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

PUBLIC REPORT

Tinuvin Carboprotect

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (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 conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Department of the Environment.

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:

Street Address:	Level 7, 260 Elizabeth Street, SURRY HILLS NSW 2010, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL:	+ 61 2 8577 8800
FAX:	+ 61 2 8577 8888
Website:	www.nicnas.gov.au

**Director
NICNAS**

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SUMMARY

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

ASSESSMENT REFERENCE	APPLICANT(S)	CHEMICAL OR TRADE NAME	HAZARDOUS CHEMICAL	INTRODUCTION VOLUME	USE
LTD/1809	BASF Australia Ltd	Tinuvin Carboprotect	ND*	≤ 1 tonne per annum	UV light absorber in automotive coatings

*ND = not determined

CONCLUSIONS AND REGULATORY OBLIGATIONS

Hazard classification

Based on the available information, the notified chemical is not recommended for classification according to the *Globally Harmonised System for the Classification and Labelling of Chemicals* (GHS), as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

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 and the reported use pattern, the notified chemical is not considered to pose an unreasonable risk to the environment.

Recommendations

REGULATORY CONTROLS

- The (M)SDSs for coating products containing the notified chemical should include appropriate advice on workplace controls, including personal protective equipment (PPE).

CONTROL MEASURES

Occupational Health and Safety

- A person conducting a business or undertaking at a workplace should implement the following engineering controls to minimise occupational exposure to the notified chemical, if possible:
 - Closed processes
 - Spray booth during spray application
 - Local exhaust ventilation during reformulation and spray application
- A person conducting a business or undertaking at a workplace should implement the following safe work practices to minimise occupational exposure during handling of the notified chemical:
 - Avoid skin and eye contact
 - Avoid exposure to dust during reformulation
 - Avoid inhalation of spray particles during spray application
- A person conducting a business or undertaking at a workplace should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified chemical during reformulation and spray application:

- Impervious gloves
- Coveralls
- Anti-static footwear
- Eye protection such as safety glasses or goggles
- Respiratory protection if inhalation exposure may occur

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 Code of Practice for *Spray Painting and Powder Coating* (SWA, 2012) or relevant State or Territory Code of Practice.
- A copy of the (M)SDS should be easily accessible to employees.
- If products and mixtures containing the notified chemical are classified as hazardous to health in accordance with the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)* as adopted for industrial chemicals in Australia, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation should be in operation.

Disposal

- Where reuse or recycling are not appropriate, dispose of the notified chemical in an environmentally sound manner in accordance with relevant Commonwealth, state, territory and local government legislation.

Emergency procedures

- Spills or accidental release of the notified chemical should be handled by physical containment, collection and subsequent 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 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;or
- (2) Under Section 64(2) of the Act; if
 - the function or use of the chemical has changed from a UV light absorber in automotive coatings, or is likely to change significantly;
 - the amount of chemical being introduced has increased, or is likely to increase, significantly;
 - the chemical as 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 (M)SDS of the notified chemical provided by the notifier was reviewed by NICNAS. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

BASF Australia Ltd (ABN: 62 008 437 867)
Level 12, 28 Freshwater Place
Southbank VIC 3006

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, other names, CAS number, molecular and structural formulae, molecular weight, analytical data, degree of purity, impurities, additives/adjuvants, import volume, and identity of recipients.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Variation to the schedule of data requirements is claimed as follows: all physico-chemical properties except melting point, water solubility and partition coefficient.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

USA (2010), China (2014), Japan (2014)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Tinuvin Carboprotect

MOLECULAR WEIGHT

>500 Da

ANALYTICAL DATA

Reference NMR and IR spectra were provided.

