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OPPT Document Control Office (DCO)
EPA East Room 6428
1201 Constitution Ave., N.W.
Washington DC, 20460
Attn: 8(d) Health and Safety Reporting Rule (Notification/Reporting)

Re : Submission of TSCA 8(d) Health and Safety Study reports – BASF Corporation

Dear 8(d) Coordinator:

In compliance with 40 CFR 716, BASF hereby submits requested Health and Safety Study reports for substances recently added to the list of subject chemicals (71 FR 47130).

This submission contains information for the following list of substances:

62-56-6	121-69-7	1738-25-6
83-41-0	127-68-4	3039-83-6
84-69-5	131-57-7	4316-73-8
96-22-0	137-20-2	61788-76-9
104-93-8	645-62-5	68188-18-1
110-18-9	939-97-9	68609-05-2
111-44-4	1111-78-0	68909-77-3

Should you have questions regarding this submission, please do not hesitate to contact me at 734-324-6593 or email kara.sparks@basf.com .

Sincerely,

BASF Corporation

Kara Sparks
Manager, North America
Product Regulatory Centre of Expertise

CONTAINS NO CBI

Contains No CBI

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302148

IUCLID

Data Set

Existing Chemical	ID: 96-22-0
CAS No.	96-22-0
EINECS Name	pentan-3-one
EC No.	202-490-3
Index number	606-006-00-5
Molecular Weight	86.13 g/mol
Molecular Formula	C5 H10 O

Producer Related Part

Company:	BASF AG
Creation date:	12-NOV-1992

Substance Related Part

Company:	BASF AG
Creation date:	12-NOV-1992

Memo:	master

Printing date:	17-JAN-2007
Revision date:	
Date of last Update:	**17-JAN-2007**

Number of Pages:	**27**

Chapter (profile):	Chapter: 1, 2, 3, 4, 5, 6, 7, 8, 10
Reliability (profile):	Reliability: without reliability, 1, 2, 3, 4
Flags (profile):	Flags: TSCA 8d

1.0.1 Applicant and Company Information

-

1.0.2 Location of Production Site, Importer or Formulator

-

1.0.3 Identity of Recipients

-

1.0.4 Details on Category/Template

-

1.1.0 Substance Identification

Mol. Formula: C5 H10 O
Mol. Weight: 86.13 g/mol

Flag: non confidential, TSCA 8d
28-SEP-2005

1.1.1 General Substance Information

Substance type: organic
Physical status: liquid
Purity: >= 99.5 - % w/w

Method: GC.
Flag: non confidential, TSCA 8d
17-JAN-2007 (1)

Substance type: organic
Physical status: liquid
Colour: colourless to yellow
Odour: ketone-like

Flag: non confidential, TSCA 8d
17-JAN-2007 (2)

1.1.2 Spectra

-

1.2 Synonyms and Tradenames

-

1.3 Impurities

-

1.4 Additives

-

1.5 Total Quantity

-

1.6.1 Labelling

-

1.6.2 Classification

-

1.6.3 Packaging

-

1.7 Use Pattern

-

1.7.1 Detailed Use Pattern

-

1.7.2 Methods of Manufacture

-

1.8 Regulatory Measures

-

1.8.1 Occupational Exposure Limit Values

-

1.8.2 Acceptable Residues Levels

-

1.8.3 Water Pollution

-

1.8.4 Major Accident Hazards

-

1.8.5 Air Pollution

-

1.8.6 Listings e.g. Chemical Inventories

-

1.9.1 Degradation/Transformation Products

-

1.9.2 Components

-

1.10 Source of Exposure

-

1.11 Additional Remarks

-

1.12 Last Literature Search

-

1.13 Reviews

-

2.1 Melting Point

-

2.2 Boiling Point

-

2.3 Density

-

2.3.1 Granulometry

-

2.4 Vapour Pressure

-

2.5 Partition Coefficient

Partition Coeff.: octanol-water
log Pow: = .85 at 25 degree C

Method: other (measured): test procedure according to an internal BASF standard, comparable to OECD 107
GLP: no

Method: Defined quantities of pentan-3-one were weighted to 25.0 ml octanol-1 and with 25.0 ml distilled water equilibrated. After phase separation the aqueous phase was isolated and diltuted with dimethylformamide.
The concentration of pentan-3-one in the water-DMF-samples was determined gaschromatographic with external standard.
The obtained values were counted back to the water phase.
Via mass balance the concentration of pentan-3-one in the octanol phase could be calculated.

Result: 1. Initial weight:
==========

20.9258 g octanol-1 (saturated with water)
0.0944 g Diethyl ketone (DEK)
25.0831 g dist. water (saturated with octanol-1)

concentration of DEK in the water phase c/(g/l): 0.478 (mean value of three repetitions, standard deviation: 0.007)

concentration of DEK in the octanol phase c/(g/l): 3.296 (calculated)

$$P(OW) = \frac{c\ (\text{DEK in the octanol phase})}{} = \frac{3.296\ g/l}{} = 6.90$$

c (DEK in the water phase) 0.478 g/l

2. Initial weight:
==========

20.9228 g octanol-1 (saturated with water)
0.1425 g Diethyl ketone (DEK)
24.6454 g dist. water (saturated with octanol-1)

concentration of DEK in the water phase c/(g/l): 0.729 (mean value of three repetitions, standard deviation: 0.007)

concentration of DEK in the octanol phase c/(g/l): 4.981 (calculated)

P(OW) = 6.83

3. Initial weight:
==========

20.9392 g octanol-1 (saturated with water)
0.2294 g Diethyl ketone (DEK)
24.9771 g dist. water (saturated with octanol-1)

concentration of DEK in the water phase c/(g/l): 1.093 (mean value of three repetitions, standard deviation: 0.014)

concentration of DEK in the octanol phase c/(g/l): 8.084 (calculated)

P(OW) = 7.39

Summary of results:
==========

	P(OW)	log P(OW)
1. Initial weight	6.90	0.84
2. Initial weight	6.83	0.83
3. Initial weight	7.39	0.87
mean value	7.04	0.85
standard deviation	0.31	

Test condition: GC-conditions:

column: dimethylpolysiloxane-capillary (DB-1)
thickness of film: 0.2 um
inside diameter: 0.32 mm
length: 30 m

oven temperature: 60 °C - 8 min isoth. - 8 K/min - 200 °C
injector temperature: 200 degree C
detector temperature: 250 degree C

carrier gas: nitrogen
pressure input: 2.0 bar absolute
overall-flow: 55 ml/min
injection volume: 1.0 ul

apparatus: HP 5890 with autosampler
detector: FID

room temperature: 25 degree C
Test substance: pentan-3-one, purity 99.1 %
Reliability: (2) valid with restrictions
scientifically acceptable
Flag: TSCA 8d
14-DEC-2006 (3)

2.6.1 Solubility in different media

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2.6.2 Surface Tension

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2.7 Flash Point

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2.8 Auto Flammability

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2.9 Flammability

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2.10 Explosive Properties

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2.11 Oxidizing Properties

-

2.12 Dissociation Constant

-

2.13 Viscosity

-

2.14 Additional Remarks

-

3.1.1 Photodegradation

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3.1.2 Stability in Water

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3.1.3 Stability in Soil

-

3.2.1 Monitoring Data (Environment)

-

3.2.2 Field Studies

-

3.3.1 Transport between Environmental Compartments

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3.3.2 Distribution

-

3.4 Mode of Degradation in Actual Use

-

3.5 Biodegradation

Type: aerobic
Inoculum: activated sludge, non-adapted
Concentration: 1050 mg/l related to COD (Chemical Oxygen Demand)
Degradation: = 90 - 100 % after 13 day(s)
Result: other: easily eliminated from water
Kinetic:

1 day(s)	27 %
3 day(s)	93 %
7 day(s)	94 %
10 day(s)	94 %
13 day(s)	97 %

Method: OECD Guide-line 302 B "Inherent biodegradability: Modified Zahn-Wellens Test"
Year: 1977
GLP: no
Test substance: as prescribed by 1.1 - 1.4

Result: - elimination related to TOC-measurements:

Time (d)	TS COD (mg/l)	TS elimination (%)
0	1056	-
3*	1200	0
1	900	27
3	215	93
7	203	94
10	203	94
13	173	97

* = hours

Test condition: Study conditions:

- number of replicates:
test substance: 2 flask, only mean value reported in reprint

- reference substance:
no reference substance was tested in parallel

- test system:
5 l-glass bottle
COD value of the stock solution: 9000 mg/l
test concentration 1050 mg/l COD
- inoculum:
non-adapted activated sludge, industrial, 1 g/l dry weight

- incubation:
at room temperature (20 - 25 °C) on a magnetic stirrer, aerated with air (sparging)

Reliability: (2) valid with restrictions
Guideline Study, with accaptable restrictions (e.g. industrial

activated sludge instead of municipal activated sludge). Basic data given.

Flag: TSCA 8d

07-NOV-2006 (4)

3.6 BOD5, COD or BOD5/COD Ratio

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3.7 Bioaccumulation

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3.8 Additional Remarks

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AQUATIC ORGANISMS

4.1 Acute/Prolonged Toxicity to Fish

Type: static
Species: Leuciscus idus (Fish, fresh water)
Exposure period: 48 hour(s)
Unit: mg/l **Analytical monitoring:** no
NOEC: = 1500
LC0: = 1500
LC50: = 1936.5
LC100: = 2500
Limit Test: no

Method: other
Year: 1977
GLP: no
Test substance: other TS

Method: The study was performed according to later German industrial standard test guideline, DIN 38 412 L15, 1982.
Result: 48 h-LC50 of the positive control kaliumcyanide: no data

During the 48 h exposure to diethylketone, mortalities were as follows:

Nominal test concentration (mg/L)	Cumulative mortalitiy (%) after x hours 4/24/48
Control	0/0/0
10	0/0/0
100	0/0/0
500	0/0/0
1000	0/0/0
1500	0/0/0
2500	3/3/3
4000	3/3/3
6300	3/3/3
10000	3/3/3

n.d. - not determined
Sympotoms of intoxication:
No data given.

All results refer to nominal test concentrations of diethylketone.
No analytical dose-verification of the test item was carried out.

Behavior of the test item during the test:
No data given.
Test condition: Test fish: Leuciscus idus (golden variety)

Supplier: Fischzucht Paul Eggers, 2354 Hohenweststadt, Germany

Body length: 6.64 cm (mean)
Body weight: 3.13 g (mean)
Corpulence factor of the test fish batch: not indicated

Housing and adpation
Culture conditions: oil-free aerated and charcoal filtered tap water, flow-through system;
Water temperature: not indicated
Duration of housing: about 5 weeks
Mortality during the last 2 weeks of housing: not indicated
Mortality during the adaption period: not indicated
Medical treatment: not indicated

Diet: not indicated

Test procedure:
test water: reconstituted freshwater according to the later DIN 38412, Part II, 1982; prepared from fully demineralised tap water (conductivity: max 10 micro MHO) by adding:
294.0 mg/L $CaCl_2 * 2 H_2O$
123.3 mg/L $MgSO_4 + 7 H_2O$
63.0 mg/L $NaHCO_3$
5.5 mg/L KCl

Continuous aeration with oil-free air

Test water ready for use:

total hardness:	2.5 mmol/L
Acid capacity:	0.8 mmol/L
Ratio Ca/Mg ions:	4 : 1
Ration Na/K ions:	10 : 1
pH:	about 7.0

Volume of water: 10 L
No of animals per test concentration and control: 10
Loading rate (g fish/L test water): not indicated
Test vessels: All glass aquaria

Test temperature: not indicated
Adaption to Test water and test temperature: not indicated
Photoperiod: 16 : 8 hours day-night regime
Aeration: slight
Exposure period: 48 h
pH during the test: 7.0 at test start
Oxygen content during the test: not indicated
Withdrawal of food: 1 day before and during exposure.

Nominal test concentrations: 10, 100, 500, 1000, 1500, 2500, 4000, 6300 and 10000 mg/L. No control was tested in parallel.

Observation time: 4, 24 and 48 h.

Endpoints investigated: mortality

Preparation of the test item:
The test solution was prepared by adding the test item to the test media without any pre-treatment. Then, the fish were placed into the test aquaria.

Statistical evaluation of data:
The NOEC, the LC0 and the LC 100 were determined directly from the raw data. The EC50 value was calculated as the geometrical mean of the LC0 and the LC100.

Test substance: Diethylketone; CAS: 96-22-0; no further details given.

Conclusion: The 48 h results of dimethylketone to fish were as follows:
The LC50 was 1936.5 mg/L (nominal).
The NOEC and the LC0 were 1500 mg/L (nominal).
The LC100 was 2500 mg/L (nominal).

Reliability: (2) valid with restrictions
Study according to a later guideline study. Scientfically acceptable although no details on test item characteristics are given.

Flag: TSCA 8d

09-NOV-2006 (5)

Type: static
Species: Leuciscus idus (Fish, fresh water)
Exposure period: 48 hour(s)
Unit: mg/l **Analytical monitoring:** no
NOEC: = 1500
LC0: = 1500
LC50: = 1936.5
LC100: = 2500
Limit Test: no

Method: other
Year: 1977
GLP: no
Test substance: other TS

Method: The study was performed according to later German industrial standard test guideline, DIN 38 412 L15, 1982.

Result: 48 h-LC50 of the positive control kaliumcyanide: no data

During the 48 h exposure to diethylketone, mortalities were as follows:

Nominal test concentration (mg/L)	Cumulative mortalitiy (%) after x hours 4	24	48
Control	0	0	0
10	0	0	0
100	0	0	0
500	0	0	0
1000	0	0	0

1500	0	0	0
2500	3	3	3
4000	3	3	3
6300	3	3	3
10000	3	3	3

n.d. - not determined
Sympotoms of intoxication:
No data given.

