FOREWORD INTRODUCTION

ISOCTYL ACRYLATE

CAS N°: 29590-42-9

Substance

End Point	:	**IDENTIFIERS, PHYSICAL AND CHEMICAL PROPERTIES**
Chemical Name	:	**2-Propenoic acid, isooctyl ester**
Common Name	:	**Isooctyl acrylate**
CAS Number	:	**29590-42-9**

Synonyms

Acrylic acid, isooctyl ester **IOA**

Properties & Definitions

Molecular Formula	:	**C11H20O2**
Molecular Weight	:	**184.2**
Boiling Point	:	**196.8C**
State	:	**liquid**
Flash Point	:	**91.0C**
Density	:	**0.88**
Vapour Pressure	:	**0.1333kPa (1.0mmHg) at 25C***
Octanol/Water Partition Coefficient	:	**log Pow = 3.93 at 25C**
Water Solubility	:	**12.44mg/l at 23.1C**
Colour	:	**Colourless**
Additives	:	**Methylethylhydroquinone (MEHQ) may be used as stabilizer at concentrations up to 20ppm.**
Impurities	:	**2-Propenoic acid, isononyl esters 3.16% (w/w), 2-propenoic acid, isoheptyl esters 1.62% (w/w), acrylate/acrylic acid adducts 0.45 (w/w), isooctyl alcohol 0.32% (w/w), 2-propenoic acid, isodecyl esters 0.05% (w/w), 2-propenoic acid, isohexyl esters 0.02 (w/w).**
General Comments	:	IOA polymerizes at elevated temperatures. *VP = 0.33kPa (2.5mmHg) at 50C is also reported. The calculated log Pow for IOA agrees well with the measured value for 2-ethylhexyl acrylate 367. Viscosity: 2cps. Reactivity: violent, polymerization may result on exposure to heat.

Overall Evaluation

EXPOSURE

General discussion: IOA is manufactured in the U.S. by a single company (3M, St. Paul, MN) as an intermediate used for the synthesis of acrylic polymers. IOA monomer is not sold commercially. One product containing unreacted IOA as a component is sold by 3M as a concrete sealer for use by professional tradespeople. The IOA monomer in this product, about 1000kg/year, is polymerized at the job site. Trace amounts of unreacted IOA (typically less than 0.1% by weight) are present in certain industrial and consumer products (e.g. adhesive tapes) sold by 3M.

Environmental exposure: waste monomer is incinerated in a hazardous waste incinerator. There is no intentional discharge to water. Airborne emissions from 3M facilities are less than 1ppm (the limit of detection) for expected worst case operations. Industrial and consumer products containing trace amounts of unreacted IOA may be landfilled or incinerated after use. IOA is rapidly biodegraded aerobically and is expected to be rapidly oxidized in the atmosphere.

Consumer exposure: there are no known consumer uses for IOA monomer. Trace residual amounts of unreacted IOA (typically less than 0.1% by weight) are present in certain consumer products sold by 3M.

Occupational exposure: approximately 200 3M employees work in areas in which exposure to IOA, either as the liquid or vapor, may occur. Certain processes involving IOA are open systems in which IOA vapor may be generated. Ventilation systems are used to keep IOA vapor concentrations below the 3M Exposure Guideline of 5ppm (8-hour TWA). This guideline was established in 1981 and is based on the TLV established by the ACGIH for ethyl acrylate. Air monitoring studies of 3M processing and manufacturing areas have typically indicated

airborne IOA concentrations to be less than 1ppm. impermeable gloves are required to be worn by all employees who may come into contact with unreacted IOA monomer.

TOXICITY

Human toxicity: on acute exposure, IOA is practically non-toxic orally to rats and is slightly irritating to the eyes and skin of rabbits. IOA is expected to be a weak skin sensitizer by analogy to other low molecular weight acrylate esters. Repeated dermal exposure to IOA caused no systemic toxicity or reproductive/developmental effects at doses which caused moderate dermal irritation. IOA is not genotoxic in vitro and did caused no increased incidence of cancers in a limited dermal carcinogenicity study in mice.