3. COMPOSITION

DEGREE OF PURITY

>95%

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: yellow powder

Property	Value	Data Source/Justification
Melting Point/Freezing Point	134 °C	Measured
Density	1.16±0.1 g/cm ³ at 20 °C	Calculated using Advanced Chemistry Development (ACD/Labs) Software V11.02 (© 1994-2015 ACD/Labs)
Vapour Pressure	<1 x 10 ⁻⁵ kPa at 25 °C	Estimated by the notifier.
Water Solubility	<1 x 10 ⁻⁵ g/L at 20 °C	Measured
Hydrolysis as a Function of	Not determined	Contains hydrolysable functionality.

pH		However, the notified chemical is not expected to be significantly hydrolysed in the environmental pH range of 4 – 9.
Partition Coefficient (n-octanol/water)	log Pow > 6.5	Measured
Adsorption/Desorption	Not determined	Given its hydrophobic nature, the notified chemical is likely to partition to organic carbon and sludge
Dissociation Constant	Not determined	The notified chemical contains dissociable functionalities including a group with expected pKa of ~ 6 - 10, and hence it is expected to be ionised under normal environmental conditions (pH 4 – 9).
Particle Size	Not determined	The notified chemical is stated to be an agglomerated powder (not fine powder).
Solid Flammability	Not determined	-
Autoignition Temperature	Not determined	No autoignition was seen up to the melting point of 134 °C.
Explosive Properties	Not determined	The structural formula contains no functional groups that would imply explosive properties
Oxidising Properties	Not determined	The structural formula contains no functional groups that would imply oxidising properties

DISCUSSION OF PROPERTIES

For full details of tests on physical and chemical properties, refer to Appendix A.

Reactivity

When in powder form, the notified chemical may pose a dust explosion risk.

Physical hazard classification

Based on the limited submitted physico-chemical data depicted in the above table, the notified chemical is not recommended for hazard classification according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia.

5. INTRODUCTION AND USE INFORMATION

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

The notified chemical will not be manufactured in Australia. The notified chemical will be imported by sea into Australia as the chemical itself.

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

Year	1	2	3	4	5
Tonnes	≤1	≤1	≤1	≤1	≤1

PORT OF ENTRY

Melbourne

IDENTITY OF MANUFACTURER/RECIPIENTS

BASF Australia Ltd

TRANSPORTATION AND PACKAGING

The notified chemical will be imported in 4 kg open head metal pails with polyethylene inner liner and transported by road to a third party warehouse for storage. The notified chemical will then be transported by road to reformulation sites.

USE

The notified chemical will be used as an additive (UV light absorber) in surface coatings for OEM and after-market automotive applications.

OPERATION DESCRIPTION

The notified chemical will be formulated into surface coating products in a batch process. The batch process will involve weighing out the notified chemical and adding it to a 1000 L blender for mixing. The weighing process is expected to be conducted in a dispensary with local exhaust ventilation. The blending process is also expected to be conducted under controlled conditions in systems for milling and screening. After mixing, the coating formulation containing 1 to 3% notified chemical will then be piped into 20 L steel pails directly from the blending vessel *via* an automated process. The blender and pipelines will be cleaned using solvent, which will be fed back into the process where possible.

In the OEM application, the coating formulation containing 1 to 3% notified chemical will be applied manually to automotive panels by spray. These coated panels will then be baked to cure the coating. The process and controls are likely to be similar if the coatings are used for after-market applications.

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>
Storage and Transport personnel	1-2	30-50
Reformulation	2-4	30-50
Paint tank operators	2	200
Spray tank operators	8	200
Spray paint cleaners	2	200

EXPOSURE DETAILS

Transport and storage

Transport and warehouse workers are expected to be exposed to the notified chemical only in the event of a spill or if the packaging is accidentally breached.

Reformulation

There is potential for dermal, ocular and inhalation exposure to the notified chemical at 100% during the weighing and loading operations. Inhalation exposure could lead to ingestion. The extent of worker exposure is expected to be minimised by the use of exhaust ventilation, overalls, gloves and eye protection.

There is also potential for dermal and ocular exposure to the notified chemical in the formulated coating product at up to 3% from drips, spills and splashes during batch adjustment and quality control processes. This exposure is expected to be minimised by the use of PPE such as laboratory coats, gloves and eye protection.

Workers may also be exposed to the notified chemical at a concentration of up to 3% while connecting and disconnecting filling pipes and during cleaning. They are expected to wear coveralls, gloves and eye protection during these activities.

