

File No: LTD/1567

February 2012

**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME
(NICNAS)**

PUBLIC REPORT

AC-Hostavin 3055

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Department of Health and Ageing, and conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Department of Sustainability, Environment, Water, Population and Communities.

For the purposes of subsection 78(1) of the Act, this Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

This Public Report is also available for viewing and downloading from the NICNAS website or available on request, free of charge, by contacting NICNAS. For requests and enquiries please contact the NICNAS Administration Coordinator at:

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**Director
NICNAS**

TABLE OF CONTENTS

SUMMARY	3
CONCLUSIONS AND REGULATORY OBLIGATIONS	3
ASSESSMENT DETAILS	5
1. APPLICANT AND NOTIFICATION DETAILS	5
2. IDENTITY OF CHEMICAL.....	5
3. COMPOSITION.....	5
4. PHYSICAL AND CHEMICAL PROPERTIES	5
5. INTRODUCTION AND USE INFORMATION	6
6. HUMAN HEALTH IMPLICATIONS	7
6.1. Exposure Assessment.....	7
6.1.1. Occupational Exposure.....	7
6.1.2. Public Exposure.....	7
6.2. Human Health Effects Assessment	7
6.3. Human Health Risk Characterisation	7
6.3.1. Occupational Health and Safety	7
6.3.2. Public Health	8
7. ENVIRONMENTAL IMPLICATIONS.....	8
7.1. Environmental Exposure & Fate Assessment	8
7.1.1. Environmental Exposure	8
7.1.2. Environmental Fate	8
7.1.3. Predicted Environmental Concentration (PEC).....	9
7.2. Environmental Effects Assessment.....	10
7.2.1. Predicted No-Effect Concentration	10
7.3. Environmental Risk Assessment	10
BIBLIOGRAPHY	12

SUMMARY

The following details will be published in the NICNAS *Chemical Gazette*:

ASSESSMENT REFERENCE	APPLICANT(S)	CHEMICAL OR TRADE NAME	HAZARDOUS SUBSTANCE	INTRODUCTION VOLUME	USE
LTD/1567	PPG Industries Australia Pty Limited	AC-Hostavin 3055	Yes	≤1 tonne per annum	Component of coatings for the aerospace industry

CONCLUSIONS AND REGULATORY OBLIGATIONS

Hazard classification

As no toxicity data were provided, the notified chemical cannot be classified according to the *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)].

The classification of the notified chemical using the Globally Harmonised System for the Classification and Labelling of Chemicals (GHS) (United Nations 2009) is presented below.

	<i>Hazard category</i>	<i>Hazard statement</i>
Skin Corrosion/Irritation	Category 1	Causes severe skin burns and eye damage
Skin Sensitisation	Category 1	May cause an allergic skin reaction
Aquatic Environment	Acute Category 1	Very toxic to aquatic life
Aquatic Environment	Chronic Category 1	Very toxic to aquatic life with long term effects

Human health risk assessment

Under the conditions of the occupational settings described, the notified chemical is not considered to pose an unreasonable risk to the health of workers.

When used in the proposed manner, the notified chemical is not considered to pose an unreasonable risk to public health.

Environmental risk assessment

On the basis of the PEC/PNEC ratio, the limited import volume and the assessed use pattern, the notified chemical is not considered to pose an unreasonable risk to the environment.

Recommendations

CONTROL MEASURES

Occupational Health and Safety

- Employers should implement the following engineering controls to minimise occupational exposure to the notified chemical:
 - Enclosed, automated processes, where possible
 - Spray booths (or other ventilation), during application
- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified chemical:
 - Avoid contact with skin and eyes
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified chemical:
 - Coveralls, impervious gloves, goggles
 - Respiratory protection during spray applications

Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- Spray applications should be carried out in accordance with the Safe Work Australia *National Guidance Material for Spray Painting* [NOHSC (1999)] or relevant State and Territory Codes of Practice.
- A copy of the MSDS should be easily accessible to employees.
- If products and mixtures containing the notified chemical are classified as hazardous to health in accordance with the *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)] workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Disposal

- The notified chemical should be disposed of to landfill. Emergency procedures
- Spills or accidental release of the notified chemical should be handled by physical containment, collection and subsequent safe disposal.