Ecotoxicity: IOA is moderately to highly toxic to fathead minnows, daphnia, algae and bacteria. Bioconcentration is unlikely due to its rapid biodegradation and, by analogy to other acrylate esters, its rapid hydrolysis in vivo.

INITIAL ASSESSMENT

The potential for human exposure to IOA is very limited and its toxicity is low. Based on its use and hazard profile, the only anticipated human health risks posed by IOA are possible eye and skin irritation and allergic contact dermatitis among workers involved in its production or use. These effects are mitigated by the use of gloves by workers who may come into contact with the material.

IOA is manufactured in the U.S. by a single company as an intermediate for the synthesis of acrylic polymers. About 1000kg/year of IOA monomer is sold as a component of a concrete sealing product which is polymerized at the job site. Waste monomer is incinerated. There is no intentional discharge of IOA to water. Although IOA is significantly toxic to aquatic organisms and bacteria it is readily biodegraded. Airborne IOA concentrations in emissions from processing operations are typically less than 1ppm. Small quantities of unreacted IOA monomer are expected to reach landfills as a trace residual contaminant of certain industrial and consumer products. Atmospheric oxidation of IOA is expected to be rapid. There are no known or anticipated exposures to terrestrial organisms.

CONCLUSIONS AND RECOMMENDATIONS

Based on its low occupational exposure potential, its low toxicity in in vitro and mammalian studies, its limited release to the environment and its predicted rapid environmental biodegradation, IOA is considered a low priority for additional human health or environmental effects testing at this time.

Production-Trade

Chemical Name	:	**Isooctylacrylate**
CAS Number	:	**29590-42-9**
Geographic Area	:	**USA**
General Comments	:	No non-confidential data available. The 3M company, St Paul, MN is believed to be the only manufacturer of IOA.

References

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

Uses

Chemical Name : **Isooctylacrylate**
CAS Number : **29590-42-9**
Geographic Area : **USA**

Use

Quantity	*Year*	*Comments*
>99 %		An intermediate for the synthesis of acrylic polymers.
1000 kg		A single product containing unreacted IOA as an intentional component is sold by 3M company as a concrete sealer for use by professional tradespeople. IOA in this product is polymerized on the job site.
<0.1 %		Trace amounts of unreacted IOA monomer are present in a number of industrial and consumer products (e.g. adhesive tapes sold by 3M company).

References

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

Study

End Point	:	**Pathway into the Environment and Environmental Fate.**
Chemical Name	:	**Isooctylacrylate**
CAS Number	:	**29590-42-9**

Test Method and Conditions

Test method description : Method of Hunter, R., Faulkner, L., Culver, F., and Hill, J., 1985, QSAR, structure-activity based chemical modelling and information software. (Montana State University, Montana, U.S.A.)

Quantity Transported

Medium	*to Medium*	*Quantity*	*Time*	*Year*	*to Year*
	to AIR	**<1.0 mg/l**			

For expected worst case operations. (Reported as <1.0ppm, which is the detection limit).

to AQ **FRESH**

No intentional discharge to water.

to SOIL **WASTE**

Unspecified small amounts of unreacted IOA monomer are expected to reach landfills as a trace residual contaminant of certain industrial and consumer products.

to AIR **9.77 %**

According to "Neely 100-day partitioning pattern" (QSAR)

to AQ **50.83 %**

According to "Neely 100-day partitioning pattern" (QSAR)

to SOIL **GRND** **20-38 %**

According to "Neely 100-day partitioning pattern" (QSAR)

to SED **19.02 %**

According to "Neely 100-day partitioning pattern" (QSAR)

References

Secondary Reference : **!SIDSP***

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

Study

End Point	:	**HUMAN INTAKE AND EXPOSURE**
Chemical Name	:	**Isooctylacrylate**
CAS Number	:	**29590-42-9**

Evaluations

Evaluation text	:	3M is believed to be the only manufacturer of IOA. It is estimated that approximately 200 3M employees work in areas in which exposure to IOA, either as the liquid or vapor, could occur. Certain processes involving IOA are open systems in which IOA vapor may be generated. Ventilation systems are used to keep IOA vapor concentrations below the 3M Exposure Guideline of 5ppm (8h TWA). Air monitoring studies of 3M processing and manufacturing areas have typically indicated airborne IOA concentrations to be less than 1 ppm. Impermeable gloves are required to be worn by all employees who may come into contact with unreacted IOA monomer.

