toxicity of the substance to human health which could inform the screening assessment.

Responses to this part of the challenge for this substance should be received at the address provided below by November 13, 2007.

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[1] "Guidelines for the Notification and Testing of New Substances: Chemicals & Polymers (version 2005)", Government of Canada, Available from http://www.ec.gc.ca/substances/nsb/eng/cp_guidance_e.shtml

Opportunity to Submit Additional Information on Current Uses and Existing Control Measures to Inform the Risk Management Approach for this Substance

The Ministers of Health and Environment are inviting the submission of additional information that is deemed beneficial by interested stakeholders, relating to the extent and nature of the management/stewardship of substances listed under the Challenge.

Organizations that may be interested in submitting additional information in response to this invitation include those that manufacture, import, export or use this substance whether alone, in a mixture, in a product or in a manufactured item.

Submission of additional information is being invited in the following areas:

- Import, manufacture and use quantities
- Substance and product use details
- Releases to the environment and spill management
- Current and potential risk management and product stewardship actions
- Existing legislative or regulatory programs controlling/managing the substance
- Information to support the development of a regulatory impact assessment.

A questionnaire is available which provides a detailed template as an example for the submission of this information. Guidance on how to respond to the challenge questionnaire is also available. Interested stakeholders are invited to provide available additional information, recognizing that not all questions in the questionnaire may be relevant to a particular substance, use, or industrial sector.

Copies of the questionnaire and associated guidance are available from the Government of Canada Chemicals Portal (www.chemicalsubstanceschimiques.gc.ca)**,** or from the contact provided below.

Responses to the questionnaire should be received at the address provided below by November 13, 2007.

Request for Documents and Submission of Information

Documents and instructions may be requested from the following contact. Information in response to the above Challenge must be submitted to this address.

DSL Surveys Coordinator
Place Vincent Massey, 20th Floor
351 Saint Joseph Boulevard
Gatineau QC K1A 0H3
Tel: 1-888-228-0530 / 819-956-9313

Fax: 1-800-410-4314 / 819-953-4936
Email: DSL.surveyco@ec.gc.ca

Appendix I
Human Health Information to Support The Challenge for 1,3-Butadiene, 2-methyl- (Isoprene) CAS No. 78-79-5

Introduction

Under the *Canadian Environmental Protection Act, 1999* (CEPA, 1999), Health Canada undertook to categorize all substances on the Domestic Substances List (DSL) to identify those representing the greatest potential for human exposure (GPE) and those among a subset of substances considered persistent (P) and/or bioaccumulative (B) that are also considered to be "inherently toxic" to humans.

In order to efficiently identify substances that represent the highest priorities for screening assessment [from a human health perspective], Health Canada developed and applied a Simple Exposure Tool (SimET) to the DSL to identify those substances that meet the criteria for GPE, Intermediate Potential for Exposure (IPE) or Low Potential for Exposure (LPE), and a Simple Hazard Tool (SimHaz) to identify those substances that pose a high or low hazard.

Isoprene is considered to meet the criteria for GPE under SimET and for high hazard under SimHaz. This document summarizes the currently available information used to support the inclusion of this substance in the Challenge.

Exposure Information from Health Related Components of DSL Categorization

As mentioned above, SimET was developed and used to identify substances on the DSL considered to represent GPE. This approach was based on three lines of evidence: 1) the quantity in commerce in Canada, 2) the number of companies involved in commercial activities in Canada (i.e., number of notifiers), and 3) the consideration by experts of the potential for human exposure based on various use codes. The proposed approach was released for public comment in November 2003 and also enabled designation of substances as presenting an Intermediate (IPE) or Lowest Potential for Exposure (LPE), based on criteria for quantity and nature of use (Health Canada, 2003)

Results of the Application of SimET

Isoprene has been determined to be GPE based on a consideration of the DSL nomination information listed below.

Nomination Information for DSL

Quantity in Commerce

The quantity reported to be manufactured, imported or in commerce in Canada during the calendar year 1986 was 11,020,000 kg.

Number of Notifiers

The number of notifiers for the calendar years 1984-86 was 7.

Use Codes and Description

The following DSL use codes have been identified for the substance:

10 Chemical intermediate - organic
22 Fragrance/perfume/deodourizer/flavouring agent
23 Fuel/fuel additive
28 Monomer
77 Organic Chemicals, Specialty
82 Petroleum and Natural Gas
93 Soap and Cleaning Products

Potential Uses in Canada

The information below on potential uses of isoprene was identified through searches of the available scientific and technical literature.