Regulatory Obligations

Secondary Notification

This risk assessment is based on the information available at the time of notification. The Director may call for the reassessment of the chemical under secondary notification provisions based on changes in certain circumstances. Under Section 64 of the *Industrial Chemicals (Notification and Assessment) Act (1989)* the notifier, as well as any other importer or manufacturer of the notified chemical, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply even when the notified chemical/polymer is listed on the Australian Inventory of Chemical Substances (AICS).

Therefore, the Director of NICNAS must be notified in writing within 28 days by the notifier, other importer or manufacturer:

- (1) Under Section 64(1) of the Act; if
 - the importation volume exceeds one tonne per annum notified chemical;
 - the concentration of the notified chemical exceeds or is intended to exceed 1% in coatings.

or

- (2) Under Section 64(2) of the Act; if
 - the function or use of the chemical has changed from a component of coatings for the aerospace industry or is likely to change significantly;
 - the chemical has begun to be manufactured in Australia;
 - additional information has become available to the person as to an adverse effect of the chemical on occupational health and safety, public health, or the environment.

The Director will then decide whether a reassessment (i.e. a secondary notification and assessment) is required.

Material Safety Data Sheet

The MSDS of the notified chemical provided by the notifier was reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

PPG Industries Australia Pty Limited (ABN: 82 055 500 939)
McNaughton Road
Clayton, VIC 3168

NOTIFICATION CATEGORY

Limited-small volume: Chemical other than polymer (1 tonne or less per year).

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication: chemical name, CAS number, molecular and structural formulae, molecular weight, analytical data, degree of purity, impurities, additives/adjuvants and use details.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Variation to the schedule of data requirements is claimed as follows: all physicochemical endpoints.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

U.S.A.

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

AC-Hostavin 3055

MOLECULAR WEIGHT

<500 Da

ANALYTICAL DATA

Reference IR spectrum was provided.

3. COMPOSITION

DEGREE OF PURITY >90%

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: Light yellow liquid

Property	Value	Data Source/Justification
Melting Point/Freezing Point	-15 °C	Technical data sheet. Full study report not provided.
Boiling Point	>200 °C	Technical data sheet. Full study report not provided.
Density	959 kg/m ³ at 20 °C	Technical data sheet. Full study report not provided.
Vapour Pressure	1.19 x 10 ⁻¹⁰ kPa at 25 °C	Estimated – modified Grain method with user input of melting point, -15 °C (US EPA, 2009)
Water Solubility	<0.01 g/L at 20 °C	Technical data sheet. Full study report not provided. (Calculated as 0.035 mg/L, from log Kow, with user input of melting point, -15 °C, WSKOW v1.42, US EPA, 2011).
Hydrolysis as a Function of pH	Not determined	Contains hydrolysable functionality.

Partition Coefficient (n-octanol/water)	log Pow = 6.75 at 20 °C	Expected to hydrolyse slowly under environmental conditions (pH 4-9, 25 °C) Calculated (KOWWIN v1.68, US EPA, 2011)
Adsorption/Desorption	log K _{oc} = 4.59	Calculated – from log Kow (KOCWIN v2.00, US EPA, 2011).
Dissociation Constant	pK _b = 6.3 at 20 °C	Technical data sheet. Full study report not provided.
Flash Point	203 °C (closed cup)	Technical data sheet. Full study report not provided.
Flammability	Not determined	Based on the flash point, not classified as flammable (NTC, 2007)
Autoignition Temperature	380 °C	MSDS
Explosive Properties	Not determined	Contains no functional groups that would imply explosive properties.
Oxidising Properties	Not determined	Contains no functional groups that would imply oxidative properties.