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	:	**Isooctylacrylate**
CAS Number	:	**29590-42-9**
Study type	:	**LAB**
Geographic Area	:	**USA**

Test Subject

Organism	*Medium*	*Specification*
	AQ	

Test Substance

Impurities	:	**Methylethylhydroquinone 10-15ppm**

Test Method and Conditions

Test method description	:	OECD Guideline 301d. Closed system.
(An)aerobic	:	**AEROB**

Exposure

Exposure Period	:	**5-28 d**

Test Results

Quantity		*Time*	*Comments on result*
72 %	AV	**5 d**	In the uninhibited samples. Dissolved oxygen levels declined in proportion to test substance levels.
100 %	AV	**15-28 d**	In the uninhibited samples. Dissolved oxygen levels declined in proportion to test substance levels.
0.4 %	AV	**5 d**	In the inhibited samples with no oxygen depletion.
30 %	AV	**15 d**	In the inhibited samples with no oxygen depletion.
6.9 %	AV	**28 d**	In the inhibited samples with no oxygen depletion
			The sodium benzoate reference solution showed dissolved oxygen loss of 56, 74 and 83% at 5, 15, 28 days, respectively.

General Comments	:	Biodegradation results indicate that IOA (the test substance) is treatable in sewage systems.

References

Primary Reference : **#UR3MD***
Unpublished 3M Data Company

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

Study

End Point : **BIODEGRADATION**
Chemical Name : **Isooctylacrylate**
CAS Number : **29590-42-9**

Evaluations

Evaluation text : Information on treatability of the substance: biodegradation results indicate IOA is treatable in sewage systems.

References

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

Study

End Point	:	**PHOTODEGRADATION**
Chemical Name	:	**Isooctylacrylate**
CAS Number	:	**29590-42-9**

Test Method and Conditions

Test method description	:	Estimate by the method of William Meylan and Philip Howard, 1990. Atmospheric oxidation program, version 1.10, Syracuse Research Corporation, Syracuse, N.Y., U.S.A.

Test Results

Quantity	*Time*	*Comments on result*
50 %	**6.5 d**	Half life due to reaction with ozone at an ozone concentration of 7 x E+11 mol/cm3.

References

Primary Reference	:	**#UR3MD*** Unpublished 3M Data Company
Secondary Reference	:	**!SIDSP*** OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)

Study

End Point	:	**HYDROLYSIS**
Chemical Name	:	**Isooctylacrylate**
CAS Number	:	**29590-42-9**

Test Method and Conditions

Test method description	:	Estimated by the method of william Meylan and Philip Howard, 1990. Atmospheric oxidation Program, version 1.10. Syracuse Research Corporation, Syracuse, N.Y. U.S.A.

Test Results

Quantity	*Time*	*Comments on result*
50 %	**11 h**	T/2 due to reaction with hydroxyl radical at a hydroxyl radical concentration of 5xE+5 mol/cm3. (Half-life reported as 0.46 day).

References

Primary Reference	:	**UR3MD*** Unpublished 3M Data Company
Secondary Reference	:	**!SIDSP*** OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)

Study

End Point	:	**BIOCONCENTRATION**
Chemical Name	:	**Isooctylacrylate**
CAS Number	:	**29590-42-9**

Evaluations

Evaluation text	:	Bioaccumulation is not anticipated since IOA is biodegradable and similar acrylate esters are readily metabolized in vivo.

References

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

Study

End Point	:	**MAMMALIAN ACUTE TOXICITY**
Chemical Name	:	**Isooctylacrylate**
CAS Number	:	**29590-42-9**
Species/strain/system	:	Sprague-Dawley strain
Dose / Concentration	:	**5000 mg/kg BW**

Test Method and Conditions

Test method description : 5 male and female rats were fasted overnight and administered undiluted substance monomer at a dose of 5g/kg body weight by oral gavage. OECD 401; GLP: YES

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RAT			**ORL**	**ADULT**		**LD50**	Rat oral LD50 was greater than 5g/kg body weight under the condition of the study.

