FOREWORD INTRODUCTION

2,3,4-TRICHLORO-1-BUTENE

CAS N°: 2431-50-7

Substance

End Point	:	**IDENTIFIERS, PHYSICAL AND CHEMICAL PROPERTIES**
Chemical Name	:	**1-Butene, 2,3,4-trichloro-**
Common Name	:	**2,3,4-Trichloro-1-butene**
CAS Number	:	**2431-50-7**
RTECS Number	:	**EM9046000**

Synonyms

TCB **1,2,3-Trichlorobutene-3**

Properties & Definitions

Molecular Formula	:	**C4H5Cl3**
Molecular Weight	:	**159.44**
Melting Point	:	**-52C**
Boiling Point	:	**155C-162C**
State	:	**Gas predominantly**
Flash Point	:	**63C, liquid***
Density	:	**1.34g/cm3 at 20C**
Vapour Pressure	:	**0.23kPa(177mmHg) at 20C**
Octanol/Water Partition Coefficient	:	**log Pow = 2.4 calculated**
Water Solubility	:	**600mg/l at 20C**
General Comments	:	*The given FP determined by the method DIN 51578.

Overall Evaluation

SIDS INITIAL ASSESSMENT

This chemical warrants special attention on the basis of its carcinogenic potencial. Exposure has to be avoided by all means. The compound should be produced and processed in closed systems only.

SHORT SUMMARY OF THE REASONS SUPPORTING THE RECOMMENDATIONS

Trichlorobutene has a high acute inhalation toxicity. At repeated dose toxicity, neuro-epithesioma and maligne were found. No further work recommended.

GENERAL DISCUSSION

The production level of TCB in Germany was about 1000-2000 tons in 1989. TCB is not exported. There is no information about imported volumes.
Data on production volumes in other countries are not available.

The compound is produced and used in closed systems only. It is only used as an intermediate for the synthesis of chloroprene. There is no public use.

ENVIRONMENTAL EXPOSURE

Solid and gaseous wastes are treated by incineration and liquid wastes are directed to a waste water treatment plant.

There is no information about environmental monitoring data available.
Based on the physicochemical properties of the compound, there is a tendency to pass from water to air and a low tendency to pass from water to sediment.
Bioaccumulation may be expected to a small extent.
TCB is not readily biodegradable.

Hydrolytical degradation or direct photodegradation in water are not to be expected.
The half-life due to photochemical-oxidative degradation in the atmosphere is about 1.4 days (calculation

according to Atkinson).

CONSUMER EXPOSURE

The described use pattern for Germany excludes any consumer exposure. There are no information available about a possible public use of TCB in other countries. The compound is produced and used in closed systems only.

Based on analytical monitoring performed by the German producer, exposure concentration at the workplace (production and processing) is as follows:
production : 0.01-0.03mg/m3
processing: below the detection limit of 0.007mg/m3

TOXICITY

HUMAN TOXICITY

a) Acute toxicity

The acute oral toxicity of trichlorobutene is moderate (rat: LD50 351mg/kg body weight). After inhalation, high toxicity must provisionnally be assumed, since it is not currently possible to weigh the different LC50 values (430 up to 1722mg/m3/4h) as study details are missing.

b) Repeated dose toxicity

Because of the strong irritant action on the mucosa after repeated inhalation (rat: 102mg/m3, 4h/d, 10 days) there are morphologically detectable changes in the airways and the lungs. After long term inhalation exposure (rats: 2ppm, 6h/d, 5d/week, for 12 weeks followed by 88 weeks at 1.5ppm), in the nasal cavities, neuro-epithelioma and maligne neurinoma were found.
In another study a NOAEL of 0.1ppm was derived.

c) Genetic toxicity

The result of the single available in vivo study (rats: dominant lethal test) shows no mutagenic potential. However, with bacteria or yeast, trichlorobutene induced an elevated gene mutation rate.

d) Other toxicological endpoints

Local action on the skin and the eye may lead to erosions.

AQUATIC ORGANISMS

The available test results could not be validated.
At the OECD review meeting it was considered that no further testing was needed because of lack of exposure in the environment.

Production-Trade

Chemical Name	:	**1-Butene, 2,3,4-trichloro**
CAS Number	:	**2431-50-7**
Geographic Area	:	**EUR**
Area Specifications	:	**W**

Production

Quantity	*Year*
1000-2000 T - P	**1989**

References

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

Processes

Chemical Name : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**

Process

Process comments : The compound is produced and used in closed systems, only.