All results refer to nominal test concentrations of diethylketone.
No analytical dose-verification of the test item was carried out.

Behavior of the test item during the test:
No data given.

Test condition: Test fish: Leuciscus idus (golden variety)
Supplier: Fischzucht Paul Eggers, 2354 Hohenweststadt, Germany

Body length: not indicated
Body weight: not indicated
Corpulence factor of the test fish batch: not indicated

Housing and adpation
Culture conditions: oil-free aerated and charcoal filtered tap water, flow-through system;
Water temperature: not indicated
Duration of housing: about 6 weeks
Mortality during the last 2 weeks of housing: not indicated
Mortality during the adaption period: not indicated
Medical treatment: not indicated

Diet: not indicated

Test procedure:
test water: reconstituted freshwater according to the later DIN 38412, Part II, 1982; prepared from fully demineralised tap water (conductivity: max 10 micro MHO) by adding:
294.0 mg/L $CaCl_2 * 2 H_2O$
123.3 mg/L $MgSO_4 + 7 H_2O$
63.0 mg/L $NaHCO_3$
5.5 mg/L KCl

Continuous aeration with oil-free air

Test water ready for use:

total hardness:	2.5 mmol/L
Acid capacity:	0.8 mmol/L
Ratio Ca/Mg ions:	4 : 1
Ration Na/K ions:	10 : 1
pH:	about 7.0

Volume of water: 10 L
No of animals per test concentration and control: 10
Loading rate (g fish/L test water): not indicated
Test vessels: All glass aquaria

Test temperature: not indicated
Adaption to Test water and test temperature: not indicated
Photoperiod: 16 : 8 hours day-night regime
Aeration: slight
Exposure period: 48 h
pH during the test: 7.0 at test start
Oxygen content during the test: not indicated
Withdrawal of food: 1 day before and during exposure.

Nominal test concentrations: 10, 100, 500, 1000, 1500, 2500, 4000, 6300 and 10000 mg/L. No control was tested in parallel.

Observation time: 4, 24 and 48 h.
Endpoints investigated: mortality

Preparation of the test item:
The test solution was prepared by adding the test item to the test media without any pre-treatment. Then, the fish were placed into the test aquaria.

Statistical evaluation of data:
The NOEC, the LC0 and the LC 100 were determined directly from the raw data. The EC50 value was calculated as the geometrical mean of the LC0 and the LC100.

Test substance: Diethylketone; CAS: 96-22-0; no further details given

Conclusion: The 48 h results of dimethylketone to fish were as follows:
The LC50 was 1936.5 mg/L (nominal).
The NOEC and the LC0 were 1500 mg/L (nominal).
The LC100 was 2500 mg/L (nominal).

Reliability: (2) valid with restrictions
Study according to a later guideline study. Scientfically acceptable although no details on test item characteristics are given.

Flag: TSCA 8d

09-NOV-2006 (6)

4.2 Acute Toxicity to Aquatic Invertebrates

Type: static
Species: Daphnia magna (Crustacea)
Exposure period: 48 hour(s)
Unit: mg/l **Analytical monitoring:** no
EC0: = 500
EC50: > 500
EC100: > 500
Limit Test: no

Method: other: Directive 79/831/EEC, C.2
Year: 1979
GLP: no
Test substance: other TS: Diethylketon, CAS-No. 96-22-0, purity: no data available

Method: Guideline 79/831/EEC, C.2 is comparable to OECD 202.
Result: Concentration response relationship:
Mobile daphnids after x hours:
Concentration / 0h / 3h / 6h / 24h / 48h
Control (0 mg/l) / 20 / 20 / 20 / 20 /20
31.25 mg/l / 20 / 20 / 20 / 20 / 20
62.5 mg/l / 20 / 20 / 20 / 20 / 20
125 mg/l / 20 / 20 / 20 / 20 / 20
250 mg/l / 20 / 20 / 20 / 20 / 20
500 mg/l / 20 / 20 / 20 / 20 / 20

EC0/50/100 after 24h were: 500 / >500 / >500 mg/l
Test condition: Test organisms:
a) Daphnia magna Straus was originally supplied from "Institut National de Recherche Chimique appliquee, France", and has been breeded from 1978 in the Laboratories of BASF.
b) 2 - 24 hours old

Test conditions:
a) Dilution water chemistry: according to guideline
b) Test temperature: 20 °C
c) Exposure vessels: 20 ml glass tubes with flat bottom, 10 ml test volume
d) Light conditions: 16:8 hours, diffuse light (5 microeinstein/m*m*s (400-750 nm))
e) Number of Replicates: 4
f) Individuals /replicate: 5
g) Preparation of stock solution: Concentration of the stock solution was 500 mg/l.
Dilution series with dilution water gave the following nominal test concentrations: 500, 250, 125, 62.5, 31.25 mg/l.

Measurements:
a) Ph values and dissolved oxygen: After 0 and 48 hours
b) Mobile daphnids: after 0, 3, 6, 24 and 48 hours

Water chemistry in the test:
a) pH range over all concentrations and 0/48h: 8.03 to 8.31
b) Dissolved oxygen range over all concentrations and 0/48h: 8.86 to 10.14 mg/l

Statistics:
Results allowed no statistical evaluation of the data

Test substance: Diethylketon, CAS-No. 96-22-0. Purity: not reported.
Reliability: (2) valid with restrictions
Guideline-study, non-GLP.
Flag: TSCA 8d
01-DEC-2006 (7)

4.3 Toxicity to Aquatic Plants e.g. Algae

Species: Scenedesmus subspicatus (Algae)
Endpoint: growth rate
Exposure period: 72 hour(s)
Unit: mg/l **Analytical monitoring:** no
EC10: > 500
EC50: > 500
Limit Test: no

Method: other: DIN 38412/9
Year: 1989
GLP: no

Method: The test follows the later German National Standard Industrial Guideline DIN 38412 L9 (May 1989). This guideline is comparable to OECD 201.
Result: Concentration response relationship:
Concentration / effect in % (biomass) / effect in % (growth rate) after 72 hours
7.8 mg/l / -30.7 / -8.5 /
15.625 mg/l / -32.7 / -7.6 /
31.25 mg/l / -55.6 / -10.4 /
62.5 mg/l / -34.2 / -6.3 /
125 mg/l / -22.3 / -3.1 /
250 mg/l / 6.6 / 2.8 /
500 mg/l / 22.2 / 8.2 /

EC-values:

EbC10 (72h) 314.8 mg/l
EbC50 (72h) >500 mg/lEbC90 (72h) 392.2 mg/l

ErC10 (72h) >500 mg/l
ErC50 (72h) >500 mg/l

NOEC (72h) 125 mg/l
LOEC (72h) 250 mg/l
Test condition: Test organisms:

a) Supplier: Sammlung für Algenkulturen der Universität Göttingen
b) Stem culture on agar tubes, weekly renewal

Test conditions:
a) Dilution water chemistry: according to OECD 201
b) Test temperature: 20 °C
c) Exposure vessels: 20 ml glass tubes with flat bottom, plugged with siliconesponge caps, 10 ml test volume.
d) Light conditions: continuous white light (120 microE/m*m*s)
e) Number of Replicates: 4
f) Initial cell number: 10,000 cells/ml
g) Preparation of stock solution: Concentration of the stock solution was 1000 mg/l.
Dilution series with dilution water gave the following nominal test concentrations: 500, 250, 125, 62.5, 31.25, 15.6, 7.8 mg/l.

Measurements:
a) pH values: After 0 and 72 hours
b) in vivo chlorophyll-a-fluorescence at 685 nm wavelength (as measure for cell number): after 0, 24, 48, and 72 hours.

Water chemistry in the test:
a) pH range over all concentrations and 0/72h: 8.05 to 9.11

Statistics:
EC50 values have been determined by appropriate statistical methods (Probit analysis/moving average).

Test substance: Diethylketon, CAS-No. 96-22-0. Purity: not reported
Reliability: (2) valid with restrictions
Comparable to guideline-study, non-GLP.
Flag: TSCA 8d
04-DEC-2006 (8)

4.4 Toxicity to Microorganisms e.g. Bacteria

4.5 Chronic Toxicity to Aquatic Organisms

4.5.1 Chronic Toxicity to Fish

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4.5.2 Chronic Toxicity to Aquatic Invertebrates

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TERRESTRIAL ORGANISMS

4.6.1 Toxicity to Sediment Dwelling Organisms

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4.6.2 Toxicity to Terrestrial Plants

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4.6.3 Toxicity to Soil Dwelling Organisms

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4.6.4 Toxicity to other Non-Mamm. Terrestrial Species

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4.7 Biological Effects Monitoring

-

4.8 Biotransformation and Kinetics

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4.9 Additional Remarks

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5.0 Toxicokinetics, Metabolism and Distribution

-

5.1 Acute Toxicity

5.1.1 Acute Oral Toxicity

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5.1.2 Acute Inhalation Toxicity

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5.1.3 Acute Dermal Toxicity

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5.1.4 Acute Toxicity, other Routes

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5.2 Corrosiveness and Irritation

5.2.1 Skin Irritation

-

5.2.2 Eye Irritation

-

5.3 Sensitization

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5.4 Repeated Dose Toxicity

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5.5 Genetic Toxicity 'in Vitro'

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5.6 Genetic Toxicity 'in Vivo'

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5.7 Carcinogenicity

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5.8.1 Toxicity to Fertility

5.8.2 Developmental Toxicity/Teratogenicity

5.8.3 Toxicity to Reproduction, Other Studies

5.9 Specific Investigations

5.10 Exposure Experience

5.11 Additional Remarks

6.1 Analytical Methods

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6.2 Detection and Identification

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7.1 Function

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7.2 Effects on Organisms to be Controlled

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7.3 Organisms to be Protected

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7.4 User

-

7.5 Resistance

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8.1 Methods Handling and Storing

-

8.2 Fire Guidance

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8.3 Emergency Measures

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8.4 Possib. of Rendering Subst. Harmless

-

8.5 Waste Management

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8.6 Side-effects Detection

-

8.7 Substance Registered as Dangerous for Ground Water

-

8.8 Reactivity Towards Container Material

-

(1) BASF AG (2007). Product Details DIETHYL KETONE, 17 Jan 2007.

(2) BASF AG (2005). Safety data sheet according to 91/155/EEC, DIETHYL KETONE, revised 30 May 2005.

(3) BASF AG (1988), Bestimmung des Verteilungskoeffizienten P(OW) von Diethylketon in 1-Octanol/Wasser bei Raumtemperatur (25 Grad C). Department of analytics, unpublished data, report no. 124835/02, 26 May 1988

(4) BASF AG (2006). Reprint of Test Report. Test Substance: Diethylketon. Determination of the Inherent Biodegradation in a Batch Test with Activated Sludge (Zahn-Wellens Method). Department of Product Safety, unpublished report, 07. Nov 2006.
Original Report from Department of Ecology, unpublished data, study No. 77/1841 (original registration No. 71). 02 Aug 1977.

(5) BASF AG (2006). Determinatiom of the acute toxicity of Diethylkoetone to fish, Golden orfe (Leuciscus idus L., golden variety) - Screening test. Department of Ecology, unpublished data, Reprint of the Report No. PF 57 from 17 Jan 1977, 26 Oct 2006.

(6) BASF AG (2006). Determinatiom of the acute toxicity of Diethylkoetone to fish, Golden orfe (Leuciscus idus L., golden variety) - Screening test. Department of Toxicology, unpublished data, Reprint of the Report No. PF 83 from 31 Jan 1977, 26 Oct 2006.

(7) BASF AG (1989). Daphnia toxicity. Department of Ecology, unpublished data, 1/1110/2/88-1110/88, 1 Mar 1989.

(8) BASF AG (2006). Algal growth inhibition test. Department of Ecology, unpublished report, reprint of the test report 2/1110/88 from 7 Nov 1989, dated 16 Nov 2006, with an additional ToxRatPro calculation (performed by ECT 31 Oct 2006), 16 Nov 2006.

10.1 End Point Summary

10.2 Hazard Summary

10.3 Risk Assessment

CAS Number	Product Name	Study Title	Report Date	Laboratory	Comment	Study Report attached?	Report No
96-22-0	Pentan-3-one	Determinatiom of the acute toxicity of Diethylketone to fish, Golden orfe (Leuciscus idus L. golden variety) - Screening test	17-Jan-77	BASF	BASF	yes	5.1
96-22-0	Pentan-3-one	Determinatiom of the acute toxicity of Diethylketone to fish, Golden orfe (Leuciscus idus L. golden variety) - Screening test	31-Jan-77	BASF	BASF	yes	5.2
96-22-0	Pentan-3-one	Bestimmung der akuten Wirkung von Diethylketon gegenüber dem Wasserfloh Daphnia magna Straus	1 Mar 1989	BASF	BASF	yes	5.3
96-22-0	Pentan-3-one	Toxicity of Diethylketone in a Algal Growth Inhibition Test using Green Algae, Scenedesmus subspicatus	17-Nov-89	BASF	BASF, Reprint + Recalculation	yes	5.4
96-22-0	Pentan-3-one	Reprint of Test Report. Test Substance: Diethylketon. Determination of the Inherent Biodegradation in a Batch Test with Activated Sludge (Zahn-Wellens Method)	2-Aug-77	BASF	BASF	yes	5.5

5.1

BASF Aktiengesellschaft
Product Safety, Regulations, Toxicology and Ecology
Ecological Studies
D-67056 Ludwigshafen

REPRINT OF A TEST REPORT

Determination of the Acute Toxicity of

Diethylketone

to Fish, Golden Orfe
(*Leuciscus idus* L., golden variety)

- Screening test -

Report No.: PF 57

Report Date: 17 January 1977

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TEST METHOD AND PRINCIPLE

Determination of the acute toxicity of the test substance in an acute fish toxicity test. The LC0, the LC100 (Lethal Concentration with 0 and 100 % mortality, respectively) and the NOEC (no observed effect concentration) were determined directly from the raw data. The LC50 (lethal concentration with 50 % mortality) was determined as the geometrical mean of the LC0 and the LC100, if possible.