End-use

Dermal, ocular and inhalation exposure to the notified chemical at up to 3% could occur during transfer of the coating formulation to hand spraying equipment, during manual spraying and during equipment cleaning and maintenance.

Spraying is expected to be carried out in a booth with exhaust/filter system. During this process, exposure to the notified chemical is expected to be further reduced by the use of air-fed respirators and full protective equipment including impermeable gloves, coveralls, anti-static footwear and eye protection.

Once the coating is cured by heating or baking, the notified chemical will be incorporated in the coating matrix, and is not expected to be bioavailable. Therefore worker exposure to the notified chemical after curing is expected to be negligible.

6.1.2. Public Exposure

The coatings containing the notified chemical are expected to be used for industrial use only. The public may come in contact with coated and cured surfaces containing the notified chemical. In this form there is little potential for public exposure to the notified chemical since the chemical is trapped within the paint matrix.

6.2. Human Health Effects Assessment

The results from a bacterial reverse mutation study conducted on the notified chemical are summarised in the following table. For full details of the study, refer to Appendix B.

<i>Endpoint</i>	<i>Result and Assessment Conclusion</i>
Mutagenicity – bacterial reverse mutation	non mutagenic

No further toxicity data were submitted for the notified chemical. It is noted that the notified chemical has a structural alert which has been associated with systemic toxicity, reproductive toxicity and dermal sensitisation.

Dermal absorption is expected to be limited by the log Kow (>6.5, measured) and the molecular weight (<1000 Da) (ECHA, 2012).

Health hazard classification

Based on the available information, the notified chemical is not recommended for classification according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

6.3. Human Health Risk Characterisation

6.3.1. Occupational Health and Safety

Only limited toxicological data is available on the notified chemical, however it contains a structural alert for adverse systemic effects and skin sensitisation.

Worker exposure to the notified chemical may occur during formulation and during application of the formulated coatings to automotive parts. Engineering controls and PPE that are planned to be used for different processes in order to control this potential exposure have been detailed by the notifier.

Providing that adequate controls are in place to reduce worker exposure to the notified chemical, it is not considered to pose an unreasonable risk to the health of workers.

6.3.2. Public Health

Negligible public exposure is expected due to the use of the paint only in industrial settings. Although the public will make occasional contact with automotive surfaces containing the notified chemical, the chemical in this form will be trapped within the paint matrix and is not expected to be bioavailable. Based on negligible exposure, the notified chemical is not expected to pose an unreasonable risk to the public.

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 in Australia; therefore, there will be no release from this activity. Environmental release during importation, transport and distribution may occur as a result of accidental spills. In the event of a spill, the notified chemical is expected to be contained and collected with an inert absorbent material and disposed of to approved landfills.

The reformulation process is expected to be conducted under controlled conditions in systems for milling and screening. Filling the product containing the notified chemical into steel pails is expected to be done via an automated process. The blending equipment such as the blender and pipelines are expected to be cleaned using solvent which will be fed back into the process where possible. Therefore, release of the notified chemical to the

environment from the cleaning of blending equipment is expected to be insignificant. Residues in import containers are expected to be disposed of to landfill; however, the residues are expected to be cured prior to disposal to landfill.

RELEASE OF CHEMICAL FROM USE

Application of coating formulation containing the notified chemical is expected to be by manual spray gun to automotive panels. These panels are then baked to cure the coating. Spraying is expected to be typically conducted in a controlled environment, in industrial settings.

The main release of the notified chemical from end-use is expected as a result from overspray, spills, and leaks, from cleaning of equipment and from residues in empty containers. Overspray is expected to be collected by water curtains or a dry filter medium. The collected wastes and empty containers are expected to be disposed of to approved landfills. The spray guns are expected to be cleaned with solvent and the waste solvent is expected to be collected by licensed waste contractors. Therefore, a significant release of the notified chemical to the environment from these activities is not expected.

RELEASE OF CHEMICAL FROM DISPOSAL

The notified chemical in coatings is expected to share the fate of metal substrates to which it has been applied. The notified chemical is likely to be either thermally decomposed during metal reclamation processes or disposed of to landfill at the end of the useful life of the article to which it has been applied.