References

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

Uses

Chemical Name : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**
Geographic Area : **EUR**
Area Specifications : **W**

Use

Quantity	*Year*	*Comments*
1000-2000 T	**1989**	It is only used as an intermediate for the synthesis of chloroprene.

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 : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**

Quantity Transported

Medium	*to Medium*	*Quantity*	*Time*	*Year*	*to Year*
AQ	**to AIR**				
AQ	**to SED**				

General Comments : Based on physicochemical properties of the compound, there is a tendency to pass from water to air and a low tendency to pass from water to soil.

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	:	**1-Butene, 2,3,4-trichloro**
CAS Number	:	**2431-50-7**
Species/strain/system	:	Water

Test Method and Conditions

Test method description	:	Closed bottle test (28d)
(An)aerobic	:	**AEROB**

Test Results

Quantity		*Time*	*Comments on result*
0 %	LOSS	**28 d**	Not biodegradable

References

Primary Reference :

#BAYUR*

Bayer AG Tests, (1988)

Secondary Reference :

!SIDSP*

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

Study

End Point	:	**PHOTODEGRADATION**
Chemical Name	:	**1-Butene, 2,3,4-trichloro**
CAS Number	:	**2431-50-7**

Test Results

General Comments	:	The authors suggest that based on structure, direct photodegradation in water is possible but no further reasoning is presented.

References

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

Study

End Point	:	**HYDROLYSIS**
Chemical Name	:	**1-Butene, 2,3,4-trichloro**
CAS Number	:	**2431-50-7**

Test Results

General Comments	:	The authors suggest that based on structure, dehydrochlorination in water is possible but no further reasoning is presented.

References

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

Study

End Point	:	**OXIDATION**
Chemical Name	:	**1-Butene, 2,3,4-trichloro**
CAS Number	:	**2431-50-7**

Test Results

Quantity		*Time*	*Comments on result*
50 %	LOSS	**1.4 d**	Calculated half-life connected with photochemical-oxidative degradation (Atkinson).

References

Secondary Reference :

!SIDSP*

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

Study

End Point	:	**BIOCONCENTRATION**
Chemical Name	:	**1-Butene, 2,3,4-trichloro**
CAS Number	:	**2431-50-7**

Test Results

General Comments	:	Based on water solubility and n-octanol/water partition coefficient, bioaccumulation to a small extent may be expected.

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 : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**

Dose / Concentration : **351 mg/kg BW**
Exposure comments : Acute oral toxicity in the rat was tested using several doses; 351mg/kg body weight is the only dose reported.

Test Results

Organism	Medium	Spec.	Route	Lifestage	Sex	Effect	Effect Comments
RAT			**ORL**	**ADULT**		**LD50**	Oral LD50 for rats was established at dose level of 351mg/kg body weight.

References

Primary Reference : **ZKMAAX**
Gizhlaryan, M. S. Zhurnal eksperimental'noi biologii klinicheskoi meditsiny (Journal of Experimental and Clinical Medicine), 21, 590-596, (1981)

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

Study

End Point : **MAMMALIAN ACUTE TOXICITY**
Chemical Name : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**

Dose / Concentration : **206 mg/kg BW**

Test Results

Organism	Medium	Spec.	Route	Lifestage	Sex	Effect	Effect Comments
MOUSE			**ORL**	**ADULT**		**LD50**	

References

Primary Reference : **ZKMAAX**
Gizhlaryan, M. S. Zhurnal eksperimental'noi biologii klinicheskoi meditsiny (Journal of Experimental and Clinical Medicine), 21, 590-596, (1981)

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

Study

End Point	:	**MAMMALIAN ACUTE TOXICITY**
Chemical Name	:	**1-Butene, 2,3,4-trichloro**
CAS Number	:	**2431-50-7**
Exposure Period	:	**4 h**
Dose / Concentration	:	**>1722 mg/m3**
Exposure comments	:	Inhalation toxicity in rats was tested with unspecified range of dosage and duration. 1722mg/m3 was the only reported dose.

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RAT			**IHL**	**ADULT**		**LC50**	Inhalation LC50 for rats was established at dose level of 1722mg/m3.