General Comments : Test results: no treatment-related mortality occurred during the study. Average body weights for male and female rats increased 43% and 13%, respectively, over the course of the study. Clinical signs consistent with gastrointestinal irritation (diarrhea) and mild central nervous system depression (ataxia and hypoactivity) were observed in most of the animals for the first two days after dosing. No significant gross lesions were noted at necropsy.

References

Primary Reference : **JTEHD6**
Gordon, S. C. et al. Journal of Toxicology and Environmental Health, 34, 279-296, (1991)

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

Study

End Point : **MAMMALIAN TOXICITY**
Chemical Name : **Isooctylacrylate**
CAS Number : **29590-42-9**

Evaluations

Evaluation text : On acute exposure, the substance is practically non-toxic orally to rats. Repeated dermal exposure to the substance caused no systemic toxicity effects at doses which caused moderate dermal irritation.

References

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

Study

End Point : **MAMMALIAN TOXICITY**
Chemical Name : **Isooctylacrylate**
CAS Number : **29590-42-9**

Evaluations

Evaluation text : Human toxicity: On acute exposure,IOA is practically non-toxic orally to rats and is slightly irritating to the eyes and skin of rabbits IOA is expected to be a weak skin sensitizer by analogy to oher low molecular weight acrylate esters. Repeated dermal exposure to IOA caused no systemic toxicity or reproductive/developmental effects at doses which caused moderate dermal irritation.IOA is not genotoxic in vitro and did caused no increased incidence of cancers in a limited dermal carcinogenicity study in mice.

References

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

Study

End Point : **MAMMALIAN TOXICITY**
Chemical Name : **Isooctylacrylate**
CAS Number : **29590-42-9**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RAT			**SKN**	**ADULT**			

Species/strain/system : F344 rats strain

Test Substance

Vehicle - Solvent : Acetone

Test Method and Conditions

Test method description : OECD Combined Repeated Dose and Reproductive/Developmental Screening Test.

Exposure

Exposure Type : **SHORT**
Dose / Concentration : **1-25 %**
Exposure comments : Dermal application of 0%, 1%, 7.5%, 15% or 25% of the substance solution in acetone at a constant dose volume of 100ul/day. Due to marked irritation at the treatment site in the high dose group the concentration was lowered to 20% after one week.

Test Results

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

Dermal irritation was observed in the high dose group and included slight to moderate erythema and slight desquamation .

SKIN	**IRRIT** **CIRC** **STRUC**			**F**	

Dermal irritation was observed in the high dose group and included slight erythema, slight to moderate desquamation and slight fissuring.

BLOOD	**BIOCH**			**M**	

Minimally higher serum aspartate and alanine aminotransferases levels were observed in the high dose group.

General Comments : There were no significant differences (as compared with controls) in body weights, absolute organ weights, organ to body weights percentages, or macroscopic and microscopic findings for any dose group.

References

Primary Reference : **#UR3MD***
Unpublished 3M Data Company, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 12, (1993)

Study

End Point : **CARCINOGENICITY**
Chemical Name : **Isooctylacrylate**
CAS Number : **29590-42-9**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
MOUSE			**SKN**	**74-79 d**	**M**	**40/GROUP**	

Species/strain/system : C3H/HeJ mice strain

Test Substance

Vehicle - Solvent : Acetone

Test Method and Conditions

Test method description : EPA recommendations for dermal screening for carcinogenisis of acrylates/methylacrylates. GLP: NO.

Exposure

Exposure Type : **LONG**
Frequency : **3 x/wk**
Dose / Concentration : **5 % v/v**
Exposure comments : Carcinogenicity potential was studied in a lifetime dermal bioassay. 25ul of the substance monomer or acetone (negative solvent control) were applied to shaved backs of the animals three days/week. Daily observation for mortality and monthly examination for skin lesions were done. Necropsy was performed on all animals.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
SKIN	**CIRC**			**M**	
	CHNG				

Gross and microscopic dermal lesions observed in the IOA-treatment group were: edema (1/39 animals), surface crusting (10/39), epidermal vesiculation (1/39), hyperkeratosis (27/39).

SKIN	**STRUC**				
	NEO				

Epidermal hyperplasia (16/39) and benign melanoma (1/39) were reported.