The test follows the later German Nation Standard Industrial test guideline DIN 38 412 L 15, Acute Fish Toxicity Test, 1982.

TEST RESULTS AFTER 48 HOURS:

NOEC: 1500 mg/L
LC0: 1500 mg/L
LC50: 1936.5 mg/L
LC100: 2500 mg/L

EVALUATION OF THE TEST RESULT

Based on the concentrations tested, acute toxic effects on fish can be excluded.

TEST DETAILS

Test substance:	Diethylketone
CAS-Nr:	96-22-0
Purity :	Not determined
Test concentrations:	10, 100, 500, 1000, 1500, 2500, 4000, 6300, 10000 mg/L
Control :	No data
Test duration:	48 hours
Test species:	Golden orfe, *Leuciscus idus* L., golden variety
Test fish length:	mean 6.64 cm
Test fish weight:	mean 3.13 g
No of test fish per test concentration:	3
48h-LC50 of the positive control: (potassiumcyanide)	Not determined
pH during the test:	7.0 – 8.1
Oxygen content during the test:	No data
Observation time:	4, 24, 48 h
Analytical dose verification:	No
GLP:	No
Limit test:	No

TEST INFORMATION

The investigations were performed in the former Laboratory of Emission Control (department code: DUU/WL – K 210) of BASF Aktiengesellschaft Ludwigshafen/Rhein, Germany.

Original registration number: PF 57
Date of the start of the test: 17 January 1977
Name of the study director: Dr. Pagga

Actual validity score: 2
(1: reliable without restriction, 2: reliable with restriction, 3: not reliable, 4: not assignable)

No original data have been modified in the reprint of the test report.

Date of the reprint: 26 October 2006

Author: S. Pawlowski
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Test results

Table 1. Mortalities of Test Fish within 48 hours of Exposure

Nominal test concentration [mg/L]	Number of test fish introduced	Dead fish after x hours		
		4	24	48
10	3	0	0	0
100	3	0	0	0
500	3	0	0	0
1000	3	0	0	0
1500	3	0	0	0
2500	3	3	3	3
4000	3	3	3	3
6300	3	3	3	3
10000	3	3	3	3

Table 2. pH-Values during the Test

Nominal test concentration [mg/L]	pH-Values	
	Test start	Test end
10	7.0	7.9
100	7.0	n.d.
500	7.0	n.d.
1000	7.0	n.d.
1500	7.0	8.1
2500	7.0	n.d.
4000	7.0	n.d.
6300	7.0	n.d.
10000	7.0	n.d.

n.d. – Not determined

Table 2. Oxygen Concentrations during the Test

Nominal test concentration [mg/L]	Oxygen concentrations [mg/L]	
	Test start	Test end
10	n.d.	n.d.
100	n.d.	n.d.
500	n.d.	n.d.
1000	n.d.	n.d.
1500	n.d.	n.d.
2500	n.d.	n.d.
4000	n.d.	n.d.
6300	n.d.	n.d.
10000	n.d.	n.d.

n.d. – Not determined

5.2

BASF Aktiengesellschaft
Product Safety, Regulations, Toxicology and Ecology
Ecological Studies
D-67056 Ludwigshafen

REPRINT OF A TEST REPORT

Determination of the Acute Toxicity of

Diethylketone

to Fish, Golden Orfe
(*Leuciscus idus* L., golden variety)

- Screening test -

Report No.: PF 83

Report Date: 31 January 1977

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TEST METHOD AND PRINCIPLE

Determination of the acute toxicity of the test substance in an acute fish toxicity test. The LC0, the LC100 (Lethal Concentration with 0 and 100 % mortality, respectively) and the NOEC (no observed effect concentration) were determined directly from the raw data. The LC50 (lethal concentration with 50 % mortality) was determined as the geometrical mean of the LC0 and the LC100, if possible.

The test follows the later German Nation Standard Industrial test guideline DIN 38 412 L 15, Acute Fish Toxicity Test, 1982.

TEST RESULTS AFTER 48 HOURS:

NOEC: 1500 mg/L
LC0: 1500 mg/L
LC50: 1936.5 mg/L
LC100: 2500 mg/L

EVALUATION OF THE TEST RESULT

Based on the concentrations tested, acute toxic effects on fish can be excluded.

TEST DETAILS

Test substance:	Diethylketone
CAS-Nr:	96-22-0
Purity :	Not determined
Test concentrations:	10, 100, 500, 1000, 1500, 2500, 4000, 6300, 10000 mg/L
Control :	No data
Test duration:	48 hours
Test species:	Golden orfe, *Leuciscus idus* L., golden variety
Test fish length:	Not determined
Test fish weight:	Not determined
No of test fish per test concentration:	3
48h-LC50 of the positive control: (potassiumcyanide)	Not determined
pH during at test start:	7.0
Oxygen content during the test:	Not determined
Observation time:	4, 24, 48 h
Analytical dose verification:	No
GLP:	No
Limit test:	No

TEST INFORMATION

The investigations were performed in the former Laboratory of Emission Control (department code: DUU/WL – K 210) of BASF Aktiengesellschaft Ludwigshafen/Rhein, Germany.

Original registration number: PF 83
Date of the start of the test: 31 January 1977
Name of the study director: Dr. Pagga

Actual validity score: 2
(1: reliable without restriction, 2: reliable with restriction, 3: not reliable, 4: not assignable)

No original data have been modified in the reprint of the test report.

Date of the reprint: 26 October 2006

Author: S. Pawlowski
Dr. S. Pawlowski

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Test results

Table 1. Mortalities of Test Fish within 48 hours of Exposure

Nominal test concentration [mg/L]	Number of test fish introduced	Dead fish after x hours		
		4	24	48
10	3	0	0	0
100	3	0	0	0
500	3	0	0	0
1000	3	0	0	0
1500	3	0	0	0
2500	3	3	3	3
4000	3	3	3	3
6300	3	3	3	3
10000	3	3	3	3

Table 2. pH-Values during the Test

Nominal test concentration [mg/L]	pH-Values	
	Test start	Test end
10	7.0	n.d.
100	7.0	n.d.
500	7.0	n.d.
1000	7.0	n.d.
1500	7.0	n.d.
2500	7.0	n.d.
4000	7.0	n.d.
6300	7.0	n.d.
10000	7.0	n.d.

n.d. – Not determined

Table 2. Oxygen Concentrations during the Test

Nominal test concentration [mg/L]	Oxygen concentrations [mg/L]	
	Test start	Test end
10	n.d.	n.d.
100	n.d.	n.d.
500	n.d.	n.d.
1000	n.d.	n.d.
1500	n.d.	n.d.
2500	n.d.	n.d.
4000	n.d.	n.d.
6300	n.d.	n.d.
10000	n.d.	n.d.

n.d. – Not determined

BASF Aktiengesellschaft

Labor für Ökologie
DUU/OO

Bericht 1/1110/2/88-1110/88
vom 1989-03-01

Thema

Bestimmung der akuten Wirkung von Diethylketon gegenüber dem Wasserfloh Daphnia magna Straus.

Kurzfassung

Die auf Nominalkonzentrationen bezogene EC 50 von Diethylketon gegenüber Daphnia magna war nach 48 h:

EC 50 = > 500 [mg/l]
VB 95% = - - - [mg/l]

Die höchste geprüfte Konzentration ohne Effekt war nach 48 h:

EC 0 = 500 [mg/l]

Die niedrigste geprüfte Konzentration mit 100% Effekt war nach 48 h:

EC 100 = >500 [mg/l]

Das Ergebnis wurde bei 292.8 -294.4 [K] und einem Testwasser mit folgenden Spezifikationen erhalten:

pH - Wert : 8.1
Gesamthärte : 2.61 [mmol/l]
Ks bis pH 4.3 : 0.91 [mmol/l]

Bearbeiter: Zborow

Versuchsleiter: Dr. Jatzek

Laborleiter: Dr. Bias

Tel.: 0621/ 6093895

Auftraggeber: Dr. Foerster CIH/A U 508

Verteiler: DUU/WT-Registratur (Titelblatt und Seite 1)
DUU/OO-A 520
Dr. Foerster CIH/A U 508

Auftraggeber : Dr. Foerster CIH/A U 508
Auftragsdatum : 1988-08-04
Substanz-Nr. : 1110/88
Substanzbezeichnung : Diethylketon

E I N L E I T U N G

In der vorliegenden Untersuchung wurde die akute Wirkung von Diethylketon
gegenüber dem Wasserfloh Daphnia magna ermittelt.
Daphnia magna hat eine weite geographische Verbreitung und ist ein bedeutender Teil vieler aquatischer Nahrungsnetze, in denen sie zwischen den Destruenten und Primärkonsumenten einerseits und den Konsumenten höherer Ordnung anderseits eingeordnet werden kann. Daphnia magna wird daher heute weltweit als Testorganismus empfohlen (1, 2, 3, 4).
Diese Untersuchung wurde gemäss der Methodenvorschrift C2 des Anhangs V zur Richtlinie 79/831 EWG (4) durchgeführt.

M A T E R I A L und M E T H O D E N

TESTSUBSTANZ (Angaben des Auftraggebers)

Substanzbezeichnung : Diethylketon

Chemische Bezeichnung : Diethylketon

Hersteller : BASF

Löslichkeit in Wasser : > 500 mg/l bei 293 K

BEHANDLUNG DER SUBSTANZ:

Die Konzentration der Substanz im Stammansatz betrug 500 mg/l.
Es wurde eine Verdünnungsreihe mit Verdünnungswasser angesetzt.
Pro Testgefäß wurden 10 ml der entsprechenden Verdünnung zugegeben.

VERSUCHSTIERE

Herkunft : Der verwendete Teststamm von Daphnia magna Straus wurde vom Institut National de Recherche Chimique Appliquee, Frankreich, bezogen und wird seit Anfang 1978 im Labor für Umweltanalytik und Ökologie der BASF AG Ludwigshafen gezüchtet.

ZUCHTBEDINGUNGEN

Wasser

Gesamthärte	: 2.70 +- 0.5 mmol/l
Ks bis pH 4.3	: 0.90 +- 0.1 mmol/l
Molverhältnis Ca:Mg	: ca. 4:1
Sauerstoffgehalt	: > 2 mg/l
Temperaturbereich	: 292.0 - 294.0 K
Futter	: 1 x täglich Grünaalgenkultur
Beleuchtung	: Tag:Nacht-Rhythmus 16:8 Stunden
Beleuchtungsstärke	: ca. 5 Mikroeinstein/(m*m*s) im Wellenlängenbereich von 400- 750 nm

TESTBEDINGUNGEN

Testbeginn : 1989-02-27

Testende : 1989-03-01

Testwasser

Als Testwasser findet ein künstliches Süßwasser Verwendung.

Zusammensetzung des Wassers

Als Ansetzwasser für dieses künstliche Süßwasser wurde deionisiertes Wasser mit einer Leitfähigkeit von < 0.05 µS/cm verwendet.

Spurenelemente	mg/l	Makronährstoffe	mg/l
B	0.5000	Ca	80.1
Fe	0.2000	Mg	12.2
Mn	0.1000	Na	19.8
Li	0.0500	K	3.2
Rb	0.0500	Si	1.0
Sr	0.0500	Cl	144.9
Br	0.0250	NO3	0.2
Mo	0.0250	PO4	0.2
Cu	0.0125	SO4	48.4
Zn	0.0125	HCO3	47.1
Co	0.0025		
J	0.0025	Vitamine	µg/l
Se	0.0020	Thiamin	75.0
V	0.0003	B 12	1.0
Na2 EDTA * 2H20	0.0003	Biotin	0.75

Die Eigenschaften des eingestellten Wassers sind näherungsweise folgende

Gesamthärte : 2.70+-0.50 mmol/l

Ks bis pH 4.3 : 0.90+-0.10 mmol/l

Molverhältnis Ca:Mg : 4 zu 1

Molverhältnis Na:K : 10 zu 1

Leitfähigkeit : 600-700 µSiemens/cm

pH-Wert : 8.0 +- 0.5

Das Testwasser wird bis zur Sauerstoffsättigung mit ölfreier Luft belüftet und anschliessend mindestens weitere 24 h zur Stabilisierung stehengelassen.
Die am Versuchsbeginn gemessenen Werte der physikalischen und chemischen Parameter sind im Ergebnissteil wiedergegeben (Tabelle 1, Seite 5).

Temperaturbereich	:	292.0 - 294.0 K
Testgefäß	:	Zentrifugenglaeser mit abgeflachtem Boden
Testvolumen	:	10 ml
Volumen/Tier	:	2 ml
Anzahl Tiere/Testgefäß	:	5
Gesamtzahl Tiere/Konz.	:	20
Zahl Parallelen/Testkonz.	:	4
Alter der Tiere	:	2 - 24 h
Aufbewahrung d. Testans.	:	diffuses Licht
Ablesepunkte	:	0 + 3 + 6 + 24 + 48 h

ABLESUNG

Bei Versuchsbeginn und nach + 3 + 6 + 24 + 48 h wird die Schwimmunfähigkeit der eingesetzten Daphnien abgelesen.
Als schwimmunfähig gelten die Tiere, die nach leichtem Anstoßen an das Testgefäß keine Schwimmbewegungen mehr zeigen.

