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***BENZALDEHYDE***  
***CAS N°: 100-52-7***

## Substance

<i>End Point</i>	:	<b>IDENTIFIERS, PHYSICAL AND CHEMICAL PROPERTIES</b>
<i>Chemical Name</i>	:	<b>Benzaldehyde</b>
<i>Common Name</i>	:	<b>Benzaldehyde</b>
<i>CAS Number</i>	:	<b>100-52-7</b>
<i>RTECS Number</i>	:	<b>CU4375000</b>

## Synonyms

<b>Artificial almond oil</b>	<b>Benzaldehyde FFC</b>
<b>Benzenecarbonal</b>	<b>Benzenecarboxaldehyde</b>
<b>Benzoic aldehyde</b>	<b>Phenylformaldehyde</b>
<b>Phenylmethanal</b>	

## Properties &amp; Definitions

<i>Molecular Formula</i>	:	<b>C7H6O</b>
<i>Molecular Weight</i>	:	<b>106.12</b>
<i>Melting Point</i>	:	<b>-26C</b>
<i>Boiling Point</i>	:	<b>179.2C</b>
<i>State</i>	:	<b>Liquid</b>
<i>Flash Point</i>	:	<b>64C (c-cup)</b>
<i>Density</i>	:	<b>1.0415 g/cm<sup>3</sup> at 20C</b>
<i>Vapour Pressure</i>	:	<b>0.130 kPa (0.97 mmHg) at 20C</b>
<i>Octanol/Water Partition Coefficient</i>	:	<b>log Pow = 1.48 experimental</b>
<i>Water Solubility</i>	:	<b>6.55 g/L at 25C</b>
<i>Solubility in other Solvents</i>	:	<b>Miscible with alcohol, ether, oils.</b>
<i>Taste</i>	:	<b>Burning aromatic</b>
<i>Impurities</i>	:	<b>Toluene, benzoic acid</b>
<i>General Comments</i>	:	Freezing point = -56C. For water solubility the value 3.3 g/L at 25C is also given. FP (o-cup) = 74C. Auto-flammability = 190C. Strongly reactive. Becoming yellowish on keeping. Volatile with steam. Keep tightly closed and protected from light.

## Overall Evaluation

## ENVIRONMENTAL EXPOSURE

Biodegradability: "readily biodegradable"

## RELEASE AND SOURCES

Production of benzaldehyde (Botlek):

Emission to air calculated for 8300 production hours/year at the Botlek facility is for 6 pumps in total 275 kg/year and for 83 valves in total 1382 kg/year. This leads to continuous release to air of 5 kg/day. The storage tank is provided with a carbonfilter, so it can be assumed that emissions are very small. There is almost no release to water as process water is incinerated as chemical waste or recycled.

Purification of benzaldehyde (SP-South Geleen):

Process water is incinerated or recycled, no discharges occurs into the water.

Processing of benzaldehyde (SP-South Geleen):

After processing the waste water is incidentally discharged to the process sewer and then via several canals to the IAZI (Integral Waste Water Purification Installation). The IAZI at the DSM site Geleen has a capacity of 1 million inhabitants equivalents and a 4500 m<sup>3</sup>/hour influent. It is assumed that 300 kg benzaldehyde/day is released into the influent of the IAZI. The emission levels to air of the purification installation in Geleen are low: toluene: 0.013% = 0.6 kg/day, benzaldehyde: 0.231% = 11.2 kg/day and benzylformiate : 0.004% = 0.2 kg/day.

At the Botlek site yearly "personal monitoring" has only been carried out for aromatic hydrocarbons and not for benzaldehyde. In Geleen no personal sampling measurements have been carried out too.

At the German production and processing site, the emissions into waste water during processing is < 1 t/y. The release during production is not known.

#### PARTITIONING AND FATE

Benzaldehyde is a highly soluble and readily biodegradable chemical with a log Kow of 1.48. A DT50 for photodegradation of 9.4 hours was calculated for the reaction with OH-radicals. Results from Mackay level 1 calculation indicate that 29%, 68,8%, 1.8% and 4% will partition into air, water, soil and sediment, respectively.

#### CONSUMER EXPOSURE

Since benzaldehyde is approved as a direct and indirect food additive consumers can be exposed by the oral route. Benzaldehyde is also approved as a fragrance additive and is reported to occur in several essential oils, notably hyacinth, citronella and cinnamon. It is also used as a solvent for resins. Therefore consumers can also be exposed dermally and after inhalation.

#### OCCUPATIONAL EXPOSURE

In the Netherlands occupational exposure can occur during production, transportation and purification. No data on workplace monitoring have been reported. Occupational exposure is probably low since no complaints concerning smell and irritation were expressed by workers. Both thresholds are very low (odour threshold: 0.05 ppm; irritation occurs at 4 ppm).

Workplace exposure measurements of benzaldehyde have been carried out in Finland in some workplaces. Benzaldehyde, as one of the numerous aldehydes emitted when cutting the painted metal components with propan-gaz welding flame, was measured at a concentration of 0.02 mg/m<sup>3</sup>. The benzaldehyde concentration inside a small hut made of artificial element materials was 0.01 mg/m<sup>3</sup> (Malm, 1994).

#### SIDS INITIAL ASSESSMENT

The human and environmental profiles presented in this assessment describe the risk from the plant in the Netherlands (production at the Rotterdam Botlek site). The risk assessment is carried out using the Uniform System for the Evaluation of Substances (USES) (RIVM, VROM & WVC, 1994).

Assumptions made are:

production: 25000 tonnes/year of which 500 tonnes/year is used as a food and fragrance additive.

processing: Use as on-site intermediate at Gleen 60% of 25000 tonnes/year.

#### HUMAN

Indirect:

The human effects alone indicate a low degree of toxicity. From the USES model, based on production figures it is calculated that the margin of safety (MOS) between the NOAEL and the data for indirect exposure is 35000. Based on the ADI the MOS is 1073.

Using processing figures the margin of safety for indirect exposure is 1.38E+7 Based on the ADI the MOS is 4.2E+7

Consumers:

Oral exposure to benzaldehyde from its use as a food additive can occur and is regulated based on the established ADI of 5 mg/kg body weight as benzoic acid total.

Workers:

No monitoring data are available. Exposure will probably be very low since no complaints concerning smell and irritation were expressed by workers (odour threshold: 0.05 ppm).

#### ENVIRONMENTAL

Ecotoxicological data indicate that benzaldehyde is acutely toxic to fish, harmful to daphnia and very slightly toxic to algae. Using an uncertainty factor of 100 on the lowest LC50 to fish a PNEC (Predicted No Effect

Concentration) of 10.7 ug/L is calculated, for aquatic organisms.

During production discharges to water are negligible as all waste is recycled or incinerated. There are no indication for a risk to the environment.

From releases to water during processing is estimated that the benzaldehyde concentration in the influent is 300 kg/ (400 x 24 m<sup>3</sup>) = 2.8 mg/L. Applying the model USES an effluent concentration of 94 ug/L is calculated. When using a dilution factor of 32 the concentration in surface water 1000 m from the discharge point is 2.9 ug/L.

The PEC/PNEC ratio according to the USES data is  $2.9/10.7 = 0.27$ .

Using a NOEC of 132 mg/L a PEC/PNEC ratio of < 0.01 for microorganisms in the IAZI is calculated. However, if the lowest EC50 of 4.85 mg/L is used there is still no risk for microorganisms in a waste water treatment plant.

Based on an EC50 of 624 mg/kg for lettuce a PNEC of 0.6 mg/kg is calculated for soil organisms. Applying a scenario of USES in which sewage sludge is applied on agricultural land a PEC/PNEC ratio of < 0.01 is calculated.

## CONCLUSIONS

Based upon the available information, the initial assessment gave no indications for concern for humans for indirect exposure and no indications for concern for the aquatic environment. The assessment is considered to be limited by:

- the lack of exposure data: workers and aquatic environment.

## RECOMMENDATIONS

Information on human as well as environmental exposure is needed in particular with respect to other producers and processing industries.

Production-Trade 

*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Geographic Area* : **NLD**

## Production

<u>Quantity</u>	<u>Year</u>
<b>15000-25000 t/y - P</b>	<b>1987-1993</b>

*General Comments* : About 15000 tonnes per year is produced in the USA, Japan, Germany and another EU country.

## References

**!SIDSP\***

OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

**#DSMIC\***

Neis, J. Concernstaf Veiligheid, Milieu, Gezondheid en Technologie, 19, (1993)

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## Processes

*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

## Process

*Process comments* : In the Netherlands the raw benzaldehyde (95% purity) is produced in the Rotterdam Botlek plant by the oxidation of toluene. The raw material is daily transported by truck to the DSM Geleen facilities where it is purified to 99%.

