FOREWORD INTRODUCTION

DIPENTAERYTHRITOL

CAS N°: 126-58-9

Substance

End Point	:	**IDENTIFIERS, PHYSICAL AND CHEMICAL PROPERTIES**
Chemical Name	:	**1,3-Propanediol, 2,2-(oxybis(methylene)bis(2-(hydroxymethyl))-**
Common Name	:	**Dipentaerythritol**
CAS Number	:	**126-58-9**

Synonyms

Bis(pentaerithritol) **Dipentek**
DPE

Properties & Definitions

Molecular Formula	:	**C10H22O7**
Molecular Weight	:	**254**
Melting Point	:	**221C; 217-224C**
Boiling Point	:	**356C**
State	:	**Solid, powder**
Flamable Limit	:	**30g/m3 at >400C**
Vapour Pressure	:	**10E-14kPa (10E-14mmHg) at 25C**
Octanol/Water Partition Coefficient	:	**log Pow = -2**
Water Solubility	:	**3g/l at 30C**
Impurities	:	**Monopentaerythritol 2.8%, tripentaerythritol 0.51%**
General Comments	:	AQSOL = 1.9g/l at 10C and 9g/l at 50C were also measured. The reported MP = 221C measured with H20 as solvent and MP = 217-224C measured with acetone as solvent.

Overall Evaluation

SIDS INITIAL ASSESSMENT

This chemical is presently of "low priority" for further work.
"Further exposure information required if available".

It should be noted that the human and environmental exposure profile presented in this assessment is limited to describing a single production site in Sweden.

The human effects alone indicate a low degree of toxicity. Comparison of NO(A)ELs with the EHE for occupational exposure do not give reason for concern.

Ecotoxicological data indicate low toxicity to aquatic organism. Water is the main environmental compartment exposed; however this exposure is low. As indicated in the "Ready biodegradability" test, DPE is potentially persistent. This raises the question to whether a better estimate of the degradation rate should be determined. This would be supported if it was suspected that DPE accumulated in environmental compartments; however, no evidence is available in the SIDS to support such conclusion and further testing is therefore not recommended.

It is noteworthy that the combination: "persistent" and "high water solubility" would be expected to give a long-term distribution pattern in the environment. As an assessment of a chemical with these properties is poorly understood it is difficult to estimate the potential hazard of DPE to the environment.

OVERALL RECOMMENDATION AND INITIAL ASSESSMENT

Based upon the available information, the initial assessment gave no evident grounds for concern. However, the assessment is considered to be limited by the available exposure data which only detailed a single site in Sweden.

Production-Trade

Chemical Name : **Dipentaerythritol**
CAS Number : **126-58-9**
Geographic Area : **SWE**

Production

Quantity	*Year*
100-990 T - P	**1991**
100-500 T - P	**1991**
0.3835-1.918 T - P	

General Comments : Dipentaerythritol is mainly exported. Dipentaerythritol also occurs as an impurity (up to 10%) in pentaerythritol (CAS No.115-77-5) which was produced in Sweden in the range of 300-1000 tonnes during 1991 (Product Register, 1992) (see date profile on pentaerythritol).

References

!SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 3, (1993)

Processes

Chemical Name : **Dipentaerythritol**

CAS Number : **126-58-9**

Process

Process comments : Occurs as a byproduct during the reaction of formaldehyde with acetaldehyde in alkaline medium and is separated from pentaerythritol by fractional crystallization (in closed system).

References

Secondary Reference : **!SIDSP***

OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)

Uses

Chemical Name : **Dipentaerythritol**
CAS Number : **126-58-9**
Geographic Area : **SWE**

Use

Quantity	*Year*	*Comments*
		Dipentaerythritol is predominantly used as an esterification alcohol in the preparation of polyesters used as paint vehicles and as fatty acid esters used as lubricants (Sjogreen, 1992f). Dipentaerythritol has been identified as a raw material for: plastics, stabilizer (Product Register, 1992); PVC stabilizer (Korner, 1990); cosmetics/hygiene products including hair rinses (HSDB, 1992 and Ueda, Yoshihiro, 1988), nail lacquers (HSDB, 1992), chemical stabilizer and skin adhesion in cosmetic basis (HSDB, 1992); surface-coating (Kucera & Sedivy, 1986), flame retardants (Korner, 1990), insulation plastic (Chiba, Tsukasa, 1988), coating for steel (Vasatco, Eduard, 1987), putties (Kucera & Sedivy, 1986), paint resins (Sjogreen, 1992f). The only instance of direct use is as a plant preservative (Davydenko, 1988). However, this information is contained in a Russian reference which was not obtainable. Softening agents in detergents. Dipentaerythritol is mainly exported. Information on international uses are not available.