	NEF				

No significant difference in mean survival time between treatment and control groups.

General Comments : Microscopic examination of the melanoma showed that the cells were well differentiated with no indication of nuclear or cytoplasmic pleomorphism or atypia. Study performed at Bushy Run Research Center, Export, PA in April 1979.

References

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 16-17, (1993)

Study

End Point	:	**MUTAGENICITY**
Chemical Name	:	**Isooctylacrylate**
CAS Number	:	**29590-42-9**
Study type	:	**LAB**

Test Subject

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

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

Test Substance

Vehicle - Solvent	:	Dimethylsulfoxide (DMSO)

Test Method and Conditions

Test method description	:	Essentially similar to OECD 471; GLP: NO

Exposure

Exposure Type	:	**SHORT**
Dose / Concentration	:	**0.005-0.5 ul/ PLATE**
Exposure comments	:	Ames salmonella microsome assay with and without metabolic activation was performed in quadruplicate with 6 concentrations. Negative controls were run with DMSO and positive controls with 2-anthramine, sodium azide, 9-aminoacridine or 2-nitrofluorene.

Test Results

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

The highest concentration tested: 0.5ul/plate, produced pinpoint colonies, (indication of toxicity), in strain TA100.

NEF

No significant increase in revertants were observed at any IOA concentration, either with or without metabolic activation.

General Comments	:	IOA was not considered mutagenic under the conditions of the study.

References

Primary Reference	:	**JTEHD6** Gordon, S. C. et al. Journal of Toxicology and Environmental Health, 34, 297-308, (1991)
Secondary Reference	:	**!SIDSP*** OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 12, (1993)

Study

End Point : **MUTAGENICITY**
Chemical Name : **Isooctylacrylate**
CAS Number : **29590-42-9**
Study type : **LAB**

Test Subject

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

Species/strain/system : Saccharomyces cerevisiae D3 strain

Test Substance

Vehicle - Solvent : DMSO

Test Method and Conditions

Test method description : Testing for mitotic recombinogenic activity following the method of Zimmerman and Schwater. GLP: NO

Exposure

Exposure Type : **SHORT**
Dose / Concentration : **0.00005-0.05 % v/v**
Exposure comments : Test with and without metabolic activation was run at seven concentrations of IOA. DMSO was used for negative control and 1,2,3,4-diepoxybutane for the positive control.

Test Results

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

Toxic effect was observed at concentration of 0.05% with metabolic activation and at 0.01% without metabolic activation.

NEF

IOA was not mutagenic under the test conditions.

General Comments : Study performed at SRI International, Menlo Park, CA, in May 1980.

References

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 13-14, (1993)

Study

End Point : **MUTAGENICITY**
Chemical Name : **Isooctylacrylate**
CAS Number : **29590-42-9**
Study type : **LAB**

Test Subject

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

Species/strain/system : Mouse embryo C3H/10T1/2 cell line

Test Substance

Vehicle - Solvent : Acetone

Test Method and Conditions

Test method description : Cell transformation potential according to Bertram; GLP: YES. Transformation was classified according to the criteria of Reznikoff.

Exposure

Dose / Concentration : **0.0049-0.039 ul/ml**
Exposure comments : Four concentrations, 12 plates/concentration. Acetone was used for the negative control tests and 7,12-dimethylbenz(a)anthracene for the positive control. (Cancer Res. 33, 3231, 1973)

Test Results

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

No type II or type III transformed foci were observed in any of the IOA cultures.

	CELL				

Lowest concentration producing cell toxicity was 0.0098ul/ml, without metabolic activation.

General Comments : IOA did not cause morphological transformation of C3H/10T1/2 cells in this test system.

References

Primary Reference : **CNREA8**
Bertram. Cancer Research, 37, 514, (1977)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 14, (1993)

Study

End Point : **MUTAGENICITY**
Chemical Name : **Isooctylacrylate**
CAS Number : **29590-42-9**
Study type : **LAB**

Test Subject

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

Species/strain/system : Mouse lymphoma, L5178Y TK +/- cells

Test Substance

Vehicle - Solvent : Dimethylsulfoxide

Test Method and Conditions

Test method description : According to a modification of the method of Clive and OECD 476. GLP: YES

Exposure

Dose / Concentration : **0.0015-0.11 ul/ml**
Exposure comments : Mutagenic activity assay was performed with and without metabolic activation at concentrations 0.0084-0.11ul/ml and 0.0015-0.02 respectively. (In triplicates). DMSO was used in the negative control. Ethylmethanesulfonate and 7,12-dimethylbenz(a)anthracene were used in the positive control.