DISCUSSION OF PROPERTIES

Reactivity

The notified chemical is expected to be stable under normal conditions of use.

Dangerous Goods classification

Based on the submitted physico-chemical data in the above table the notified chemical is not classified according to the Australian Dangerous Goods Code (NTC, 2007). However, the data above do not address all Dangerous Goods endpoints. Therefore, consideration of all endpoints should be undertaken before a final decision on the Dangerous Goods classification is made by the introducer of the chemical.

5. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

The notified chemical will be imported as a component of two-pack coatings (at <1% concentration).

MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonne</i>	≤1	≤1	≤1	≤1	≤1

PORT OF ENTRY

Melbourne and Sydney

IDENTITY OF MANUFACTURER/RECIPIENTS

PPG Industries Australia Pty Limited

TRANSPORTATION AND PACKAGING

The notified chemical will be supplied as a component of two-pack coatings (at <1% concentration) in 200 kg drums. The drums will then be transported within Australia by road.

USE

The notified chemical will be used as a component (at <1% concentration) of two-pack coatings for the aerospace industry. In general, the coatings will be used for touch-up work following maintenance operations.

OPERATION DESCRIPTION

Following introduction into Australia, the coatings containing the notified chemical (at <1%) will be repackaged into 1, 4 and 20 L containers prior to distribution to end-users. Enclosed lines are expected to be used in the repackaging process.

At end-use sites, the coating containing the notified chemical will be mixed with the other component of the 2-pack coating using a power stirrer (open container) or via manual mixing. The resulting coating will then be manually transferred to spray application equipment and subsequently applied onto the metal substrate. Spray

application will take place in both spray booths and aircraft hangars.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

6.1.1. Occupational Exposure

CATEGORY OF WORKERS

<i>Category of Worker</i>	<i>Exposure Duration (hours/day)</i>	<i>Exposure Frequency (days/year)</i>
Transport and storage	2-3	10-15
Repackaging	Unspecified	Unspecified
Application Operations	6	260

EXPOSURE DETAILS

Transport and storage workers may come into contact with the notified chemical as a component of the imported coating (at <1%) only in the event of accidental rupture of containers.

Dermal, ocular or inhalation exposure to the notified chemical may occur during transfer processes (including repackaging), during spray application processes and during cleaning and maintenance of equipment. Exposure will be mitigated by the use of ventilated environments (including spray booths and/or aircraft hangars) and personal protective equipment (PPE: chemical goggles, impervious gloves, appropriate industrial clothing and respirators during spray operations). Once the coating is cured, the notified chemical is not expected to be bioavailable and further dermal contact should not lead to exposure.

6.1.2. Public Exposure

The notified chemical is intended for industrial use only. Therefore, the public may be exposed to the imported product (<1% notified chemical) only in the event of a transport accident. Given the intended use of the chemical in the aerospace industry and that the coatings containing the notified chemical will be cured, public exposure from articles to which the coating has been applied is not expected.

6.2. Human Health Effects Assessment

No toxicity data were submitted.

While passive diffusion of the notified chemical across the gastrointestinal (GI) tract and dermal absorption may occur, it is expected to be limited by the likely low water solubility (calculated: 0.035 mg/L) and high partition coefficient (calculated: Log Pow = 6.75 at 20°C) of the notified chemical. The notified chemical may also be absorbed across the respiratory tract.

The technical data sheet for the notified chemical (full study reports not provided) indicates that the notified chemical was found to be of low acute oral toxicity (LD50 = 2,000 mg/kg bw), low acute dermal toxicity (LD50 >5,000 mg/kg bw) and severely irritating and/or corrosive to the skin and eyes. In addition, the notifier has classified the chemical as R35: Causes severe burns.