References

Secondary References : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 1, (1993)

Study

End Point : **Pathway into the Environment and Environmental Fate.**
Chemical Name : **Dipentaerythritol**
CAS Number : **126-58-9**
Geographic Area : **SWE**
Area Specifications : **S**

Test Method and Conditions

Test method description : Calculation of the distribution based on chemical/physical data, type of use and produced and released quantity. Mackay model level 1 and "SAMS" model for air and water.

Pathway and Transport

Pathway : **INDST AQ**
Pathway description : Release to air from factory. Sewage released into river.

Quantity Transported

Medium	*to Medium*		*Quantity*	*Time*	*Year*	*to Year*
	to AQ	**FRESH**	**0.04-0.30 mg/l**		**1991**	

100% of dipentaerythritol is distributed to the water phase. Above concentration in recipient for a production plant was calculated using the RIVER model in SAMS.

to AQ	**FRESH**	**0.5-1.0 kg/t**		**1991**

Predicted release to water (Sjogreen, 1992f). Predicted sewage volume = 300m3/ton of produced DPE. Predicted flow in the recipient 0.3-5m3/s (mean 0.5m3/s) (ref: Sjogreen, 1992e).

to AQ	**FRESH**	**0.1918-1.918 kg**	**/d**

Release to water per working day (8 hours/day): minimum and maximum values.

to AIR	**0.2-0.5 kg/t**	**1991**

Predicted release to air

to AIR	**0.0767-0.9590 kg**	**/d**

Release to air per working day (8 hours/day).

References

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 6, (1993)

Study

End Point : **Pathway into the Environment and Environmental Fate.**
Chemical Name : **Dipentaerythritol**
CAS Number : **126-58-9**

Evaluations

Evaluation text : Summary: it is noteworthy that the combination: "persistent" and "high water solubility" would be expected to give a long-term distribution pattern in the environment. As an assessment of a chemical with these properties is poorly understood it is difficult to estimate the potential hazard of DPE to the environment.

References

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)

Study

End Point	:	**BIODEGRADATION**
Chemical Name	:	**Dipentaerythritol**
CAS Number	:	**126-58-9**
Study type	:	**LAB**
Geographic Area	:	**SWE**
Area Specifications	:	**S**

Test Subject

Organism	*Medium*	*Specification*
	AQ	

Species/strain/system : Water and sludge

Test Substance

Purity Grade : **99.7%**

Test Method and Conditions

Test method description : Determination of biochemical oxygen demand. BOD7 and BOD28. (This method very closely corresponds to the OECD methods 301 D (closed bottle test)).

Temperature : **20-+/-1 C**

(An)aerobic : **AEROB**

Exposure

Exposure Period : **7 d**

Dose / Concentration : **1 g/l**

Test Results

Quantity		*Time*
0.6 %	LOSS	**7 d**
1.8 %	LOSS	**28 d**

General Comments : Dipentaerythritol is not readily biodegradable.

References

Primary Reference : **#SAMDB***

Sjogreen, C. A. Dipentaerythritol: Aerobic Biodegradability. Perstorp AB, 92A79SCA. SAM, Sweden, (1992)

Secondary Reference : **!SIDSP***

OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 4, (1993)

Study

End Point	:	**BIODEGRADATION**
Chemical Name	:	**Dipentaerythritol**
CAS Number	:	**126-58-9**

Evaluations

Evaluation text	:	Summary: as indicated in the "Ready biodegradability" test, DPE is potentially persistent. This raises the question to whether a better estimate of the degradation rate should be determined. This would be supported if it was suspected that DPE accumulated in environmental compartments; however, no evidence is available in the SIDS to support such conclusion and further testing is therefore not recommended.