7.1.2. Environmental Fate

The notified chemical is not readily biodegradable based on the environmental fate study provided. For the details of the environmental fate studies please refer to Appendix C. The notified chemical has a tendency to sorb to soil/sediment based on its potential cationicity. Hence, any notified chemical that may be released to sewers is expected to mainly partition to sludge, and be disposed of to landfill. Consequently, it is not anticipated to be significantly bioavailable to aquatic organisms. Given that the notified chemical has potential cationicity, it is not expected to be bioaccumulative as it is not likely to cross biological membranes. The majority of the notified chemical is expected to be cured by adhering to articles following its use in coatings. Notified chemical that is disposed of to landfill is expected to remain associated with the substrate to which it has been applied. In its cured form it is not expected to be mobile, bioavailable or biodegradable. Ultimately, the notified chemical is expected to eventually degrade via biotic and abiotic processes in landfill, or by thermal decomposition during metal reclamation processes, to form water and oxides of carbon and nitrogen.

7.1.3. Predicted Environmental Concentration (PEC)

The PEC for the notified chemical has not been calculated since no significant release of the notified chemical to the environment is expected based on its reported use pattern. Therefore, it is not appropriate to attempt to estimate a predicted environmental concentration (PEC) as this concentration is not expected to reach ecotoxicologically significant levels.

7.2. Environmental Effects Assessment

The results from ecotoxicological investigations conducted on the notified chemical are summarised in the table below. Details of these studies can be found in Appendix C.

<i>Endpoint</i>	<i>Result</i>	<i>Assessment Conclusion</i>
Fish Toxicity	96 h EC50 > 100 mg/L	Not harmful to fish
Earthworm	14 d LC50 > 1000 mg/kg dry soil	Very slightly toxic to sediment dwellers

The notified chemical is not considered to be harmful to aquatic organisms based on the above data. Therefore, the notified chemical is not formally classified under the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) (United Nations, 2009) for acute or chronic effects.

7.2.1. Predicted No-Effect Concentration

No significant adverse effects were observed in the ecotoxicity tests submitted. In addition, no significant release of the notified chemical to the aquatic environment is expected based on the reported use pattern. Therefore, a predicted no-effect concentration (PNEC) has not been derived.

7.3. Environmental Risk Assessment

A risk Quotient ($Q = \text{PEC}/\text{PNEC}$) value has not been calculated since neither PEC nor PNEC were derived. The majority of the notified chemical will be disposed of to landfill as cured coated articles. The notified chemical in coatings is physically bound into a solid inert matrix, and is unlikely to be bioavailable or leach in this form. The notified chemical is not expected to pose an unreasonable risk to the environment based on the assessed use pattern and the reported low adverse ecotoxicological effects to aquatic organisms.

APPENDIX A: PHYSICAL AND CHEMICAL PROPERTIES**Melting Point/Freezing Point** 134 °C

Method OECD TG 102 Melting Point/Melting Range.
Remarks Determined by Differential Scanning Calorimetry.
Test Facility Competence Center Analytics, BASF SE, D-67056 Ludwigshafen

Water Solubility <1 x 10⁻⁵ g/L at 20 °C

Method OECD TG 105 Water Solubility.
EC Council Regulation No 440/2008 A.6 Water Solubility.
Remarks Column Elution Method
Test Facility Institut (2014a)

**Partition Coefficient
(n-octanol/water)** log Pow = > 6.5

Method OECD TG 117 Partition Coefficient (n-octanol/water).
EC Council Regulation No 440/2008 A.8 Partition Coefficient.
Remarks HPLC Method. The test substance eluted from the column later than the reference substance
(log Pow = 6.5). Therefore, the log Pow of the test substance is expressed as > 6.5.
Test Facility Institut (2014b)