## References

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

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## Uses

*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Geographic Area* : **NLD**

## Use

<u>Quantity</u>	<u>Year</u>	<u>Comments</u>
>98 %		Used as an intermediate in production of pharmaceuticals, aromatic alcohols, photographic chemicals, dyes, benzoic acid and cinnamic acid. Purified benzaldehyde used as an intermediate (60% on site and 38% off site) in closed systems.
1-2 %		Used as a food and fragrance additive. Used as a solvent for resins, oils, etc. It is also used as a brightener in zinc electroplating processes.

## References

*Primary References* : **#DSMIC\***  
Neis, J. Concernstaf Veiligheid, Milieu, Gezondheid en Technologie, 19, (1993)

*Secondary References* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

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## Study

*End Point* : **Pathway into the Environment and Environmental Fate.**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

## Test Method and Conditions

*Test method description* : Mckay level 1 model

## Quantity Transported

<u>Medium</u>	<u>to Medium</u>	<u>Quantity</u>	<u>Time</u>	<u>Year</u>	<u>to Year</u>
	<b>to AIR</b>	<b>29 %</b>			
	<b>to AQ</b>	<b>68.8 %</b>			
	<b>to SOIL</b>	<b>1.8 %</b>			
	<b>to SED</b>	<b>4 %</b>			

*General Comments* : From the calculations it can be concluded that 29% and 68.8% of benzaldehyde will partition into the atmosphere and water respectively. All above values are calculated.

## References

*Secondary Reference* : **ISIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **Pathway into the Environment and Environmental Fate.**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Geographic Area* : **DEU**

## Test Method and Conditions

*Test method description* : Mckay level 1 model

## Pathway and Transport

*Pathway description* : Waste water

## Quantity Transported

<u>Medium</u>	<u>to Medium</u>	<u>Quantity</u>	<u>Time</u>	<u>Year</u>	<u>to Year</u>
	<b>to AQ</b>	<b>&lt;1 t</b>	<b>1 y</b>		

Emission into waste water during processing. The release during production is not known.



## References

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High  
 Production Volume Chemicals Programme, (1994)

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## Study

*End Point* : **Pathway into the Environment and Environmental Fate.**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Geographic Area* : **NLD**

## Quantity Transported

<u>Medium</u>	<u>to Medium</u>	<u>Quantity</u>	<u>Time</u>	<u>Year</u>	<u>to Year</u>
	<b>to AIR</b>	<b>1382 kg</b>	<b>/ y</b>		
Calculated emission to air (in Botlek)					
	<b>to AIR</b>	<b>5 kg</b>	<b>/ d</b>		
Calculated emission to air (in Botlek)					
	<b>to AIR</b>	<b>0.6 kg</b>	<b>/ d</b>		
Emission of toluene in the purification installation (in Gleen)					
	<b>to AIR</b>	<b>11.2 kg</b>	<b>/ d</b>		
Emission of benzaldehyde in the purification installation (in Gleen)					
	<b>to AIR</b>	<b>0.2 kg</b>	<b>/ d</b>		
Emission of benzylformiate in purification installation (in Gleen)					
<i>General Comments</i>	:	In production of benzaldehyde (in Boltek) the storage tank is provided with a carbonfilter, so it can be assumed that emissions are very small. In production and purification of benzaldehyde (in Botlek) there is almost no release to water as process water is incinerated as chemical waste or recycled. The waste water from processing in Gleen is incidently discharged to the process water and then via several canals to the IAZA (Integral Waste Water Purification Installation).			

## References

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High  
 Production Volume Chemicals Programme, (1994)

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## Study

*End Point* : **CONCENTRATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Lifestage Sex

**AIR**  
**AIR**

## Test Results

<u>Matrix</u>	<u>Concentrations</u>	<u>Spec.</u>	<u>Date</u>
<b>AIR</b> In gasoline exhaust	<b>&lt;0.1-13.5 ppm</b>		
<b>AIR</b> In diesel exhaust	<b>0.3 ppm</b>		

## References

*Primary Reference* : **HBEDC\***  
 Verschueren, K. Handbook of Environmental Data on Organic Chemicals, 2nd ed., 234-236, (1983)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **CONCENTRATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **FIELD**  
*Geographic Area* : **USA**

## Test Subject

Organism Medium Specification Lifestage Sex

**AIR**

## Test Results

<u>Matrix</u>	<u>Concentrations</u>	<u>Spec.</u>	<u>Date</u>
<b>AIR</b>	<b>0-1 ppb</b>		
In Claremont (California)			
<b>AIR</b>	<b>2 ppb</b>		
In Los Angeles			
<b>AIR</b>	<b>0-0.5 ppb</b>		
In Azusa and Lennox (California)			

## References

*Primary Reference* : **ATENBP**  
Carlier et al. Atmospheric Environment, 20(11), 2079-99, (1986)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

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## Study

*End Point* : **CONCENTRATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Geographic Area* : **FIN**

## Test Results

<u>Matrix</u>	<u>Concentrations</u>	<u>Spec.</u>	<u>Date</u>
	<b>0.02 mg/m3</b>		
Emitted when cutting the painted metal components with propan-gas welding flame.			
	<b>0.01 mg/m3</b>		
Inside a small hut made of artificial element materials.			

## References

*Primary Reference* : **#NBWCC\***  
Malm, J. Exposure Data on Benzaldehyde, (1994)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

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## Study

*End Point* : **CONCENTRATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Lifestage Sex

**AQ**  
**SED**

## Test Results

Matrix Concentrations Spec. Date

**AQ**

In water. Not detected (detection limit: 0.5-4 ppb).

**SED** **0.01-0.17 ppm**

In sediment.

## References

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High  
 Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **CONCENTRATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Lifestage Sex

**AQ** **WASTE**  
**AQ** **-**  
**AQ** **SURF**





## Study

*End Point* : **HUMAN INTAKE AND EXPOSURE**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

## Test Subject

Organism Medium Specification Route Lifestage Sex

**ORL**  
**IHL**  
**SKN**

## Test Results

*General Comments* : Since benzaldehyde is approved as a direct and indirect food additive, consumers can be exposed by the oral route. As it is also used as a solvent for resins, therefore consumers can also be exposed dermally and by inhalation.

## References

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

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## Study

*End Point* : **HUMAN INTAKE AND EXPOSURE**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Geographic Area* : **NLD**

## Test Results

*General Comments* : Occupational exposure can occur during production, transportation and purification. No data on workplace monitoring have been reported. Occupational exposure seems to be low.

## References

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

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## Study

*End Point* : **BIODEGRADATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification

**SOIL** -  
**AQ** **SEW**

*Species/strain/system* : Mixed soil/raw sewage (adapted); reference compound: glucose.

## Test Method and Conditions

*Test method description* : Gledhill (combination of shake flask test and Strum test); measuring both CO<sub>2</sub> evolution and DOC removal; (1981).  
*Temperature* : **20 C**  
*(An)aerobic* : **AEROB**

## Exposure

*Exposure Period* : **2-21 d**  
*Dose / Concentration* : **20 mg/L**

## Test Results

<u>Quantity</u>	<u>Time</u>	<u>Comments on result</u>
<b>100 %</b>	<b>21 d</b>	CO <sub>2</sub> evolution
<b>100 %</b>	<b>21 d</b>	CO <sub>2</sub> removal
<b>0 %</b>	<b>21 d</b>	CO <sub>2</sub> evolution in sterile control
<b>45 %</b>	<b>2 d</b>	DOC removal in sterile control

*General Comments* : A DT50 for photodegradation of 9.4 hours was calculated for the reaction with OH-radicals.

## References

*Primary Reference* : **WAPLAC**  
 Means, J. I. and Anderson, S. J. Water, Air and Soil Pollution, 16, 301-315, (1981)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)



## Study

*End Point* : **BIODEGRADATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification

**AQ** **SLUDG**

*Species/strain/system* : Activated sludge (adapted)

## Test Method and Conditions

*Test method description* : Determination of chemical oxygen demand; benzaldehyde as sole C-source. Degradation reference compound (phenol): 98.5%; (1976).  
*Temperature* : **20 C**  
*(An)aerobic* : **AEROB**

## Exposure

*Dose / Concentration* : **200 mg/L**

## Test Results

<u>Quantity</u>	<u>Time</u>	<u>Comments on result</u>
<b>99 %</b>	<b>120 h</b>	Degree of biodegradation from COD

*General Comments* : The results indicate the substance is "inherently biodegradable".