References

Secondary Reference	:	**!SIDSP*** OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 4, (1993)

Study

End Point	:	**HYDROLYSIS**
Chemical Name	:	**Dipentaerythritol**
CAS Number	:	**126-58-9**
Study type	:	**LAB**
Geographic Area	:	**SWE**
Area Specifications	:	**S**

Test Substance

Purity Grade	:	**99.7%**
Vehicle - Solvent	:	**Sterile buffer solutions. Reagent grade chemicals and distilled sterile water**

Test Method and Conditions

Test method description	:	OECD Guideline 111. GLP specified for test. 6 solutions were prepared by weighing 150mg dipentaerythritol, diluting to 100ml, dissolving and analyzing by HPLC.
Temperature	:	**25-50 C**
pH	:	**4.0-9.0**

Exposure

Exposure Period	:	**5 d**

Test Results

Quantity		*Time*	*Comments on result*
50 %	LOSS	**>1 y**	Dipentaerythritol is hydrolitically stable at 25C and pH from 4-9.

General Comments : DPE is predominently used as an esterification alcohol and the extent to which ester bonds are able to reversibly hydrolyse to dipentaerythritol can be considered to be insignificant because the polyolic structure of DPE forms multiple ester bonds which will limit hydrolysis. The standard recovery was 99% with a standard deviation of 0.7.

References

Primary Reference : **#SAMDH***
Sjogreen, C. A. Dipentaerythritol: Hydrolysis as a function of pH. Perstorp AB, 92A45SAC. SAM, Sweden, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 4, (1993)

Study

End Point	:	**MAMMALIAN ACUTE TOXICITY**
Chemical Name	:	**Dipentaerythritol**
CAS Number	:	**126-58-9**
Species/strain/system	:	Sprague-Dawley rats
Dose / Concentration	:	**2000 mg/kg**

Test Method and Conditions

Test method description	:	Acute oral toxicity study for LD50 carried out with the tes t substance. Administered in oral gavage to a total dose of 2000mg/kg/body weight. EEC method directive 84/449/EEC (OJ No. L251, 19.9.84) Part B.1 acute toxicity (oral). GLP: YES

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RAT			**ORL**	**ADULT**	**M F**	**LD50**	Established as >2000mg/kg/body weight

General Comments	:	No deaths recorded. Limited pilo-erection and abnormal body carriage were observed. Recovery was complete by day 2. There was slightly lower bodyweight gains for some animals but they reached anticipated bodyweight gain, during recovery period.

References

Primary Reference :

#HRCUR*

Allan, S. A. Huntington Research Centre, Unpublished Report, (1992)

Secondary Reference :

!SIDSP*

OECD/SIDS/EEC. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 7, (1993)

Study

End Point	:	**MAMMALIAN TOXICITY**
Chemical Name	:	**Dipentaerythritol**
CAS Number	:	**126-58-9**

Evaluations

Evaluation text	:	Summary: The potential exposure routes considered for an occupationalexposure setting are inhalation, ingestion and dermal. It is expected that inhalation exposure to gaseous DPE or dermal absorption will be very low because DPE has a low vapour pressure (10-9 Pa) and partition coefficient (-2(log kow)), respectively. It should be noted that the human and environmental exposureprofile presented in this assessment is limited to describing a single production site in Sweden. The human effects alone indicate a low degree of toxicity. Comparison of NO(A)ELs with the EHE for occupational exposure do not give reason for concern.

References

Secondary Reference	:	**!SIDSP*** OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 4, (1993)

Study

End Point : **MAMMALIAN TOXICITY**
Chemical Name : **Dipentaerythritol**
CAS Number : **126-58-9**
Study type : **LAB**
Geographic Area : **GBR**

Test Subject

Organism	Medium	Specification	Route	Lifestage	Sex	Number exposed	Number controls
RAT			**ORL**	**ADULT**	**M**	**10/DOSE**	**10**
					F	**10/DOSE**	**10**

Species/strain/system : Male and female rats Crl: CD(SD)BR VAF7 Plus strain

Test Substance

Purity Grade : **96.2%**

Test Method and Conditions

Test method description : OECD "a preliminary screening test for reproductive and general toxicity". GLP: YES

Exposure

Exposure Period : **4-6 wk**
Frequency : **1 x**
Dose / Concentration : **500-1000 mg/kg BW**
Exposure comments : In this repeated dose oral toxicity studies the animals were given 0, 500,and 1000mg/kg/body weight daily by oral route, for 4 to 6 weeks, respectively.