References

Primary Reference : **ZKMAAX**

Gizhlaryan, M. S. Zhurnal eksperimental'noi biologii klinicheskoi meditsiny (Journal of Experimental and Clinical Medicine), 21, 590-596, (1981)

Secondary Reference : **!SIDSP***

OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 15, (1993)

Study

End Point : **MAMMALIAN TOXICITY**
Chemical Name : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RAT			**IHL**		**M**		
					F		

Exposure

Exposure Type : **SHORT**
Exposure Period : **4 wk**
Frequency : **5 d/wk**
6 h/d
Dose / Concentration : **0.55-15.5 ppm**
Exposure comments : Concentrations of 0, 0.55, 2.0, 8.1 and 15.5ppm were used for male and female rats. It was followed by 2 weeks observation: biochemistry, haematology and clinical pathology were assessed.

Test Results

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

No Observed Adverse Effect Level was established to be 0.55ppm.

DEATH

Mortality was increased at 8.1 ppm and was 100% at dose level of 15.5ppm.

LUNG **SIZE**

Increased relative weight of lungs was observed at dose levels of 2.0 and 8.1ppm.

LUNG **STRUC**
NOSE

Hyperplasia and degenerative metaplasia of the epithelium of lung, nose and bronchi at the doses of 2.0 and 8.1ppm.

References

Primary Reference : **#TNOTC***
Tests CIVO Institute, TNO, (1981)

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

Study

End Point : **MAMMALIAN TOXICITY**
Chemical Name : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RAT			**IHL**		**M**		
					F		

Exposure

Exposure Type : **SHORT**
Dose / Concentration : **0.1-2.5 ppm**
Exposure comments : Doses of 0, 0.1, 0.5, 2.5 ppm were administered in rats via inhalation for 6 hours/day, 5 days/week for 13 weeks.

Test Results

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

No Observed Adverse Effect Level was 0.1 ppm

LUNG	**SIZE**

Increased relative lung weight was observed at dose levels of 0.5 and 2.5ppm.

LUNG	**STRUC**

Degenerative metaplasia and hyperplasia of the respiratory tract epithelium was observed at dose level of 2.5ppm.

References

Primary Reference : **#TNOTC***
Tests CIVO Institute, TNO, (1981)

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

Study

End Point : **MAMMALIAN TOXICITY**
Chemical Name : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**
Study type : **LAB**

Test Subject

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

Exposure

Exposure Type	:	**SHORT**
Exposure Period	:	**2 wk**
Frequency	:	**4 h/d** **5 d/wk**
Dose / Concentration	:	**102-268 mg/m3**

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
	DEATH				**2/6**

Reported at dose level of 268mg/m3.

BW **DECR**

Decrease in body weight was reported at dose level of 102mg/m3.

RESPI **STRUC**

Tracheobronchitis and reversible epithelial necrosis in the respiratory tract was reported at dose level of 102mg/m3.

References

Primary Reference : **#HASLR***

Haskell Laboratory Report, (1978)

Secondary Reference : **!SIDSP***

OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 17A, (1993)

Study

End Point	:	**CARCINOGENICITY**
Chemical Name	:	**1-Butene, 2,3,4-trichloro**
CAS Number	:	**2431-50-7**
Study type	:	**LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RAT			**IHL**	**ADULT**	**M**		
					F		

Exposure

Exposure Period	:	**25 mo**
Frequency	:	**5 d/wk**
		6 h/d
Dose / Concentration	:	**0.2-2.0 ppm**
Exposure comments	:	Doses of 0.2 and 2.0ppm were administered for 6 hours/day and 5 days/week for 12 weeks. After 25 weeks the dose of 2.0 ppm was reduced to 1.5 ppm.

Test Results

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

Out of 110 animals receiving 2.0 ppm of test substance 27% of male rats and 18% of female rats developed nasal neuroepithelioma.

NOSE	**CAR**

Out of 110 animals receiving 2.0 ppm of test substance, 3% of male rats developed malignant nasal neurinomae.

References

Primary Reference : **#TNOTC***

Tests CIVO Institute, TNO, (1981)

Secondary Reference : **!SIDSP***

OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 19, (1993)

Study

End Point : **MUTAGENICITY**
Chemical Name : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**
Study type : **LAB**

Test Subject

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

Species/strain/system : Salmonella typhimurium: TA 1535

Exposure

Exposure comments : Ames test

Test Results

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

There was mutagenic effect observed in bacteria cultures with metabolic activation

References

Primary Reference : **#HASLR***
Haskell Laboratory Report, 32-BG, (1978)

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

Study

End Point : **MUTAGENICITY**
Chemical Name : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**
Study type : **LAB**

Test Subject

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

Species/strain/system : Saccharomyces cerevisiae

Test Results

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

Weak positive mutagenic effect

References

Primary Reference : **#HASLR***
Haskell Laboratory Report, BG-32, (1978)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 18, (1993)