## References

*Primary Reference* : **WATRAG**  
Pitter, P. Water Research, 10, 231-235, (1976)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **BIODEGRADATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification

**AQ** **SLUDG**

*Species/strain/system* : Activated sludge (adapted)

## Test Method and Conditions

*Test method description* : OECD 301B (Strum method), measuring CO<sub>2</sub> evolution; (1981).  
*Temperature* : **20 C**  
*(An)aerobic* : **AEROB**

## Exposure

*Dose / Concentration* : **10 mg/L**  
*Exposure comments* : Reference compound: glucose

## Test Results

Quantity Time Comments on result

**95 %** **28 d** DOC value

*General Comments* : The results indicate the substance is "readily biodegradable".

## References

*Primary Reference* : **WAPLAC**  
 Means, J. I. and Anderson, S. J. Water, Air and Soil Pollution, 16, 301-315, (1981)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **BIODEGRADATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification

**AQ** **SEW**

*Species/strain/system* : Acclimated settled sewage seed

## Test Method and Conditions

*Test method description* : Determination of biological oxygen demand; GLP: unknown; (1954).  
*Temperature* : **20 C**  
*pH* : **7.2**  
*(An)aerobic* : **AEROB**

## Exposure

*Dose / Concentration* : **50-90 mg/L**

## Test Results

<u>Quantity</u>	<u>Time</u>	<u>Comments on result</u>
<b>62.5 %</b>	<b>1-10 d</b>	Degree of biodegradation from BOD

*General Comments* : The results indicate the substance is "inherently biodegradable".

## References

*Primary Reference* : **PIWCAX**  
 Mills, E. J. and Stock, V. T. Proceedings of the Industrial Waste Conference, 492-517, (1954)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **BIODEGRADATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification

**AQ** **SLUDG**

*Species/strain/system* : Activated sludge (adapted)

## Test Method and Conditions

*Test method description* : Modified OECD screening test (301E), (shake flask test), 21 days (1981).  
*Temperature* : **20 C**  
*(An)aerobic* : **AEROB**

## Exposure

*Exposure Period* : **2-21 d**  
*Dose / Concentration* : **20 mg/L**

## Test Results

<u>Quantity</u>	<u>Time</u>	<u>Comments on result</u>
<b>100 %</b>	<b>2 d</b>	BOD value
<b>80 %</b>	<b>21 d</b>	DOC removal in sterile control
<i>General Comments</i>	:	The results indicate the substance is "readily biodegradable".

## References

*Primary Reference* : **WAPLAC**  
 Means, J. I. and Anderson, S. J. Water, Air and Soil Pollution, 16, 301-315, (1981)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **BIODEGRADATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

Organism Medium Specification

**AQ** **SLUDG**

*Species/strain/system* : Activated sludge (adapted)

## Test Method and Conditions

*Test method description* : Activated sludge test based on the SCAS-test and Zahn-Wellens test, measuring DOC-removal.  
*Temperature* : **20 C**  
*(An)aerobic* : **AEROB**

## Exposure

*Dose / Concentration* : **50-100 mg/L**

## Test Results

<u>Quantity</u>	<u>Time</u>	<u>Comments on result</u>
<b>&gt;95 %</b>		DOC-removal within the first 30 minutes
<b>100 %</b>	<b>&gt;2 d</b>	DOC-removal after 2 days
<i>General Comments</i>	:	The results indicate the substance is "inherently biodegradable".

## References

*Primary Reference* : **WAPLAC**  
 Means, J. I. and Anderson, S. J. Water, Air and Soil Pollution, 16, 301-315, (1981)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **BIODEGRADATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification

**AQ** **SLUDG**

*Species/strain/system* : Activated sludge, 2500 mg as suspended solids

## Test Method and Conditions

*Test method description* : Warburg respirometer; GLP: unknown; (1965).  
*Temperature* : **20 C**  
*(An)aerobic* : **AEROB**

## Exposure

*Exposure Period* : **144 h**  
*Dose / Concentration* : **500 mg/L**

## Test Results

Quantity Time Comments on result

**94.4 %** **144 h** BOD value

*General Comments* : The results indicate the substance is "inherently biodegradable".

## References

*Primary Reference* : **PEXSAO**  
 Lutin, P. A. et al. Engineering Extension Series, (1965)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **BIODEGRADATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification

- **AQ** **SEW**  
**MCR** **SOIL**

*Species/strain/system* : Secondary effluent/soil microbial culture (adapted)

## Test Method and Conditions

*Test method description* : BOD test; GLP: unknown

*Temperature* : **20 C**

*(An)aerobic* : **AEROB**

## Exposure

*Exposure Period* : **2 d**

*Dose / Concentration* : **1-16 mg/L**

*Exposure comments* : Concentrations of 1, 2, 4, 8 and 16 mg/L were tested. Reference: 50% glucose, 50% glutamic acid.

## Test Results

*General Comments* : A rapid decline in dissolved oxygen was observed within 2 days.

## References

*Primary Reference* : **WAPLAC**  
 Means, J. I. and Anderson, S. J. Water, Air and Soil Pollution, 16, 301-315, (1981)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **BIODEGRADATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification

**BACT**  
**MCR**

*Species/strain/system* : Mixed culture capable of rapid degradation of phenol.

## Test Method and Conditions

*Test method description* : Warburg respirometer; GLP: unknown  
*Temperature* : **30 C**  
*(An)aerobic* : **AEROB**

## Exposure

*Exposure Period* : **3 h**  
*Dose / Concentration* : **100 mg/L**  
*Exposure comments* : Reference compound: phenol

## Test Results

<u>Quantity</u>	<u>Time</u>	<u>Comments on result</u>
<b>41.4 %</b>	<b>3 h</b>	BOD value
<b>70 %</b>		Phenol (reference compound)
<i>General Comments</i>	:	The results indicate the substance is "inherently biodegradable".

## References

*Primary Reference* : **JWPFA5**  
 Chambers, C. W. et al. Journal of the Water Pollution Control Federation, 35, 1517-28, (1963)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)



## Study

*End Point* : **BIODEGRADATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification

**MCR**      **AQ**      **SURF**

*Species/strain/system* : Micro-organisms taken from 3 polluted surface waters

## Test Method and Conditions

*Test method description* : Afnor T 90/103 test; GLP: unknown; (1975).

*(An)aerobic* : **AEROB**

## Exposure

*Exposure Period* : **5 d**

## Test Results

Quantity                      Time                      Comments on result

**36 %**                              **5 d**                              BOD value

*General Comments* : The results indicate the substance is "inherently biodegradable".

## References

*Primary Reference* : **TCEBAA**  
Dore, M. et al. Tribune du Cebedeau, 28, 3-11, (1975)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **BIODEGRADATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification

**MCR**      **AQ**      **SEW**

*Species/strain/system* : Microbial culture isolated from raw sewage

## Test Method and Conditions

*Test method description* : BOD test. Degradation as % BOD; GLP: unknown; (1968).  
*Temperature* : **20 C**  
*(An)aerobic* : **AEROB**

## Exposure

*Exposure Period* : **5 d**

## Test Results

Quantity                      Time                      Comments on result

**67 %**                              **5 d**                              BOD removal at 20C

*General Comments* : The results indicate the substance is "inherently biodegradable".

## References

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High  
 Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **PHOTODEGRADATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Results

<u>Quantity</u>	<u>Time</u>	<u>Comments on result</u>
<b>T/2</b>	<b>9.4 h</b>	Rate constant of 1.2E-11 cm <sup>3</sup> /molecule.second (equal to a DT50 of 9.4 hours) was calculated.

*General Comments* : Above value was calculated with an estimated environmental OH-concentration of 1.7E-6 radicals/cm<sup>3</sup>.

## References

*Primary Reference* : **JPCRBU**  
Atkinson, R. and Lloyds, A. C. Journal of Physical and Chemical Reference Data, 13, 315-444, (1984)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **PHOTODEGRADATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Medium* : **AIR**  
*Geographic Area* : **NLD**

## Test Method and Conditions

*Test method description* : Smog chamber

## Exposure

*Dose / Concentration* : Using NO (0.44 ppm) and NO<sub>2</sub> (0.06 ppm) as sensitizers.

## Test Results

<u>Quantity</u>	<u>Time</u>	<u>Comments on result</u>
		Benzaldehyde was almost unreactive.
<i>General Comments</i>		Photolization rate was 1.52 ppb/minutes, expressed as rate of NO <sub>2</sub> formation and yield of reaction products (concentration of benzaldehyde = 1 ppm).