Test Results

Organ	Effect	Rev.	OnSet	Sex	Affected in Exposed - Controls
	NEF				

NOEL dose for male rats was established as 1000mg/kg per day for 6 weeks and for female rats as 500mg/kg/day for 2 weeks.

General Comments : Signs of toxicity were not observed in male rats during the test period. Females showed no signs of toxicity during pre-mating (0-2 weeks).

References

Primary Reference : **#HRCUR***
Powell, L. A. J. Huntington Research Centre, Unpublished Report, PRP75/920507, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 8, (1993)

Study

End Point	:	**MUTAGENICITY**
Chemical Name	:	**Dipentaerythritol**
CAS Number	:	**126-58-9**
Study type	:	**LAB**
Geographic Area	:	**GBR**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
BACT			**VTR**				

Species/strain/system : Salmonella typhimurium, strains: TA98, TA100, TA1535, TA1537 TA1538

Test Method and Conditions

Test method description : In vitro test in histidine selective media. GLP: YES

Exposure

Dose / Concentration : **50-5000 ug**

Exposure comments : Preincubation method with test substance in doses range 50-5000ug/plate (50, 150, 500, 1500, 5000ug). Plates/test; 1, No . of replicates: 2. Positive controls without S-9: 2-nitrofluorene (TA98 and TA1538) and 9-aminoacridine (TA1537). With +S-9; 2-aminoanthracene (all strains). Negative control: DMSO.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
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CELL

Bacteriostatic concentration was established as >5000ug/plate for cultures with and without metabolic activation.

NEF

Test substance was negative for mutagenic effects under the testing conditions.

General Comments : Precipitation concentration was not stated, but concluded by the authors as probably > 5000ug/plate.

References

Primary Reference : **#HRCUR***

Jones, E. and Gant, R. A. Huntington Research Centre, Unpublished Report, PRP78/911273, (1992)

Secondary Reference : **!SIDSP***

OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 8, (1993)

Study

End Point : **MUTAGENICITY**
Chemical Name : **Dipentaerythritol**
CAS Number : **126-58-9**
Study type : **LAB**
Geographic Area : **GBR**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
HUMAN			**VTR**				

Species/strain/system : Human lymphocytes

Test Substance

Purity Grade : **96.2%**

Test Method and Conditions

Test method description : OECD Guideline No. 473 "genetic toxicology: in vitro mammalian cytogenitic test". GLP: YES

Exposure

Dose / Concentration : **100-800 ug/ml**
Exposure comments : Test substance was assessed on human lymphocyte cultures in RPMI 1640 medium with 10% fetal calf serum + phytohemagglutinin. The doses of test substance range: 100-800ug/ml. Positive control: (-S9) ethyl methanesulphonate in DMSO. Positive control: (+S9) cyclophosphamide in distilled water. Negative control: RPMI 1640 plus 20% fetal calf serum

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
	CELL				

Cytotoxic concentration was determined as >800ug/ml both with and without metabolic activation. Cell precipitation effect was observed at concentration of test substance 800ug/ml.

NEF

Under test conditions no mutagenic effect was observed that could be attributable to the test substance.

References

Primary Reference : **#HRCUR***
Jones, E. Huntington Research Centre, Unpublished Report, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 9, (1993)

Study

End Point : **SENSITIZATION**
Chemical Name : **Dipentaerythritol**
CAS Number : **126-58-9**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
HUMAN			**SKN**		**M**	**26**	

Exposure

Exposure comments : Industrial exposure in the workers employed in: "formulating radiation drying printing ink". Patch tests obtained with pentaerythritol triacrylate and with formulations containing that substance. Cross-sensitization was tested with dipentaerythritol monohydroxy pentaacrylate.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
SKN	**ALLER**				**4/26**

Out of 26 men exposed to dipentaerythritol at work, 4 developed eczematous dermatitis (allergic reaction). Patch test gave positive results in all 4 men. Cross sensitization tests were positive in all 4 affected.

General Comments : No data available with dipentaerythritol alone.