Test Results

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

One concentration without metabolic activation and three concentrations with metabolic activation had mutant frequencies which were two-fold greater than the solvent control. Dose related increases were not observed.

CELL

Lowest concentration producing cell toxicity was 0.063ul/ml, without metabolic activation was 0.0036ul/ml. IOA was not considered mutagenic under the conditions of the assay.

References

Primary Reference : **MUREAV**
Clive, D. and Spencer, J. F. S. Mutation Research, 31, 17, (1975)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 15, (1993)

Study

[redacted]

End Point : **IRRITATION**
Chemical Name : **Isooctylacrylate**
CAS Number : **29590-42-9**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RBT			**SKN**				

Species/strain/system : New Zealand rabbits strain

Test Method and Conditions

Test method description : U.S. Federal Hazardous Substances Act test guidelines. 0.5ml undiluted samples to both abraded and intact skin. GLP: NO.

Test Results

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

Slight erythema (no edema) was noted at each test site in all of the test animals at both the 1 and 48 hour examination.

SKIN	**IRRIT**

The mean primary dermal irritation score was 1.0 at both examination times.

General Comments : Conclusions: IOA was slightly irritating under the conditions of the study.

References

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 11, (1993)

Study

[redacted]

End Point : **IRRITATION**
Chemical Name : **Isooctylacrylate**
CAS Number : **29590-42-9**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RBT			**OCU**	**ADULT**			

Species/strain/system : New Zealand rabbits

Test Method and Conditions

Test method description : U.S. Federal Hazardous Substances Act test guidelines. GLP: NO.

Test Results

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

At the 1 hour examination all animals showed slight discharge from the treated eye and 4/6 had slight conjunctival swelling. No evidence of irritation was noted at any other examination time up to 7 days.

General Comments : IOA monomer was slightly irritating under the conditions of the study.

References

Secondary Reference : **!SIDSP***

OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 11, (1993)

Study

End Point : **REPRODUCTION**
Chemical Name : **Isooctylacrylate**
CAS Number : **29590-42-9**
Study type : **LAB**

Test Subject

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

Species/strain/system : F344 rats

Test Substance

Vehicle - Solvent : Acetone

Test Method and Conditions

Test method description : OECD Combined Repeated Dose and Reproductive/Developmental Screening test. GLP: YES.

Exposure

Exposure Type : **SHORT**
Dose / Concentration : **1-25 %**
Exposure comments : Dermal application of 0%, 1%, 7.5%, 15% or 25% of IOA solution in acetone at a volume dose of 100ul/day. Due to marked irritation at the treatment site in the high dose group, the concentration was lowered to 2% after one week.

Test Results

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

No overt maternal toxicity was noted at any dose level tested. The no-observable-effect-level NOEL for reproductive and developmental testing was 20%* IOA.

General Comments : *Severe dermal irritation at infusion site precluded dosing at higher concentrations. For other dermal effects see the results of repeated dose toxicity testing.

References

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 17, (1993)

Study

End Point	:	**AQUATIC ACUTE TOXICITY**
Chemical Name	:	**Isooctylacrylate**
CAS Number	:	**29590-42-9**
Species/strain/system	:	Fathead minnows juvenile (Pimephales promelas) mean length=1.6cm
Exposure Period	:	**96 h**

Test Method and Conditions

Test method description	:	OECD Guideline 203

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
FISH	**AQ**	**FRESH**				**LC50**	Lethal concentration LC50 = 0.67mg/l for 96h. NOEC (no observed effect concentration) = 0.34mg/l.

General Comments : Results based on mean measured concentration.