Study

End Point : **MUTAGENICITY**
Chemical Name : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**
Study type : **LAB**

Test Subject

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

Species/strain/system : Strain not specified

Test Method and Conditions

Test method description : Dominant lethal test

Test Results

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

No activity was observed

References

Primary Reference : **#TNOTC***
Tests CIVO Institute, TNO, (1981)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 18, (1993)

Study

End Point : **IRRITATION**
Chemical Name : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**

Test Subject

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

Test Results

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

Irritation effect was observed, prolonged contact results in burns

References

Primary Reference : **#HASLR***
DuPont. Haskell Laboratory Report, (1978)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 15-16, (1993)

Study

End Point : **IRRITATION**
Chemical Name : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no

Test Results

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

Vapors cause eye irritation and lacrimation

References

Primary Reference : **#HASLR***
DuPont. Haskell Laboratory Report, (1978)

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

Study

End Point : **REPRODUCTION**
Chemical Name : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RAT			**IHL**		**M**		
					F		

Exposure

Exposure Type : **SHORT**
Dose / Concentration : **0.1-2.5 ppm**
Exposure comments : The dose levels of: 0, 0.1, 0.5, 2.5 ppm administered via inhalation to male and female rats, 6 hours per day from 6th to 16th day of pregnancy.

Test Results

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

NOAEL for parental generation was established at the dose level of 0.5 ppm

References

Primary Reference : **#TNOTC***
Tests CIVO Institute, TNO, (1981)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 19, (1993)

Study

End Point : **TERATOGENICITY**
Chemical Name : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**

Test Subject

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

Species/strain/system : Unspecified strain; pregnant

Exposure

Dose / Concentration : **0.1-2.5 ppm**
Exposure comments : The dose levels of: 0, 0.1, 0.5, and 2.5 administered to pregnant rats via inhalation, 6 hours per day from 6th to 16th day of gestation.

Test Results

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

NOAEL for F1 generation was established at the dose of 0.5ppm

References

Primary Reference : **#TNOTC***
Tests CIVO Institute, TNO, (1981)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 19, (1993)

Study

End Point : **AQUATIC TOXICITY**
Chemical Name : **1-Butene, 2,3,4-Trichloro**
CAS Number : **2431-50-7**

Test Subject

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

Species/strain/system : Bluegill sunfish (Lepomis Macrochirus)

Exposure

Exposure Period : **96 H**

Test Results

(Reported TLm = 0.48ppm for 96h)

References

Primary Reference : **#HASLR***
Haskell Laboratory Report

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 : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**
Study type : **LAB**

Test Subject

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

Species/strain/system : Diatoms

Exposure

Exposure Period : **7 d**
Dose / Concentration : **14.8 ppm**

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
POPUL	**INHIB**				**50%**

Growth reduction

References

Primary Reference : **#HASLR***
Haskell Laboratory Report

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 : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**

Test Subject

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

Species/strain/system : Bacteria

Test Results

Organ	Effect	Rev.	OnSet	Sex	Affected in Exposed - Controls

EC0

Effect concentration EC5 = 35mg/l

EC50

EC50 = 394mg/l

EC100

EC95 = 4454mg/l

References

Primary Reference : **#BAYUR***
Bayer AG Tests

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 : **1-Butene, 2,3,4-trichloro**
CAS Number : **2431-50-7**
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)

Test Method and Conditions

Test method description : Test Env. Federal Agency (UBA) 1984. Static test

Exposure

Exposure Period : **24-48 h**

Test Results

Organ	Effect	Rev.	OnSet	Sex	Affected in Exposed - Controls

EC0

Effect concentration EC0 = 35mg/l for 24h

EC50

EC50 = 50mg/l

EC100

EC100 = 71mg/l for 24h

References

Primary Reference : **#BAYUR***
Bayer AG Tests, (1988)