References

Primary Reference : **#HSILN***
Harmful Substances in the Chemical Industry, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)

Study

End Point : **IRRITATION**
Chemical Name : **Dipentaerythritol**
CAS Number : **126-58-9**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
HUMAN			**SKN**		**M**	**26**	

Exposure

Exposure comments : Industrial exposure in workers formulating radiation drying printing ink. Sensitization and cross sensitization tests were applied for differential diagnostic procedures.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
SKIN	**IRRIT**				

One out of 26 exposed developed skin irritation. Sensitization and cross sensitization tests were negative.

References

Primary Reference : **#HSILN***
Harmful Substances in the Chemical Industry, 12, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)

Study

End Point : **REPRODUCTION**
Chemical Name : **Dipentaerythritol**
CAS Number : **126-58-9**
Study type : **LAB**

Test Subject

Organism	Medium	Specification	Route	Lifestage	Sex	Number exposed	Number controls
RAT			**ORL**	**ADULT**	**M**	**10/GROUP**	**10**
					F	**10/GROUP**	**10**

Species/strain/system : Crl: CD(SD)BR VAF7 Plus strain

Test Substance

Purity Grade : **96.2%**

Test Method and Conditions

Test method description : OECD "a preliminary screening test for reproductive and general toxicity". GLP: YES

Exposure

Dose / Concentration : **500-1000 mg/kg**
Exposure comments : Females and males were given 500, 1000mg/kg/day of the test substance for 4-6 weeks, respectively. Females from 14 days of pre-mating up to day 3 of lactation.

Test Results

Organ	Effect	Rev.	OnSet	Sex	Affected in Exposed - Controls
	NEF				

NOAEL for parental female generation was established as 500mg/kg/day.

	NEF

NOAEL for parental males generation was established as 1000mg/kg/day.

OFSPR	**NEL**

NOAEL for F1 generation was established as 1000mg/kg/day (of maternal exposure).

BW	**DECR**

Females given 1000mg/kg/day showed decreased body weight gain of 9.9% during pregnancy as compared with controls.

General Comments : There were no effects of reproductive toxicity observed in the parental generation. No toxic effects observed in F1 offsprings. Mean pup birth weight, litter size and sex ratio at birth and day 4 appeared normal. The authors comment on the bodyweight gain during pregancy: food intake was not recorded for the female rats during pregnancy. It cannot be determined whether the decreased bodyweight gain in the highdose group was due to decreased food intake or energy defficiency.

References

Primary Reference : **#HRCUR***

Powell, L. A. J. Huntington Research Centre, Unpublished Report, PRP75/920507, (1992)

Secondary Reference : **!SIDSP***

OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 9-10, (1993)

Study

End Point : **TERATOGENICITY**
Chemical Name : **Dipentaerythritol**
CAS Number : **126-58-9**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RAT			**ORL**				

Species/strain/system : Crl: CD(SD)BR VAF 7 Plus

Test Substance

Purity Grade : **96.2%**

Test Method and Conditions

Test method description : OECD Guideline. A preliminary screening test for reproductive and general toxicity. GLP: yes.

Exposure

Dose / Concentration : **500-1000 mg/kg BW**
Exposure comments : The effects of "in utero" exposure to dipentaerythritol at maternal doses of 0, 500, 1000mg/kg/day were examined for teratogenicity potential.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
OFSPR	**NEF**				

The size of litter, body weight at birth and at day 4 showed no difference between the treated and control groups. No body abnormalities observed.

References

Primary Reference : **#HRCUR***
Powell, L. A. J. Huntington Research Centre, Unpublished Report, PRP75/920507, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 9-10, (1993)

Study

End Point	:	**AQUATIC ACUTE TOXICITY**
Chemical Name	:	**Dipentaerythritol**
CAS Number	:	**126-58-9**
Species/strain/system	:	Rainbow trout (Oncorhynchus mykiss) mean weight = 1.99g, mean length = 4.8cm
Exposure Period	:	**3-96 h**
Dose / Concentration	:	**100 mg/l**

Test Substance

Purity Grade	:	**96.2%**

Test Method and Conditions

Test method description	:	Direct dispersion in water with the aid of ultrasonic disruption. White powder (stored in original container at room temperature in darkness). OECD Guideline 203. Semi-static test.
Temperature	:	**14-+/-1 C**
pH	:	**7.2**
Dissolved Oxygen	:	**>10.1 mg/l**
(An)aerobic	:	**AEROB**

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
FISH	**AQ**	**FRESH**				**LC50** **LC0**	LC50 after 96h >100mg/l. LC0 after 96h >100mg/l. LC50 after 3h, 6h, 24h, 48h, 72h and 96h >100mg/l. Highest concentration resulting in 0% mortality > or = 800mg/l. Lowest concentration resulting in 100% mortality >100mg/l.