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## References

- Primary Reference* : **JPCAAC**  
Dimitriadis, B. and Wesson, T. C. Journal of the Air Pollution Control Association, 22, 33-38, (1972)
- Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)
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## Study

*End Point* : **METABOLISM**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Geographic Area* : **NLD**

## Test Results

*General Comments* : The primary reaction in the metabolism of benzaldehyde is enzymatic oxidation or reduction of the carbonyl group to produce benzoyl or benzyl derivatives such as benzoic acid and benzyl alcohol which may subsequently be conjugated with glycine to hippuric acid. Hippuric acid is found in urine (Opdyke, 1976; NTP, 1990). The occurrence of benzaldehyde among 300 volatile constituents in urine of healthy human volunteers indicates that also unchanged benzaldehyde is excreted.

## References

*Primary Reference* : **CLCHAU**  
 Zlatkis, A. and Liebich, H. Clinical Chemistry  
 (Winston-Salem, North Carolina), 17, 952, (1971)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High  
 Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **METABOLISM**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**RBT**

*Species/strain/system* : New Zealand White rabbits

## Test Substance

*Purity Grade* : >98%

## Exposure

*Exposure Type* : **ACUTE**  
*Dose / Concentration* : **350-750 mg/kg BW**  
*Exposure comments* : Single doses of benzaldehyde (0.35-0.75 g/kg body weight) were administered to rabbits. (Route not given).

---

## Test Results

<i>Organ</i>	<i>Quantity</i>	<i>Time</i>	<i>Comments on result</i>
URINE	83 %	TOT	Metabolites: hippuric acid, free and conjugated benzoic acid (benzoylglucuronic acid), benzylglucuronide and benzylmercapturic acid (only twice amounts). Urinary metabolites accounted for 83% of the total dose.

## References

*Primary Reference* : **CMSHAF**  
Laham, S. et al. Chemosphere. Chemistry, Biology and Toxicology as Related to Environmental Problems, 17, 517-524, (1988)

*Secondary Reference* : **!SIDSP\***  
Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

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## Study

*End Point* : **MAMMALIAN ACUTE TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

*Dose / Concentration* : **80-1600 mg/kg BW**

## Test Results

<u>Organism</u>	<u>Medium</u>	<u>Spec.</u>	<u>Route</u>	<u>Lifestage</u>	<u>Sex</u>	<u>Effect</u>	<u>Effect Comments</u>
<b>MOUSE</b>			<b>ORL</b>			<b>LD50</b>	LD50: 80 - 1600 mg/kg body weight.

## References

*Primary Reference* : **URKOD\***  
Eastman Kodak Company Reports

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MAMMALIAN ACUTE TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

*Frequency* : **1 x**  
*Dose / Concentration* : **1100-1540 mg/kg BW**

## Test Results

<u>Organism</u>	<u>Medium</u>	<u>Spec.</u>	<u>Route</u>	<u>Lifestage</u>	<u>Sex</u>	<u>Effect</u>	<u>Effect Comments</u>
<b>RAT</b>			<b>ORL</b>		<b>M</b> <b>F</b>	<b>LD50</b>	Oral LD50 for rats was established as 1300 mg/kg body weight .

## References

*Primary Reference* : **FCTXAV**  
Jenner, P. M. et al. Food and Cosmetics Toxicology, 2, 327-343, (1964)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MAMMALIAN ACUTE TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

*Frequency* : **1 x**  
*Dose / Concentration* : **800-1250 mg/kg BW**

## Test Results

<u>Organism</u>	<u>Medium</u>	<u>Spec.</u>	<u>Route</u>	<u>Lifestage</u>	<u>Sex</u>	<u>Effect</u>	<u>Effect Comments</u>
<b>GPIG</b>			<b>ORL</b>		<b>M</b> <b>F</b>	<b>LD50</b>	Oral LD50 for guinea pigs was established as 1000 mg/kg body weight.

## References

*Primary Reference* : **FCTXAV**  
 Jenner, P. M. et al. Food and Cosmetics Toxicology, 2, 327-343, (1964)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MAMMALIAN ACUTE TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

*Dose / Concentration* : **1250 mg/kg BW**

## Test Results

<u>Organism</u>	<u>Medium</u>	<u>Spec.</u>	<u>Route</u>	<u>Lifestage</u>	<u>Sex</u>	<u>Effect</u>	<u>Effect Comments</u>
<b>RBT</b>			<b>SKN</b>			<b>LD50</b>	Dermal LD50 for rabbits was established as > 1250 mg/kg body weight.

## References

*Primary Reference* : **FCTXAV**  
 Opdyke, D. L. J. Food and Cosmetics Toxicology, 14, 693-698, (1976)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)



## Study

*End Point* : **MAMMALIAN ACUTE TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

*Dose / Concentration* : **2000 mg/kg BW**

## Test Results

<u>Organism</u>	<u>Medium</u>	<u>Spec.</u>	<u>Route</u>	<u>Lifestage</u>	<u>Sex</u>	<u>Effect</u>	<u>Effect Comments</u>
<b>GPIG</b>			<b>SKN</b>			<b>LD50</b>	

## References

*Primary Reference* : **URKOD\***  
Eastman Kodak Company Reports

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MAMMALIAN ACUTE TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

*Dose / Concentration* : **27.8 mg/kg BW**

## Test Results

<u>Organism</u>	<u>Medium</u>	<u>Spec.</u>	<u>Route</u>	<u>Lifestage</u>	<u>Sex</u>	<u>Effect</u>	<u>Effect Comments</u>
<b>MOUSE</b>			<b>ORL</b>			<b>LD50</b>	LD50: 27.8 mg/kg body weight

## References

*Secondary Reference* : **SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MAMMALIAN TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**HUMAN**

**IHL**

## Exposure

*Exposure Type* : **ACUTE**  
*Exposure Period* : **1 mi**  
*Dose / Concentration* : **19.5 mg/m3**  
*Exposure comments* : Human volunteers were exposed to 4.5 ppm benzaldehyde for 1 minute.

## Test Results

<u>Organ</u>	<u>Effect</u>	<u>Rev.</u>	<u>OnSet</u>	<u>Sex</u>	<u>Affected in</u> <u>Exposed - Controls</u>
<b>EYE</b>	<b>IRRIT</b>				
Eye irritation.					
<b>RESPI</b>	<b>IRRIT</b>				
Irritation of the upper respiratory tract.					

## References

*Primary Reference* : **AIHAL\***  
 American Industrial Hygiene Association. Workplace Environmental Exposure Level Guide, (1985)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MAMMALIAN TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**HUMAN**

**IHL**

## Exposure

*Exposure Type* : **OCC**  
*Dose / Concentration* : **>5 mg/m3**

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
<b>RESPI</b>	<b>FUNCT</b>				

An increased incidence of respiratory illness was observed in workers exposed to atmospheric concentrations of benzaldehyde not exceeding 5 mg/m<sup>3</sup>.

**EYE**            **IRRIT**  
**SKIN**         **IRRIT**

Benzaldehyde vapour caused slight eye irritation and considerable skin irritation.

## References

*Primary Reference* : **BIBRT\***  
BIBRA Toxicity Profile, (1989)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MAMMALIAN TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

## Test Subject

<i>Organism</i>	<i>Medium</i>	<i>Specification</i>	<i>Route</i>	<i>Lifestage</i>	<i>Sex</i>	<i>Number exposed</i>	<i>Number controls</i>
-----	-----	-----	-----	-----	-----	-----	-----
<b>MOUSE</b>			<b>ORL</b>		<b>M</b>	<b>5/GROUP</b>	<b>5</b>
					<b>F</b>	<b>5/GROUP</b>	<b>5</b>

*Species/strain/system* : B6C3F1 mice

## Test Substance

*Purity Grade* : **99.5%**  
*Vehicle - Solvent* : Corn oil

## Test Method and Conditions

*Test method description* : Post exposure observation: 2 days. GLP: unknown

## Exposure

*Exposure Type* : **SHORT**  
*Exposure Period* : **16 d**  
*Frequency* : **5 d/wk**  
**1 x/d**  
*Dose / Concentration* : **200-3200 mg/kg BW**  
*Exposure comments* : Benzaldehyde was administered by gavage once daily, 5 days/week (12 doses) at doses of 0, 200, 400, 800, 1600 or 3200 mg/kg/day.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
	<b>DEATH</b>		<b>3 d</b>		<b>100%</b>
All mice receiving 1600 or 3200 mg/kg died by day 3.					
	<b>DEATH</b>		<b>10 d</b>	<b>M</b>	<b>1/5</b>
At 800 mg/kg 1 male died at day 10.					
	<b>NOEL</b>				
NOEL: 400 mg/kg/day					

## References

<i>Primary Reference</i>	:	<b>!NTPSE3</b> (378), (1990)
<i>Secondary Reference</i>	:	<b>!SIDSP*</b> OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