Isoprene is used mainly as a monomer in the production of polyisoprene (*cis*-1,4-polyisoprene), butyl rubber (isobutene-isoprene copolymer) and thermoplastic, elastomeric co-block polymers (styrene-isoprene-styrene rubber) (SIS) (NTP, 2004). Polyisoprene is used in the manufacture of products such as medical equipment, baby bottle nipples, toys, shoe soles, tires, elastic films and threads for textiles and golf balls, adhesives and paints and coatings, while butyl rubber is typically used in inner tubes and SIS rubber is used in pressure sensitive adhesives. Isoprene may be used in the formulation of viscosity improvers and in the production of agrochemicals, pharmaceuticals and other fine chemicals (Shell, 2006).

Hazard Information from Health Related Components of DSL Categorization

Simple Hazard Tool (SimHaz)

SimHaz is a tool that has been used to identify, among all of the approximately 23 000 substances on the DSL, those considered to present either high or low hazard to human health based on formalized weight of evidence criteria and/or peer review/consensus of

experts. This tool has been developed through extensive compilation of hazard classifications of Health Canada and other agencies and consideration of their robustness based on availability of transparent documentation of both process and criteria (Health Canada, 2005).

Results of the Application of SimHaz

Isoprene is considered to be a potentially high hazard substance based on its classification for carcinogenicity by the European Commission, United States National Toxicology Program (NTP), and the International Agency for Research on Cancer (IARC) and genotoxicity by the European Commission.

The following classifications for carcinogenicity of isoprene are available:

The European Commission has classified isoprene as Category 2 for carcinogenicity (Substance which should be regarded as if carcinogenic to man) (European Commission, 2004, European Commission, 2003, ESIS, 2006).

The NTP considers isoprene to be 'Reasonably anticipated to be a human carcinogen based on sufficient evidence of tumour formation at multiple organ sites in multiple species of experimental animals' (NTP, 2004).

IARC has classified isoprene as Group 2B (Agent is possibly carcinogenic to man), due to sufficient evidence of carcinogenicity in experimental animals (IARC, 1994, 1999).

The following classification for genotoxicity of isoprene is available:

The European Commission has classified isoprene as Category 3 for genotoxicity (Substances which cause concern for humans owing to possible mutagenic effects) (European Commission, 2004, European Commission, 2003, ESIS, 2006).

Uncertainties

SimET and SimHaz have been developed as robust tools for effectively identifying substances from the DSL that are considered to be human health related priorities for further consideration. It is recognized that they do not include a number of elements normally considered in a human health risk assessment such as a comprehensive characterization of exposure and hazard, a comparison of exposure metrics to hazard metrics and a detailed analysis of uncertainties. However, as a result of the combination of the severe hazard properties of these substances and their high potential for exposure to humans, evaluation of the need for preventative and protective actions is required.

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Appendix II
Ecological Information
to Support The Challenge for
1,3-Butadiene, 2-methyl-
CAS No. 78-79-5

Introduction

The information in this document will form the basis of a screening assessment under section 74 of CEPA, 1999. Data relevant to an ecological screening assessment were identified in original literature, review documents, commercial and government databases prior to December 2005. Properties and characteristics may also have been estimated using Quantitative Structure Activity Relationship (QSAR) models.

Physical and Chemical Properties

Table 1 contains experimental and modelled physical-chemical properties of isoprene which are relevant to its environmental fate.

Table 1. Physical and chemical properties for isoprene.

Property	Type	Value	Temperature (C°)	Reference
Boiling Point	Experimental	34 Deg C		SRC PHYSPROP Database (2003)
	Modelled	34.95 Deg C		MPBPWIN v.1.41
Henry's Law Constant	Experimental	0.077 atm-m3/mole (7,802 Pa-m3/mole)		SRC PHYSPROP Database (2003)
	Modelled	0.061 - 0.122 atm-m3/mole (6,181 – 12,362 Pa-m3/mole)		EPIWINv3.11
log K_{oc} (Organic carbon-water partition coefficient)	Modelled	1.831		PCKOCWIN v.1.66
log K_{ow} (Octanol-water partition coefficient)	Experimental	2.42		MITI (1992)
	Modelled	2.58		Kowwin v.1.67
Melting Point	Experimental	-145.9 Deg C		SRC PHYSPROP Database 2003
	Modelled	-118.89 Deg C		MPBPWIN v.1.41
Vapour Pressure	Experimental	551 mm Hg		Daubert and Danner (1989)
	Modelled	551 mm Hg (73460 Pa)		EPIWINv3.11

Water Solubility	Experimental	642 mg/L	15-25 Deg C	McAuliffe (1966)
	Modelled	338.6 mg/L		WSKOW v.1.41

Manufacture, Importation, and Uses

Available information is presented in Appendix I.