TESTKRITERIEN

Bestimmung der EC 50, EC 0 und EC 100 nach 3 + 6 + 24 + 48 h.
Diese Werte sind auf die Nominalkonzentrationen bezogen.

BESTIMMUNG VON EC 0 UND EC 100

Als EC 0 wurde die höchste geprüfte Konzentration bei der ein Effekt <= 10% auftrat bezeichnet.
Als EC 100 wurde die niedrigste geprüfte Konzentration bei der 100% Effekt auftraten bezeichnet.

E R G E B N I S S E

PHYSIKALISCHE UND CHEMISCHE MESSWERTE

Tabelle 1

Testwasser (Werte am Versuchsanfang)

pH - Wert	: 8.1
Leitfähigkeit	: 610 [µSiemens/cm]
Gesamthärte	: 2.61 [mmol/l]
Ks bis pH 4.3	: 0.91 [mmol/l]
Temperatur	: 293.0 [Kelvin]
gemessen am	: 1989-02-27

Tabelle 2

pH-Werte in einem Versuchsgefäß (Parallele 1) pro Test-Konzentration

Konz. [mg/l]	pH-Werte nach 0 h	48 h
31.25	8.13	8.11
62.5	8.11	8.11
125.	8.10	8.08
250.	8.29	8.08
500.	8.31	8.03
0.	8.38	8.07

Tabelle 3

Sauerstoff-Werte in einem Versuchsgefäß (Parallele 1)
pro Test-Konzentration

Konz. [mg/l]	Sauerstoff-Werte nach 0 h	48 h
31.25	10.11	9.66
62.5	10.12	9.6
125.	10.14	9.31
250.	10.07	9.12
500.	9.20	8.86
0.	9.80	9.59

Tabelle 4

Schwimmfähige Testtiere

Konz. [mg/l]	Schwimmfähige Testtiere nach 0 h	3 h	6 h	24 h	48 h
31.25	20	20	20	20	20
62.5	20	20	20	20	20
125.	20	20	20	20	20
250.	20	20	20	20	20
500.	20	20	20	20	20
0.	20	20	20	20	20

ZUSAMMENFASSUNG DER ENDERGEBNISSE NACH 3h

EC 50 [mg/l] = > 500

VB 95% [mg/l] = - - -

EC 0 [mg/l] = 500

EC 100 [mg/l] = >500

ZUSAMMENFASSUNG DER ENDERGEBNISSE NACH 6h

EC 50 [mg/l] = > 500

VB 95% [mg/l] = - - -

EC 0 [mg/l] = 500

EC 100 [mg/l] = >500

ZUSAMMENFASSUNG DER ENDERGEBNISSE NACH 24h

EC 50 [mg/l] = > 500

VB 95% [mg/l] = - - -

EC 0 [mg/l] = 500

EC 100 [mg/l] = >500

ZUSAMMENFASSUNG DER ENDERGEBNISSE NACH 48h

EC 50 [mg/l] = > 500

VB 95% [mg/l] = - - -

EC 0 [mg/l] = 500

EC 100 [mg/l] = >500

L I T E R A T U R

1. Deutsches Institut für Normung: Bestimmung der biologischen Wirkung von Wasserinhaltsstoffen auf Kleinkrebse, DIN 38412, Teil 11 (Entwurf) (1981).

2. International Organisation for Standardiziation: Water quality-Determination of the inhibition of the mobility of Daphnia magna Straus. (Cladorera, Crustacea) (1979), ISO 6341.

3. Daphnid Acute Toxicity Test,- 'Guideline for Testing of Chemicals',EG-1, EPA, Office of Toxic Substances, Jan. 1982. Macroinvertebrates and Amphibians. EPA-660/3 75-009 (1975).

4. EG-Richtlinie 79/831/EWG, Anhang V, Teil C: Methoden zur Bestimmung der Ökotoxizität für Daphnien - Entwurf -, Stand Mai 1984. Heft 5, UBA-Texte zum Chemikaliengesetz 16/84 Umweltbundesamt.

5. Sachs, Lothar: Angewandte Statistik, Springer Verlag, Berlin, Heidelberg, New York, 4. Auflage, 1974.

A N L A G E N

Schwimmfähige Tiere der Konzentration 31.25 mg/l

Ablese-punkt [h]	Parallelen 1	2	3	4
0	5	5	5	5
3	5	5	5	5
6	5	5	5	5
24	5	5	5	5
48	5	5	5	5

Schwimmfähige Tiere der Konzentration 62.5 mg/l

Ablese-punkt [h]	Parallelen 1	2	3	4
0	5	5	5	5
3	5	5	5	5
6	5	5	5	5
24	5	5	5	5
48	5	5	5	5

Schwimmfähige Tiere der Konzentration 125 mg/l

Ablese-punkt [h]	Parallelen 1	2	3	4
0	5	5	5	5
3	5	5	5	5
6	5	5	5	5
24	5	5	5	5
48	5	5	5	5

Schwimmfähige Tiere der Konzentration 250 mg/l

Ablese-punkt [h]	Parallelen 1	2	3	4
0	5	5	5	5
3	5	5	5	5
6	5	5	5	5
24	5	5	5	5
48	5	5	5	5

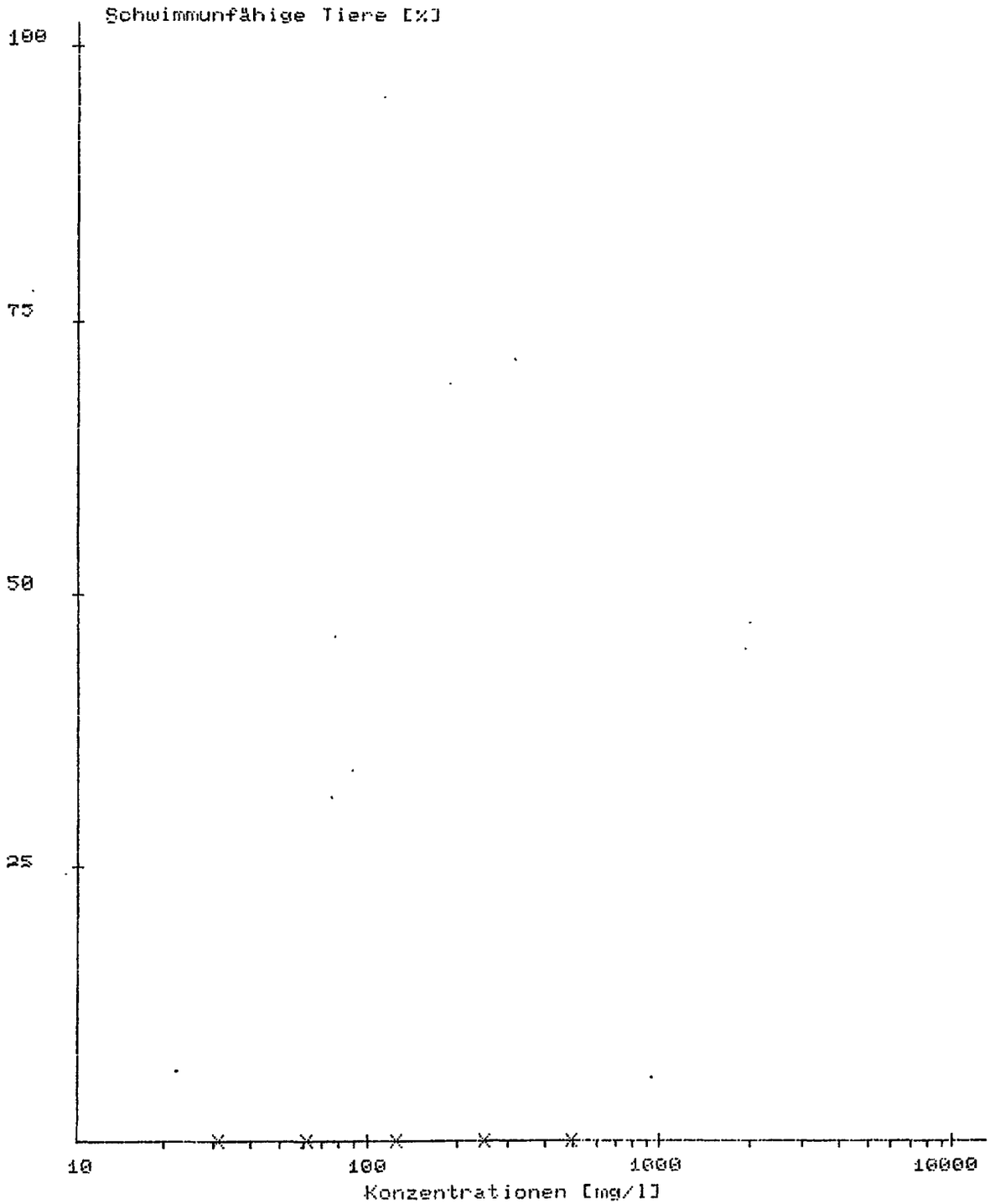
Schwimmfähige Tiere der Konzentration 500 mg/l

Ablese-punkt [h]	Parallelen 1	2	3	4
0	5	5	5	5
3	5	5	5	5
6	5	5	5	5
24	5	5	5	5
48	5	5	5	5

Schwimmfähige Tiere der Kontrolle

Ablese-punkt [h]	Parallelen 1	2	3	4
0	5	5	5	5
3	5	5	5	5
6	5	5	5	5
24	5	5	5	5
48	5	5	5	5

Konzentrations-Wirkungskurve



Ablesepunkt 3 h = ⊕ Ablesepunkt 6 h = △

Ablesepunkt 24 h = + Ablesepunkt 48 h = X

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Ecological Studies
D-67056 Ludwigshafen

REPRINT OF A TEST REPORT

Toxicity of

Diethylketone

in a Algal Growth Inhibition Test using Green algae,

Scenedesmus subspicatus

Report No.: 2/1110/88

Report Date: 17 November 1989

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TEST METHOD AND PRINCIPLE

Determination of growth inhibition effects on green algal *Scenedesmus subspicatus* by fluorometric measurements after 24, 48 and 72 hours of exposure. The EC50, the EC10 and EC90 (if possible), the NOEC and the LOEC of both biomass (b) and growth rate (r) were determined after 72 hours of exposure using appropriate statistical methods (Probit analysis/moving average).

The test follows the later German Nation Standard Industrial test guideline DIN 38 412 L9, Algal growth inhibition test, May 1989.

TEST RESULTS AFTER 72 HOURS:

Growth rate:

NOEC:	125.00 mg/l
LOEC :	250.00 mg/l
EC10:	> 500.00 mg/l
95 % confidence intervals:	> 500.00 mg/l
EC50:	> 500.00 mg/l
95 % confidence intervals:	> 500.00 mg/l
EC90:	Not determined
95 % confidence intervals:	Not determined

Biomass:

NOEC:	250.00 mg/l
LOEC :	500.00 mg/l
EC10:	314.83 mg/l
95 % confidence intervals:	296.02 – 331.11 mg/l
EC50:	> 500.00 mg/l
95 % confidence intervals:	> 500.00 mg/l
EC90:	Not determined
95 % confidence intervals:	Not determined

TEST DETAILS

Test substance:	Diethylketone
CAS-Nr:	96-22-0
Purity :	Not indicated
Test concentrations:	7.812, 15.63, 31.25, 62.50, 125.00, 250.00 and 500.00 mg/L
Control:	OECD-Medium
Test duration:	72 hours
Test species:	Green algae, *Scenedesmus subspicatus*, Strain SAG 86.81
Initial cell density:	10000 cells/ml
Light intensity:	120 µE/m*m*s
No of replicates: 4	
Culture method:	Shaking culture
Culture medium:	OECD-Medium
Test baker:	20 ml glass tubes with flat bottom, plugged with siliconesponge caps
Medium volume:	10 ml
Test temperature:	20 °C
pH during the test:	Reported in the raw data
Observation time:	24, 48, 72 h
Analytical dose verification:	No
GLP:	No
Limit-Test:	No

VALIDITY CRITERIA FOR THE TEST

- The minimum multiplication factor in the control cultures must be at least 16 until the end of the test.
- The coefficient of variation of section-by-section specific growth rates in the control cultures must not exceed 35 %.
- The mean coefficient of variation of average specific growth rates within the control cultures during the test must not exceed 7 %.

TEST INFORMATION

The investigations were performed in the former Laboratory of Emission Control (department code: DUU/WL – A 520) of BASF Aktiengesellschaft Ludwigshafen/Rhein, Germany.

Original registration number:	2/1110/88
Date of the start of the test:	7 November 1989
Name of the study director:	Dipl.-Biol. A. Siebel-Sauer

Actual validity score: 1
(1: reliable without restriction, 2: reliable with restriction, 3: not reliable, 4: not assignable)

No original data have been modified in the reprint of the test report.

Date of the reprint: 16 November 2006

Author: Siebel-Sauer
Dipl.-Biol. A. Siebel-Sauer

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TEST RESULTS

Validity of the test:

- The multiplication factor in the control cultures was 29.3 until the end of the test.
- The coefficient of variation of section-by-section specific growth rates in the control cultures was 8.2 %.
- The mean coefficient of variation of average specific growth rates within the control cultures during the test was 1.1 %.