The notified chemical contains functional groups that, in addition to corrosion, have been associated with sensitisation and systemic toxicity effects (US EPA, 2006 and Gerner *et al.*, 2004). Based on the information available, the potential for these effects cannot be ruled out.

Health hazard classification

As no toxicity data were provided, the notified chemical cannot be classified according to the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

6.3. Human Health Risk Characterisation

6.3.1. Occupational Health and Safety

The notified chemical will only be handled by workers at <1% concentration. At such concentration(s), corrosive, sensitisation and systemic toxicity effects are not expected. However, given the absence of supporting toxicity studies, steps should be taken to avoid exposure to the notified chemical, particularly during spray application processes.

Therefore, provided that control measures are in place to minimise worker exposure, including the use of ventilated environments, automated processes and PPE, the risk to the health of workers from use of the notified chemical is not considered to be unreasonable.

6.3.2. Public Health

The notified chemical is intended for use in industrial applications by qualified operators. As public exposure from articles to which the coating has been applied is not expected, the risk to the health of the public from use of the notified chemical is not considered to be unreasonable.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Environmental Exposure & Fate Assessment

7.1.1. Environmental Exposure

RELEASE OF CHEMICAL AT SITE

The notified chemical will not be manufactured or reformulated in Australia; therefore, there will be no releases due to these activities. The notified chemical will be repackaged into smaller containers in Australia, prior to shipment to end users. It is expected that some of the notified chemical may be lost as residues in equipment washings and import containers (estimated at 1% of annual import volume). Residues in import containers are expected to either be disposed of to landfill or, if recycled, collected in rinsate. Residues in liquid wastes are likely to be recovered during processing and are expected to be ultimately disposed of to landfill.

The release of the notified chemical to the environment during import, storage, and transport is unlikely. The most likely source of a release to the environment during these activities will be a transport accident. However, the capacity and specifications of the repackaged containers are likely to minimise the extent of any such releases. Releases that do occur as a result of accidents are expected to be physically contained, absorbed into inert material and disposed of in accordance with local regulations, namely to landfill.

RELEASE OF CHEMICAL FROM USE

The notified chemical is a component of a product used in two-pack coatings in the aerospace industry for use by professional applicators only. The two products are mixed together immediately prior to use and transferred to spray equipment for application to metal substrates with a transfer efficiency of 40-60%, depending on the equipment. During industrial use of the notified chemical, application is expected to occur in spray booths with typical industrial controls to collect overspray or, where this is not practical, application will take place in aircraft hangers with overspray to be collected on plastic coverings or kraft paper. Collected overspray is expected to be disposed of via a licensed waste collector in accordance with local regulations.

Solvent-based equipment washings containing the notified chemical are expected to be collected and disposed of via a licensed waste collector in accordance with local regulations. Up to 1% of the annual import volume of notified chemical is estimated to be released to sewers as residues in equipment washings.

RELEASE OF CHEMICAL FROM DISPOSAL

The notified chemical is expected to share the fate of articles to which it has been applied and, at the end of the coated articles useful life, is therefore expected to be disposed of to landfill or thermally decomposed during metals reclamation processes.

7.1.2. Environmental Fate

Based on the reported application efficiency, about half of the annual import volume of notified chemical is expected to be applied to aerospace articles with a substantial part of the remainder expected to be collected as overspray. Therefore, the majority of the imported quantity of notified chemical is expected to be ultimately disposed of to landfill attached to metal substrates or physical barriers used to collect overspray, or thermally decomposed during recycling of metal substrates to which it has been applied. When disposed of to landfill, the

majority of the notified chemical is expected to be held within a cured polymer matrix as part of its reported use pattern and is not expected to be mobile, bioavailable nor biodegradable in this form.