<i>End Point</i>	:	<b>MAMMALIAN TOXICITY</b>
<i>Chemical Name</i>	:	<b>Benzaldehyde</b>
<i>CAS Number</i>	:	<b>100-52-7</b>
<i>Study type</i>	:	<b>LAB</b>

## Test Subject

<i>Organism</i>	<i>Medium</i>	<i>Specification</i>	<i>Route</i>	<i>Lifestage</i>	<i>Sex</i>	<i>Number exposed</i>	<i>Number controls</i>
<b>MOUSE</b>			<b>ORL</b>		<b>M</b>	<b>10/GROUP</b>	<b>10</b>
					<b>F</b>	<b>10/GROUP</b>	<b>10</b>
<i>Species/strain/system</i>	:	<b>B6C3F1</b>					

## Test Substance

<i>Purity Grade</i>	:	<b>99.5%</b>
<i>Vehicle - Solvent</i>	:	Corn oil

## Test Method and Conditions

<i>Test method description</i>	:	GLP: unknown
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## Exposure

<i>Exposure Type</i>	:	<b>SHORT</b>
<i>Exposure Period</i>	:	<b>13 wk</b>
<i>Frequency</i>	:	<b>1 x/d</b> <b>5 d/wk</b>
<i>Dose / Concentration</i>	:	<b>75-1200 mg/kg BW</b>
<i>Exposure comments</i>	:	Benzaldehyde was administered by gavage at doses of 0, 75, 150, 300, 600 or 1200 mg/kg/day.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
	<b>DEATH</b>				<b>10/20</b>
9/10 males and 1/10 females died during the first week at 1200 mg/kg					
<b>BW</b>	<b>DECR</b>			<b>M</b>	
Final mean body weight was 9% lower than in controls, in males at 600 mg/kg.					
<b>KIDNEY</b>	<b>TUBUL</b>			<b>M</b>	
Mild-to-moderate renal tubule degeneration was observed in all males at 1200 mg/kg and in 1/10 males at 600 mg/kg.					
<b>NOEL</b>					
NOEL was established as 300 mg/kg/day and 600 mg/kg/day on males and females, respectively.					

## References

<i>Primary Reference</i>	:	<b>INTPSE3</b> (378), (1990)
<i>Secondary Reference</i>	:	<b>!SIDSP*</b> OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

<i>End Point</i>	:	<b>MAMMALIAN TOXICITY</b>
<i>Chemical Name</i>	:	<b>Benzaldehyde</b>
<i>CAS Number</i>	:	<b>100-52-7</b>
<i>Study type</i>	:	<b>LAB</b>

## Test Subject

<u>Organism</u>	<u>Medium</u>	<u>Specification</u>	<u>Route</u>	<u>Lifestage</u>	<u>Sex</u>	<u>Number exposed</u>	<u>Number controls</u>
<b>RAT</b>							<b>IHL</b>

## Test Method and Conditions

<i>Test method description</i>	:	GLP: unknown
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## Exposure

<i>Exposure Type</i>	:	<b>SHORT</b>
<i>Exposure Period</i>	:	<b>4 mo</b>
<i>Frequency</i>	:	<b>5 h/d</b>
<i>Dose / Concentration</i>	:	<b>6-26 mg/m3</b>

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
<b>BLOOD</b>	<b>CHNG</b>	<b>RV</b>			
-	-				
<b>BW</b>	<b>DECR</b>				

Changes in blood and body weight occurred at 26 mg/m<sup>3</sup>, but the rats were normal after an unspecified recovery period.

### NOEL

NOEL: 6 mg/m<sup>3</sup>

## References

- Primary Reference* : **GTPZAB**  
Peresdou, V. P. Gigiena Truda i Professional'nye Zabolevaniya (Labour Hygiene and Occupational Diseases), 11-40, (1974)
- Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MAMMALIAN TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

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

**RAT** **IHL**

## Test Method and Conditions

*Test method description* : GLP: unknown

## Exposure

*Exposure Type* : **SHORT**  
*Exposure Period* : **2 wk**  
*Frequency* : **4 h/d**  
**5 d/wk**  
*Dose / Concentration* : **803 mg/m<sup>3</sup>**  
*Exposure comments* : Rats were exposed to 185 ppm concentration of benzaldehyde for 2 weeks.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
<b>RESPI</b>	<b>IRRIT</b>				

Respiratory irritation was observed during exposure.

### NEF

No effects in histopathological examinations of the tissues were observed.

## References

*Primary Reference* : **EPXXDW**  
Caprino, L. et al. European Patent Application, 9(2), 99-103, (1976)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MAMMALIAN TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

<u>Organism</u>	<u>Medium</u>	<u>Specification</u>	<u>Route</u>	<u>Lifestage</u>	<u>Sex</u>	<u>Number exposed</u>	<u>Number controls</u>
RAT			ORL		M	5/GROUP	5
					F	5/GROUP	5

## Test Substance

*Description of the test substance* : Purity unknown

## Test Method and Conditions

*Test method description* : GLP: unknown

## Exposure

*Exposure Type* : **LONG**  
*Exposure Period* : **16-28 wk**  
*Dose / Concentration* : **1000-10000 mg/kg DIET**  
*Exposure comments* : Rats were fed diet containing 10000 ppm of benzaldehyde for 16 weeks or 1000 ppm for 28 weeks.

## Test Results

<u>Organ</u>	<u>Effect</u>	<u>Rev.</u>	<u>OnSet</u>	<u>Sex</u>	<u>Affected in Exposed - Controls</u>
-----	-----	-----	-----	-----	-----
	<b>NEF</b>				

No effects on body weight and haematological parameters and no macroscopic or microscopic changes in selected organs were observed.

## References

*Primary Reference* : **FCTXAV**  
Hagan, E. C. et al. Food and Cosmetics Toxicology, 5, 141, (1967)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)





**KIDNY STRUC**

Degeneration or necrosis of the tubular epithelium in the kidney was seen at 800 mg/kg.

**STM STRUC**

Mild epithelial hyperplasia or hyperkeratosis of the fore- stomach occurred at the highest dose.

**NOEL**

NOEL: 400 mg/kg/day.

## References

*Primary Reference* : **!NTPSE3**  
(378), (1990)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High  
Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MAMMALIAN TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

<u>Organism</u>	<u>Medium</u>	<u>Specification</u>	<u>Route</u>	<u>Lifestage</u>	<u>Sex</u>	<u>Number exposed</u>	<u>Number controls</u>
RAT			ORL		M	5/GROUP	5
					F	5/GROUP	5

*Species/strain/system* : F344/N

## Test Substance

*Purity Grade* : **99.5%**  
*Vehicle - Solvent* : Corn oil

## Test Method and Conditions

*Test method description* : GLP: unknown

## Exposure

*Exposure Type* : **SHORT**  
*Exposure Period* : **16 d**  
*Dose / Concentration* : **100-1600 mg/kg BW**  
*Exposure comments* : Benzaldehyde was administered by gavage at doses of 0, 100, 200, 400, 800 or 1600 mg/kg/day. Post exposure observation: 2 days.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
	<b>DEATH</b>		<b>2 d</b>		<b>100%</b>

All rats at 1600 mg/kg died on day 2.

**DEATH** **4/10**  
2/5 males and 2/5 females at 800 mg/kg died before the end of the study.

- **BEHAV**  
**MUSCL** **NERVE**

Hyperexcitability, tremors or inactivity were observed throughout the study in rats receiving 800 or 1600 mg/kg.

**BW** **DECR**

At 800 mg/kg final mean body weight was 14% and 11% lower than in control rats, in males and females, respectively.

**NOEL**  
NOEL: 400 mg/kg/day

## References

*Primary Reference* : **!NTPSE3**  
(378), (1990)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **CARCINOGENICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

<u>Organism</u>	<u>Medium</u>	<u>Specification</u>	<u>Route</u>	<u>Lifestage</u>	<u>Sex</u>	<u>Number exposed</u>	<u>Number controls</u>
MOUSE			ORL		M	50/GROUP	50
					F	50/GROUP	50

*Species/strain/system* : B6C3F1 mice

## Test Substance

*Purity Grade* : **99.5%**  
*Vehicle - Solvent* : Corn oil

## Test Method and Conditions

*Test method description* : GLP: unknown

## Exposure

*Exposure Type* : **LONG**  
*Exposure Period* : **2 y**  
*Frequency* : **1 x/d**  
**5 d/wk**  
*Dose / Concentration* : **200-600 mg/kg BW**  
*Exposure comments* : Benzaldehyde was administered by gavage at doses of 200 or 400 mg/kg body weight/day to males and 300 or 600 mg/kg body weight/day to females.