General Comments : 100mg/l (nominal concentration) was the highest concentration employed in this test. It was considered unnecessary and unrealistic to test at concentrations in excess of 100mg/l (93mg/l was the measured test concentration). Above figures are assumed results as concentrations above 100mg/l were not tested. Mortalities = 0% in 7 days prior to study. Criteria of death: absence of respiratory movement and response to physical stimulation.

References

Primary Reference : **#HRCUR***
Douglas, M. T. Huntington Research Centre, Unpublished Report, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 5, (1993)

Study

End Point	:	**AQUATIC ACUTE TOXICITY**
Chemical Name	:	**Dipentaerythritol**
CAS Number	:	**126-58-9**
Species/strain/system	:	Water flea (Daphnia magna) Straus
Exposure Period	:	**24 h**

Test Method and Conditions

Test method description	:	Direct dispersion in water with the aid of ultrasonic disruption. white powder (kept in original container at room temperature in darkness). OECD Guideline 202, part I. GLP specified static test EEC directive 67/548 Annex V C2
Temperature	:	**20-+/-2 C**

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
CRUS	**AQ**	**FRESH**				**LC50**	LC50 > or = 100mg/l

General Comments : 100mg/l were the highest concentration employed in this test. Results are expressed in terms of nonimal concentration. Measured concentrations remained within the range 82-97% of nominal throughout the duration of study. (Mean 92%).

References

Primary Reference : **#HRCUR***
Douglas, M. T. Huntington Research Centre, Unpublished Report, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 9, (1993)

Study

End Point : **AQUATIC TOXICITY**
Chemical Name : **Dipentaerythritol**
CAS Number : **126-58-9**

Evaluations

Evaluation text : Summary: Ecotoxicological data indicate low toxicity to aquatic organisms. Water is the main environmental compartment exposed; however, this exposure is low.

References

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 9, (1993)

Study

End Point : **AQUATIC TOXICITY**
Chemical Name : **Dipentaerythritol**
CAS Number : **126-58-9**

Evaluations

Evaluation text : Summary: Conclusion: Based upon the available information, the initial assessment gave no evident grounds for concern. However, the assessment is considered to be limited by the available exposure data which only detailed a single site in Sweden. Recommendation: Effects: "Further tests not required" Exposure: "Further information required if available" Status: "Low current priority"

References

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)

Study

End Point	:	**AQUATIC TOXICITY**
Chemical Name	:	**Dipentaerythritol**
CAS Number	:	**126-58-9**
Study type	:	**LAB**
Geographic Area	:	**SWE**
Area Specifications	:	**S**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
ALGAE	**AQ**	**FRESH**					

Species/strain/system : Green algae (Scenedesmus subspicatus)(strain No CCAP 276/20)

Test Substance

Description of the test substance	:	White powder (stored in original container at room temperature in darkness)
Purity Grade	:	**96.2%**

Test Method and Conditions

Test method description	:	According to OECD Guideline 201. Cultured under continuous ilumination on an orbital shaker. GPL specified. Static test. Stability of test concentrations verified by chemical analysis.
Temperature	:	**24-+/-1 C**
(An)aerobic	:	**AEROB**

Exposure

Exposure Period	:	**24-72 h**
Dose / Concentration	:	**>=100 mg/l**
Exposure comments	:	Direct dispersion in algal media with the aid of ultrasonic disruption. Samples were taken at 0h, 24h, 48h and 72h and the absorbance measured at 665nm. The suspension was diluted to an absorbance of 0.042 prior to use.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
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EC50

Effective concentration for growth inhibition for 72h > or = 100mg/l EC50 based on nominal concentrations.