Thus, the test was considered as valid according to the recent OECD test guideline 2001 from March 2006.

TABLES

Table 1. Growth rates r and % inhibition of growth rates r during the 72 hours of exposure

Nominal test concentration [mg/L]	Growth rate r and % inhibition of growth rate r					
	0 - 24 hours		0 - 48 hours		0 - 72 hours	
	Growth rate r	% inhibition	Growth rate r	% inhibition	Growth rate r	% inhibition
Control	1.07	0.0	1.08	0.0	1.13	0.0
7.812	0.96	9.7	1.21	-11.9	1.22	-8.5
15.625	1.03	3.3	1.24	-14.5	1.21	-7.6
31.250	1.10	-3.1	1.32	-21.6	1.24	-10.4
62.500	1.02	4.1	1.26	-16.1	1.20	-6.3
125.000	0.94	12.2*	1.20	-10.8	1.16	-3.1
250.000	0.78	27.3*	1.05	2.9	1.09	2.8*
500.000	0.81	23.8*	1.00	7.3*	1.03	8.2*

*statistically significant from the control (α = 0.05, Williams test, ToxRat Professional v 2.09, 2005)

Table 2. Biomass b and % inhibition of biomass b during the 72 hours of exposure

Nominal test concentration [mg/L]	Biomass b and % inhibition of biomass b					
	24 hours		48 hours		72 hours	
	Biomass b	% inhibition	Biomass b	% inhibition	Biomass b	% inhibition
Control	39.38	0.0	237.55	0.0	978.18	0.0
7.812	33.61	14.6	280.27	-18.0	1278.51	-30.7
15.625	37.67	4.3	303.08	-27.6	1287.11	-32.7
31.250	43.41	-10.3	365.95	-54.1	1522.45	-55.6
62.500	38.10	3.2	318.40	-34.0	1312.84	-34.2
125.000	34.05	13.5*	287.20	-20.9	1196.22	-22.3
250.000	25.32	35.7*	205.44	13.5*	913.33	6.6
500.000	26.14	33.6*	186.23	21.6*	761.30	22.2*

*statistically significant from the control (α = 0.05, Bonferroni t-test, ToxRat Professional v 2.09, 2005)

Alga, Growth Inhibition Test (OECD 201, EEC, ISO): 2/1110/88

ECT Oekotoxikologie GmbH
Boettgerstr. 2-14
D-65439 Floersheim am Main
Germany

General:

Test identification/project no.	2/1110/88
Test item	Diethylketon
Unit of test item concentration	mg/L
Start of experiment on day	07. November 1989
Date and time of the evaluation	31/10/2006; 14:06:17
Algae counts divided by factor	10000
Repeated measurements per replicate	1
Number of treatments (incl. control(s))	8
Duration of the test	72 h
Measurement intervals	24 h
Measurement variable	Cellcount
Test system	*Desmodesmus subspicatus*
Design	NOEC/Ecx

Since no calibration curve data were available, fluorescence data were equated with cell numbers.

Validity according to OECD TG 201 (adopted 23 Mar 2006):

(1) The factor of cell number measured in the control between 0 and 72 h was 29.3, which is > 16. **The test fulfils this validity criterion.**

(2) Evaluation of the sectional growth rates (the mean coefficient of variation of sectional growth rates calculated for the individual control replicates must not be higher than 35 %):

- Coefficients of variation in control replicates from 0 to 72 h were: Replicate 1: 9.4 %; Replicate 2: 8.4 %; Replicate 3: 6.5 %; Replicate 4: 8.5 %. The mean of the replicate coefficients of variation in the section-by-section growth rate was: 8.2 %. **The test fulfils this validity criterion.**

(3) The coefficient of variation of average specific growth rates in control cultures was 1.1 % after 72 h, which is < 7 %. **The test fulfils this validity criterion.**

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Relation of *Desmodesmus subspicatus* Endpoints on Concentration

Summary of Results for all Endpoints

Tab. 1: Summary of Results for all Endpoints: Critical effect and threshold concentration as observed at end of experimental time; EC: Effective concentration for xx% reduction; 95%-CL: 95% Confidence limits; LOEC: Lowest observed effect concentration; NOEC: No observed effect concentration

Critical Conc.s [mg/L]			0-24 h	0-48 h	0-72 h
Yield		**EC10**	**70.686**	**410.157**	**328.821**
	95%-CL	lower	n.d.	405.885	322.089
		upper	164.841	414.213	335.138
		EC20	**171.202**	**566.034**	**452.203**
	95%-CL	lower	0.019	560.397	447.549
		upper	432.942	572.103	456.834
		EC50	**921.313**	**n.d.**	**829.072**
	95%-CL	lower	386.434	n.d.	805.960
		upper	n.d.	n.d.	855.150
		LOEC	**125.000**	**500.000**	**500.000**
		NOEC	**62.500**	**250.000**	**250.000**
Growth rate		**EC10**	**83.547**	**629.275**	**570.798**
	95%-CL	lower	0.006	570.077	538.903
		upper	188.280	728.339	614.098
		EC20	**266.367**	**n.d.**	**975.062**
	95%-CL	lower	71.261	n.d.	860.295
		upper	3621.661	n.d.	1163.180
		EC50	**n.d.**	**n.d.**	**n.d.**
	95%-CL	lower	n.d.	n.d.	n.d.
		upper	n.d.	n.d.	n.d.
		LOEC	**125.000**	**500.000**	**250.000**
		NOEC	**62.500**	**250.000**	**125.000**
Biomass integral		**EC10**	**70.686**	**249.343**	**314.832**
	95%-CL	lower	n.d.	142.106	296.023
		upper	164.841	316.810	331.109
		EC20	**171.202**	**444.900**	**467.284**
	95%-CL	lower	0.019	357.578	451.952
		upper	432.942	606.973	483.777
		EC50	**921.313**	**n.d.**	**990.522**
	95%-CL	lower	386.434	n.d.	902.068
		upper	n.d.	n.d.	1115.347
		LOEC	**125.000**	**250.000**	**500.000**
		NOEC	**62.500**	**125.000**	**250.000**
Sectional growth rate		**EC10**	**83.547**	**n.d.**	**822.542**
	95%-CL	lower	0.006	n.d.	n.d.
		upper	188.280	n.d.	n.d.
		EC20	**266.367**	**n.d.**	**n.d.**
	95%-CL	lower	71.261	n.d.	n.d.
		upper	3621.661	n.d.	n.d.
		EC50	**n.d.**	**n.d.**	**n.d.**
	95%-CL	lower	n.d.	n.d.	n.d.
		upper	n.d.	n.d.	n.d.
		LOEC	**125.000**	**>500.000**	**31.250**
		NOEC	**62.500**	**>=500.000**	**15.625**

n.d.: not determined due to mathematical reasons

Fluorescence raw data as Dependent on Concentration and Time

Tab. 2: Fluorescence raw data as dependent on concentration of the test item and time; Mean: arithmetic mean; Std.Dev.: standard deviation; n: number of replicates; CV: coefficient of variation (calculated from InputRawData)

Treatm. [mg/L]		Control	7.81	15.63	31.25	62.50	125.00	250.00	500.00
0.0 h		43.4	41.2	43.8	43.7	41.2	43.6	42	40.5
		41.1	40.7	41.4	44.2	45.1	42.8	44.4	43.1
		40.3	40.8	39	43.3	42.5	44.2	43.9	41.4
		39.6	42.4	42.1	41.8	42	44.4	42	41.2
	Mean:	41.1	41.3	41.6	43.3	42.7	43.8	43.1	41.6
	Std.Dev:	1.7	0.8	2.0	1.0	1.7	0.7	1.3	1.1
	n:	4	4	4	4	4	4	4	4
	CV%:	4.0	1.9	4.8	2.4	4.0	1.6	2.9	2.7
24.0 h		136.7	97.7	123.1	127.4	114.8	108.3	93.8	92.7
		115.2	118.2	105.2	129.2	125.4	111.8	99.7	100.8
		117.8	114.3	127.9	124.6	119.5	105.7	97.1	92
		109.7	103.8	111.5	139.1	115.9	121.6	84.3	89.8
	Mean:	119.9	108.5	116.9	130.1	118.9	111.9	93.7	93.8
	Std.Dev:	11.7	9.4	10.4	6.3	4.8	7.0	6.7	4.8
	n:	4	4	4	4	4	4	4	4
	CV%:	9.8	8.7	8.9	4.8	4.0	6.2	7.2	5.1
48.0 h		378	406.9	565.7	599	501.4	473.5	362.9	299.5
		377.1	486.9	457.2	608.5	551.6	476.7	355.5	325.5
		347.6	497.3	498.4	578.7	524.6	460.3	355.8	310.1
		332.1	478.4	466.8	619.8	530.8	517.3	336.4	302.7
	Mean:	358.7	467.4	497.0	601.5	527.1	482.0	352.7	309.5
	Std.Dev:	22.7	41.1	49.1	17.4	20.7	24.6	11.4	11.6
	n:	4	4	4	4	4	4	4	4
	CV%:	6.3	8.8	9.9	2.9	3.9	5.1	3.2	3.7
72.0 h		1297.6	1586.2	1769.4	1719.1	1515.9	1486	1189.5	1002.3
		1255.9	1670	1480.3	1827.5	1631.3	1414.9	1147.5	907.9
		1148.4	1613.6	1570.6	1770	1538.6	1366	1173.4	932.6
		1117.1	1576.8	1484.5	1875.4	1502.9	1427.5	1086.7	852.4
	Mean:	1204.8	1611.7	1576.2	1798.0	1547.2	1423.6	1149.3	923.8
	Std.Dev:	85.8	41.9	135.4	68.0	58.0	49.3	45.2	62.2
	n:	4	4	4	4	4	4	4	4
	CV%:	7.1	2.6	8.6	3.8	3.7	3.5	3.9	6.7

Yield of *Desmodesmus subspicatus* cells as Dependent on Concentration and Time

Tab. 3: Yield of *Desmodesmus subspicatus* cells as dependent on concentration of the test item and time; Mean: arithmetic mean; Std.Dev.: standard deviation; n: number of replicates; CV: coefficient of variation (calculated from InputRawData)

Treatm. [mg/L]		Control	7.81	15.63	31.25	62.50	125.00	250.00	500.00
0 h		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mean:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Std.Dev.:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	n:	4	4	4	4	4	4	4	4
	CV:								
24 h		93.30	56.50	79.30	83.70	73.60	64.70	51.80	52.20
		74.10	77.50	63.80	85.00	80.30	69.00	55.30	57.70
		77.50	73.50	88.90	81.30	77.00	61.50	53.20	50.60
		70.10	61.40	69.40	97.30	73.90	77.20	42.30	48.60
	Mean:	78.75	67.22	75.35	86.82	76.20	68.10	50.65	52.28
	Std.Dev.:	10.161	9.898	11.076	7.150	3.136	6.800	5.749	3.905
	n:	4	4	4	4	4	4	4	4
	CV:	12.9	14.7	14.7	8.2	4.1	10.0	11.4	7.5
48 h		334.60	365.70	521.90	555.30	460.20	429.90	320.90	259.00
		336.00	446.20	415.80	564.30	506.50	433.90	311.10	282.40
		307.30	456.50	459.40	535.40	482.10	416.10	311.90	268.70
		292.50	436.00	424.70	578.00	488.80	472.90	294.40	261.50
	Mean:	317.60	426.10	455.45	558.25	484.40	438.20	309.58	267.90
	Std.Dev.:	21.320	41.127	48.128	17.865	19.137	24.358	11.049	10.505
	n:	4	4	4	4	4	4	4	4
	CV:	6.7	9.7	10.6	3.2	4.0	5.6	3.6	3.9
72 h		1254.20	1545.00	1725.60	1675.40	1474.70	1442.40	1147.50	961.80
		1214.80	1629.30	1438.90	1783.30	1586.20	1372.10	1103.10	864.80
		1108.10	1572.80	1531.60	1726.70	1496.10	1321.80	1129.50	891.20
		1077.50	1534.40	1442.40	1833.60	1460.90	1383.10	1044.70	811.20
	Mean:	1163.65	1570.38	1534.63	1754.75	1504.47	1379.85	1106.20	882.25
	Std.Dev.:	84.307	42.490	134.349	68.595	56.375	49.507	44.872	62.612
	n:	4	4	4	4	4	4	4	4
	CV:	7.2	2.7	8.8	3.9	3.7	3.6	4.1	7.1

Effective Concentrations (ECx) with Yield at 72 h

Yield of *Desmodesmus subspicatus*

Tab. 4: %Inhibition caused by the test item after 72 h.

Treatm.[mg/L]	Mean	Std. Dev.	n	%Decrease
Control	1163.65	84.307	4	0.0
7.81	1570.38	42.490	4	-35.0
15.63	1534.63	134.349	4	-31.9
31.25	1754.75	68.595	4	-50.8
62.50	1504.47	56.375	4	-29.3
125.00	1379.85	49.507	4	-18.6
250.00	1106.20	44.872	4	4.9
500.00	882.25	62.612	4	24.2

Probit analysis using linear max. likelihood regression

Tab. 5: Probit analysis using linear max. likelihood regression: Determination of the concentration/response function; data is shown which entered the probit analysis; Log(x): logarithm of the concentration; n: number of replicates; Emp. Probit: empirical probits; reg. probit: calculated probits for the final function.