Releases, Fate and Presence in the Environment

Releases

Isoprene linkages are found extensively in nature and oak trees are known to be a significant natural source of isoprene to the atmosphere (HSDB, 2007).

The National Pollutant Release Inventory (NPRI) has tracked the release of isoprene from industrial facilities in Canada. Table 2 provides a summary of reported releases to the Canadian environment from 1999 to 2005.

Table 2: Releases of isoprene to the Canadian environment reported to NPRI, 1999-2005 (Environment Canada, 2006).

Year	Releases To Air	Total Releases	Release Units	Total Disposed of
2005	11.6	11.6	tonnes	0.17 tonnes
2004	9.8	9.8	tonnes	0.55 tonnes
2003	11.3	11.3	tonnes	0.73 tonnes
2002	16.5	16.5	tonnes	0.7 tonnes
2001	20.4	20.4	tonnes	0.6 tonnes
2000	60.0	60.0	tonnes	0.3 tonnes
1999	42.2	42.2	tonnes	0.2 tonnes

Appendix I provides additional information regarding the anthropogenic sources of releases to the environment.

Fate

An estimated log Koc value of 1.8 (Table 1) indicates that if released into water, isoprene is expected to have relatively low adsorptivity to suspended solids and sediments. Volatilization from water surfaces is expected based upon an estimated Henry's Law constant of 0.077 atm·m^3/mol (Table 1). Thus, if water is a receiving medium, isoprene is

expected to mainly partition to water and, in much lesser extent, partition to sediments and air, which can be illustrated by the results of Level III Fugacity modelling (Table 3).

If released to soil, isoprene is expected to have relatively low adsorptivity to soil particles (and, therefore, relatively high mobility in soil) based on the estimated log Koc value of 1.8 (Table 1). Volatilization of this chemical from moist soil surfaces is expected to be an important fate process given the Henry's Law constant of 0.077 atm·m^3/mol (Table 1). The potential for volatilization of isoprene from dry soil surfaces may exist based upon the vapor pressure of this compound (551 mm Hg, Table 1). Therefore, if soil is a receiving medium, isoprene is expected to partition to soil and air, as indicated by the results of Level III Fugacity modelling (Table 3).

Isoprene which has a vapor pressure of 551 mm Hg (Table 1) is expected to exist solely as a vapor in the ambient atmosphere. It is expected to remain exclusively in air after being released into this environmental compartment (Table 3).

Therefore, water, soil and air are expected to be the major media of concern when this chemical is released to the environment.

Table 3: Results of the Level III fugacity modelling (EPIWIN V3.04)

Receiving Media	% in Air	% in Water	% in Soil	% in Sediment
Air (100%)	100	0.03	0.02	0.00
Water (100%)	0.77	98.6	0.00	0.61
Soil (100%)	21.6	1.02	77.4	0.01
Air, Water, Soil (33.3% each)	3.75	90.3	5.43	0.56

Presence in the Environment

Some monitoring data relating to the presence of isoprene in environmental media are available (e.g., air monitoring data from Environment Canada's National Air Pollution Surveillance Network). Searches for other air data, or for water, soil and sediment data relevant to environmental exposures has not been yet conducted.

Evaluation of P, B and iT Properties

Environmental Persistence

When released to the environment, isoprene is likely to degrade significantly in all environmental compartments. Measure and predicted degradation (photodegradation, atmospheric oxidation or ozone reaction) half-lives of 0.102 – 0.82 days demonstrate that in air, this chemical is likely to be rapidly degraded.
For water, empirical persistence data are not available, but a biodegradation half-life of 15 days has been determined using BIOWIN v4.02 (Table 4a), suggesting relatively rapid degradation in this compartment.

Boethling's extrapolation factors (Boethling et al., 1995) allow extrapolating the half-lives in soil and sediment from that estimated for water ($t_{1/2\ water} : t_{1/2\ soil} : t_{1/2\ sediment} = 1: 1:$

4). Therefore, in soil and sediments, the half-lives are expected to be 15 and 60 days, respectively.

Table 4a. Modeled data for persistence

Medium	Fate Process	Degradation Value	Endpoint (units)	Model
Water/Soil	Biodegradation	15	half-life (days)	BIOWIN v4.02 , Ultimate survey
Water/Soil	Biodegradation	0.67	Probability	BIOWIN v4.02 MITI Non-Linear Probability
Water/Soil	Biodegradation	0.004	Probability	TOPKAT
Air	Ozone reaction	0.82	half-life (days)	AOPWIN v1.91
Air	Atm. oxidation	0.102	half-life (days)	AOPWIN v1.91

Table 4b. Empirical data for persistence

Medium	Fate Process	Degradation Value	Endpoint (units)	Reference
Air	Photodegradation	0.106	Half-life (days)	Atkinson (1989)
Air	Ozone Reaction	0.80	Half-life (days)	Atkinson (1989)

Therefore, the empirical and modelled data (Tables 4a and 4b) demonstrate that the substance does not meet the persistence criteria (half-lives in soil and water ≥ 182 days, half-life in air ≥ 2 days, half-life in sediment > 365 days) as set out in the Persistence and Bioaccumulation Regulations (Government of Canada, 2000).