NEF

No observed effect concentration NOEC for 72h > 100mg/l

LOEC

Lowest observed effect concentration LOEC for 72h >100mg/l

Maximum tolerated concentration = 1mg/l

General Comments : Chemical analysis show that 94% to 133% (mean 114%) of added dipentaerythritol remained in the solution after 72 hours. 100mg/l was the highest concentration tested. Results are expressed in terms of nominal concentration. Measured concentrations remained within the range of 94-133% of nominal concentration throughout the duration of study (mean 114%).

References

Primary Reference : **#HRCUR***
Douglas, M. T. Huntington Research Centre, Unpublished Report, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)

Study

End Point : **AQUATIC TOXICITY**
Chemical Name : **Dipentaerythritol**
CAS Number : **126-58-9**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
CRUS	**AQ**	**BEHAV**					

Species/strain/system : Water flea (Daphnia magna) Straus

Test Substance

Description of the test substance : White powder (stored in original container at room temperature in darkness)
Purity Grade : **96.2%**

Test Method and Conditions

Test method description : OECD Guideline 202, part 1. GLP specified. Static test. EEC directive 67/548 annex V C2 as published in 84/449/EEC. Stability of test concentrations verified by chemical analysis. 1 test concentration (4 replicates), 1 control.
Temperature : **20-+/-2 C**

Exposure

Exposure Type : **ACUTE**
Exposure Period : **24-48 h**
Exposure comments : Direct dispersion in water with the aid of ultrasonic disruption.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
	NEF				

Effective concentration EC50 (immobilization) for 24h and 48h >=100mg/l. EC50 based on nominal concentrations.

BEHAV
NOEC

No observed effect concentration NOEC (immobilization) for 24h and 48h > or = 100mg/l.

General Comments : Chemical analysis show that 92% (82-97%) of added dipentaerythritol remained in the solution after 48h. Results are expressed in nominal concentration. Measured concentrations remained within the range of 82-97% of nominal throughout the duration of study (mean 92%). 100mg/l was the highest concentration employed in this test. Daphnia were considered to be immobilized if they were unable to swim for approximately 15 seconds after gentle agitation. (Criterion of effect)

References

Primary Reference : **#HRCUR***
Douglas, M. T. Huntington Research Centre, Unpublished Report, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 6, (1993)

Study

End Point : **AQUATIC TOXICITY**
Chemical Name : **Dipentaerythritol**
CAS Number : **126-58-9**
Study type : **LAB**
Geographic Area : **SWE**
Area Specifications : **S**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
FISH	**AQ**	**FRESH**					

Species/strain/system : Rainbow trout (Oncorhynchus mykiss), mean weight = 1.99g, mean length = 4.8cm

Test Substance

Description of the test substance : White powder (stored in original container at room temperature in darkness)
Purity Grade : **96.2%**

Test Method and Conditions

Test method description : OECD Guidelines 203. Semi static test. GLP specified. EEC directive 67/548 annex V C1 as published in 84/449/EEC. Test concentrations were ensured by daily renewal of test media and verified by chemical analysis.
Temperature : **14-+/-1 C**
pH : **7.2**
Dissolved Oxygen : **>10.1 mg/l**
(An)aerobic : **AEROB**

Exposure

Exposure Period : **3-96 h**
Dose / Concentration : **56-100 mg/l**
Exposure comments : Direct dispersion in water with the aid of ultrasonic disruption. 18mg/l, 32mg/l and 56mg/l were also tested for 6h, 24h, 48h and 72h. (Nominal concentrations).

Test Results

Organ	Effect	Rev.	OnSet	Sex	Affected in Exposed - Controls
SKIN	COLOR LOEC				

Lowest observed effect concentration (LOEC) (pigmentation) for 96h = 100mg/l

SKIN	COLOR NOEC				

No observed effect concentration (NOEC) (pigmentation) for 96h = 56mg/l

General Comments : The only marked reaction to exposure was increased pigmentation. Results are expressed in terms of nominal concentrations. Measured concentration remained within the range of 92-100% of nominal concentrations throughout the duration of study (mean 94%).

References

Primary Reference : **#HRCUR***

Douglas, M. T. Huntington Research Centre, Unpublished Report, (1992)

Secondary Reference : **!SIDSP***

OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)