Treatm. [mg/L]	Log(x)	% Decrease	n	Emp. Probit	Weight	Reg. Probit
Control		0.10	4			excluded
7.81	0.893	0.10	4	1.9074	0.000	1.278
15.63	1.194	0.10	4	1.9074	0.000	1.278
31.25	1.495	0.10	4	1.9074	0.000	1.278
62.50	1.796	0.10	4	1.9074	0.000	1.438
125.00	2.097	0.10	4	1.9074	0.001	2.381
250.00	2.398	4.94	4	3.3494	0.064	3.342
500.00	2.699	24.18	4	4.3023	0.613	4.303

excluded: value not in line with the chosen function

Inhibitions lower equal 0% or greater equal 100% were replaced by 0.100 and 99.900, respectively.

Results of the probit analysis

Tab. 6: Results of the probit analysis: Selected effective concentrations (ECx) of the test item and their 95%- and 99%-confidence limits

Parameter	EC10	EC20	EC50
Value [mg/L]	328.821	452.203	829.072
lower 95%-cl	322.089	447.549	805.960
upper 95%-cl	335.138	456.834	855.150
lower 99%-cl	318.474	444.946	792.508
upper 99%-cl	338.942	459.507	869.666

n.d.: not determined due to mathematical reasons

Computation of variances and confidence limits was adjusted to metric data (Christensen & Nyholm 1984). Inhibitions lower equal 0% or greater equal 100% were replaced by 0.100 and 99.900, respectively. Slope function after Litchfield and Wilcoxon: 2.059

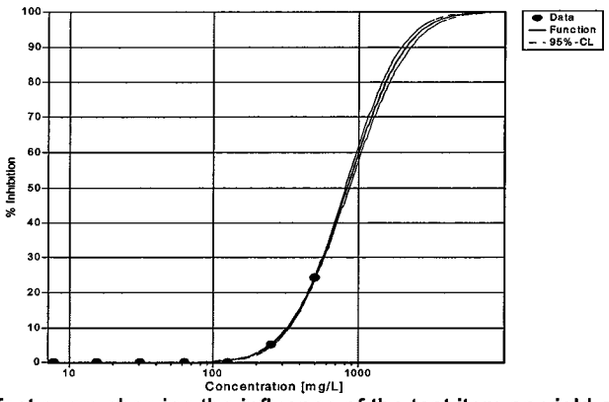

Fig. 1: Concentration-effect curve showing the influence of the test item on yield of the introduced *Desmodesmus subspicatus* as observed after 72 h.

Overview over the ECs of the Test Item on Yield

Effects on Yield

Tab. 7: Yield (Y) and its inhibition relative to control (%I) as computed from the raw data for test intervals selected.

Treatment		**0-24 h**		**0-48 h**		**0-72 h**
[mg/L]	**Y**	**%I**	**Y**	**%I**	**Y**	**%I**
Control	78.75	0.0	317.60	0.0	1,163.65	0.0
7.812	67.22	14.6	426.10	-34.2	1,570.38	-35.0
15.625	75.35	4.3	455.45	-43.4	1,534.63	-31.9
31.250	86.82	-10.3	558.25	-75.8	1,754.75	-50.8
62.500	76.20	3.2	484.40	-52.5	1,504.47	-29.3
125.000	68.10	13.5	438.20	-38.0	1,379.85	-18.6
250.000	50.65	35.7	309.58	2.5	1,106.20	4.9
500.000	52.28	33.6	267.90	15.6	882.25	24.2

EC10	70.686	410.157	328.821
lower 95%-cl	n.d.	405.885	322.089
upper 95%-cl	164.841	414.213	335.138
EC20	171.202	566.034	452.203
lower 95%-cl	0.019	560.397	447.549
upper 95%-cl	432.942	572.103	456.834
EC50	921.313	n.d.	829.072
lower 95%-cl	386.434	n.d.	805.960
upper 95%-cl	n.d.	n.d.	855.150

Threshold Concentrations (NOEC) with Yield at 72 h

Statistical characteristics of the sample

Tab. 8: Statistical characteristics: Mean: arithmetic mean (X); Med: median; Min: minimum value, Max: maximum value; n: sample size; s: standard deviation; s%: coefficient of variation; s(X): standard error; %s(X): %standard error; 95%l, 95%u: lower, upper 95%-confidence limits.

Treatm. [mg/L]	Mean	Med	Min	Max	n	s	%s	s(X)	%s(X)	95%l	95%u
Control	1163.65	1161.45	1077.50	1254.20	4	84.307	7.2	42.154	3.6	1027.91	1299.39
7.81	1570.38	1558.90	1534.40	1629.30	4	42.490	2.7	21.245	1.4	1501.97	1638.78
15.63	1534.63	1487.00	1438.90	1725.60	4	134.349	8.8	67.175	4.4	1318.32	1750.93
31.25	1754.75	1755.00	1675.40	1833.60	4	68.595	3.9	34.297	2.0	1644.31	1865.19
62.50	1504.47	1485.40	1460.90	1586.20	4	56.375	3.7	28.188	1.9	1413.71	1595.24
125.00	1379.85	1377.60	1321.80	1442.40	4	49.507	3.6	24.754	1.8	1300.14	1459.56
250.00	1106.20	1116.30	1044.70	1147.50	4	44.872	4.1	22.436	2.0	1033.96	1178.44
500.00	882.25	878.00	811.20	961.80	4	62.612	7.1	31.306	3.5	781.44	983.06

Range-to-standard-deviation-ratio Test on Normal Distribution

Tab. 9: The range-to-standard-deviation ratio (R/s) is used to test correspondence with normal distribution (according to Sachs 2002); significance level Alpha = 0.05; R: range; s: standard deviation; R/s: quotient of R and s; cl, ch: critical margins for acceptance of the Ho; Ho assumes "normally distributed" and is rejected if R/s is outside of the critical margins (indicated by a +sign).

Treatm. [mg/L]	R	s	n	R/s	cl	ch	Sign.
Control	176.70	84.307	4	2.096	1.980	2.429	-
7.81	94.90	42.490	4	2.233	1.980	2.429	-
15.63	286.70	134.349	4	2.134	1.980	2.429	-
31.25	158.20	68.595	4	2.306	1.980	2.429	-
62.50	125.30	56.375	4	2.223	1.980	2.429	-
125.00	120.60	49.507	4	2.436	1.980	2.429	+
250.00	102.80	44.872	4	2.291	1.980	2.429	-
500.00	150.60	62.612	4	2.405	1.980	2.429	-

+: significant; -: non-significant (= in line with normal distribution)

Correspondence with normal distribution was seen in more than 50% of treatments.
Cochran´s test is chosen for variance homogeneity testing.

Cochran´s Test Procedure on Variance Homogeneity

Tab. 10: Homogeneity of variance is tested (Alpha = 0.05); var: variance; n: sample size; G*: critical limit for G_max; dfm: degrees of freedom for the multiple test procedure; homogeneity hypothesis is rejected if G_max > G*.

Treatm. [mg/L]	var	n
Control	7107.75	4
7.81	1805.38	4
15.63	18049.77	4
31.25	4705.22	4
62.50	3178.15	4
125.00	2450.98	4
250.00	2013.48	4
500.00	3920.30	4

G_max = 0.42; dfm = 3; G* = 0.44; G_max <= G*: homogeneity hypothesis is accepted.

Variance homogeneity check was passed.
Normal distribution and variance homogeneity requirements are fulfilled.
A parametric multiple test is advisable.

Williams Multiple Sequential t-test Procedure

Tab. 11: Comparison of treatments with "Control" by the t test procedure after Williams. Significance was Alpha = 0.05, one-sided smaller; Mean: arithmetic mean; n: sample size; s: standard deviation; LhM: max. likelihood mean; %MDD: minimum detectable difference to Control (in percent of Control); t: sample t; t*: critical t for Ho: μ1 = μ2 = ... = μk; the differences are significant in case |t| > |t*| (The residual variance of an ANOVA was applied; df = N - k; N: sum of treatment replicates n(i); k: number of treatments).

Treatm. [mg/L]	Mean	s	df	LhM	%MDD	t	t*	Sign.
Control	1163.65	73.5111						
7.81	1570.38	73.5111	24	1570.38	-7.64	7.82	-1.71	-
15.63	1534.63	73.5111	24	1644.69	-8.00	9.25	-1.79	-
31.25	1754.75	73.5111	24	1644.69	-8.12	9.25	-1.82	-
62.50	1504.47	73.5111	24	1504.47	-8.17	6.56	-1.83	-
125.00	1379.85	73.5111	24	1379.85	-8.21	4.16	-1.84	-
250.00	1106.20	73.5111	24	1106.20	-8.23	-1.11	-1.84	-
500.00	882.25	73.5111	24	882.25	-8.25	-5.41	-1.85	+

+: significant; -: non-significant

A NOEC of 250.00 mg/L is suggested by the program.

Overview over the Effect-Thresholds of the Test Item on Yield

Overview over the LOEC and NOEC Determination by Williams Test

Tab. 12: Overview over the LOEC and NOEC Determination by Williams Test: Sample t-values as computed for yield for all inspection intervals; note that with "one-sided smaller" positive values of the test statistic point to promotion of the variable relative to control.

Treatm. [mg/L]	0-24 h		0-48 h		0-72 h	
7.81	-0.417	-	8.459	-	7.825	-
15.63	-0.417	-	8.459	-	9.254	-
31.25	-0.417	-	8.459	-	9.254	-
62.50	-0.466	-	8.459	-	6.557	-
125.00	-1.946	+	6.242	-	4.159	-
250.00	-4.985	+	-0.415	-	-1.105	-
500.00	-4.985	+	-2.572	+	-5.414	+
LOEC	125.00		500.00		500.00	
NOEC	62.50		250.00		250.00	

+: Significant difference to control (p <=0.05)

Mean growth rate in *Desmodesmus subspicatus* as Dependent on Concentration and Time

Tab. 13: Mean growth rate in *Desmodesmus subspicatus* as dependent on concentration of the test item and time; Mean: arithmetic mean; Std.Dev.: standard deviation; n: number of replicates; CV: coefficient of variation (calculated from InputRawData)

Treatm. [mg/L]		Control	7.81	15.63	31.25	62.50	125.00	250.00	500.00
0 h		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mean:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Std.Dev.:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	n:	4	4	4	4	4	4	4	4
	CV:								
24 h		1.15	0.86	1.03	1.07	1.02	0.91	0.80	0.83
		1.03	1.07	0.93	1.07	1.02	0.96	0.81	0.85
		1.07	1.03	1.19	1.06	1.03	0.87	0.79	0.80
		1.02	0.90	0.97	1.20	1.02	1.01	0.70	0.78
	Mean:	1.07	0.96	1.03	1.10	1.02	0.94	0.78	0.81
	Std.Dev.:	0.058	0.099	0.112	0.068	0.008	0.059	0.053	0.031
	n:	4	4	4	4	4	4	4	4
	CV:	5.4	10.3	10.8	6.2	0.8	6.3	6.8	3.8
48 h		1.08	1.15	1.28	1.31	1.25	1.19	1.08	1.00
		1.11	1.24	1.20	1.31	1.25	1.21	1.04	1.01
		1.08	1.25	1.27	1.30	1.26	1.17	1.05	1.01
		1.06	1.21	1.20	1.35	1.27	1.23	1.04	1.00
	Mean:	1.08	1.21	1.24	1.32	1.26	1.20	1.05	1.00
	Std.Dev.:	0.019	0.048	0.043	0.022	0.008	0.023	0.018	0.006
	n:	4	4	4	4	4	4	4	4
	CV:	1.7	3.9	3.5	1.7	0.7	2.0	1.7	0.6
72 h		1.13	1.22	1.23	1.22	1.20	1.18	1.11	1.07
		1.14	1.24	1.19	1.24	1.20	1.17	1.08	1.02
		1.12	1.23	1.23	1.24	1.20	1.14	1.10	1.04
		1.11	1.21	1.19	1.27	1.19	1.16	1.08	1.01
	Mean:	1.13	1.22	1.21	1.24	1.20	1.16	1.09	1.03
	Std.Dev.:	0.013	0.014	0.025	0.018	0.004	0.014	0.014	0.027
	n:	4	4	4	4	4	4	4	4
	CV:	1.1	1.1	2.0	1.5	0.3	1.2	1.3	2.6

Effective Concentrations (ECx) with Growth Rate at 72 h

Growth Rate of *Desmodesmus subspicatus*

Tab. 14: %Inhibition caused by the test item after 72 h.

Treatm.[mg/L]	Mean	Std. Dev.	n	%Inhibition
Control	1.13	0.013	4	0.0
7.81	1.22	0.014	4	-8.5
15.63	1.21	0.025	4	-7.6
31.25	1.24	0.018	4	-10.4
62.50	1.20	0.004	4	-6.3
125.00	1.16	0.014	4	-3.1
250.00	1.09	0.014	4	2.8
500.00	1.03	0.027	4	8.2

Probit analysis using linear max. likelihood regression

Tab. 15: Probit analysis using linear max. likelihood regression: Determination of the concentration/response function; data is shown which entered the probit analysis; Log(x): logarithm of the concentration; n: number of replicates; Emp. Probit: empirical probits; reg. probit: calculated probits for the final function.

Treatm. [mg/L]	Log(x)	% Inhibition	n	Emp. Probit	Weight	Reg. Probit
Control		0.10	4			excluded
7.81	0.893	0.10	4	1.9074	0.000	1.278
15.63	1.194	0.10	4	1.9074	0.000	1.278
31.25	1.495	0.10	4	1.9074	0.000	1.341
62.50	1.796	0.10	4	1.9074	0.000	1.896
125.00	2.097	0.10	4	1.9074	0.002	2.467
250.00	2.398	2.76	4	3.0816	0.021	3.039
500.00	2.699	8.19	4	3.6087	0.145	3.612

excluded: value not in line with the chosen function

Inhibitions lower equal 0% or greater equal 100% were replaced by 0.100 and 99.900, respectively.