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	:	**Isooctylacrylate**
CAS Number	:	**29590-42-9**
Study type	:	**LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
BACT	**AQ**	**MARIN**					

Species/strain/system : Bacteria bioluminiscent (Photobacterium phosphorium)

Test Substance

Description of the test substance : Test substance: lot 1419

Test Method and Conditions

Test method description : Microtox(R) Toxicity Analyser, Model 2055 (Microbics Corp.) which measures the reduction in bioluminiscence of naturally occuring marine bacterium in response to chemical toxicant.

Exposure

Exposure Period	:	**5-15 mi**
Dose / Concentration	:	**0.034-0.27 mg/l**
Exposure comments	:	Two separate tests were run with four concentrations of test substance, ranging from 0.034-0.27mg/l.

Test Results

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

Inhibitory concentration IC50 for reduction in bioluminescence = 0.163mg/l for 5 minutes and 0.168mg/l for 15 minutes.

References

Primary Reference : **#UR3MD***
Unpublished 3M Data Company

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 : **Isooctylacrylate**
CAS Number : **29590-42-9**
Study type : **LAB**

Test Subject

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

Species/strain/system : Water flea (Daphnia magna), less than 24h old neonates

Test Substance

Description of the test substance : Test substance: lot 1419

Test Method and Conditions

Test method description : OECD Guideline 202. GLP specified. Immobilization test.

Exposure

Exposure Type : **ACUTE**
Exposure Period : **48 h**
Dose / Concentration : **<0.24-0.77 mg/l**

Test Results

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

Effective Concentration for immobilization, EC50 = 0.77mg/l for 48h (test result based on initial measured concentrations). EC50 = 0.40mg/l for 48h (test result based on mean measured concentrations).

	BEHAV				
	NOEC				

No Observed Effect Concentration NOEC = <0.56mg/l (test result based on initial measured concentrations). NOEC = <0.24mg/l for 48h. (Test result based on mean measured concentrations).

References

Primary Reference : **#UR3MD***
Unpublished 3M Data Company

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	:	**Isooctylacrylate**
CAS Number	:	**29590-42-9**
Study type	:	**LAB**

Test Subject

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

Species/strain/system : Water flea (Daphnia magna), less than 24h old neonates

Test Substance

Description of the test substance : Test substance: lot 3290

Test Method and Conditions

Test method description : OECD Guideline 202. GLP specified.

Exposure

Exposure Type	:	**LONG**
Exposure Period	:	**14-21 d**
Dose / Concentration	:	**<0.13-2.93 mg/l**

Test Results

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

Effective Concentration, EC50 = 2.93mg/l for 14 days, EC50 = 2.62mg/l for 21 days. (Test results based on initial measured concentrations).

Inhibitory concentration IC50 = 1.50mg/l for 14 days. IC50 = 1.72mg/l for 21 days. (Test results based on initial measured concentrations).

NOEC

No Observed Effect Concentration NOEC = 0.79mg/l for 14 days. NOEC = <0.20mg/l for 21 days. (Test result based on initial measured concentrations).

EC50

EC50 = 1.99mg/l for 14 days. EC50 = 1.61mg/l for 21 days. (Test result based on mean measured concentrations).

IC50 = 0.97mg/l for 14 days. IC50 = 1.02mg/l for 21 days. (Test result based on mean measured concentrations).

NOEC

NOEC = 0.51mg/l for 14 days. NOEC = <0.13mg/l for 21 days. (Test result based on mean measured concentrations).

References

Primary Reference : **#UR3MD***
Unpublished 3M Data Company

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 : **Isooctylacrylate**
CAS Number : **29590-42-9**
Study type : **LAB**

Test Subject

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

Species/strain/system : Fathead minnows juvenile (Pimephales promelas) mean length=1.6cm

Test Method and Conditions

Test method description : OECD Guideline 203

Exposure

Exposure Period : **96 h**

Test Results

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

No Observed Effect Concentration, NOEC = 0.34mg/l for 96h

General Comments : Test result based on mean measured concentrations.

References

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

Substance

Chemical Name : **Isooctylacrylate**
CAS Number : **29590-42-9**

Description

Option for disposal: all waste IOA monomer generated by 3M is incinerated in a hazardous waste incinerator. There is no intentional discharge to water. It is anticipated that consumer and industrial products containing trace amounts of unreacted IOA monomer (typically less than 0.1% by weight) may be landfilled or incinerated after their use.

References

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