Up to 1% of the notified chemical is estimated to be released to sewers in equipment rinsate following use. During sewage treatment plant processes, up to 85% of the notified chemical is estimated to be removed from effluent through partitioning to sludge (SimpleTreat, using the maximum allowable $\log P_{ow} = 6.00$, European Commission, 2003). The notified chemical is not considered inherently biodegradable (0% in 28 days, OECD 301B, safety data sheet, test report not provided) and, based on structural considerations, is expected to be relatively stable to hydrolysis under environmental conditions. However, the notified chemical is not expected to be persistent with a predicted primary half life of 3.43 days and predicted ultimate half life of 23.14 days (Oasis POPs v2.58.7, CATALOGIC_BOD 28 Days MITI (OECD 301C)_v0.3.04). Although the notified chemical has a high partition coefficient ($\log P_{ow} = 6.75$) the notified chemical is not expected to bioaccumulate based on its predicted bioconcentration factor of $\log BCF_{corrected} = 3.00$ (Oasis POPs v2.58.7, BCFModel_All_Mitigating_Factors). In surface waters, the notified chemical is expected to disperse and degrade through biotic and abiotic processes to form water and oxides of carbon and nitrogen.

A proportion of notified chemical may be applied to land when effluent is used for irrigation or when sewage sludge is used for soil remediation, or disposed of to landfill. Unbound notified chemical that is disposed of to landfill, or that is slowly released from its polymer matrix in landfill, is expected to be immobile in soils based on its predicted adsorption coefficient ($\log K_{oc} = 4.59$) and degrade by abiotic and biotic processes to produce water and oxides of carbon and nitrogen.

7.1.3. Predicted Environmental Concentration (PEC)

The predicted environmental concentration is calculated assuming that 1% of the notified chemical is released to sewers, with 85% removal during sewage treatment plant (STP) processes (SimpleTreat, European Commission, 2003). The coatings containing the notified chemical are expected to be used for small touch up work following maintenance and widely dispersed around the country in hangars in moderate sized cities including Sydney and Melbourne (but potentially other State capital cities) with an estimated minimum number of application days of 50 per annum. Therefore, the worst-case release scenario is for release to occur on 50 days into sewers in the greater Sydney and Melbourne metropolitan areas with an estimated population of 8.66 million as of June 2010 (ABS, 2011).

Predicted Environmental Concentration (PEC) for the Aquatic Compartment		
Total Annual Import/Manufactured Volume	1,000	kg/year
Proportion expected to be released to sewer	1%	
Annual quantity of chemical released to sewer	10	kg/year
Days per year where release occurs	50	days/year
Daily chemical release:	0.20	kg/day
Water use	200.0	L/person/day
Combined population of Sydney and Melbourne (Millions)	8.660	million
Removal within STP	85%	
Daily effluent production:	1,732	ML
Dilution Factor - River	1	
Dilution Factor - Ocean	10	
PEC - River:	0.017	µg/L
PEC - Ocean:	0.002	µg/L

Partitioning to biosolids in STPs Australia-wide may result in an average biosolids concentration of 0.982 mg/kg (dry wt). Biosolids are applied to agricultural soils, with an assumed average rate of 10 t/ha/year. Assuming a soil bulk density of 1500 kg/m³ and a soil-mixing zone of 10 cm, the concentration of the notified chemical may approximate 0.007 mg/kg in applied soil. This assumes that degradation of the notified chemical occurs in the soil within 1 year from application. Assuming accumulation of the notified chemical in soil for 5 and 10 years under repeated biosolids application, the concentration of notified chemical in the applied soil in 5 and 10 years may approximate 0.035 mg/kg and 0.07 mg/kg, respectively.

STP effluent re-use for irrigation occurs throughout Australia. The agricultural irrigation application rate is assumed to be 1000 L/m²/year (10 ML/ha/year). The notified chemical in this volume is assumed to infiltrate and accumulate in the top 10 cm of soil (density 1500 kg/m³). Using these assumptions, irrigation with a

concentration of 0.017 µg/L may potentially result in a soil concentration of approximately 0.1155 µg/kg. Assuming accumulation of the notified chemical in soil for 5 and 10 years under repeated irrigation, the concentration of notified chemical in the applied soil in 5 and 10 years may be approximately 0.5774 µg/kg and 1.155 µg/kg, respectively.