## Test Results

<u>Organ</u>	<u>Effect</u>	<u>Rev.</u>	<u>OnSet</u>	<u>Sex</u>	<u>Affected in Exposed - Controls</u>
<b>STM</b>	<b>STRUC</b>				
<b>STM</b>	<b>NEO</b>				

Focal hyperplasia and squamous cell papillomas of the forestomach were significantly increased in high dose males and in females at the low and the high dose level.

No dose related effects on mortality, clinical signs and body weight were observed.

## References

*Primary Reference* : **!INTPSE3**  
(378), (1990)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **CARCINOGENICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

<u>Organism</u>	<u>Medium</u>	<u>Specification</u>	<u>Route</u>	<u>Lifestage</u>	<u>Sex</u>	<u>Number exposed</u>	<u>Number controls</u>
RAT			ORL		M	50/GROUP	50
					F	50/GROUP	50

*Species/strain/system* : F344/N rats

## Test Substance

*Purity Grade* : **99.5%**  
*Vehicle - Solvent* : Corn oil

## Test Method and Conditions

*Test method description* : GLP: unknown

## Exposure

*Exposure Type* : **LONG**  
*Exposure Period* : **2 y**  
*Frequency* : **1 x/d**  
                   **5 d/wk**  
*Dose / Concentration* : **200-400 mg/kg BW**

## Test Results

<u>Organ</u>	<u>Effect</u>	<u>Rev.</u>	<u>OnSet</u>	<u>Sex</u>	<u>Affected in Exposed - Controls</u>
-----	-----	-----	-----	-----	-----

**NEF**

The tumour incidence was not enhanced.

**DEATH**

**M**      **29/50**      **13/50**

Mortality, was significantly increased in high dose males (survival rats: 37/50 (control), 29/50 (low dose), 21/50 (high dose)).

**NEF**

No dose related effects were observed on clinical signs and body weight.

## References

*Primary Reference* : **!NTPSE3**  
(378), (1990)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MUTAGENICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**BACT**

**VTR**

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

## Test Method and Conditions

*Test method description* : Ames Test; GLP: unknown

## Exposure

*Exposure comments* : Tests were carried out with and without metabolic activation.

## Test Results

<u>Organ</u>	<u>Effect</u>	<u>Rev.</u>	<u>OnSet</u>	<u>Sex</u>	<u>Affected in Exposed - Controls</u>
-----	-----	-----	-----	-----	-----
	<b>NEF</b>				

Negative results with and without metabolic activation.

## References

*Primary Reference* : **TXCYAC**  
 Florin, J. et al. Toxicology, 18, 219-232, (1980)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MUTAGENICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**BACT**

**VTR**

*Species/strain/system* : Salmonella typhimurium TA100, TA98

## Test Method and Conditions

*Test method description* : Ames Test; GLP: unknown

## Exposure

*Exposure comments* : Tests were conducted with and without metabolic activation, concentration not given.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
	<b>NEF</b>				

Negative results for mutagenicity with and without metabolic activation.

## References

*Primary Reference* : **MUREAV**  
Sasaki, Y. and Endo, R. Mutation Research, 54, 251-257, (1978)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MUTAGENICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

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

**BACT** **VTR**

*Species/strain/system* : Salmonella typhimurium TA98, TA100

## Test Method and Conditions

*Test method description* : Ames test; GLP: unknown

## Exposure

*Dose / Concentration* : **0.05-500 ug/ PLATE**  
*Exposure comments* : The substance was tested with and without metabolic activation.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
	<b>NEF</b>				

Negative results with and without metabolic activation. Positive controls yielded positive results.

## References

- Primary Reference* : **MUREAV**  
Kasamaki, A. et al. Mutation Research, 105, 387-392, (1982)
- Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)
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## Study

- End Point* : **MUTAGENICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**BACT**

**VTR**

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

## Test Method and Conditions

*Test method description* : Ames test: GLP: unknown

## Exposure

*Exposure comments* : The substance was tested with and without metabolic activation.

## Test Results

<u>Organ</u>	<u>Effect</u>	<u>Rev.</u>	<u>OnSet</u>	<u>Sex</u>	<u>Affected in Exposed - Controls</u>
-----	-----	-----	-----	-----	-----
	<b>NEF</b>				

Negative results with and without metabolic activation.

## References

- Primary Reference* : **ENMUDM**  
Haworth, S. et al. Environmental Mutagenesis, 1(5Sp), 3-142, (1983)
- Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)
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## Study

*End Point* : **MUTAGENICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**HAMST****VTR**

*Species/strain/system* : Chinese hamster lung cells

## Test Method and Conditions

*Test method description* : Cytogenetic analysis (Chromosomal aberration assay); GLP: unknown

## Exposure

*Exposure comments* : Chinese hamster lung cells were incubated with tested substance with and without metabolic activation.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
<b>CHROM</b>	<b>CHNG</b>				
Positive results without metabolic activation.					

**NEF**

Negative result with metabolic activation in Chromosomal aberration assay.

## References

*Primary Reference* : **BIBRT\***  
BIBRA Toxicity Profile, (1989)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MUTAGENICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**HAMST****VTR**

*Species/strain/system* : Chinese hamster ovary cells



## Test Method and Conditions

*Test method description* : Sister Chromatid Exchange Assay; GLP: unknown

## Exposure

*Dose / Concentration* : **5-1600 ug/mL**  
*Exposure comments* : Concentrations of 5, 16, 50 or 160 ug/mL without metabolic activation and 160, 500 or 1600 ug/mL with metabolic activation were used.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
<b>CHROM</b>	<b>RECOM</b>				
Positive results in sister chromatid exchange assay.					

## References

*Primary Reference* : **INTPSE3**  
(378), (1990)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MUTAGENICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

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

**HAMST** **VTR**

*Species/strain/system* : Chinese hamster ovary cells

## Test Method and Conditions

*Test method description* : Cytogenetic analysis (Chromosomal Aberration Assay); GLP: unknown

## Exposure

*Dose / Concentration* : **50-500 ug/mL**  
*Exposure comments* : Chinese hamster ovary cells, were incubated with 50, 160 and 500 ug/mL of benzaldehyde with and without metabolic activation.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
	<b>NEF</b>				
Negative results for mutagenicity with and without metabolic activation.					

## References

*Primary Reference* : **INTPSE3**  
(378), (1990)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High  
Production Volume Chemicals Programme, (1994)

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## Study

*End Point* : **MUTAGENICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**HAMST** **VTR**

*Species/strain/system* : Chinese hamster cell line B241

## Test Substance

*Vehicle - Solvent* : DMSO

## Test Method and Conditions

*Test method description* : Chromosomal Aberration Assay; GLP: unknown

## Exposure

*Dose / Concentration* : **5.3 ug/L**

*Exposure comments* : Cells were incubated with 50 nMole solution of benzaldehyde with and without metabolic activation.

## Test Results

<u>Organ</u>	<u>Effect</u>	<u>Rev.</u>	<u>OnSet</u>	<u>Sex</u>	<u>Affected in Exposed - Controls</u>
<b>CHROM</b>	<b>CHNG</b>				

Positive results in chinese hamster B241 cells for mutagenicity with and without metabolic activation.

## References

*Primary Reference* : **MUREAV**  
Kasamaki, A. et al. Mutation Research, 105, 387-392, (1982)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High  
Production Volume Chemicals Programme, (1994)

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## Study

*End Point* : **MUTAGENICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**HUMAN****VTR**

*Species/strain/system* : Human lymphocytes

## Test Method and Conditions

*Test method description* : Sister Chromatid Exchange Assay; GLP: unknown

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
<b>CHROM</b>	<b>RECOM</b>				
Positive results					

## References

*Primary Reference* : **MUREAV**  
Jansson, T. et al. Mutation Research, 206, 17-24, (1988)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **MUTAGENICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**INSEC****ORL****INJ**

*Species/strain/system* : Drosophila melanogaster

## Test Method and Conditions

*Test method description* : Drosophila Sex-linked Recessive Lethal Assay; GLP: unknown

## Exposure

*Dose / Concentration* : **1150-2500 mg/L**  
*Exposure comments* : Benzaldehyde was administered in food at concentration of 1150 ppm and by injection at concentration of 2500 ppm.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
	<b>NEF</b>				
Negative results for mutagenicity					

## References

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1990)

## Study

*End Point* : **MUTAGENICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

<i>Organism</i>	<i>Medium</i>	<i>Specification</i>	<i>Route</i>	<i>Lifestage</i>	<i>Sex</i>	<i>Number exposed</i>	<i>Number controls</i>
<b>MOUSE</b>			<b>VTR</b>				
<i>Species/strain/system</i> : Mouse L5178Y tk/tk+ cells							

## Test Method and Conditions

*Test method description* : Mouse Lymphoma Assay; GLP: unknown

## Exposure

*Dose / Concentration* : **50-800 ug/mL**  
*Exposure comments* : Test was performed without metabolic activation.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
<b>CHROM</b>	<b>CHNG</b>				
Positive results without metabolic activation.					