APPENDIX B: TOXICOLOGICAL INVESTIGATIONS

B.1. Genotoxicity – bacteria

TEST SUBSTANCE	Notified chemical
METHOD	OECD TG 471 Bacterial Reverse Mutation Test. Plate incorporation procedure (test 1) and Pre incubation procedure (test 2)
Species/Strain	<i>S. typhimurium</i> : TA1535, TA1537, TA98, TA100 <i>E. coli</i> : WP2uvrA
Metabolic Activation System	Phenobarbitone/β-naphthoflavone induced rat liver (S9 homogenate)
Concentration Range in Main Test	a) With metabolic activation: 0, 33, 100, 333, 1000, 2600, 5200 µg/plate b) Without metabolic activation: 0, 33, 100, 333, 1000, 2600, 5200 µg/plate
Vehicle	Acetone
Remarks - Method	No significant protocol deviations. Vehicle and positive controls were conducted in parallel with the test material in accordance with the testing guideline.

RESULTS

<i>Metabolic Activation</i>	<i>Test Substance Concentration (µg/plate) Resulting in:</i>			
	<i>Cytotoxicity in Preliminary Test</i>	<i>Cytotoxicity in Main Test</i>	<i>Precipitation</i>	<i>Genotoxic Effect</i>
<i>Absent</i>				
Test 1	> 5200	> 5200	> 333	negative
Test 2	> 5200	> 5200	> 333	negative
<i>Present</i>				
Test 1	> 5200	> 5200	> 333	negative
Test 2	> 5200	> 5200	> 333	negative

Remarks - Results	<p>In both Test 1 and Test 2, no statistically or biologically relevant increases in the frequency of revertant colonies were recorded for any of the bacterial strains up to and including the maximum dose, either with or without metabolic activation.</p> <p>In Test 2, occasional bacteriotoxicity was observed depending on the strain and tests conditions at concentrations ≥ 2600 µg/plate. No clear dose-response was observed.</p> <p>The positive controls gave satisfactory responses, confirming the validity of the test system.</p>
CONCLUSION	The notified chemical was not mutagenic to bacteria under the conditions of the test.
TEST FACILITY	BASF (2011)

APPENDIX C: ENVIRONMENTAL FATE AND ECOTOXICOLOGICAL INVESTIGATIONS

C.1. Environmental Fate

C.1.1. Ready biodegradability

TEST SUBSTANCE	Notified chemical
METHOD	OECD TG 301 F: Ready Biodegradability: Manometric Respirometry Test
Inoculum	Activated sewage sludge
Exposure Period	28 days
Auxiliary Solvent	Not reported
Analytical Monitoring	Biological Oxygen Demand (BOD) analysis
Remarks - Method	The test was conducted according to the guidelines above using good laboratory practice (GLP). No significant deviations from the test guidelines were reported.

RESULTS

<i>Test substance</i>		<i>Sodium benzoate</i>	
<i>Day</i>	<i>% Degradation</i>	<i>Day</i>	<i>% Degradation</i>
7	1.4	7	77.5
14	1.8	14	84.3
28	9.2	28	86.0

Remarks - Results	<p>All validity criteria for the test were satisfied. The reference compound, sodium benzoate, achieved 77.5% degradation after 7 days, and 84.3% after 14 days, therefore the test is considered valid for this criterion. The toxicity control exceeded 25% biodegradation within 14 days required by the guideline) showing that toxicity was not a factor affecting the low biodegradability of the test substance.</p> <p>The test substance achieved 9.2% degradation after 28 days under the test conditions and, therefore it is not considered to be readily biodegradable.</p>
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CONCLUSION	The notified chemical is not readily biodegradable
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TEST FACILITY	Guangdong (2014a)
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C.2. Ecotoxicological Investigations

C.2.1. Acute toxicity to fish

TEST SUBSTANCE	Notified chemical
METHOD	OECD TG 203 Fish, Acute Toxicity Test – Semi-static Test
Species	Zebra Fish (<i>Danio rerio</i>)
Exposure Period	96 hours
Auxiliary Solvent	Not applicable
Water Hardness	135 mg CaCO ₃ /L
Analytical Monitoring	RRLC Analysis
Remarks – Method	The test was conducted according to the guidelines above and good laboratory practice (GLP) principles. No significant deviations from the test guidelines were reported.
	A Water Accommodated Fraction (WAF) of the notified chemical at the loading rates of 100 mg/L was prepared by dissolving the notified chemical in the test water with ultrasonic treatment for 10 mins. Then, the volume of the suspension was adjusted to obtain the nominal loading rate of 100 mg/L. Then the suspension was stirred by using a magnetic stirrer for 48 hours and filtered through a membrane filter of 0.45 µm. The filtrate was used as treatment in the toxicity test. The blank control and the treatment were observed to be clear and colourless during the test period.