7.2. Environmental Effects Assessment

The results from ecotoxicological investigations conducted on the notified chemical, as reported in the safety data sheet, are summarised in the table below. Full study reports were not provided. As there is the potential for aquatic exposure from the use of the notified chemical, modelled estimates for ecotoxicological endpoints for daphnia and green algae have been calculated (ECOSAR, v1.00, amides class, US EPA, 2011) and are tabulated below.

Endpoint	Result	Assessment Conclusion
Fish Toxicity <i>Cyprinus carpio</i> <i>Leuciscus idus</i>	96 h L50 = 0.097 mg/L (92/69/EEC, C.1) ¹ 48 h LC50 = 0.49 mg/L (DIN 38412 T.15) ¹	Very toxic to fish
Daphnia Toxicity	48 h EC50 = 0.026 mg/L ²	Predicted to be very toxic to aquatic invertebrates
Algal Toxicity	96 h EC50 = 0.042 mg/L ²	Predicted to be very toxic to algae

¹ Test guideline. Full study not available

² ECOSAR estimates. No log Kow limitations for amides class

The notified chemical may not be soluble enough to measure the predicted effects for algae. However, it is noted that the reported endpoints for fish are also higher than the predicted water solubility of 0.035 mg/L. The above values are used as best available evidence, noting that the full study reports for the reported water solubility and fish toxicity endpoints were not provided and measured endpoints are not available for daphnia or algae. Based on the above endpoints, under the Globally Harmonised System of Classification and Labelling of Chemicals (GHS; United Nations, 2009) the notified chemical is very toxic to fish, aquatic invertebrates and algae and, based on either the reported or calculated endpoints, is formally classified as 'Acute Category 1: Very toxic to aquatic life'. The long-term hazard of the notified chemical is formally classified under the GHS on the basis of its acute toxicity to aquatic biota, and its lack of experimental evidence to demonstrate rapid degradability, as 'Chronic Category 1: Very toxic to aquatic life with long lasting effects'.

7.2.1. Predicted No-Effect Concentration

The predicted no-effect concentration (PNEC) has been calculated from the estimated acute aquatic invertebrates toxicity endpoint of the notified chemical and an assessment factor of 100 to account for chronic toxicity and laboratory-to-field extrapolation.

Predicted No-Effect Concentration (PNEC) for the Aquatic Compartment		
EC50 (Invertebrates).	0.026	mg/L
Assessment Factor	100	
PNEC:	0.26	µg/L

7.3. Environmental Risk Assessment

Based on the above PEC and PNEC values, the following Risk Quotient (Q) has been calculated:

Risk Assessment	PEC µg/L	PNEC µg/L	Q
Q - River	0.017	0.26	0.067
Q - Ocean	0.002	0.26	0.007

The notified chemical is a component of coatings used in the aerospace industry. The majority of the notified chemical is expected to be disposed of to landfill bound within the inert polymer matrix of coating adhering to articles or physical barriers that captured overspray during application, and is not expected to be mobile, bioavailable or biodegradable in this form.

A small percentage (1%) of the annual import volume was estimated to be released to sewers during use. While the notified chemical is very toxic to aquatic life, the risk quotient for discharge of treated effluents indicate that the notified chemical is unlikely to reach ecotoxicologically relevant concentrations in surface waters based

on its low import volume, dispersive industrial use and partial removal from waste water by sorption to sewage sludge. The notified chemical has a low potential for bioaccumulation and is unlikely to persist in surface waters.

Therefore, on the basis of the PEC/PNEC ratio, maximum annual importation volume and assessed use pattern, the notified chemical is not expected to pose an unreasonable risk to the environment.

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