Potential for Bioaccumulation

Experimental and modelled log K_{ow} values for isoprene (Table 1) suggest that this chemical has low potential to bioaccumulate in the aquatic organisms.

The experimental bioconcentration factor (BCF) in fish is reported to be 9.5 to 12.9 L/kg (MITI 1992; Table 5a).

QSAR modelled bioaccumulation (BAF) and bioconcentration (BCF) values also agree quite well with the experimental value (Table 5b). The Modified Gobas BAF middle-trophic-level fish model produced a bioaccumulation factor of 6.3 L/kg, indicating that isoprene does not have a high potential to bioconcentrate and biomagnify in the organisms. The three other fish BCF models (6-117 L/kg) also provide a weight-of-evidence to support a low bioconcentration potential of this substance.

Table 5a. Empirical data for bioaccumulation

Test Organism	Endpoint	Value wet wt	Reference
Common carp	BCF	9.5 - 12.9	MITI (1992)

Table 5b. Modelled data for bioaccumulation

Test Organism	Endpoint	Value wet wt	Reference
Fish	BAF	6.3 L/kg	Modified GOBAS BAF Tier II (Arnot and Gobas, 2003)
Fish	BCF	5.9 L/Kg	Modified GOBAS BCF Tier II (Arnot and Gobas, 2003)
Fish	BCF	117 L/kg	OASIS
Fish	BCF	14.6 L/kg	BCFWIN v2.15

The weight of evidence indicates that this substance does not meet the bioaccumulation criteria (BCF, BAF ≥ 5000) as set out in the Persistence and Bioaccumulation Regulations (Government of Canada, 2000).

Ecological Effects

A - In the Aquatic Compartment

The experimental toxicity data to aquatic organisms (Table 6a) indicate that acute LC50 values for fish vary within the relatively narrow range of 42.5-240 mg/L, showing that the substance does not cause harm to aquatic organisms at low concentrations. Table 6b contains predictions that were considered as reliable and were used in the QSAR weight-of-evidence approach for aquatic toxicity (ESD, 2006a). Acute ecotoxicity values of 3 to 29 mg/L indicate that isoprene does not have a high potential for toxicity to aquatic organisms.

Table 6a. Empirical data for aquatic toxicity

Test Organism	Type of Test	Endpoint	Value (mg/L)	Reference
Guppy	Acute (96-hr)	LC_{50}	240	Pickering and Henderson (1966)
Bluegill	Acute (96-hr)	LC_{50}	42.54*	Pickering and Henderson (1966)
Fathead minnow	Acute (96-hr)	LC_{50}	74.83 – 86.51	Pickering and Henderson (1966)
Goldfish	Acute (96-hr)	LC_{50}	180.0	Pickering and Henderson (1966)

*Pivotal iT value for categorization

Table 6b. Modelled data for aquatic toxicity

Organism	Test Type	Endpoint	Toxicity value (mg/L)	Reference
Fish	Acute	LC50	11.88	AI Expert
Fish	Acute	LC50	29.16	OASIS
Fish	Acute	LC50	14.39	ECOSAR v.0.99h
Daphnia	Acute	EC50	3.2	TOPKAT v6.2
Daphnia	Acute	EC50	16.05	ECOSAR v.0.99h
Algae	Acute	EC50	10.375	ECOSAR v.0.99h
Mysid Shrimp	Acute	LC50	2.74	ECOSAR v.0.99h
Daphnia	Chronic	EC50	1.06	ECOSAR v.0.99h

Therefore, since the experimental acute toxicity values are in the range of tens to hundreds of mg/L, isoprene is expected to pose a moderate to low (acute or immediate) hazard to aquatic organisms.

B - In Other Media
No effects studies for non-aquatic non-human organisms were found for this compound.

Potential to Cause Ecological Harm

Based on the available information, isoprene does not persist in the environment and is not bioaccumulative based on criteria defined in the Persistence and Bioaccumulation Regulations (Government of Canada, 2000). Only limited information on concentrations of isoprene in the environment has been identified at this time. The low toxicity observed in laboratory studies indicate that isoprene poses a relatively low hazard to aquatic organisms in the environment. Information on potential impacts in other environmental compartments has not been identified.

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