## References

*Primary Reference* : **INTPSE3**  
(378), (1990)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High  
Production Volume Chemicals Programme, (1994)

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## Study

*End Point* : **SENSITIZATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

GPIG

SCU

## Test Method and Conditions

*Test method description* : Maximization test; GLP: unknown

## Exposure

*Exposure comments* : Inducing stimulus: intradermal injection and 48 hours patch test.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
<b>SKN</b> Sensitizing	<b>ALLER</b>				

## References

*Primary Reference* : **FCTXAV**  
Opdyke, D. L. J. Food and Cosmetics Toxicology, 14, 693-698, (1976)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **SENSITIZATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

GPIG

SKN

## Test Method and Conditions

*Test method description* : Maximization test; GLP: unknown

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
	<b>NEF</b>				
No effect in this test.					

## References

- Primary Reference* : **FCTXAV**  
Opdyke, D. L. J. Food and Cosmetics Toxicology, 14, 693-698, (1976)
- Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **SENSITIZATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

## Test Subject

<i>Organism</i>	<i>Medium</i>	<i>Specification</i>	<i>Route</i>	<i>Lifestage</i>	<i>Sex</i>	<i>Number exposed</i>	<i>Number controls</i>
<b>HUMAN</b>			<b>SKN</b>			<b>100</b>	

## Test Method and Conditions

*Test method description* : Patch test; GLP: unknown

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
<b>SKN</b>	<b>ALLER</b>				
Senzitizing in 10 people out of 100. Positive reactions were observed in people sensitive also to benzoic acid or vanillin.					

## References

- Primary Reference* : **FCTXAV**  
Opdyke, D. L. J. Food and Cosmetics Toxicology, 14, 693-698, (1976)
- Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **SENSITIZATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

## Test Subject

<u>Organism</u>	<u>Medium</u>	<u>Specification</u>	<u>Route</u>	<u>Lifestage</u>	<u>Sex</u>	<u>Number exposed</u>	<u>Number controls</u>
<b>HUMAN</b>			<b>SKN</b>			<b>25</b>	

## Test Method and Conditions

*Test method description* : Maximization test; GLP: unknown

## Test Results

<u>Organ</u>	<u>Effect</u>	<u>Rev.</u>	<u>OnSet</u>	<u>Sex</u>	<u>Affected in Exposed - Controls</u>
-----	-----	-----	-----	-----	-----
	<b>NEF</b>				

No reaction in 25 volunteers.

## References

*Primary Reference* : **FCTXAV**  
 Opdyke, D. L. J. Food and Cosmetics Toxicology, 14, 693-698, (1976)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)



## Study

*End Point* : **IRRITATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

RBT

SKN

## Test Method and Conditions

*Test method description* : GLP: no data

## Exposure

*Exposure Type* : **ACUTE**  
*Exposure Period* : **24 h**  
*Exposure comments* : Benzaldehyde was applied under occlusive conditions to the rabbit ear for 24 hours.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
<b>SKN</b>	<b>IRRIT</b>				
Moderately irritating.					

## References

*Primary Reference* : **BATUR\***  
 Bayer Institute of Toxicology Unpublished Report, (1990)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **IRRITATION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

RBT

SKN

## Test Method and Conditions

*Test method description* : GLP: no data

---

## Exposure

*Exposure Type* : **ACUTE**  
*Exposure Period* : **24 h**  
*Dose / Concentration* : **500 mg**  
*Exposure comments* : Benzaldehyde was applied under occlusion on intact or abraded skin for 24 hours.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
<b>SKN</b>	<b>IRRIT</b>				
Moderately irritating.					

## References

*Primary Reference* : **FCTXAV**  
Opdyke, D. L. J. Food and Cosmetics Toxicology, 14, 693-698, (1976)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

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## Study

*End Point* : **REPRODUCTION**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**RAT** **ORL** **F**

## Exposure

*Exposure Type* : **LONG**  
*Exposure Period* : **32 wk**  
*Dose / Concentration* : **5 mg/kg BW**  
*Exposure comments* : Female rats were treated with benzaldehyde once a day every second day. Dosing started 75 days before mating with untreated males. Duration of the test: 32 weeks.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
	<b>NEF</b>				

No effect on the number of pups born, their weight or their viability.

*General Comments* : OECD/SIDS remark: "Only reviews available, in which the units of the dose levels are different."

## References

*Primary Reference* : **IGIBA5**  
Sporn, A. et al. Igiena, 16, 23-24, (1967)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **AQUATIC ACUTE TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**

*Species/strain/system* : Golden orfe (Leuciscus idus)  
*Exposure Period* : **48 h**

## Test Method and Conditions

*Test method description* : Test method not specified; GLP: unknown

## Test Results

Organism Medium Spec. Route Lifestage Sex Effect Effect Comments

**FISH** **AQ** **FRESH** **LC50** LC50 for 48 hours = 16-62 mg/L.  
*General Comments* : The chemical is acute toxic to fish.

## References

*Primary Reference* : **ZWABAQ**  
 Junke, I. and Ludemann, D. Zeitschrift fuer Wasser und Abwasser Forschung, 11(5), 161-164, (1978)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **AQUATIC ACUTE TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Geographic Area* : **NLD**

*Species/strain/system* : Five species of fish: Fathead minnow (Pimephales promelas); Trout rainbow (Oncorhynchus mykiss); Goldfish (Carassius auratus); Channel catfish (Ictalurus punctatus), Bluegill sunfish (Lepomis macrochirus)

*Exposure Period* : **96 h**  
*Dose / Concentration* : **1.07-13.8 mg/L**

## Test Method and Conditions

*Test method description* : Single flow-through test; GLP: unknown  
*Temperature* : **16-18 C**

## Test Results

<u>Organism</u>	<u>Medium</u>	<u>Spec.</u>	<u>Route</u>	<u>Lifestage</u>	<u>Sex</u>	<u>Effect</u>	<u>Effect Comments</u>
<b>FISH</b>	<b>AQ</b>	<b>FRESH</b>				<b>LC50</b>	LC50 for (P.promelas) for 96 hours = 12.4 mg/L; LC50 for (O. mykiss) for 96 hours = 11.2 mg/L; LC50 for (C. auratus) for 96 hours = 13.8 mg/L; LC50 for (I. punctatus) for 96 hours = 5.39 mg/L; LC50 for (L. macrochirus) for 96 hours = 1.07 mg/L
<i>General Comments</i>		:	Results based on mesured concentrations. Benzaldehyde is acute toxic to fish. Acute tests with Leuciscus idus gave opposite results (possibly due to volatilisation): a 96-hour LC50 of 100 mg/L was found; Bayer (1990) Grunddatensatz für Altstoffe uker 1000 JATO. Bayer, Leverkusen, FGR.				

## References

<i>Primary Reference</i>	:	<b>ENVPAF</b> Phipps, G. L. and Holcombe, G. W. Environmental Pollution, A 38, 141-157, (1985)
<i>Secondary Reference</i>	:	<b>!SIDSP*</b> OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

<i>End Point</i>	:	<b>AQUATIC ACUTE TOXICITY</b>
<i>Chemical Name</i>	:	<b>Benzaldehyde</b>
<i>CAS Number</i>	:	<b>100-52-7</b>
<i>Species/strain/system</i>	:	Trout rainbow (Oncorhynchus mykiss)
<i>Exposure Period</i>	:	<b>96 h</b>

## Test Method and Conditions

<i>Test method description</i>	:	Single flow-through test; GLP: unknown
<i>Temperature</i>	:	<b>16-18 C</b>

## Test Results

<u>Organism</u>	<u>Medium</u>	<u>Spec.</u>	<u>Route</u>	<u>Lifestage</u>	<u>Sex</u>	<u>Effect</u>	<u>Effect Comments</u>
<b>FISH</b>	<b>AQ</b>	<b>FRESH</b>				<b>LC50</b>	LC50 for 96 hours = 11.2 mg/L. Results based on measured concentrations.
<i>General Comments</i>		:	The chemical is acute toxic to fish.				