RESULTS

Loading rate (mg/L)		Number of Fish	Cumulative Mortality (%)				
Nominal	Measured		2 h	24 h	48 h	72 h	96 h
Control	Control	10	0	0	0	0	0
100	< LOD*	10	0	0	0	0	0

* Limit of Detection (LOD) = 0.0782 mg/L

LL50	> 100 mg/L (loading rate) at 96 hours
NOEL	100 mg/L (loading rate) at 96 hours
Remarks – Results	All validity criteria for the test were satisfied. The toxicity test was conducted as a limit test.
	The actual concentrations of the test substance in treatment solutions were measured every 24 hours within the 96-h test period. The treatment solutions were renewed every 24 hours during the test. No mortality of fish occurred at any of the treatment concentrations at the end of the 96-hour test. The 96-hour LC50 was reported by visual observations.

CONCLUSION The notified chemical is not harmful to fish

TEST FACILITY Guangdong (2014b)

C.2.2. Earthworm

TEST SUBSTANCE Notified chemical

METHOD OECD TG 207: Earthworm, Acute Toxicity Tests.
EEC Directive 87/302, No. L 133.

Species Earthworm (*Eisenia foetida*)

Exposure Period 14 days

Auxiliary Solvent Not applied

Analytical Monitoring Not applied

Remarks - Method The test was conducted according to the guidelines above and good laboratory practice (GLP) principles. No significant deviations from the test guidelines were reported.

RESULTS

<i>Nominal Concentration (mg/kg dry soil)</i>	<i>Number of E. foetida</i>	<i>% Mortality(day)</i>	
		<i>7</i>	<i>14</i>
Control	40	0	0
1000	40	0	0

LC50 > 1000 mg/kg dry soil (14 day)

NOEL 1000 mg/kg dry soil (14 day)

Remarks - Results All validity criteria for the test were satisfied. No mortality was observed after 14 days of exposure in the control and at test concentration of 1000 mg/kg dry soil. The test was conducted as an artificial soil limit test.

CONCLUSION The notified chemical is considered to be very slightly toxic to earthworms

TEST FACILITY Guangdong (2014c)

BIBLIOGRAPHY

- BASF (2011) [notified chemical] *Salmonella typhimurium*/*Escherichia coli* reverse mutation assay (Study No. 40M0558/10M124, March 2011). BASF, Ludwigshafen, Germany (Unpublished report submitted by the notifier).
- ECHA (2012) Guidance on information requirements and chemical safety assessment. Chapter R.7c: Endpoint specific guidance, November 2012 (v 1.1).
- Guangdong (2014a) Ready Biodegradability: Manometric Respirometry Test of [Notified Chemical] (Study No. 2014ESG0019, June, 2014). China, Guangdong Detection Centre of Microbiology (Unpublished report submitted by the notifier).
- Guangdong (2014b) Acute Toxicity Test of [Notified Chemical] with Zebra Fish (*Danio rerio*) (Study No. 2014ESG0017, May, 2014). China, Guangdong Detection Centre of Microbiology (Unpublished report submitted by the notifier).
- Guangdong (2014c) Acute Toxicity Test of [Notified Chemical] with *Eisenia foetida* (Study No. 2014ESG0018, July, 2014). China, Guangdong Detection Centre of Microbiology (Unpublished report submitted by the notifier).
- Institut (2014a) Determination of the Solubility in Water of [Notified Chemical] using the Column Elution Method According to OECD 105 (Study No. GLP-018/13, Oct, 2014) Germany, Institut KuhlmannGmbH (Unpublished report submitted by the notifier).
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