Results of the probit analysis

Tab. 16: Results of the probit analysis: Selected effective concentrations (ECx) of the test item and their 95%- and 99%-confidence limits

Parameter	EC10	EC20	EC50
Value [mg/L]	570.798	975.062	n.d.
lower 95%-cl	538.903	860.295	n.d.
upper 95%-cl	614.098	1163.180	n.d.
lower 99%-cl	519.270	789.635	n.d.
upper 99%-cl	637.317	1267.266	n.d.

n.d.: not determined due to mathematical reasons

Computation of variances and confidence limits was adjusted to metric data (Christensen & Nyholm 1984). Inhibitions lower equal 0% or greater equal 100% were replaced by 0.100 and 99.900, respectively. Slope function after Litchfield and Wilcoxon: 3.367

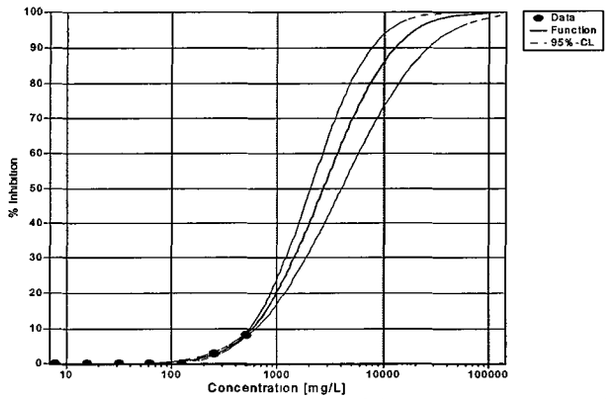

Fig. 2: Concentration-effect curve showing the influence of the test item on growth rate of the introduced *Desmodesmus subspicatus* as observed after 72 h.

Overview over the ECs of the Test Item on Growth Rate

Effects on Growth Rate

Tab. 17: Growth rate (G) and its inhibition relative to control (%I) as computed from the raw data for test intervals selected.

Treatment		**0-24 h**		**0-48 h**		**0-72 h**
[mg/L]	**G**	**%I**	**G**	**%I**	**G**	**%I**
Control	1.07	0.0	1.08	0.0	1.13	0.0
7.812	0.96	9.7	1.21	-11.9	1.22	-8.5
15.625	1.03	3.3	1.24	-14.5	1.21	-7.6
31.250	1.10	-3.1	1.32	-21.6	1.24	-10.4
62.500	1.02	4.1	1.26	-16.1	1.20	-6.3
125.000	0.94	12.2	1.20	-10.8	1.16	-3.1
250.000	0.78	27.3	1.05	2.9	1.09	2.8
500.000	0.81	23.8	1.00	7.3	1.03	8.2
EC10		83.547		629.275		570.798
lower 95%-cl		0.006		570.077		538.903
upper 95%-cl		188.280		728.339		614.098
EC20		266.367		n.d.		975.062
lower 95%-cl		71.261		n.d.		860.295
upper 95%-cl		3621.661		n.d.		1163.180
EC50		n.d.		n.d.		n.d.
lower 95%-cl		n.d.		n.d.		n.d.
upper 95%-cl		n.d.		n.d.		n.d.

Threshold Concentrations (NOEC) with Growth Rate at 72 h

Statistical characteristics of the sample

Tab. 18: Statistical characteristics: Mean: arithmetic mean (X); Med: median; Min: minimum value, Max: maximum value; n: sample size; s: standard deviation; s%: coefficient of variation; s(X): standard error; %s(X): %standard error; 95%l, 95%u: lower, upper 95%-confidence limits.

Treatm. [mg/L]	Mean	Med	Min	Max	n	s	%s	s(X)	%s(X)	95%l	95%u
Control	1.13	1.12	1.11	1.14	4	0.013	1.1	0.006	0.6	1.11	1.15
7.81	1.22	1.22	1.21	1.24	4	0.014	1.1	0.007	0.6	1.20	1.24
15.63	1.21	1.21	1.19	1.23	4	0.025	2.0	0.012	1.0	1.17	1.25
31.25	1.24	1.24	1.22	1.27	4	0.018	1.5	0.009	0.7	1.21	1.27
62.50	1.20	1.20	1.19	1.20	4	0.004	0.3	0.002	0.2	1.19	1.20
125.00	1.16	1.16	1.14	1.18	4	0.014	1.2	0.007	0.6	1.14	1.18
250.00	1.09	1.09	1.08	1.11	4	0.014	1.3	0.007	0.7	1.07	1.12
500.00	1.03	1.03	1.01	1.07	4	0.027	2.6	0.014	1.3	0.99	1.08

Range-to-standard-deviation-ratio Test on Normal Distribution

Tab. 19: The range-to-standard-deviation ratio (R/s) is used to test correspondence with normal distribution (according to Sachs 2002); significance level Alpha = 0.05; R: range; s: standard deviation; R/s: quotient of R and s; cl, ch: critical margins for acceptance of the Ho; Ho assumes "normally distributed" and is rejected if R/s is outside of the critical margins (indicated by a +sign).

Treatm. [mg/L]	R	s	n	R/s	cl	ch	Sign.
Control	0.03	0.013	4	2.091	1.980	2.429	-
7.81	0.03	0.014	4	2.363	1.980	2.429	-
15.63	0.05	0.025	4	1.842	1.980	2.429	+
31.25	0.04	0.018	4	2.377	1.980	2.429	-
62.50	0.01	0.004	4	2.425	1.980	2.429	-
125.00	0.03	0.014	4	2.351	1.980	2.429	-
250.00	0.03	0.014	4	2.107	1.980	2.429	-
500.00	0.06	0.027	4	2.208	1.980	2.429	-

+: significant; -: non-significant (= in line with normal distribution)

Correspondence with normal distribution was seen in more than 50% of treatments.
Cochran´s test is chosen for variance homogeneity testing.

Cochran´s Test Procedure on Variance Homogeneity

Tab. 20: Homogeneity of variance is tested (Alpha = 0.05); var: variance; n: sample size; G*: critical limit for G_max; dfm: degrees of freedom for the multiple test procedure; homogeneity hypothesis is rejected if G_max > G*.

Treatm. [mg/L]	var	n
Control	0.00	4
7.81	0.00	4
15.63	0.00	4
31.25	0.00	4
62.50	0.00	4
125.00	0.00	4
250.00	0.00	4
500.00	0.00	4

G_max = 0.30; dfm = 3; G* = 0.44; G_max <= G*: homogeneity hypothesis is accepted.

Variance homogeneity check was passed.
Normal distribution and variance homogeneity requirements are fulfilled.
A parametric multiple test is advisable.

Williams Multiple Sequential t-test Procedure

Tab. 21: Comparison of treatments with "Control" by the t test procedure after Williams. Significance was Alpha = 0.05, one-sided smaller; Mean: arithmetic mean; n: sample size; s: standard deviation; LhM: max. likelihood mean; %MDD: minimum detectable difference to Control (in percent of Control); t: sample t; t*: critical t for Ho: μ1 = μ2 = ... = μk; the differences are significant in case |t| > |t*| (The residual variance of an ANOVA was applied; df = N - k; N: sum of treatment replicates n(i); k: number of treatments).

Treatm. [mg/L]	Mean	s	df	LhM	%MDD	t	t*	Sign.
Control	1.13	0.0175						
7.81	1.22	0.0175	24	1.22	-1.88	7.77	-1.71	-
15.63	1.21	0.0175	24	1.23	-1.97	8.19	-1.79	-
31.25	1.24	0.0175	24	1.23	-2.00	8.19	-1.82	-
62.50	1.20	0.0175	24	1.20	-2.01	5.75	-1.83	-
125.00	1.16	0.0175	24	1.16	-2.02	2.84	-1.84	-
250.00	1.09	0.0175	24	1.09	-2.02	-2.51	-1.84	+
500.00	1.03	0.0175	24	1.03	-2.03	-7.46	-1.85	+

+: significant; -: non-significant

A NOEC of 125.00 mg/L is suggested by the program.

Overview over the Effect-Thresholds of the Test Item on Growth Rate

Overview over the LOEC and NOEC Determination by Williams Test

Tab. 22: Overview over the LOEC and NOEC Determination by Williams Test: Sample t-values as computed for growth rate for all inspection intervals; note that with "one-sided smaller" positive values of the test statistic point to promotion of the variable relative to control.

Treatm. [mg/L]	0-24 h		0-48 h		0-72 h	
7.81	-0.728	-	8.969	-	7.767	-
15.63	-0.728	-	8.969	-	8.190	-
31.25	-0.728	-	8.969	-	8.190	-
62.50	-0.892	-	8.969	-	5.755	-
125.00	-2.677	+	6.031	-	2.843	-
250.00	-5.612	+	-1.634	-	-2.510	+
500.00	-5.612	+	-4.088	+	-7.460	+
LOEC	125.00		500.00		250.00	
NOEC	62.50		250.00		125.00	

+: Significant difference to control (p <=0.05)

Biomass integral in *Desmodesmus subspicatus* as Dependent on Concentration and Time

Tab. 23: Biomass integral in *Desmodesmus subspicatus* as dependent on concentration of the test item and time; Mean: arithmetic mean; Std.Dev.: standard deviation; n: number of replicates; CV: coefficient of variation (calculated from InputRawData)

Treatm. [mg/L]		Control	7.81	15.63	31.25	62.50	125.00	250.00	500.00
0 h		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mean:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Std.Dev.:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	n:	4	4	4	4	4	4	4	4
	CV:								
24 h		46.65	28.25	39.65	41.85	36.80	32.35	25.90	26.10
		37.05	38.75	31.90	42.50	40.15	34.50	27.65	28.85
		38.75	36.75	44.45	40.65	38.50	30.75	26.60	25.30
		35.05	30.70	34.70	48.65	36.95	38.60	21.15	24.30
	Mean:	39.38	33.61	37.67	43.41	38.10	34.05	25.32	26.14
	Std.Dev.:	5.080	4.949	5.538	3.575	1.568	3.400	2.875	1.953
	n:	4	4	4	4	4	4	4	4
	CV:	12.9	14.7	14.7	8.2	4.1	10.0	11.4	7.5
48 h		260.60	239.35	340.25	361.35	303.70	279.65	212.25	181.70
		242.10	300.60	271.70	367.15	333.55	285.95	210.85	198.90
		231.15	301.75	318.60	349.00	318.05	269.55	209.15	184.95
		216.35	279.40	281.75	386.30	318.30	313.65	189.50	179.35
	Mean:	237.55	280.27	303.08	365.95	318.40	287.20	205.44	186.23
	Std.Dev.:	18.641	29.154	31.949	15.535	12.189	18.883	10.700	8.756
	n:	4	4	4	4	4	4	4	4
	CV:	7.8	10.4	10.5	4.2	3.8	6.6	5.2	4.7
72 h		1055.00	1194.70	1464.00	1476.70	1271.15	1215.80	946.45	792.10
		1017.50	1338.35	1199.05	1540.95	1379.90	1188.95	917.95	772.50
		938.85	1316.40	1314.10	1480.05	1307.15	1138.50	929.85	764.90
		901.35	1264.60	1215.30	1592.10	1293.15	1241.65	859.05	715.70
	Mean:	978.18	1278.51	1298.11	1522.45	1312.84	1196.22	913.33	761.30
	Std.Dev.:	70.468	63.859	121.718	55.028	47.100	44.090	38.024	32.488
	n:	4	4	4	4	4	4	4	4
	CV:	7.2	5.0	9.4	3.6	3.6	3.7	4.2	4.3

Effective Concentrations (ECx) with Biomass Integral at 72 h

Biomass Integral of *Desmodesmus subspicatus*

Tab. 24: %Inhibition caused by the test item after 72 h.

Treatm.[mg/L]	Mean	Std. Dev.	n	%Decrease
Control	978.18	70.468	4	0.0
7.81	1278.51	63.859	4	-30.7
15.63	1298.11	121.718	4	-32.7
31.25	1522.45	55.028	4	-55.6
62.50	1312.84	47.100	4	-34.2
125.00	1196.22	44.090	4	-22.3
250.00	913.33	38.024	4	6.6
500.00	761.30	32.488	4	22.2

Probit analysis using linear max. likelihood regression

Tab. 25: Probit analysis using linear max. likelihood regression: Determination of the concentration/response function; data is shown which entered the probit analysis; Log(x): logarithm of the concentration; n: number of replicates; Emp. Probit: empirical probits; reg. probit: calculated probits for the final function.

Treatm. [mg/L]	Log(x)	% Decrease	n	Emp. Probit	Weight	Reg. Probit
Control		0.10	4			excluded
7.81	0.893	0.10	4	1.9074	0.000	1.278
15.63	1.194	0.10	4	1.9074	0.000	1.278
31.25	1.495	0.10	4	1.9074	0.000	1.278
62.50	1.796	0.10	4	1.9074	0.000	1.912
125.00	2.097	0.10	4	1.9074	0.005	2.687
250.00	2.398	6.63	4	3.4968	0.094	3.463
500.00	2.699	22.17	4	4.2362	0.559	4.240

excluded: value not in line with the chosen function

Inhibitions lower equal 0% or greater equal 100% were replaced by 0.100 and 99.900, respectively.

Results of the probit analysis

Tab. 26: Results of the probit analysis: Selected effective concentrations (ECx) of the test item and their 95%- and 99%-confidence limits

Parameter	EC10	EC20	EC50
Value [mg/L]	314.832	467.284	990.522
lower 95%-cl	296.023	451.952	902.068
upper 95%-cl	331.109	483.777	1115.347
lower 99%-cl	286.751	443.298	849.280
upper 99%-cl	341.816	493.221	1184.673

n.d.: not determined due to mathematical reasons

Computation of variances and confidence limits was adjusted to metric data (Christensen & Nyholm 1984). Inhibitions lower equal 0% or greater equal 100% were replaced by 0.100 and 99.900, respectively. Slope function after Litchfield and Wilcoxon: 2.448

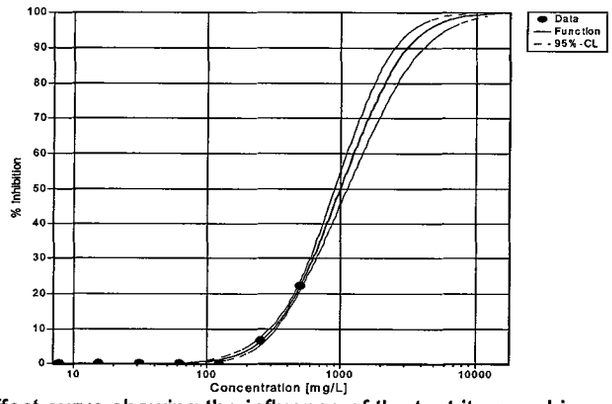

Fig. 3: Concentration-effect curve showing the influence of the test item on biomass integral of the introduced *Desmodesmus subspicatus* as observed after 72 h.

Overview over the ECs of the Test Item on Biomass Integral

Effects on Biomass Integral

Tab. 27: Biomass integral (BI) and its inhibition relative to control (%I) as computed from the raw data for test intervals selected.

Treatment		**0-24 h**		**0-48 h**		**0-72 h**
[mg/L]	**BI**	**%I**	**BI**	**%I**	**BI**	**%I**
Control	39.38	0.0	237.55	0.0	978.18	0.0
7.812	33.61	14.6	280.27	-18.0	1,278.51	-30.7
15.625	37.67	4.3	303.08	-27.6	1,298.11	-32.7
31.250	43.41	-10.3	365.95	-54.1	1,522.45	-55.6
62.500	38.10	3.2	318.40	-34.0	1,312.84	-34.2
125.000	34.05	13.5	287.20	-20.9	1,196.22	-22.3
250.000	25.32	35.7	205.44	13.5	913.33	6.6
500.000	26.14	33.6	186.23	21.6	761.30	22.2
EC10		70.686		249.343		314.832
lower 95%-cl		n.d.		142.106		296.023
upper 95%-cl		164.841		316.810		331.109
EC20		171.202		444.900		467.284
lower 95%-cl		0.019		357.578		451.952
upper 95%-cl		432.942		606.973		483.777
EC50		921.313		n.d.		990.522
lower 95%-cl		386.434		n.d.		902.068
upper 95%-cl		n.d.		n.d.		1115.347

Threshold Concentrations (NOEC) with Biomass Integral at 72 h

Statistical characteristics of the sample

Tab. 28: Statistical characteristics: Mean: arithmetic mean (X); Med: median; Min: minimum value, Max: maximum value; n: sample size; s: standard deviation; s%: coefficient of variation; s(X): standard error; %s(X): %standard error; 95%l, 95%u: lower, upper 95%-confidence limits.

Treatm. [mg/L]	Mean	Med	Min	Max	n	s	%s	s(X)	%s(X)	95%l	95%u
Control	978.18	978.18	901.35	1055.00	4	70.468	7.2	35.234	3.6	864.72	1091.63
7.81	1278.51	1290.50	1194.70	1338.35	4	63.859	5.0	31.930	2.5	1175.70	1381.33
15.63	1298.11	1264.70	1199.05	1464.00	4	121.718	9.4	60.859	4.7	1102.15	1494.08
31.25	1522.45	1510.50	1476.70	1592.10	4	55.028	3.6	27.514	1.8	1433.85	1611.05
62.50	1312.84	1300.15	1271.15	1379.90	4	47.100	3.6	23.550	1.8	1237.01	1388.67
125.00	1196.22	1202.38	1138.50	1241.65	4	44.090	3.7	22.045	1.8	1125.24	1267.21
250.00	913.33	923.90	859.05	946.45	4	38.024	4.2	19.012	2.1	852.11	974.54
500.00	761.30	768.70	715.70	792.10	4	32.488	4.3	16.244	2.1	708.99	813.61

Range-to-standard-deviation-ratio Test on Normal Distribution

Tab. 29: The range-to-standard-deviation ratio (R/s) is used to test correspondence with normal distribution (according to Sachs 2002); significance level Alpha = 0.05; R: range; s: standard deviation; R/s: quotient of R and s; cl, ch: critical margins for acceptance of the Ho; Ho assumes "normally distributed" and is rejected if R/s is outside of the critical margins (indicated by a +sign).

Treatm. [mg/L]	R	s	n	R/s	cl	ch	Sign.
Control	153.65	70.468	4	2.180	1.980	2.429	-
7.81	143.65	63.859	4	2.249	1.980	2.429	-
15.63	264.95	121.718	4	2.177	1.980	2.429	-
31.25	115.40	55.028	4	2.097	1.980	2.429	-
62.50	108.75	47.100	4	2.309	1.980	2.429	-
125.00	103.15	44.090	4	2.340	1.980	2.429	-
250.00	87.40	38.024	4	2.299	1.980	2.429	-
500.00	76.40	32.488	4	2.352	1.980	2.429	-

+: significant; -: non-significant (= in line with normal distribution)

Correspondence with normal distribution was seen in more than 50% of treatments.
Cochran´s test is chosen for variance homogeneity testing.

Cochran´s Test Procedure on Variance Homogeneity

Tab. 30: Homogeneity of variance is tested (Alpha = 0.05); var: variance; n: sample size; G*: critical limit for G_max; dfm: degrees of freedom for the multiple test procedure; homogeneity hypothesis is rejected if G_max > G*.

Treatm. [mg/L]	var	n
Control	4965.69	4
7.81	4078.03	4
15.63	14815.18	4
31.25	3028.06	4
62.50	2218.39	4
125.00	1943.91	4
250.00	1445.84	4
500.00	1055.47	4

G_max = 0.44; dfm = 3; G* = 0.44; G_max > G*: homogeneity hypothesis is rejected.

Variance homogeneity check was not passed
However, normal distribution requirements are fulfilled.
The parametric Bonferroni-t-test for non-homogeneous variances is advisable.

Welch-t test for Inhomogeneous Variances with Bonferroni Adjustment

Tab. 31: Multiple sequentially rejective comparisons after Welch of treatments with "Control" by the t test procedure. Significance was Alpha = 0.05, one-sided smaller; Mean: arithmetic mean; n: sample size; s^2: variance; %MDD: minimum detectable difference to Control (in percent of Control); t: sample t; p(t): probability of sample t for Ho: μ1 = μ2; Alpha(i): adjusted significance levels; the differences are significant in case p(i) <= Alpha(i) ; dfm: modified degrees of freedom due to heteroscedascity. (The residual variance of an ANOVA was applied; df = N - k; N: sum of treatment replicates n(i); k: number of treatments).

Treatm. [mg/L]	Mean	s^2	df	%MDD	t	p(t)	Alpha(i)	Sign.
Control	978.18	4193.82						
7.81	1278.51	4193.82	10	-12.35	6.56	1.000	0.013	-
15.63	1298.11	4193.82	13	-11.15	6.99	1.000	0.017	-
31.25	1522.45	4193.82	11	-8.41	11.89	1.000	0.050	-
62.50	1312.84	4193.82	12	-10.21	7.31	1.000	0.025	-
125.00	1196.22	4193.82	12	-12.57	4.76	1.000	0.010	-
250.00	913.33	4193.82	14	-12.74	-1.42	0.089	0.008	-
500.00	761.30	4193.82	17	-12.79	-4.74	< 0.001	0.007	+

+: significant; -: non-significant

A NOEC of 250.00 mg/L is suggested by the program.

Overview over the Effect-Thresholds of the Test Item on Biomass Integral

Overview over the LOEC and NOEC Determination by Bonferroni t-Test (inhomog. Var.)

Tab. 32: Overview over the LOEC and NOEC Determination by Bonferroni t-Test (inhomog. Var.): Sample t-values as computed for biomass integral for all inspection intervals; note that with "one-sided smaller" positive values of the test statistic point to promotion of the variable relative to control.

Treatm. [mg/L]	0-24 h		0-48 h		0-72 h	
7.81	-0.417	-	5.652	-	6.559	-
15.63	-0.417	-	5.652	-	6.987	-
31.25	-0.417	-	5.652	-	11.886	-
62.50	-0.466	-	5.652	-	7.308	-
125.00	-1.946	+	3.535	-	4.762	-
250.00	-4.985	+	-2.287	+	-1.416	-
500.00	-4.985	+	-3.655	+	-4.736	+
LOEC	125.00		250.00		500.00	
NOEC	62.50		125.00		250.00	

+: Significant difference to control (p <=0.05)

Sectional growth rate in *Desmodesmus subspicatus* as Dependent on Concentration and Time

Tab. 33: Sectional growth rate in *Desmodesmus subspicatus* as dependent on concentration of the test item and time; Mean: arithmetic mean; Std.Dev.: standard deviation; n: number of replicates; CV: coefficient of variation (calculated from InputRawData)

Treatm. [mg/L]	Control	7.81	15.63	31.25	62.50	125.00	250.00	500.00
0 h	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mean:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Std.Dev.:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
n:	4	4	4	4	4	4	4	4
CV:								
0 - 24 h	1.15	0.86	1.03	1.07	1.02	0.91	0.80	0.83
	1.03	1.07	0.93	1.07	1.02	0.96	0.81	0.85
	1.07	1.03	1.19	1.06	1.03	0.87	0.79	0.80
	1.02	0.90	0.97	1.20	1.02	1.01	0.70	0.78
Mean:	1.07	0.96	1.03	1.10	1.02	0.94	0.78	0.81
Std.Dev.:	0.058	0.099	0.112	0.068	0.008	0.059	0.053	0.031
n:	4	4	4	4	4	4	4	4
CV:	5.4	10.3	10.8	6.2	0.8	6.3	6.8	3.8
24 - 48 h	1.02	1.43	1.53	1.55	1.47	1.48	1.35	1.17
	1.19	1.42	1.47	1.55	1.48	1.45	1.27	1.17
	1.08	1.47	1.36	1.54	1.48	1.47	1.30	1.22
	1.11	1.53	1.43	1.49	1.52	1.45	1.38	1.22
Mean:	1.10	1.46	1.45	1.53	1.49	1.46	1.33	1.19
Std.Dev.:	0.070	0.051	0.069	0.026	0.022	0.014	0.051	0.025
n:	4	4	4	4	4	4	4	4
CV:	6.4	3.5	4.8	1.7	1.5	1.0	3.8	2.1
48 - 72 h	1.23	1.36	1.14	1.05	1.11	1.14	1.19	1.21
	1.20	1.23	1.17	1.10	1.08	1.09	1.17	1.03
	1.20	1.18	1.15	1.12	1.08	1.09	1.19	1.10
	1.21	1.19	1.16	1.11	1.04	1.02	1.17	1.04
Mean:	1.21	1.24	1.15	1.09	1.08	1.08	1.18	1.09
Std.Dev.:	0.017	0.083	0.015	0.028	0.027	0.053	0.011	0.084
n:	4	4	4	4	4	4	4	4
CV:	1.4	6.7	1.3	2.6	2.5	4.9	0.9	7.7

REPRINT OF TEST REPORT

TEST SUBSTANCE: Diethylketon

Determination of the Inherent Biodegradation in a Batch Test with Activated Sludge (Zahn-Wellens Method)

TEST GUIDELINE

OECD Guideline for Testing of Chemicals 302 B; ISO 9888

SUMMARY:

The Zahn Wellens test is a static method to determine the ultimate inherent aerobic biodegradability or the elimination from water of a test substance in a batch test. The test substance, a defined inorganic medium and activated sludge from a municipal or laboratory waste water treatment plant are incubated and aerated at room temperature for up to 28 days. Samples are taken in regular intervals to measure the concentration of Chemical Oxygen Demand (COD).

TEST RESULT

Elimination of the test substance:
Removal of COD: 90-100 % after an exposure period of 13days

ORDER INFORMATION:

The investigations were performed in the former Laboratory of Emission Control (department code: DUU/W – K 210) of BASF Aktiengesellschaft Ludwigshafen/Rhein, Germany.

Original registration number of the test: 71

Date of the reprint: 07 November 2006 Author: Schwarz

Signature: H. Schwarz

TEST DETAILS

COD value of the stock solution:	9000 mg/L
Test concentration:	1050 mg/L COD
Test temperature:	20-25° C
Inoculum:	Activated sludge from a test plant for sewage treatment of BASF Aktiengesellschaft
Concentration of inoculum:	1 g/L dry matter
Test duration:	13 days

Date of the start of the test:	02. August 1977
Name of the then study director:	Dr. Pagga

TEST DATA:

Measured COD-values [mg/L]

Test duration	TS COD	% Elim.
0 hours	1056	-
3 hours	1200	0
1 day	900	27
3 days	215	93
7 days	203	94
10 days	203	94
13 days	173	97

LEGEND: TS = test substance assay
COD = Chemical Oxygen Demand