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

Substance

Chemical Name :
Reported Name : **2,3,4-TRICHLORO-1-BUTENE**
CAS Number : **2431-50-7**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
DEU	**REG**	**SAFTY**	**INDST**	**RQR**	THE REGULATION APPLIES TO SPECIFIED PLANTS IN WHICH THE SUBSTANCE IS PRESENT OR COULD BE PRODUCED DURING AN INCIDENT. THE OPERATOR HAS TO TAKE THE NECESSARY SECURITY MEASURES TO PREVENT INCIDENTS IN WHICH THE SUBSTANCE CAUSES A SERIOUS HAZARD TO HUMANS OR THE ENVIRONMENT DUE TO HIGHER EMISSIONS, FIRES, OR EXPLOSIONS, AN INVENTORY OF STORED SUBSTANCES HAS TO BE KEPT. THE COMPETENT AUTHORITY HAS TO BE INFORMED IMMEDIATELY WHEN AN INCIDENCE HAPPENED . WHEN CERTAIN THRESHOLD AMOUNTS OF THE SUBSTANCE ARE EXCEEDED A SAFETY ANALYSIS OF THE PLANT IS REQUIRED AND THE OPERATOR HAS TO INFORM THE NEIGHBOURHOOD AND THE GENERAL PUBLIC ABOUT THE PLANT AND THE ADEQUATE BEHAVIOUR IN THE CASE OF AN INCIDENT. ***Title :*** ORDINANCE ON INCIDENCES(STOERFALL-VERORDNUNG) ***Reference :*** **BGZBAD, I, 1891, 1991** ***Effective Date :*** 01SEP1991 **Bundesgesetzblatt. Federal Law Gazette** ***Last Amendment :*** ***Entry / Update :*** NOV1991

Substance

Chemical Name :
Reported Name : **2,3,4-trichlorobutene-1**
CAS Number : **2431-50-7**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
DEU	**REC**	**AIR**	**OCC**	**MAK**	CARCINOGENIC WORKING MATERIAL PROVEN IN ANIMAL EXPERIMENTATION (GROUP IIIA2). NO MAK VALUE ESTABLISHED. ***Title :*** MAXIMUM CONCENTRATIONS AT THE WORKPLACE AND BIOLOGICAL TOLERANCE VALUES FOR WORKING MATERIALS (MAXIMALE ARBEITSPLATZKONZENTRATIONEN UND BIOLOGISCHE ARBEITSSTOFFTOLERANZWERTE) ***Reference :*** **MPGFDF, XXVII, 17, 1991** ***Effective Date :*** **MITTEILUNG DER SENATSKOMMISSION ZUR PRUEFUNG GESUNDHEITSSCHAEDLICHER ARBEITSSTOFFE (DEUTSCHE FORSCHUNGSGEMEINSCHAFT)** ***Last Amendment :*** ***Entry / Update :*** JAN1992

Substance

Chemical Name :
Reported Name : **1,2,3-TRICHLOROBUTENE-3**
CAS Number : **2431-50-7**

Area	*Type*	*Subject*	*Spec.*	*Description*	*Level / Summary Information :*
RUS	**REG**	**AIR**	**OCC**	**MAC CLASS**	CLV: 0.1MG/M3 (VAPOUR) HAZARD CLASS: II

Title :

Reference : ***Effective Date :*** 01JAN1989

Last Amendment : **GOSTS*, 12.1.005, 1988** ***Entry / Update :*** MAY1990

GOSUDARSTVENNYI STANDART SSSR (STATE STANDARD OF USSR)

Substance

Chemical Name :
Reported Name : **1,2,3-TRICHLOROBUTENE-3**
CAS Number : **2431-50-7**

Area	*Type*	*Subject*	*Spec.*	*Description*	*Level / Summary Information :*
RUS	**REG**	**AQ**	**SURF**	**MAC CLASS**	0.02MG/L HAZARD CLASS: II

Title :

Reference : ***Effective Date :*** 1JAN1989

Last Amendment : **SPNPV*, 4630-88, 1988** ***Entry / Update :*** JUL1990

SANITARNYE PRAVILA I NORMY OKHRANY POVERKHNOSTNYKH VOD OT ZAGRIAZNENIA (HEALTH REGULATION AND STANDARDS OF SURFACE WATER PROTECTION FROM CONTAMINATION)

Substance

Chemical Name :
Reported Name : **1,2,3-TRICHLOROBUTENE-3**
CAS Number : **2431-50-7**

Area	*Type*	*Subject*	*Spec.*	*Description*	*Level / Summary Information :*
UN	**REC**	**TRNSP LABEL PACK**	**-**	**CLASS**	HAZARD CLASS: 6.1 = POISONOUS SUBSTANCE. PACKING GROUP: II = MEDIUM DANGER (I = GREAT DANGER-III=MINOR DANGER). (APPLIES TO TRICHLOROBUTENE) UN NO.2322

Title :

Reference : ***Effective Date :***

Last Amendment : **!, UNTDG*, 15, 1989** ***Entry / Update :*** AUG1990

UN TRANSPORT OF DANGEROUS GOODS, RECOMMENDATION PREPARED BY THECOMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS