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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](mailto: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

# I U C L I D

## D a t a S e t

Existing Chemical ID: 1738-25-6  
CAS No. 1738-25-6  
EINECS Name 3-dimethylaminopropionitrile  
EC No. 217-090-4  
Molecular Weight 98.15 g/mol  
Molecular Formula C5 H10 N2

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**

**1.1.1 General Substance Information**

**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. General Information

date: 17-JAN-2007  
Substance ID: 1738-25-6

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**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: = -.45 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 3-dimethylaminopropionitrile 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 the  
content of 3-dimethylaminopropionitrile was determined  
gaschromatographic on a 2m Carbowax 20 M/T column with  
external standard.  
The concentration of 3-dimethylaminopropionitrile in the  
1-octanol phase was determined gaschromatographic on a DB-1  
capillary with external standard.

Result: 1. Initial weight:  
=====  
20.8880 g octanol-1 (saturated with water)  
0.0225 g 3-dimethylaminopropionitrile (DMAPN)  
25.1667 g dist. water (saturated with octanol-1)  
  
concentration of DMAPN in the octanol phase c/(g/l): 0.232  
(mean value of three repetitions, standard deviation: 0.001)  
  
concentration of DMAPN in the water phase c/(g/l): 0.665 (mean  
value of three repetitions, standard deviation: 0.005)  
  
c (DMAPN in the octanol phase) 0.232 g/l

Pow = ----- = ----- = 0.35  
c (DMAPN in the water phase) 0.665 g/l

pH of the water phase: 9.05

2. Initial weight:

=====

21.0346 g octanol-1 (saturated with water)  
0.0154 g 3-dimethylaminopropionitrile (DMAPN)  
24.9876 g dist. water (saturated with octanol-1)

concentration of DMAPN in the octanol phase c/(g/l): 0.166  
(mean value of three repetitions, standard deviation: 0.016)

concentration of DMAPN in the water phase c/(g/l): 0.446 (mean  
value of three repetitions, standard deviation: 0.006)

Pow = 0.37

pH of the water phase: 9.00

3. Initial weight:

=====

20.9219 g octanol-1 (saturated with water)  
0.0281 g 3-dimethylaminopropionitrile (DMAPN)  
25.2446 g dist. water (saturated with octanol-1)

concentration of DMAPN in the octanol phase c/(g/l): 0.296  
(mean value of three repetitions, standard deviation: 0.016)

concentration of DMAPN in the water phase c/(g/l): 0.866 (mean  
value of three repetitions, standard deviation: 0.010)

Pow = 0.34

pH of the water phase: 9.20

Summary of results:

=====

	P(OW)	log P(OW)
1. Initial weight	0.35	-0.46
2. Initial weight	0.37	-0.43
3. Initial weight	0.34	-0.47
mean value	0.35	-0.45
standard deviation	0.02	

**Test condition:** GC-conditions (determination of concentration in the 1-octanol phase):

column: dimethylpolysiloxane-capillary (DB-1)  
thickness of film: 1.0  $\mu\text{m}$   
inside diameter: 0.32 mm  
length: 30 m

oven temperature: 100 - 200  $^{\circ}\text{C}$  5 K/min  
injector temperature: 250 degree C  
detector temperature: 250 degree C

carrier gas: nitrogen  
pressure input: 1.75 bar absolute  
overall-flow: 60 ml/min  
injection volume: 1.0  $\mu\text{l}$

apparatus: HP 5890 with autosampler  
detector: FID

GC-conditions (determination of concentration in the water phase):

column: Carbowax 20 M  
carrier material: Teflon  
length: 2 m

oven temperature: 150  $^{\circ}\text{C}$  isothermal  
injector temperature: 250 degree C  
detector temperature: 250 degree C

carrier gas: nitrogen  
pressure input: 3.2 bar absolute  
injection volume: ca. 0.5  $\mu\text{l}$

apparatus: DANI 8500 with autosampler  
detector: FID

**Test substance:** room temperature: 25 degree C  
3-dimethylaminopropionitrile, purity 99.9 %

**Reliability:** (2) valid with restrictions  
scientifically acceptable

**Flag:** TSCA 8d

15-DEC-2006

(1)

### 2.6.1 Solubility in different media

**2.6.2 Surface Tension**

**2.7 Flash Point**

**2.8 Auto Flammability**

**2.9 Flammability**

**2.10 Explosive Properties**

**2.11 Oxidizing Properties**

**2.12 Dissociation Constant**

**2.13 Viscosity**

**2.14 Additional Remarks**

**3.1.1 Photodegradation**

**3.1.2 Stability in Water**

**3.1.3 Stability in Soil**

**3.2.1 Monitoring Data (Environment)**

**3.2.2 Field Studies**

**3.3.1 Transport between Environmental Compartments**

**3.3.2 Distribution**

**3.4 Mode of Degradation in Actual Use**

**3.5 Biodegradation**

**Type:** aerobic  
**Inoculum:** activated sludge, industrial  
**Concentration:** 400 mg/l related to DOC (Dissolved Organic Carbon)  
**Contact time:** 21 day(s)  
**Degradation:** 97 % after 21 day(s)  
**Result:** other: easily eliminated from water by biodegradation  
**Kinetic:** 1 day(s) 0 %  
 3 day(s) 20 %  
 10 day(s) 93 %  
 21 day(s) 97 %

**Method:** OECD Guide-line 302 B "Inherent biodegradability: Modified Zahn-Wellens Test"

**Year:** 1988

**GLP:** no

**Test substance:** as prescribed by 1.1 - 1.4

Result:	Time (d)	PC DOC (mg/l)	TS DOC (mg/l)	Blank TOC (mg/l)	TS elimination (%)	pH (TS)
	0	400	419	-	-	8.1
	3*	385	424	16	-2	7.5
	1	378	422	16	-1	7.8
	3	377	338	16	20	8.0
	7	360	172	16	61	8.6
	10	354	46	16	93	8.5
	14	335	38	16	95	8.0
	21	-	30	16	97	5.5

\* = hours

**Test condition:** Study conditions:

-----

- number of replicates:

test substance: 2 flasks, only mean value given in reprint.

- blank:

no blank flask was tested in parallel; a statistically obtained mean value of 16 mg/l DOC was used to calculate the elimination

- reference substance:

no reference substance was tested in parallel

- test system:

5 l-glass bottle

- preparation of the test assay:

stock solution of test substance:

TOC/DOC of Inoculum

liquid volume

2530.0 mg/l

1479/1463

3000.0 ml

- inoculum: 1 g/L dry weight  
- incubation: at room temperature (20-25 °C) on a magnetic stirrer, aerated with air (sparging)

**Test substance:** 3-Dimethylaminopropionitrile  
Purity: not documented

**Reliability:** (2) valid with restrictions  
Guideline study, basic data given.

**Flag:** TSCA 8d  
07-NOV-2006 (2)

**3.6 BOD5, COD or BOD5/COD Ratio**

-

**3.7 Bioaccumulation**

-

**3.8 Additional Remarks**

-

**AQUATIC ORGANISMS****4.1 Acute/Prolonged Toxicity to Fish**

**Type:** static  
**Species:** Leuciscus idus (Fish, fresh water)  
**Exposure period:** 96 hour(s)  
**Unit:** mg/l **Analytical monitoring:** no  
**NOEC:** 215  
**LC0:** 464  
**LC50:** 681.2  
**LC100:** 1000  
**Limit Test:** no

**Method:** other  
**Year:** 1989  
**GLP:** no  
**Test substance:** other TS

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

**Result:** 48 h-LC50 of the positive control Chloroacetamide: about 32 mg/L (corresponds to normal sensitivity).

During the 96 h exposure to 3-Dimethylaminopropionitril, mortalities were as follows:

Nominal test concentration (mg/L)	Cumulative mortality (%) after x hours 1/4/24/48/72/96
Control	0/0/0/0/0/0
100	0/0/0/0/0/0
215	0/0/0/0/0/0
464	0/0/0/0/0/0
1000	0/0/10/10/10/10

Symptoms of intoxication:

Nominal test concentration (mg/L)	Symptoms of intoxication after x hours 1/4/24/48/72/96
Control	-/-/-/-/-/-
100	-/-/-/-/-/-
215	-/-/-/-/-/-
464	-/-/-/-/L/L
1000	-/-/+/+/+/+

Definitions of Symptoms:

-: No symptoms  
 +: All fish dead  
 L: Gasping

All results refer to nominal test concentrations of

3-Dimethylaminopropionitrile.

No analytical dose-verification of the test item was carried out.

Behavior of the test item during the test:  
No remarkable observations.

**Test condition:**

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

Body length: 6.7 cm (range 6.0 - 7.2 cm)  
Body weight: 2.8 g (range 2.0 - 3.6 g)  
Corpulence factor of the test fish batch: 0.9

Housing and adaption

Culture conditions: oil-free aerated and charcoal filtered tap water, flow-through system;

Water temperature: 20 - 21 °C

Duration of housing: about 1 month

Mortality during the last 2 weeks of housing: about 0.03 %

Mortality during the adaption period: 0 %

Medical treatment: Twice with 0.05 mg/L malachite green chloride and once with 10 mg/L tetracycline hydrochloride.

Diet: Growing feed F/B 50, ad libitum

Test procedure:

test water: reconstituted freshwater according to DIN 38412, Part II, 1982; prepared from fully demineralised tap water (conductivity: max 10 micro MHO) by adding:

294.0 mg/L CaCl<sub>2</sub> \* 2 H<sub>2</sub>O

123.3 mg/L MgSO<sub>4</sub> + 7 H<sub>2</sub>O

63.0 mg/L NaHCO<sub>3</sub>

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 8.0

Volume of water: 10 L

No of animals per test concentration and control: 10

Loading rate (g fish/L test water): 2.8

Test vessels: All glass aquaria (30 x 22 x 24 cm)

Test temperature: 19 - 20 °C

Adaption to test water and test temperature: 3 days

Photoperiod: 16 : 8 hours day-night regime

Aeration: slight

Exposure period: 96 h

pH during the test: 7.4 - 8.6  
Oxygen content during the test: 8.2 - 9.1 mg/L  
Withdrawal of food: 1 day before and during exposure.

Nominal test concentrations: 10, 21.5, 46.4 and 100 mg/L  
(based on the results of a range-finding test). In addition, a control was tested in parallel.

Observation time: 0, 4, 24, 48, 72 and 96 h.  
Endpoints investigated: mortality and symptoms of intoxication.

Preparation of 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:  
Probit analysis (Finney 1971); The EC50 value was calculated as the geometrical mean of the LC0 and the LC100 value.

**Test substance:**

Dimethylaminopropionitril; CAS 1738-25-6; batch No.: no data; purity: > 99 %; water solubility: miscible in any ratio  
The 96 h results of 3-Dimethylaminopropionitril to fish were as follows:

**Conclusion:**

The LC50 was 681 mg/L (nominal).  
The LC0 and the LC100 were 466 and 1000 mg/L (nominal), respectively.

**Reliability:**

The NOEC was 215 mg/L (nominal).  
(1) valid without restriction  
Guideline study. Scientifically acceptable.  
Material Safety Dataset, TSCA 8d

**Flag:**

15-NOV-2006

(3)

**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:** = 250  
**EC50:** > 500  
**EC100:** > 500  
**Limit Test:** no

**Method:** other: 79/831/EEC, C.2  
**Year:** 1979  
**GLP:** no

**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 / 19  
500 mg/l / 20 / 20 / 20 / 17 / 16

**Test condition:** EC0/50/100 after 24h were: 500 / >500 / >500 mg/l  
Test organisms:

- a) Daphnia magna Straus was originally supplied from "Institut National de Recherche Chimique appliquee, France", and has been bred from 1978 in the Laboratories of BASF.
- b) 2 - 24 hours old

**Test conditions:**

- a) Dilution water chemistry: according to guideline
- b) Test temperature: 293 K
- 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<sup>2</sup>m<sup>2</sup>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.

**Water chemistry in the test:**

- a) pH range over all concentrations and 0/48h: 8.13 to 8.84
- b) Dissolved oxygen range over all concentrations and 0/48h: 8.26 to 9.32 mg/l

**Statistics:**

Results allowed no statistical evaluation of the data

Measurements:

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

**Test substance:** 3-Dimethylaminopropionitril, CAS-No. 1738-25-6. Purity: appr. 99%

**Reliability:** (2) valid with restrictions  
Guideline study.

**Flag:** TSCA 8d

14-NOV-2006 (4)

#### 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:** = 30.3  
**EC50:** > 500  
**Limit Test:** no

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

**Method:** According to the German National Standard Industrial Guideline DIN 38412 L9 (May 1989). This guideline is comparable to OECD 201.

**Result:** Concentration response relationship after 72 hours:  
Concentration / effect in % (biomass) / effect in % (growth rate)

25 mg/l	/ 18.6	/ 10.8
50 mg/l	/ 29.6	/ 13.9
100 mg/l	/ 32.6	/ 15.2
250 mg/l	/ 49.8	/ 32.6
500 mg/l	/ 67.6	/ 48.7
500 mg/l	neutr.	/ 67.2 / 51.5

EC-values after 72 hours:

EbC10 (72h) 10.2 mg/l  
EbC50 (72h) 209.1 mg/l

ErC10 (72h) 30.3 mg/l  
ErC50 (72h) >500 mg/l

**Test condition:** Test organisms:  
a) Supplier: Sammlung für Algenkulturen der Universität Göttingen, SAG 86.81  
b) Stem culture on agar tubes, weekly renewal

Test conditions:

- 
- a) Dilution water chemistry: according to DIN 38412/9
  - b) Test temperature: 23.2 °C
  - c) Exposure vessels: glass tubes, 10 ml test volume
  - d) Light conditions: continuous white light, according to guideline
  - e) Number of Replicates: 4
  - f) Initial cell number: 10,000 cells/ml
  - g) Preparation of stock solution: Details not reported.
- The following nominal test concentrations were prepared: 500, 250, 100, 50, 25 mg/l.  
Additionally the highest test concentration was also tested after neutralization.

## Water chemistry in the test:

- a) pH range over all concentrations and 0/72h: 7.81 to 8.59

## Statistics:

EC50 values have calculated according to Tallarida et al., The Dose-Response-Relation in Pharmacology, p. 98-103, Springer-Verlag (1979).

## 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.
- Additional measurement after 96h, These measurements are not used for evaluation, due to a deceleration of growth in the control assay after 72 hours.

**Test substance:** 3-Dimethylaminopropionitril, CAS-No. 1738-25-6. Purity: appr. 99%

**Reliability:** (2) valid with restrictions  
Guideline study, non-GLP.

**Flag:** TSCA 8d  
04-DEC-2006

(5) (6)

**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**

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**4.8 Biotransformation and Kinetics**

-

**4.9 Additional Remarks**

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**5.0 Toxicokinetics, Metabolism and Distribution**

**5.1 Acute Toxicity**

**5.1.1 Acute Oral Toxicity**

**5.1.2 Acute Inhalation Toxicity**

**5.1.3 Acute Dermal Toxicity**

**5.1.4 Acute Toxicity, other Routes**

**5.2 Corrosiveness and Irritation**

**5.2.1 Skin Irritation**

**5.2.2 Eye Irritation**

**5.3 Sensitization**

**5.4 Repeated Dose Toxicity**

**Species:** rat **Sex:** male/female  
**Strain:** other: SPF-Wistar/Chbb: THOM  
**Route of administration:** inhalation  
**Exposure period:** 2 weeks  
**Frequency of treatment:** 6 h/d; 5 days/week; altogether 10 expositions  
**Post exposure period:** no  
**Doses:** 0; 0.01; 0.1; 1 mg/l  
**Control Group:** yes, concurrent no treatment

**Method:** other  
**GLP:** no  
**Test substance:** as prescribed by 1.1 - 1.4

**Remark:** non-BASF study  
**Result:** No deaths occurred  
Highest dose: decrease of body weight gain (particular male animals); changes of behaviour (reduced frigth reactions, respiration in upright bearing)  
Conclusion:  
At the highest concentration of 1 mg/l toxic effects (clinical symptoms, retarded body weight gain) were observed. However, neither urine parameters nor pathological/ histopathological examinations showed a significant substance-related effect (conclusion by author).

**Flag:** TSCA 8d  
17-JAN-2007 (7)

**Species:** rat **Sex:**  
**Route of administration:** inhalation  
**Exposure period:** 2 weeks  
**Frequency of treatment:** 6 h/d  
**Doses:** 0 ; 0,01 ; 0,1 and 1 mg/l

**GLP:** no

**Remark:** non-BASF study  
Preliminary test to  
BG-Chemie, contracted to BASF AG, Department of Toxicology,  
unpublished data (85/24), 29 March 1989

**Test substance:** Dimethylaminopropionitril  
**Flag:** TSCA 8d  
17-JAN-2007 (8)

**5.5 Genetic Toxicity 'in Vitro'**

**Type:** Ames test  
**System of testing:** Salmonella typhimurium TA 98 TA 100 TA 1535 TA 1537  
**Concentration:** 20 µg - 5000 µg/plate  
**Cytotoxic Concentration:** No bacteriotoxic effect was observed.  
**Metabolic activation:** with and without  
**Result:** negative

**Method:** OECD Guide-line 471  
**GLP:** no

**Method:** Ames test, with and without metabolic activation. Standard Plate Test (SPT) and PreIncubation Test (PIT)  
**Result:** An increase in the number of his+ revertants was not observed both in the standard plate test and in the preincubation test either without S-9 mix or after addition of a metabolizing system.  
**Test condition:** Bacterial test strains were used, both in the standard plate test (SPT) and in preincubation test (PIT), both in the presence and absence of metabolic activation (+S9, -S9, respectively). Aqua dest. was used as solvent. 3 test plates per dose or per control were run in each of the three experiments. Positive controls were included by using 2-aminoanthracene with metabolic activation, N-methyl-N'-nitro-N-nitroso-guanidine, 4-nitro-o-phenylenediamine and 9-aminoacridine chloride monohydrate without S-9 mix.  
**Test substance:** 3-Dimethylaminopropionitril  
**Reliability:** (2) valid with restrictions comparable to guideline study  
**Flag:** TSCA 8d  
17-JAN-2007 (9)

**5.6 Genetic Toxicity 'in Vivo'****5.7 Carcinogenicity****5.8.1 Toxicity to Fertility****5.8.2 Developmental Toxicity/Teratogenicity****5.8.3 Toxicity to Reproduction, Other Studies**

5. Toxicity

date: 17-JAN-2007  
Substance ID: 1738-25-6

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**5.9 Specific Investigations**

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**5.10 Exposure Experience**

-

5. Toxicity

date: 17-JAN-2007  
Substance ID: 1738-25-6

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**5.11 Additional Remarks**

**6.1 Analytical Methods**

**6.2 Detection and Identification**

**7.1 Function**

**7.2 Effects on Organisms to be Controlled**

**7.3 Organisms to be Protected**

**7.4 User**

**7.5 Resistance**

**8.1 Methods Handling and Storing**

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**8.2 Fire Guidance**

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**8.3 Emergency Measures**

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**8.4 Possib. of Rendering Subst. Harmless**

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**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**

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- (1) BASF AG (1988), Bestimmung des Verteilungskoeffizienten  $P_{ow}$  von 3-Dimethylaminopropionitril in 1-Octanol/Wasser bei Raumtemperatur (25 °C). Department of analytics, unpublished data, report no. 125378/01, 02 Aug 1988
  - (2) BASF AG (2006). Reprint of Test Report. Test Substance: 3-Dimethylaminopropionitril. 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. 88/03691. 24 Aug 1988
  - (3) BASF AG (1989). 3-Dimethylaminopropionitril: Acute toxicity to fish, Golden orfe (*Leuciscus idus* L., golden variety). Department of Toxicology, unpublished data, Report No. 10F0143/885226, 28 Mar 1989.
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**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.
1738-25-6	3-Dimethylaminopropiononitrile	Ames Test (Standard Plate Test and Preincubation Test with <i>S. typhimurium</i> )	24-Feb-89	BASF AG	BASF	yes	16.1
1738-25-6	3-Dimethylaminopropiononitrile	Kurzbericht über die toxikologische Prüfung über 2 Wochen, Inhalation/Dampf.	29-Mar-89	BG Chemie		no	
1738-25-6	3-Dimethylaminopropiononitrile	Zusammenfassende tabellarische Bewertung, 2 Wochen Inhalation/Dampf	28-Feb-87	BG Chemie		no	
1738-25-6	3-Dimethylaminopropiononitrile	Toxicity of 3-dimethylaminopropionitrile to Green Algae ( <i>Scenedesmus subspicatus</i> )	08-Sep-89	BASF (contracted)	Tested by contract institute Dr. Noack	yes	16.2
1738-25-6	3-Dimethylaminopropiononitrile	Acute effect of 3-dimethylaminopropionitrile on <i>Daphnia magna</i>	26 Oct 1988	BASF	BASF	yes	16.3
1738-25-6	3-Dimethylaminopropiononitrile	3-Dimethylaminopropionitril: Acute toxicity to fish, Golden orfe ( <i>Leuciscus idus</i> L., goldfish variety)	28-Mar-89	BASF	BASF	yes	16.4
1738-25-6	3-Dimethylaminopropiononitrile	Reprint of Test Report, Test Substance: 3-Dimethylaminopropionitril. Determination of the Inherent Biodegradation in a Batch Test with Activated Sludge (Zahn-Wellens Method)	07-Nov-06	BASF	BASF	yes	16.5

Confidential

16.1  
BASF

Abteilung Toxikologie  
Department of Toxicology

6700 Ludwigshafen  
West Germany

en-db/1030 FEB 24 1989

**REPORT**

on the Study of

**3-Dimethylaminopropionitril**

(ZST Test Substance No.: 88/143)

in the

**AMES TEST**

(Standard Plate Test and Preincubation Test  
with *Salmonella typhimurium*)

Project No.: 40M0143/884312

Testing facility:

BASF Aktiengesellschaft  
Department of Toxicology, Z 470  
6700 Ludwigshafen/Rhein, FRG

Head of Department  
of Toxicology:

Prof. Dr.med. Dr.rer.nat. H.-P. Gelbke

This report consists of 15 pages and 8 tables.

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Annex: Tables 1 to 8

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**1. SUMMARY**

The substance 3-Dimethylaminopropionitril was tested for mutagenicity in the Ames test.

Strains: TA 1535, TA 100, TA 1537, TA 98  
Dose range: 20 µg - 5000 µg/plate  
Test conditions: Standard plate test and preincubation test both with and without metabolic activation (rat liver S-9 mix).  
Solubility: Complete solubility of the test substance in aqua dest.  
Toxicity: No bacteriotoxic effect was observed.

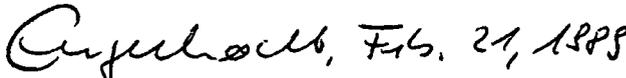
**Mutagenicity:**

An increase in the number of his<sup>+</sup> revertants was not observed both in the standard plate test and in the preincubation test either without S-9 mix or after the addition of a metabolizing system.

**Assessment:**

According to the results of the present study, the test substance 3-Dimethylaminopropionitril is not mutagenic in the Ames test under the experimental conditions chosen here.

 Febr. 22, 1989  
Dr.rer.nat. H.D. Hoffmann  
(Head of Section)

 Febr. 21, 1989  
Dr.rer.nat. G. Engelhardt  
(Study director)

Project No. 40M0143/884312

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## 2. INTRODUCTION

The Ames test is a short-term test in bacteria (1, 2) and is used as a screening method for detecting a point mutagenic effect of chemical substances.

Since most of the substances are not mutagenic or carcinogenic themselves, but only after metabolic transformation, and since the main part of all metabolic processes is catalyzed by the enzyme systems of the liver, the Ames test is carried out not only directly, but also in the presence of a metabolizing system obtained from rat livers. For this purpose, rats are pretreated with Aroclor 1254 for an activation of the enzymes which metabolize foreign substances.

The test is carried out in accordance with the OECD guideline for testing of chemicals "Genetic Toxicology: Salmonella typhimurium, Reverse Mutation Assay", No. 471.

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3. **MATERIAL AND METHOD**

3.1. Test substance:

Name of test substance: 3-Dimethylaminopropionitril

Test substance No.: 88/143

Degree of purity:  $\geq 98\%$

Storage: Room temperature

More detailed information about the test substance can be found in the raw data and may be requested from the sponsor (CZA; BASF Aktiengesellschaft).

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3.2. Tissue preparation

3.2.1. S-9 fraction

The S-9 fraction is prepared according to Ames et al. (2).

5 male Sprague-Dawley rats (200 - 300 g) receive a single intraperitoneal injection of 500 mg Aroclor 1254 (as a 20% solution in peanut oil - w/v) per kg body weight 5 days before sacrifice.

During this time the animals are housed in Makrolon cages in air-conditioned rooms. The day/night rhythm is 12 hours (light period from 6.00 - 18.00 hours and dark period from 18.00 - 6.00 hours).

Standardized pelleted feed and tap water from bottles are available ad libitum.

5 days after administration the rats are sacrificed, and the livers are prepared (all preparation steps for obtaining the liver microsome enzymes are carried out using sterile solvents and glassware at a temperature of +4°C). The livers are weighed and washed in an equivalent volume of a 150 mM KCl solution (1 ml  $\hat{=}$  1 g wet liver), then cut into small pieces and homogenized in three volumes of KCl solution. After centrifugation of the homogenate at 9000 x g for 10 minutes at +4°C, 5 ml portions of the supernatant (so-called S-9 fraction) are quickly deep-frozen in dry ice and stored at -70°C to -80°C for 2 months at the most.

Preparation of S-9 fraction: November 22, 1988 (1st experiment), December 19, 1988 (2nd experiment) and February 1, 1989 (3rd experiment).

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### 3.2.2. S-9 mix

The S-9 mix is prepared freshly prior to each experiment (1, 2). For this purpose, a sufficient amount of S-9 fraction is thawed at room temperature and 3 volumes of S-9 fraction are mixed with 7 volumes of S-9 supplement (cofactors). This preparation, the so-called S-9 mix, is kept on ice until used. The concentrations of the cofactors in the S-9 mix are:

MgCl <sub>2</sub>	8 mM
KCl	33 mM
glucose-6-phosphate	5 mM
NADP	4 mM
phosphate buffer (pH 7.4)	100 mM.

The phosphate buffer is prepared by mixing an Na<sub>2</sub>HPO<sub>4</sub> solution with an NaH<sub>2</sub>PO<sub>4</sub> solution in a ratio of about 4 : 1.

### 3.3. Bacteria

The rate of induced back mutations of several bacteria mutants from histidine auxotrophy to histidine prototrophy is determined (2, 3, 4). The indicator organisms TA 1535, TA 1537, TA 98 and TA 100 selected by Ames especially for this purpose are derivatives of *Salmonella typhimurium*. All strains have a defective excision repair system (uvrB), which prevents the repair of lesions which are induced in the DNA, and this deficiency results in greatly enhanced sensitivity of some mutagens. Furthermore, all strains show a considerably reduced hydrophilic polysaccharide layer (rfa), which leads to an increase in permeability to lipophilic substances.

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The strains TA 1535 and TA 100 are derived from histidine-prototrophic Salmonella strains by the substitution mutation his G 46 and are used to detect base pair substitutions. TA 1537 and TA 98 are strains for the detection of frameshift mutagens. These strains carry different frameshift markers, i.e. the +1 mutant his C 3076 in the case of TA 1537 and the +2 type his D 3052 in the case of TA 98.

The strains TA 98 and TA 100 carry an R factor plasmid pKM 101 (4) and, in addition to having genes resistant to antibiotics, they have a modified postreplication DNA repair system, which increases the mutation rate by inducing a defective repair in the DNA; this again leads to a considerable increase in sensitivity.

For testing, deep-frozen ( $-70^{\circ}\text{C}$  to  $-80^{\circ}\text{C}$ ) bacterial cultures (1 ml in 15 ml glass tubes) are thawed at room temperature, 0.1 ml of this bacterial suspension is inoculated in nutrient broth solution (8 g Difco nutrient broth + 5 g NaCl/liter) and incubated in the shaking water bath at  $37^{\circ}\text{C}$  for 16 hours. As a rule, a germ density of  $\geq 10^8$  bacteria/ml is reached. These cultures grown overnight are kept in iced water from the beginning of the experiment until the end in order to prevent further growth.

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### 3.4. Mutagenicity tests

#### 3.4.1. Standard plate test

The experimental procedure is based on the method of Ames et al. (1, 2).

Test tubes containing 2 ml portions of soft agar which consists of 100 ml agar (0.6% agar + 0.6% NaCl) and 10 ml amino acid solution (minimal amino acid solution for the determination of mutants: 0.5 mM histidine + 0.5 mM biotin) are kept in a water bath at 45°C, and the remaining components are added in the following order:

0.1 ml test solution

0.1 ml bacterial suspension

0.5 ml S-9 mix (in tests with metabolic activation)

or

0.5 ml phosphate buffer (in tests without metabolic activation)

After mixing, the samples are poured onto Vogel-Bonner agar plates (minimal glucose agar plates) within approx. 30 seconds.

#### 3.4.2. Preincubation test

The experimental procedure is based on the method described by Yahagi et al. (5) and Matsushima et al. (6).

0.1 ml test solution, 0.1 ml bacterial suspension and 0.5 ml S-9 mix are incubated at 37°C for the duration of 20 minutes. Subsequently, 2 ml of soft agar is added and, after mixing, the samples are poured onto the Vogel-Bonner agar plates within approx. 30 seconds.

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Composition of the minimal glucose agar:

980 ml aqua dest.  
20 ml Vogel-Bonner E medium  
15 g Difco bacto agar  
20 g D-glucose, monohydrate.

After incubation at 37°C for 48 hours in the dark, the bacterial colonies (his<sup>+</sup> revertants) are counted.

3.5. Titer determination

In general, the titer is determined only in the experiments with S-9 mix both without test substance (solvent only) and after adding the two highest amounts of substance. For this purpose, 0.1 ml of the overnight cultures (see 3.3.) is diluted to 10<sup>-6</sup> in each case. Test tubes containing 2 ml portions of soft agar containing maximal amino acid solution (5 mM histidine + 0.5 mM biotin) are kept in a water bath at 45°C, and the remaining components are added in the following order:

0.1 ml solvent (without and with test substance)  
0.1 ml bacterial suspension (dilution: 10<sup>-6</sup>)  
0.5 ml S-9 mix

After mixing, the samples are poured onto the Vogel-Bonner agar plates within approx. 30 seconds. After incubation at 37°C for 48 hours in the dark, the bacterial colonies are counted.

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3.6. Checking out the tester strains

The Salmonella strains are checked for the following characteristics at regular intervals: deep rough character (rfa); UV sensitivity ( $\Delta$  uvrB); ampicillin resistance (R factor plasmid).

Histidine auxotrophy is automatically checked in each experiment via the spontaneous rate.

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3.7. Controls

3.7.1. Negative control

Parallel with each experiment with and without S-9 mix, a negative control (solvent control, sterility control) is carried out for each tester strain in order to determine the spontaneous mutation rate.

3.7.2. Positive controls

The following positive control substances are used to check the mutability of the bacteria and the activity of the S-9 mix:

with S-9 mix            10 µg 2-aminoanthracene (dissolved in DMSO) for the strains TA 100, TA 98, TA 1537 and TA 1535

without S-9 mix        5 µg N-methyl-N'-nitro-N-nitroso-guanidine (MNNG) (dissolved in DMSO) for the strains TA 100 and TA 1535

10 µg 4-nitro-o-phenyldiamine (dissolved in DMSO) for the strain TA 98

100 µg 9-aminoacridine chloride monohydrate (dissolved in DMSO) for the strain TA 1537.

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3.8. Evaluation criteria

In general, a substance to be characterized as positive in the Ames test has to fulfill the following requirements:

- doubling of the spontaneous mutation rate (control)
- dose-response relationship
- reproducibility of the results.

3.9. Tester strains, doses, number of plates

1st Experiment:

Strains: TA 100, TA 98  
Doses: 0, 20, 100, 500, 2500 and 5000 µg/plate  
Solvent: aqua dest.  
Type of test, test condition: standard plate test with and without S-9 mix  
Number of plates: 3 test plates per dose or per control

2nd Experiment:

Strains: TA 1535, TA 1537  
Doses: 0, 20, 100, 500, 2500 and 5000 µg/plate  
Solvent: aqua dest.  
Type of test, test condition: standard plate test with and without S-9 mix  
Number of plates: 3 test plates per dose or per control

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Department of ToxicologyProject No. 40M0143/884312

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**3rd Experiment:**

**Strains:** TA 1535, TA 100, TA 1537, TA 98  
**Doses:** 0, 20, 100, 500, 2500 and 5000 µg/plate  
**Solvent:** aqua dest.  
**Type of test, test condition:** preincubation test with and without S-9 mix  
**Number of plates:** 3 test plates per dose or per control

**3.10. Retention of records**

The raw data, protocol and the original of this report will be stored at BASF Aktiengesellschaft.

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4. **RESULTS** (Tables 1 - 8)

The substance 3-Dimethylaminopropionitril was tested for mutagenicity in the Ames test (standard plate test and preincubation test) both in the presence and in the absence of a metabolizing system obtained from rat liver (S-9 mix) using the strains TA 1535, TA 100, TA 1537 and TA 98.

4.1. Mutagenicity tests

4.1.1. Standard plate test  
(Tables 1 - 4)

4.1.1.1. Tests without S-9 mix

TA 1535:	
TA 100:	No increase in the number
TA 1537:	of his <sup>+</sup> revertants
TA 98:	

4.1.1.2. Tests with S-9 mix

TA 1535:	
TA 100:	No increase in the number
TA 1537:	of his <sup>+</sup> revertants
TA 98:	

Project No. 4DM0143/884312

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4.1.2. Preincubation test  
(Tables 5 - 8)

4.1.2.1. Tests without S-9 mix

TA 1535:

TA 100:

TA 1537:

TA 98:

No increase in the number  
of his<sup>+</sup> revertants

4.1.2.2. Tests with S-9 mix

TA 1535:

TA 100:

TA 1537:

TA 98:

No increase in the number  
of his<sup>+</sup> revertants

4.2. Toxicity

No bacteriotoxic effect (reduced his<sup>-</sup> background growth)  
was observed.

4.3. Solubility

Complete solubility of the test substance in aqua dest.

Project No. 40M0143/884312

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5. **LITERATURE**

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B. A. S. F. A. G.  
DEPARTMENT OF TOXICOLOGY

TABLE : 1

STUDY NUMBER: 884312  
STUDY DIREC.: ENG  
OPERATOR : SCHW  
DATE : 08. 12. 88

AMES TEST WITH : 88/143  
METHOD : STANDARD PLATE TEST

STRAIN: TA 100

DOSE MCG/PL	REVERTANTS / PLATE						TITER DIL.	QUOTIENT	
	-S9	M	SD	+S9*	M	SD	EXP-6	-S9	+S9*
NEGATIVE CONTROL	105 109	108	3	96 110	113	18	26 18	1.0	1.0
AQUA DEST	110			132			32		
20	127 107 112	115	10	108 97 109	105	7		1.1	0.9
100	120 122 109	117	7	106 115 104	108	6		1.1	1.0
500	98 70 98	89	16	108 105 116	110	6		0.8	1.0
2500	98 101 88	96	7	96 102 106	101	5	18 22 21	0.9	0.9
5000	97 94 106	99	6	120 103 106	110	9	29 16 15	0.9	1.0
POSITIVE CONTROL 2-AA 10				2150 1800 1950	1967	176			17.5
POSITIVE CONTROL MNGG 5	1480 1800 1480	1587	185					14.7	

\* : S-9 FRACTION/COFACTORS = 3:7 EXP : EXP. TO 10

S. A. S. F. A. G.  
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TABLE : 2

STUDY NUMBER: 884312  
STUDY DIREC.: ENG  
OPERATOR : SCHW  
DATE : 08.12.88

AMES TEST WITH : 88/143  
METHOD : STANDARD PLATE TEST

STRAIN: TA98

DOSE 10G/PL	REVERTANTS / PLATE						TITER DIL.	QUOTIENT	
	-S9	M	SD	+S9*	M	SD	EXP-6	-S9	+S9*
NEGATIVE CONTROL AQUA DEST	20 22 21	21	1	36 35 31	34	3	19 24 16	1.0	1.0
20	22 24 24	23	1	35 35 33	34	1		1.1	1.0
100	23 27 21	24	3	35 31 33	33	2		1.1	1.0
500	22 28 23	24	3	32 28 41	34	7		1.2	1.0
2500	24 21 20	22	2	37 40 47	41	5	27 14 6	1.0	1.2
5000	21 20 22	21	1	34 35 36	35	1	8 16 14	1.0	1.0
POSITIVE CONTROL 2-AA 10				1160 1140 1180	1160	20			34.1
POSITIVE CONTROL NPD 10	909 927 930	922	11					43.9	

\* : S-9 FRACTION/COFACTORS = 3:7 EXP : EXP. TO 10

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TABLE : 3

STUDY NUMBER: 884312  
STUDY DIREC. : ENG  
OPERATOR : SCHW  
DATE : 05. 01. 89

AMES TEST WITH : 88/143  
METHOD : STANDARD PLATE TEST

STRAIN: TA 1535

DOSE MCG/PL	REVERTANTS / PLATE						TITER DIL.	QUOTIENT	
	-S9	M	SD	+S9*	M	SD	EXP-6	-S9	+S9*
NEGATIVE CONTROL AQUA DEST	17 22 15	18	4	20 15 16	17	3	42 41 38	1.0	1.0
20	18 16 23	19	4	23 23 23	23	0		1.1	1.4
100	20 19 -	20	1	21 21 22	21	1		1.1	1.3
500	22 16 13	17	5	16 19 24	20	4		0.9	1.2
2500	12 20 23	18	6	15 25 22	21	5	39 - 41	1.0	1.2
5000	24 23 21	23	2	22 21 20	21	1	30 27 41	1.3	1.2
POSITIVE CONTROL 2-AA 10				181 208 191	193	14			11.4
POSITIVE CONTROL MNNG 5	2250 2150 1830	2077	219					115.4	

\* : S-9 FRACTION/COFACTORS = 3:7 EXP : EXP. TO 10  
- : CONTAMINATION

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TABLE : 4

STUDY NUMBER: 884312  
STUDY DIREC. : ENG  
OPERATOR : SCHW  
DATE : 05. 01. 89

AMES TEST WITH : 88/143  
METHOD : STANDARD PLATE TEST

STRAIN: TA1537

DOSE MCG/PL	REVERTANTS / PLATE						TITER DIL	QUOTIENT	
	-S9	M	SD	+S9*	M	SD	EXP-6	-S9	+S9*
NEGATIVE CONTROL AQUA DEST	8 9 8	8	1	7 11 8	9	2	31 36 28	1.0	1.0
20	7 9 10	9	2	11 16 9	12	4		1.0	1.4
100	11 10 7	9	2	12 12 13	12	1		1.1	1.4
500	11 9 7	9	2	10 7 10	9	2		1.1	1.0
2500	13 8 9	10	3	13 11 9	11	2	34 41 32	1.2	1.3
5000	8 7 8	8	1	11 13 10	11	2	34 37 39	0.9	1.3
POSITIVE CONTROL 2-AA 10				160 189 181	177	15			20.4
POSITIVE CONTROL AAC 100	604 719 646	656	58					78.8	

\* : S-9 FRACTION/COFACTORS = 3:7 EXP : EXP. TO 10

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TABLE : 5

STUDY NUMBER: 884312  
STUDY DIREC.: ENG  
OPERATOR : SCHW  
DATE : 16. 02. 89

AMES TEST WITH : 88/143  
METHOD : PREINCUBATION TEST

STRAIN: TA 1535

DOSE MCG/PL	REVERTANTS / PLATE						TITER DIL.	QUOTIENT	
	-S9	M	SD	+S9*	M	SD	EXP-6	-S9	+S9*
NEGATIVE CONTROL	19 12	14	4	13 16	16	3	43 42	1.0	1.0
AQUA DEST	12			18			33		
20	17 16 18	17	1	13 20 21	18	4		1.2	1.1
100	13 17 18	16	3	21 16 20	19	3		1.1	1.2
500	13 15 17	15	2	13 18 13	15	3		1.0	0.9
2500	11 20 15	15	5	22 22 16	20	3	38 31 27	1.1	1.0
5000	17 21 16	18	3	12 20 20	17	5	23 36 21	1.3	1.1
POSITIVE CONTROL 2-AA 10				109 132 110	127	15			8.1
POSITIVE CONTROL MNGG 5	1050 1080 1100	1077	25					75.1	

\* : S-9 FRACTION/COFACTORS = 3:7 EXP : EXP. TO 10

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TABLE : 6

STUDY NUMBER: 884312  
STUDY DIREC.: ENG  
OPERATOR : SCHW  
DATE : 16. 02. 89

AMES TEST WITH : 88/143  
METHOD : PREINCUBATION TEST

STRAIN: TA 100

DOSE MCG/PL	REVERTANTS / PLATE						TITER DIL.	QUOTIENT	
	-S9	M	SD	+S9*	M	SD	EXP-6	-S9	+S9*
NEGATIVE CONTROL AQUA DEST	106 106 118	110	7	112 128 112	117	9	22 49 25	1.0	1.0
20	122 118 126	122	4	116 113 122	117	5		1.1	1.0
100	95 107 124	109	15	136 116 108	120	14		1.0	1.0
500	118 108 112	113	5	126 117 102	115	12		1.0	1.0
2500	114 106 116	112	5	117 132 136	128	10	23 28 26	1.0	1.1
5000	113 121 105	113	8	133 123 111	122	11	31 30 24	1.0	1.0
POSITIVE CONTROL 2-AA 10				1060 1150 920	1043	116			3.9
POSITIVE CONTROL MNNG 5	1160 1170 1100	1143	38					10.4	

\* : S-9 FRACTION/COFACTORS = 3:7 EXP : EXP. TO 10

B. A. S. F. A. G.  
DEPARTMENT OF TOXICOLOGY

TABLE : 7

STUDY NUMBER: 884312  
STUDY DIREC.: ENG  
OPERATOR: SCHW  
DATE: 16. 02. 89

AMES TEST WITH : 88/143  
METHOD : PREINCUBATION TEST

STRAIN: TA1537

DOSE MCG/PL	REVERTANTS / PLATE						TITER DIL.	QUOTIENT	
	-S9	M	SD	+S9*	M	SD	EXP-6	-S9	+S9*
NEGATIVE CONTROL AQUA DEST	8 8 7	8	1	13 12 11	12	1	35 37 28	1.0	1.0
20	9 7 9	8	1	11 7 12	10	3		1.1	0.8
100	10 8 10	9	1	11 10 14	12	2		1.2	1.0
500	6 6 7	7	1	12 12 8	11	2		0.9	0.9
2500	6 10 10	9	1	14 7 8	10	4	33 23 27	1.2	0.8
5000	7 8 3	6	3	10 13 6	10	4	27 18 21	0.8	0.8
POSITIVE CONTROL 2-AA 10				129 100 85	105	22			8.7
POSITIVE CONTROL AAC 100	423 413 377	404	24					52.7	

\* : S-9 FRACTION/COFACTORS = 3.7 EXP : EXP. TO 10

B. A. S. F. A. G.  
DEPARTMENT OF TOXICOLOGY

TABLE : 8

STUDY NUMBER: 884312  
STUDY DIREC. : ENG  
OPERATOR : SCHW  
DATE : 16.02.89

AMES TEST WITH : 88/143  
METHOD : PREINCUBATION TEST

STRAIN: TA98

DOSE MCG/PL	REVERTANTS / PLATE						TITER DIL.	QUOTIENT	
	-S9	M	SD	+S9*	M	SD	EXP-6	-S9	+S9*
NEGATIVE CONTROL AQUA DEST	19 22 20	20	2	32 36 34	34	2	43 38 31	1.0	1.0
20	21 22 26	23	3	31 33 28	31	3		1.1	0.9
100	23 22 20	22	2	32 36 43	37	6		1.1	1.1
500	24 25 22	24	2	38 36 30	35	4		1.2	1.0
2500	27 24 24	25	2	39 26 28	31	7	21 28 23	1.2	0.9
5000	24 21 22	22	2	31 41 26	33	8	24 24 18	1.1	1.0
POSITIVE CONTROL 2-AA 10				878 810 700	796	90			23.4
POSITIVE CONTROL NPD 10	985 1050 1330	1122	183					55.2	

\* : S-9 FRACTION/COFACTORS = 3:7 EXP : EXP. TO 10

DR.U.NOACK-LABORATORIUM FÜR ANGEWANDTE BIOLOGIE

16.2

Richthofenstr. 29, 3200 Hildesheim  
 Tel. (05121) 76 03 53 u. 5 78 99, Telefax 0 51 21/76 03 44

U N T E R S U C H U N G S E R G E B N I S

Prüfung auf Ökotoxizität: Hemmung der Algen-Zellvermehrung nach  
 DIN 38412 L9

Prüfsubstanz: <sup>3-Dimethylamin</sup> Propionitril

Auftraggeber: BASF AG, Abt. DUU/O, Dr. Bias

Journal-Nr. : 09911

Prüfungen von 28.08.1989 bis 01.09.1989

	72 h		96 h	
	[mg/l]	P 95%	[mg/l]	P 95%
EBC 10 :	10.177	4.038 25.650	14.826	7.543 29.138
EBC 50 :	209.093	133.916 326.472	147.544	105.794 205.771
EpC 10 :	30.277	11.779 77.822	99.130	85.263 115.252
EpC 50 :	>500	211.514 >500	535.967	410.101 >500

Bemerkungen:

1. Wachstumsförderung : keine Foerderung
2. Eigenfluoreszenz : nicht vorhanden
3. pH-Wert-Effekt : nein
4. Lösungsvermittler : keine Loesungsvermittler
5. Einfluß auf Photosynthesekap.: nein
- 6.
- 7.

6.11.89

Hildesheim, den 8.9.89

*Udo Noack*  
 Dr. rer. nat. Udo Noack  
 (Diplom-Biologe)

DR. U. NOACK-LABORATORIUM  
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 Richthofenstraße 29  
 D-3200 Hildesheim  
 Tel. 05121/76 03 53 u. 5 78 99  
 Fax 05121/76 03 44, Tlx 51 21 826 tzhc

## ZUSAMMENFASSUNG

Tab. 1 : Zelldichte

Lfd. Nr.	Konzentration [mg/l]	0 h	24 h	48 h	72 h	96 h
		[N/ml] [*10 <sup>-3</sup> ]				
1	Kontrolle ---	13	21	64	209	366
2	25.000	13	21	57	155	355
3	50.000	13	19	49	142	331
4	100.000	13	19	47	137	243
5	250.000	12	18	42	78	127
6	500.000	13	17	30	54	80
7	Kontr. pH 500.000	13	18	31	50	74

Tab. 2 : Auswertung nach 72 h

Lfd. Nr.	Konzentration [mg/l]	Wachstumsrate	Biomasse Hemmung [%]	ratenbezogene Hemmung [%]
1	Kontrolle ---	.93	*****	*****
2	25.000	.83	18.6	10.8
3	50.000	.80	29.6	13.9
4	100.000	.79	32.6	15.2
5	250.000	.62	49.8	32.6
6	500.000	.47	67.6	48.7
7	Kontr. pH 500.000	.45	67.2	51.5

Zusammenfassung 72 h

P 95%

P 95%

E<sub>p</sub>C 0: \*\*\*\*\* mg/l

EBC 0: \*\*\*\*\* mg/l

E<sub>p</sub>C10: 30.277 mg/l 11.779 77.822

EBC10: 10.177 mg/l 4.038 25.650

E<sub>p</sub>C50: >500 ; mg/l 211.514 >500

EBC50: 209.093 mg/l 133.916 326.472

# Neg. Hemmung &gt; 10% = Wachstumsförderung

## ZUSAMMENFASSUNG

Tab. 3 : Auswertung nach 96 h

Lfd. Nr.	Konzentration [mg/l]	Wachstumsrate	Biomasse Hemmung [%]	ratenbezogene Hemmung [%]
1	Kontrolle ---	.83	*****	*****
2	25.000	.83	18.8	.9
3	50.000	.81	26.3	3.0
4	100.000	.73	35.1	12.3
5	250.000	.59	62.9	29.3
6	500.000	.45	76.7	45.6
7	Kontr. pH 500.000	.43	78.1	47.9

Zusammenfassung 96 h

P 95%

P 95%

E<sub>p</sub>C 0: \*\*\*\*\* mg/l

EBC 0: \*\*\*\*\* mg/l

E<sub>p</sub>C10: 99.130 mg/l 85.263 115.252 EBC10: 14.826 mg/l 7.543 29.138E<sub>p</sub>C50: >500 mg/l 410.101 >500 EBC50: 147.544 mg/l 105.794 205.771

# Neg. Hemmung &gt; 10% = Wachstumsförderung

Höchste eingesetzte Prüfkonzentration, die im Prüfzeitraum nicht zu einer  
Hemmung der Algenzellvermehrung bzw. der Wachstumsrate führteE<sub>p</sub>C 0 = 25.000 mg/l

EBC 0 = 25.000 mg/l

Prüfsubstanz: Propionitril

Auftraggeber: BASF AG, Abt. DUU/O, Dr. Bias  
 Prüfleiter : S.Hapke

Prüfbeginn : 28.08.1989

Prüfende : 01.09.1989

Lfd. Nr.	Prüf- ansatz  [mg/l]	Lösungs- ver- mittler	Messungen					
			Chlorophyll-Fluoreszenz (Photosynthesehemmung) F (ohne F (mit Kap. CMU) CMU) [%]			pH Beginn Ende		T [°C]
1	Kontrolle	----	1653	2462	32	7.81	7.83	23.2
2	25.000	*****	1667	2364	29	8.01	7.94	23.2
3	50.000	*****	1476	2058	28	8.13	8.02	23.2
4	100.000	*****	1095	1479	25	8.22	8.14	23.2
5	250.000	*****	509	671	24	8.59	8.40	23.2
6	500.000	*****	347	542	35	8.80	8.71	23.2
7	Kontr. pH 500.000	.000	327	518	36	8.09	7.99	23.2

$$\text{Kap [\%]} = ( F(\text{mit CMU}) - F(\text{ohne CMU}) ) / F(\text{mit CMU}) * 100$$

Bemerkungen:

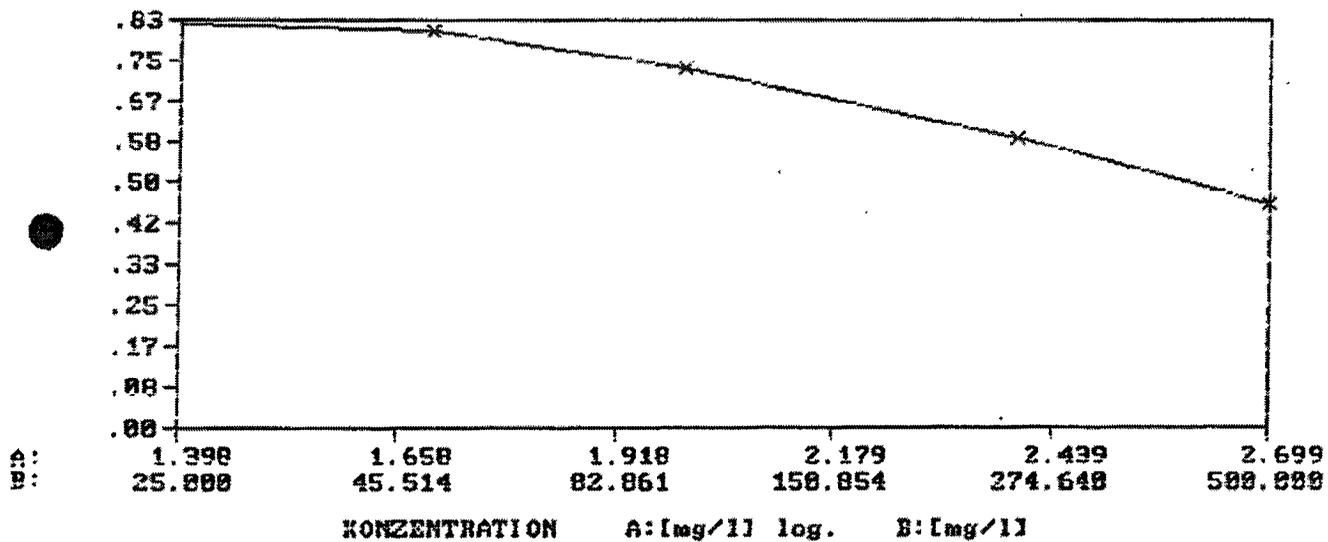
1. Wachstumsförderung : keine Foerderung
2. Eigenfluoreszenz : nicht vorhanden
3. pH-Wert-Effekt : nein
4. Lösungsvermittler : keine Loesungsvermittler
5. Einfluß auf Photosynthesekap.: nein
- 6.
- 7.

Unterschrift: S. Hapke  
 Prüfleiter

1.9.89  
 Datum

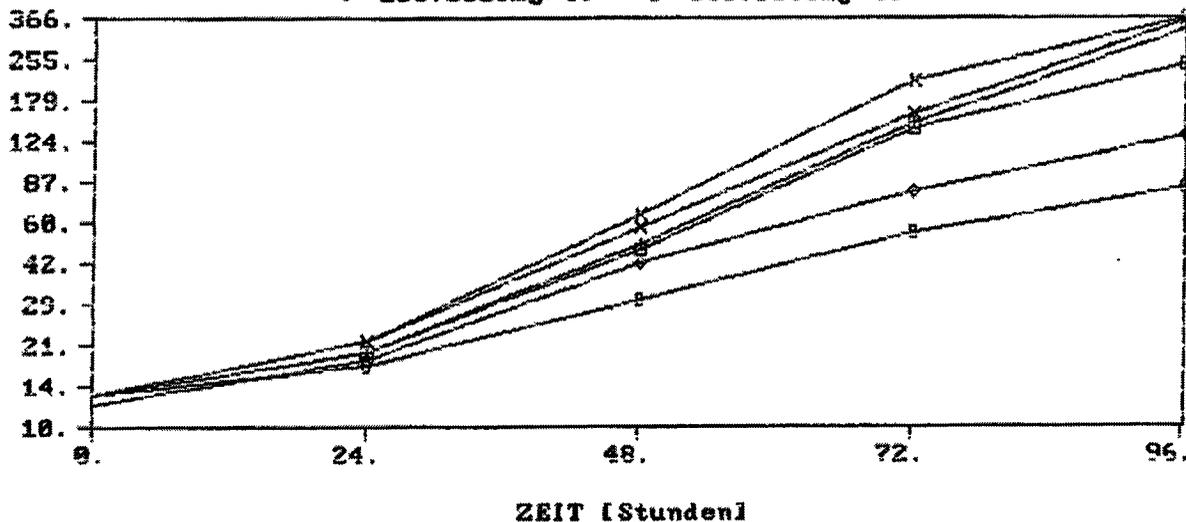
Prüfsubstanz: Propionitril

WACHSTUMSRATE



ZELLZAHL  
[ $\cdot 10^3$  N/ml]

K Kontrolle  
 x 25.000 [mg/l] + 50.000 [mg/l] □ 100.000 [mg/l]  
 o 250.000 [mg/l] ▢ 500.000 [mg/l]



Report 1/0947/2/88-0947/88  
of 1988-10-26

Title                   Determination of the acute toxicity of  
3-Dimethylaminopropionitril  
to the waterflea Daphnia magna Straus.

Summary                The EC 50 based on nominal concentrations of  
3-Dimethylaminopropionitril  
to Daphnia magna was after 48 h:

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

The highest tested concentration without effect  
was after 48 h:

EC 0 = 250 [mg/l]

The lowest tested concentration with 100%  
effect was after 48 h:

EC 100 = >500 [mg/l]

These results were obtained at 293.0 -293.1 [K]  
using a testwater with the following specifications:

pH - value            : 7.9  
Total hardness       : 2.63 [mmol/l]  
Ks up to pH 4.3: 8.79 [mmol/l]

Persons in  
charge

Study director

Dr. Jatzek

Head of  
laboratory

Dr. Bias

Tel.:  
8621/  
6893895

Client

Dr. Menger CZA/B G 500

Distribution

DUU/WT-Registry ( Title and Page 1 )  
DUU/00-f 520  
Dr. Menger CZA/B G 500

Client : Dr. Menger CZA/B G 500  
Date of order : 1988-07-25  
Substance-No. : 8947/88  
Substance : 3-Dimethylaminopropionitril

### I N T R O D U C T I O N

In this study the acute toxicity of 3-Dimethylaminopropionitril to the waterflea *Daphnia magna* has been determined. *Daphnia magna* has a wide distribution in nature and is an important part of many aquatic food webs. Therein it can be regarded as a link between the primary producers and the saprophytic bacteria on the one side and the final consumers e.g. fish on the other side. Therefore *Daphnia magna* is recommended as a bioassay organism all over the world (1, 2, 3, 4). This investigation was carried out following the 'Guideline for Testing of Chemicals' EG-1 of Jan. 1982, issued by the EPA, Office of Toxic Substances (3).

### M A T E R I A L S and M E T H O D S

TEST SUBSTANCE (specifications as given by the sponsor)

Substance : 3-Dimethylaminopropionitril.  
Formula :  $C_5H_{10}N_2$   
Purity : ca. 99 %  
Solubility in water : > 500 mg/l at 293 K  
Producer : BASF

## PREPARATION OF THE TEST CONCENTRATIONS :

The concentration of the substance in the stock solution was 500 mg/l.

A serial dilution in dilution water was prepared.

To each test vessel 10 ml of the respective dilution were added.

## TEST ANIMALS

Origin : The strain of *Daphnia magna* used was obtained from Institut National de Recherche Chimique Appliquees, France, and bred since the beginning of 1978 in the Labor für Umweltanalytik und Ökologie of the BASF Ludwigshafen.

## BREEDING CONDITIONS

## Water

Total hardness : 2.70 ± 0.50 mmol/l

Ks up to pH 4.3 : 0.80 ± 0.10 mmol/l

Molar ratio Ca:Mg : ca. 4:1

Oxygen content : > 2 mg/l

Temperature range : 292.0 - 294.0 K

Feeding : Green algae once a day.

Lighting : Day:night-rhythm  
16:8 hours

Light intensity : about 5  $\mu$ Einstein/(m<sup>2</sup>m\*s)  
in the wavelengthrange of  
400 - 750 nm

## TEST CONDITIONS

Start of the test : 1988-10-24

End of the test : 1988-10-26

## Test water

The test water used is a tap water, purified by charcoal to remove chlorine and filtered through a 6 um filter.

By addition of sulfuric acid, the buffering capacity of the carbonic acid system is reduced.

To reduce the total hardness, deionized water is added.

The properties of the adjusted water are approximately as follows:

Total hardness	: 2.70 +- 0.50 mmol/l
Acid capacity (Ks) up to pH 4.3	: 0.80 +- 0.10 mmol/l
Molar ratio Ca:Mg	: 4:1
Molar ratio Na:K	: 10:1
Conductivity	: 500 - 650 $\mu$ Siemens/cm
pH-value	: 7.7 - 8.3

The test water is aerated with oil free air until it becomes air saturated. It is then left a further 24 hours to stabilize. The physical and chemical data measured at the beginning of the experiment are given in table 1 (page 5).

Temperature range : 292.0 - 294.0 K  
Test vessel : reagent tubes with flat bottom  
Test volume : 10 ml  
Volume/animal : 2 ml  
No. of animals/testvessel : 5  
Total of animals/conc. : 20  
Parallels/conc. : 4  
Age of the animals : 2 - 24 h  
Storage of test vessels : diffuse white  
Light intensity : less than 5 [ $\mu$ Einstein/m<sup>2</sup>s]  $\mu$ s  
Light rhythm : 16 h / day  
Observation times : 0 + 3 + 6 + 24 + 48 h

#### RECORDING OF DATA

At the beginning and after + 3 + 6 + 24 + 48 h *Daphnia magna*'s inability to swim is recorded. Those animals which are unable to swim after gentle agitation of the testvessels are regarded as unable to swim.

#### TESTCRITERIA

Determination of the EC 50, EC 0 and EC 100 after 3 + 6 + 24 + 48 h. These values are based on nominal concentrations.

#### DETERMINATION OF EC 0 AND EC 100

The EC 0 is the highest concentration tested with an effect  $\leq$  10% .  
The EC 100 is the lowest concentration tested with an effect of 100%.

## R E S U L T S

## PHYSICAL AND CHEMICAL MEASUREMENTS

Table 1

Test water (at the beginning of the test)

---

pH - value : 7.9  
 Conductivity : 615 [ $\mu$ Siemens/cm]  
 Total hardness : 2.68 [mmol/l]  
 Ks up to pH 4.3: 0.79 [mmol/l]  
 Temperature : 294.0 [Kelvin]  
 Date : 1988-10-24

Table 2

pH-value in one vessel (parallel 1) per concentration

---

Conc. [mg/l]	pH-value after	
	8 h	48 h
31.25	8.31	8.14
62.5	8.37	8.13
125.	8.50	8.15
250.	8.65	8.25
500.	8.84	8.39
0.	8.29	8.16

---

Table 3

Oxygen content in one vessel (parallel 1)  
per concentration

---

Conc. [mg/l]	Oxygen content after	
	6 h	48 h
31.25	9.32	8.27
62.5	9.30	8.3
125.	9.31	8.33
250.	9.19	8.35
500.	9.22	8.26
0.	9.18	8.26

---

Table 4

Animals able to swim

Conc. [mg/l]	Animals able to swim after				
	6 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	19
500.	20	20	20	17	16
0.	20	20	20	20	20

## SUMMARY OF RESULTS AFTER 3h

EC 50 [mg/l] = &gt; 500

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

EC 0 [mg/l] = 500

EC 100 [mg/l] = &gt;500

## SUMMARY OF RESULTS AFTER 6h

EC 50 [mg/l] = &gt; 500

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

EC 0 [mg/l] = 500

EC 100 [mg/l] = &gt;500

SUMMARY OF RESULTS AFTER 24h

EC 50 [mg/l] = > 500

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

EC 0 [mg/l] = 250

EC 100 [mg/l] = >500

SUMMARY OF RESULTS AFTER 48h

EC 50 [mg/l] = > 500

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

EC 0 [mg/l] = 250

EC 100 [mg/l] = >500

## L I T E R A T U R E

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

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

3. Daphnid Acute Toxicity Test,- 'Guideline for Testing Chemicals', EG-1, EPA, Office of Toxic Substances, Jan. 1982. 75-889 (1975).

4. EG-Richtlinie 79/831/EMG, 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.

D  
Z  
Z  
M  
X  
M

Animals able to swim in the concentration 31.25 mg/l

Investigation time [h]	parallels			
	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

Animals able to swim in the concentration 62.5 mg/l

Investigation time [h]	parallels			
	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

Animals able to swim in the concentration 125 mg/l

Investigation time [h]	parallels			
	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

Animals able to swim in the concentration 250 mg/l

Investigation time [h]	parallels			
	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	4

Animals able to swim in the concentration 500 mg/l

Investigation time [h]	parallels			
	1	2	3	4
0	5	5	5	5
3	5	5	5	5
6	5	5	5	5
24	5	4	4	4
48	5	4	3	4

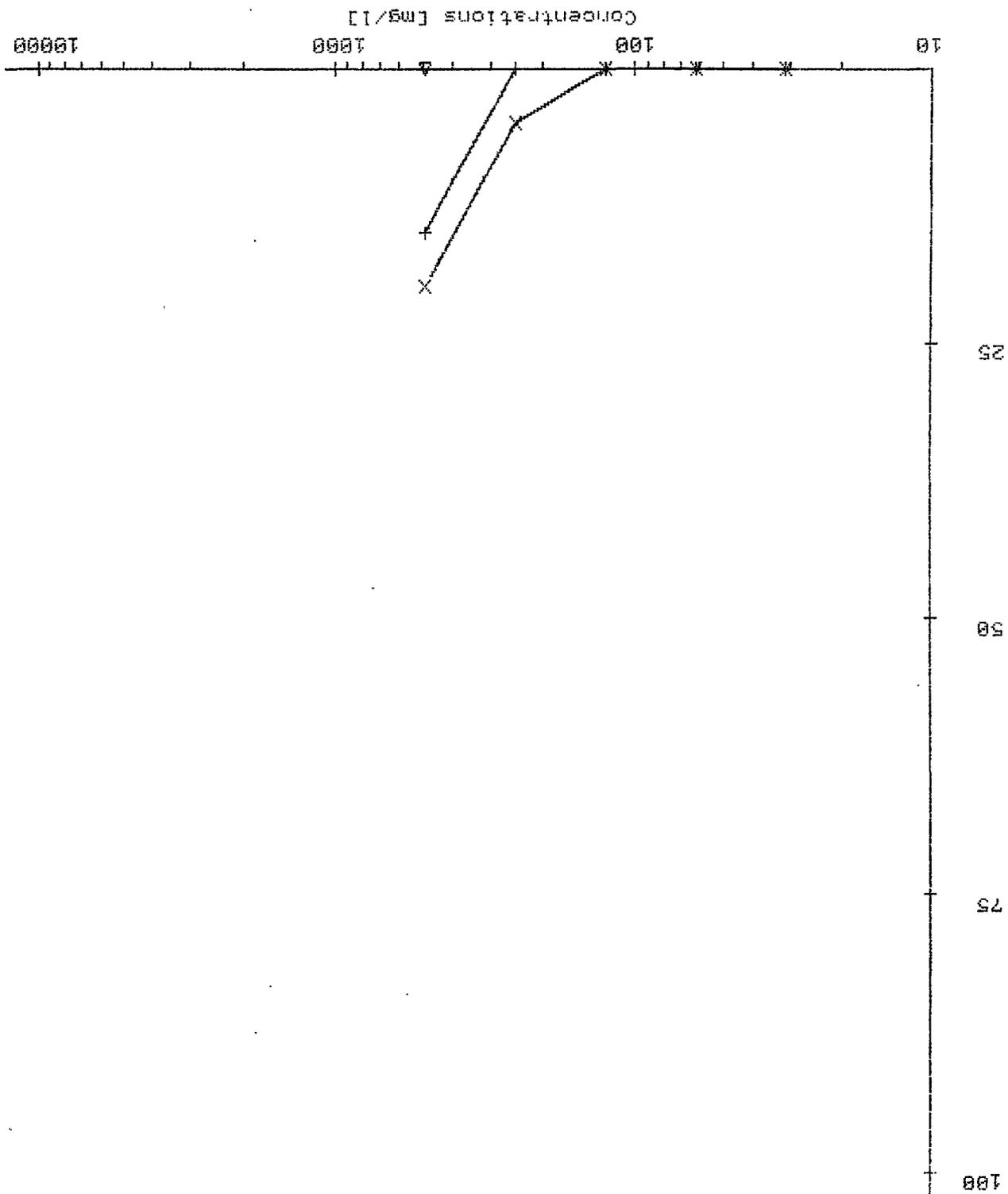
Animals able to swim in the control

Investigation time [h]	parallels			
	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



Concentration-effect-curve

Animals not able to swim [X]



Investigation time 3 h = ○

Investigation time 24 h = +

Investigation time 6 h = △

Investigation time 48 h = X

MAR 28 1989

Confidential



10F0143/885226  
GOLDEN ORFE  
(LEUCISCUS IDUS L., GOLDEN VARIETY)

PAGE 1  
BASF AKTIENGESELLSCHAFT  
DEPARTMENT OF TOXICOLOGY

16.4

REPORT ON THE STUDY OF THE ACUTE TOXICITY

NAME OF TEST SUBSTANCE: 3-DIMETHYLAMINOPROPIONITRIL

ANIMAL SPECIES: GOLDEN ORFE (LEUCISCUS IDUS L., GOLDEN VARIETY)

PROJECT NO.: 10F0143/885226

SPONSOR: BASF AKTIENGESELLSCHAFT

SUMMARY AND EVALUATION:

LC 50 (MG/L; NOMINAL CONCENTRATIONS) AFTER

1H	GREATER	1000	(MG/L)	( 1% SIGNIFICANCE LEVEL)
4H	GREATER	1000	(MG/L)	( 1% SIGNIFICANCE LEVEL)
24H	GREATER	460	(MG/L)	( 1% SIGNIFICANCE LEVEL)
	LOWER	1000	(MG/L)	( 1% SIGNIFICANCE LEVEL)
48H	GREATER	460	(MG/L)	( 1% SIGNIFICANCE LEVEL)
	LOWER	1000	(MG/L)	( 1% SIGNIFICANCE LEVEL)
72H	GREATER	460	(MG/L)	( 1% SIGNIFICANCE LEVEL)
	LOWER	1000	(MG/L)	( 1% SIGNIFICANCE LEVEL)
96H	GREATER	460	(MG/L)	( 1% SIGNIFICANCE LEVEL)
	LOWER	1000	(MG/L)	( 1% SIGNIFICANCE LEVEL)

SYMPTOMS :  
GASPING

NO OBSERVED EFFECT CONCENTRATION: 215 MG/L

MAXIMUM CONCENTRATION TESTED CAUSING NO MORTALITY: 464 MG/L

MINIMUM CONCENTRATION TESTED CAUSING 100% MORTALITY: 1000 MG/L

*Missy Hand*  
DR. MED. VET. P. KIRSCH  
HEAD OF SECTION

*Hand*  
DR. RER. NAT. R. MUNK  
STUDY DIRECTOR

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10F0143/885226  
GOLDEN ORFE  
(LEUCISCUS IDUS L., GOLDEN VARIETY)

PAGE 2  
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DEPARTMENT OF TOXICOLOGY

TEST SUBSTANCE:  
-----

TEST SUBSTANCE NO.: 88/143

NAME OF TEST SUBSTANCE: 3-DIMETHYLAMINOPROPIONITRIL

DEGREE OF PURITY: > 99%

HOMOGENEITY: ENSURED SINCE THE TEST SUBSTANCE IS A GENUINE LIQUID

SOLUBILITY IN WATER: MISCIBLE IN ANY RATIO

PHYSICAL STATE: LIQUID

CHARACTERIZATION: DETAILS ON THE CHARACTERIZATION ARE INCLUDED  
IN THE RAW DATA AND MAY BE REQUESTED FROM THE  
SPONSOR.

10F0143/885226

PAGE 3

GOLDEN ORFE  
(LEUCISCUS IDUS L., GOLDEN VARIETY)

BASF AKTIENGESELLSCHAFT  
DEPARTMENT OF TOXICOLOGY

METHOD:  
-----

THE METHOD USED CLOSELY FOLLOWED THE GUIDELINE OF DIN 38 412  
"TESTVERFAHREN MIT WASSERORGANISMEN (GRUPPE L). ALLGEMEINE HINWEISE  
ZUR PLANUNG, DURCHFUEHRUNG UND AUSWERTUNG BIOLOGISCHER TEST-  
VERFAHREN (L1)" UND "BESTIMMUNG DER WIRKUNG VON WASSERINHALTSSTOFFEN  
AUF FISCHER - FISCHTEST (L15)", JUNE 1982, USING A STATIC PROCEDURE.

PHOTOPERIOD: 16 HOURS LIGHT AND 8 HOURS DARKNESS

REASONS FOR THE SELECTION OF THE CONCENTRATIONS:  
BASED ON THE RESULTS OF A RANGE FINDING STUDY  
(LC 50 AFTER 96 H: BETWEEN 100 AND 1000 MG/L) THE CONCENTRATIONS,  
SPACED BY A FACTOR OF ABOUT 2.2, WERE FIXED AS FOLLOWS:  
100, 215, 464 AND 1000 MG/L.

AERATION: SLIGHT

PREPARATION OF THE TEST SUBSTANCE: THE PRODUCT WAS ADDED TO THE TEST  
WATER WITHOUT ANY PRETREATMENT;  
SUBSEQUENTLY THE FISH WERE PLACED  
INTO THE AQUARIA.

RETENTION OF RECORDS:  
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THE RAW DATA AND THE ORIGINAL OF THE REPORT ARE STORED IN THE  
BASF AKTIENGESELLSCHAFT.

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TEST ANIMALS:  
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ANIMAL SPECIES: GOLDEN ORFE (LEUCISCUS IDUS L., GOLDEN VARIETY)

CONSIGNMENT DATED: OCT. 18, 1988

SUPPLIER: FISCHZUCHT PAUL EGGERS  
D-2354 HOHENWESTEDT, FRG

BREEDER: CF. SUPPLIER

BODY LENGTH: 6.7 CM (RANGE: 6.0 - 7.2)

BODY WEIGHT: 2.8 G (RANGE: 2.0 - 3.6)

CORPULENCE FACTOR OF THE BATCH\*: 0.9 (DETERMINED NOV. 15, 1988)

POSITIVE CONTROL OF ANIMALS CONDUCTED WITH CHLOROACETAMIDE  
LC 50 AFTER 48 H: ABOUT 32 MG/L (DETERMINED NOV. 14, 1988)

THIS LETHAL CONCENTRATION CORRESPONDS TO THE NORMAL SENSITIVITY.

HOUSING:

THE FISH WERE KEPT IN A FLOW-THROUGH TANK IN TAP WATER CLEANED  
BY ACTIVE CARBON AND AERATED WITH OIL-FREE AIR.

PHOTOPERIOD: 16 HOURS LIGHT AND 8 HOURS DARK

TOTAL HARDNESS : ABOUT 2.5 MMOL/L

ACID CAPACITY : ABOUT 5.5 MMOL/L

OXYGEN CONTENT : > 60% OF MAXIMUM SATURATION

PH : ABOUT 8.0

DURATION OF HOUSING AND ADAPTATION: ABOUT 1 MONTH

WATER TEMPERATURE: 19 - 20 CENTIGRADE

MORTALITY DURING THE LAST 2 WEEKS OF HOUSING: ABOUT 0.03%

MORTALITY DURING THE ADAPTATION PERIOD: 0%

MEDICAL TREATMENT: TWICE WITH 0.05 MG/L MALACHITE GREEN CHLORIDE  
ONCE WITH 10 MG/L TETRACYCLINE HYDROCHLORIDE

DIET: GROWING FEED F/B 50  
SSNIFF SPEZIALDIAETEN GMBH  
D-4770 SOEST, FRG  
AD LIBITUM

\* THE CORPULENCE FACTOR K IS CALCULATED FROM THE WEIGHT W (G) AND  
THE LENGTH L (CM) MEASURED FROM THE TIP OF THE MOUTH TO THE DISTAL  
END OF THE CAUDAL FIN ACCORDING TO THE FORMULA  $K=100*W/L**3$ .

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TEST PROCEDURE:  
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THE STUDY WAS CARRIED OUT ACCORDING TO THE SPECIFIC STANDARD  
OPERATING PROCEDURES (SOP) OF THE LABORATORY OF FISH TOXICOLOGY.

TEST WATER: RECONSTITUTED FRESHWATER ACCORDING TO  
DIN 38 412, PART 11, OCTOBER 1982  
PREPARATION FROM FULLY DEMINERALIZED TAP WATER  
CONDUCTIVITY: MAX. 10 MICRO MHO

THE RESALTING IS CARRIED OUT BY ADDITION OF

294.0 MG/L  $\text{CaCl}_2 \cdot 2 \text{H}_2\text{O}$   
123.3 MG/L  $\text{MgSO}_4 \cdot 7 \text{H}_2\text{O}$   
63.0 MG/L  $\text{NaHCO}_3$   
5.5 MG/L  $\text{KCl}$

CONTINUOUS AERATION WITH OIL-FREE AIR

TEST WATER READY FOR USE:

TOTAL HARDNESS : 2.5 MMOL/L  
ACID CAPACITY : 0.8 MMOL/L  
RATIO  $\text{Ca}/\text{Mg}$  IONS : 4 : 1  
RATIO  $\text{Na}/\text{K}$  IONS : 10 : 1  
PH : ABOUT 8.0

VOLUME OF WATER: 10 LITERS

NO. OF ANIMALS PER TEST CONCENTRATION: 10

LOADING (G FISH / L TEST WATER): 2.8

TEST VESSELS: ALL-GLASS AQUARIUM (30 CM X 22 CM X 24 CM)

TEST TEMPERATURE: 19 - 20 CENTIGRADE

ADAPTATION TO TEST WATER AND TEST TEMPERATURE: 3 DAYS

TEST PERIOD: NOV. 21 - NOV. 25, 1988

WITHDRAWAL OF FOOD: 1 DAY BEFORE AND DURING EXPOSURE

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EXAMINATIONS:

DETERMINATION OF MORTALITY AND SYMPTOMS;

DETERMINATION OR CALCULATION OF THE MEDIAN LETHAL CONCENTRATION  
(LC 50) AND, IF POSSIBLE, THE LC 5 AND THE LC 95 USING THE PROBIT  
ANALYSIS\* AFTER HOURS (NOMINAL CONC.): 1, 4, 24, 48, 72, 96

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\* FINNEY, D.J., PROBIT ANALYSIS, CAMBR. UNIV. PRESS, 3RD ED., 1971  
CERTAIN ASPECTS OF THIS METHOD HAVE BEEN MODIFIED. THE EXACT  
PROCEDURE CAN BE SEEN FROM THE STANDARD OPERATING PROCEDURES OF  
THE LABORATORY.

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RESULTS :

NOMINAL CONC. OF FISH (MG/L)	NUMBER	DEAD FISH AFTER					
		1 H	4 H	24 H	48 H	72 H	96 H
100	10	0	0	0	0	0	0
215	10	0	0	0	0	0	0
464	10	0	0	0	0	0	0
1000	10	0	0	10	10	10	10
0	10	0	0	0	0	0	0

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NOMINAL CONC. (MG/L)	SYMPTOMS					
	1 H	4 H	24 H	48 H	72 H	96 H
100						
215						
464					L	L
1000						
0						

EXPLANATION OF SYMPTOMS:

A=APATHY  
E=EXOPHTHALMOS  
H=HYPERREFLEXIA  
L=GASPING  
T=TUMBLING  
V=DISCOLORATION  
X=ACCELERATED RESPIRATION

B=ABDOMINAL DISTENSION  
F=ESCAPE REFLEX  
K=CONVULSIONS  
N=NARCOTIC-LIKE STATE  
U=RESTLESSNESS  
W=HEADSTAND  
Y=

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RESULTS :

NOMINAL CONC. (MG/L)	PH					
	1 H	4 H	24 H	48 H	72 H	96 H
100	7.9		7.4	7.5	7.6	7.6
215	8.0		7.6	7.7	7.7	7.7
464	8.3		7.7	7.7	7.7	7.7
1000	8.6		8.1			
0	7.6		7.5	7.6	7.6	7.6

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NOMINAL CONC. (MG/L)	OXYGEN CONTENT (MG/L)					
	1 H	4 H	24 H	48 H	72 H	96 H
100	8.3		8.3	8.8	8.7	8.4
215	8.4		8.4	8.5	8.8	8.7
464	8.4		8.4	8.3	8.4	8.6
1000	8.8		9.1			
0	8.2		8.4	8.7	8.9	8.3

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RESULTS :

NOMINAL CONC. (MG/L)	TEMPERATURE (CENTIGRADE)					
	1 H	4 H	24 H	48 H	72 H	96 H
100	19		19	19	19	20
215	19		19	19	19	20
464	19		19	19	19	20
1000	19		19			
0	20		19	19	19	20

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STATISTICAL EVALUATION

NOMINAL CONCENTRATION

FISH TOXICITY AFTER	1 H	PAGE 11
	4 H	PAGE 12
	24 H	PAGE 13
	48 H	PAGE 14
	72 H	PAGE 15
	96 H	PAGE 16

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NOMINAL CONCENTRATIONS

FISH TOXICITY : AFTER 1H

NOMINAL CONC. (MG/L)	NUMBER OF FISH START	AFTER 1H	DEAD FISH	MORT. (%)	CONC. USED
100	10		0	0.0	
215	10		0	0.0	
464	10		0	0.0	
1000	10		0	0.0	*

LC50 > 1000 ( 1% SIGNIFICANCE LEVEL)

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NOMINAL CONCENTRATIONS

FISH TOXICITY : AFTER 4H

NOMINAL CONC. (MG/L)	NUMBER OF FISH START	DEAD FISH AFTER 4H	MORT. (%)	CONC. USED
100	10	0	0.0	
215	10	0	0.0	
464	10	0	0.0	
1000	10	0	0.0	*

LC50 > 1000 ( 1% SIGNIFICANCE LEVEL)

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NOMINAL CONCENTRATIONS

FISH TOXICITY : AFTER 24H

NOMINAL CONC. (MG/L)	NUMBER OF FISH START	DEAD FISH AFTER 24H	MORT. (%)	CONC. USED
100	10	0	0.0	
215	10	0	0.0	
464	10	0	0.0	*
1000	10	10	100.0	*

LC50 > 464 ( 1% SIGNIFICANCE LEVEL)

LC50 < 1000 ( 1% SIGNIFICANCE LEVEL)

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NOMINAL CONCENTRATIONS

FISH TOXICITY : AFTER 48H

NOMINAL CONC. (MG/L)	NUMBER OF FISH START	DEAD FISH AFTER 48H	MORT. (%)	CONC. USED
100	10	0	0.0	
215	10	0	0.0	
464	10	0	0.0	*
1000	10	10	100.0	*

LC50 > 464 ( 1% SIGNIFICANCE LEVEL)

LC50 < 1000 ( 1% SIGNIFICANCE LEVEL)

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NOMINAL CONCENTRATIONS

FISH TOXICITY : AFTER 72H

NOMINAL CONC. (MG/L)	NUMBER OF FISH START	DEAD FISH AFTER 72H	MORT. (%)	CONC. USED
100	10	0	0.0	
215	10	0	0.0	
464	10	0	0.0	*
1000	10	10	100.0	*

LC50 > 464 ( 1% SIGNIFICANCE LEVEL)

LC50 < 1000 ( 1% SIGNIFICANCE LEVEL)

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NOMINAL CONCENTRATIONS

FISH TOXICITY : AFTER 96H

NOMINAL CONC. (MG/L)	NUMBER OF FISH START	DEAD FISH AFTER 96H	MORT. (%)	CONC. USED
100	10	0	0.0	
215	10	0	0.0	
464	10	0	0.0	*
1000	10	10	100.0	*

LC50 > 464 ( 1% SIGNIFICANCE LEVEL)

LC50 < 1000 ( 1% SIGNIFICANCE LEVEL)

**REPRINT OF TEST REPORT****TEST SUBSTANCE: 3-Dimethylaminopropionitril**

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 dissolved organic carbon (DOC) concentration.

**TEST RESULT**

Elimination of the test substance:

Removal of DOC: 90-100 % after an exposure period of 21 days

**ORDER INFORMATION:**

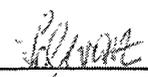
The investigations were performed in the former Laboratory of Emission Control (department code: DUU/O – K 210) of BASF Aktiengesellschaft Ludwigshafen/Rhein, Germany.

Original registration number of the test: 01.0102

Date of the reprint: 07 November 2006

Signature:

Author: \_\_\_\_\_

  
H. Schwarz

**TEST DETAILS**

Stock solution, Initial weight: 2530 mg/L  
 TOC/DOC of the stock solution: 1479/1463  
 Test concentration: 400 mg/L DOC  
 Test temperature: 20-25° C  
 Inoculum: Activated sludge from the waste water treatment  
 plant of BASF AG  
 Concentration of inoculum: 1 g/L dry matter  
 Test duration: 5 days

Date of the start of the test: 03. August 1988  
 Name of the then study director: Dr. Pagga

**TEST DATA:**

Measured DOC-values [mg/L]

Test duration	BC	TS		% Elim. TS
		DOC	pH	
0 hours	-	419	8.1	-
3 hours	16	424	7.5	-2
1 day	16	422	7.8	-1
3 days	16	338	8.0	20
7 days	16	172	8.6	61
10 days	16	46	8.5	93
14 days	16	38	8.0	95
21 days	16	30	5.5	97

Test duration	PC		% Elim. TS
	DOC	pH	
0 hours	400	7.9	-
3 hours	385	7.6	4
1 day	378	7.1	6
3 days	377	7.1	6
7 days	360	7.4	10
10 days	354	6.9	12
14 days	335	7.0	16

LEGEND: BC = blank control assay, PC = control for abiotic elimination,  
 TS = test substance assay