## References

<i>Primary Reference</i>	:	<b>EPEBD7</b> Phipps, G. L. and Halcombe, G. W. Environmental Pollution Series A: Ecological and Biological, A 38, 141-157, (1985)
<i>Secondary Reference</i>	:	<b>!SIDSP*</b> OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **AQUATIC TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**ALGAE** **AQ** **FRESH**

*Species/strain/system* : Algae (Scenedesmus quadricauda)

## Test Method and Conditions

*Test method description* : Static-test. The cell multiplication tests performed in closed system with bidistilled water; GLP: unknown  
*Temperature* : **27 C**  
*pH* : **7**

## Exposure

*Exposure Period* : **8 d**  
*Dose / Concentration* : **34 mg/L**

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
	<b>NOEC</b>				

NOEC for 8 days = 34 mg/L. Reported as TGK (observed threshold concentration).

*General Comments* : The chemical is very slightly toxic to algae. Analytical monitoring: no

## References

*Primary Reference* : **VJWWAU**  
 Bringmann, G. and Kuhn, R. Vom Wasser, 50, 50-55, (1978)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **AQUATIC TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**ALGAE**

*Species/strain/system* : Algae (Microcystis aeruginosa)

## Test Method and Conditions

*Test method description* : Static-test. The cell multiplication tests performed in closed system with bidistilled water; GLP: unknown  
*Temperature* : **27 C**  
*pH* : **7**

## Exposure

*Exposure Period* : **8 d**  
*Dose / Concentration* : **20 mg/L**

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
	<b>NOEC</b>				

NOEC = 20 mg/L for 8 days. Reported as TGK (observed threshold concentration).

*General Comments* : Benzaldehyde is very slightly toxic to algae. Analytical monitoring: no

## References

*Primary Reference* : **VJWWAU**  
 Bringmann, G. and Kuhn, R. Vom Wasser, (1978)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **AQUATIC TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**ALGAE** **AQ** **FRESH**

*Species/strain/system* : Algae (mixed population of planktonic algae, mainly Scenedesmus species)

## Test Method and Conditions

*Test method description* : Assimilation-depletion test: DEV L12 (1971); (oxygen production as end-point); GLP: unknown  
*Temperature* : **20 C**

## Exposure

*Exposure Period* : **24 h**  
*Dose / Concentration* : **340 mg/L**

## Test Results

<u>Organ</u>	<u>Effect</u>	<u>Rev.</u>	<u>OnSet</u>	<u>Sex</u>	<u>Affected in Exposed - Controls</u>
<b>EC50</b>					

EC50 for 24 hours = 340 mg/L. Above values are nominal concentrations.

*General Comments* : Analytical monitoring: no. Benzaldehyde is very slightly toxic to algae.

## References

*Primary Reference* : **DGMTAO**  
 Krebs, F. Deutsche Gewaesserkundliche Mitteilungen, DGM 35 H5/6, 161-170, (1991)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)



## Study

*End Point* : **AQUATIC TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**BACT**

*Species/strain/system* : Bacteria (Pseudomonas putida)

## Test Method and Conditions

*Test method description* : Tests carried out in a closed system; GLP: unknown

## Exposure

*Exposure Period* : **16 h**  
*Dose / Concentration* : **132 mg/L**

## Test Results

<u>Organ</u>	<u>Effect</u>	<u>Rev.</u>	<u>OnSet</u>	<u>Sex</u>	<u>Affected in Exposed - Controls</u>
<b>NOEC</b>					

NOEC for 16 hours = 132 mg/L. Reported as TGK (observed toxicity threshold) considered to be equal to NOEC.

## References

*Primary Reference* : **WATRAG**  
 Bringmann, G. and Kuhn, R. Water Research, 14, 231-241, (1980)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **AQUATIC TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**BACT**    **AQ**        **MARIN**

*Species/strain/system* : Bioluminescent bacteria (Photobacterium phosphoreum)

## Test Method and Conditions

*Test method description* : Tests carried out in a closed system; GLP: unknown

## Exposure

*Exposure Period* : **0.5 h**  
*Dose / Concentration* : **4.85 mg/L**

## Test Results

<u>Organ</u>	<u>Effect</u>	<u>Rev.</u>	<u>OnSet</u>	<u>Sex</u>	<u>Affected in Exposed - Controls</u>
	<b>EC50</b>				
EC50 for 0.5 hour = 4.85 mg/L.					

## References

*Primary Reference* : **#BATUR\***  
 Bayer. Bayer Institute of Toxicology Unpublished Report, (1990)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **AQUATIC TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**BACT**

*Species/strain/system* : Mixed heterophic bacteria populations

## Test Method and Conditions

*Test method description* : Assimilation-depletion test: DEV L12, (1971); (Oxygen consumption as end point); GLP: unknown  
*Temperature* : **20 C**

## Exposure

*Exposure Period* : **24 h**  
*Dose / Concentration* : **27 mg/L**

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
	<b>EC50</b>				

EC50 for 24 hours = 27 mg/L. Results based on nominal concentration.

## References

*Primary Reference* : **DGMTAO**  
 Kerbs, F. Deutsche Gewaesserkundliche Mitteilungen, DGM 35 H5/6, (1991)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **AQUATIC TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**CRUS** **AQ** **FRESH**

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

## Test Method and Conditions

*Test method description* : The test performed in a closed system with tap water free from chlorine and saturated with oxygen; GLP: unknown  
*Temperature* : **20-22 C**  
*pH* : **7.6-7.7**

## Exposure

*Exposure Type* : **ACUTE**  
*Exposure Period* : **24 h**  
*Dose / Concentration* : **50 mg/L**

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
	<b>EC50</b>				

EC50 for 24 hours = 50 mg/L.

*General Comments* : The chemical is harmful to daphnia.

## References

*Primary Reference* : **ZWABAQ**  
 Bringman, G. and Kuhn, R. Zeitschrift fuer Wasser und Abwasser Forschung, 10(5), 161-166, (1977)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **AQUATIC TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**FISH** **AQ** **FRESH**

*Species/strain/system* : Golden orfe (*Leuciscus idus*)

## Test Method and Conditions

*Test method description* : Test method not specified; GLP: unknown

## Exposure

*Exposure Period* : **96 h**  
*Dose / Concentration* : **100 mg/L**

## Test Results

<u>Organ</u>	<u>Effect</u>	<u>Rev.</u>	<u>OnSet</u>	<u>Sex</u>	<u>Affected in Exposed - Controls</u>
<b>LC0</b>					

LC0 for 96 hours = 100 mg/L.

*General Comments* : Acute tests with *Leuciscus idus* gave opposite results (possibly due to volatilisation).

## References

*Primary Reference* : **#BATUR\***  
Bayer. Bayer Institute of Toxicology Unpublished Report, (1990)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **AQUATIC TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**FISH** **AQ** **FRESH**

*Species/strain/system* : Fathead minnow (*Pimephales promelas*)

## Test Method and Conditions

*Test method description* : Test methods are not specified; GLP: unknown

## Exposure

*Exposure Type* : **ACUTE**  
*Exposure Period* : **24 h**  
*Dose / Concentration* : **17.2 mg/L**

## Test Results

<u>Organ</u>	<u>Effect</u>	<u>Rev.</u>	<u>OnSet</u>	<u>Sex</u>	<u>Affected in Exposed - Controls</u>
	<b>LC0</b>				

LC0 for 24 hours = 17.2 mg/L

*General Comments* : The chemical is acute toxic to fish.

## References

*Primary Reference* : **#BATUR\***  
Bayer. Bayer Institute of Toxicology Unpublished Report, (1990)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **AQUATIC TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**PROTO AQ FRESH**

*Species/strain/system* : Algae (Chilomonas paramecium)

## Test Method and Conditions

*Test method description* : Closed system; GLP: unknown

## Exposure

*Exposure Period* : **28 h**  
*Dose / Concentration* : **12 mg/L**

## Test Results

<u>Organ</u>	<u>Effect</u>	<u>Rev.</u>	<u>OnSet</u>	<u>Sex</u>	<u>Affected in Exposed - Controls</u>
<b>NOEC</b>					

NOEC for 28 hours = 12 mg/L. Reported as TGK (observed threshold concentration).

*General Comments* : Analytical monitoring: no. The chemical is very slightly toxic to algae.

## References

*Primary Reference* : **#BATUR\***  
Bayer. Bayer Institute of Toxicology Unpublished Report, (1990)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **AQUATIC TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**PROTO AQ FRESH**

*Species/strain/system* : Protozoa (Entosiphon sulcatum)

## Test Method and Conditions

*Test method description* : Static test. The tests carried out in a closed system; GLP: unknown  
*Temperature* : **25 C**  
*pH* : **6.9**

## Exposure

*Exposure Period* : **72 h**  
*Dose / Concentration* : **0.29 mg/L**  
*Exposure comments* : TGK (toxicity threshold concentration) showing 3-7% effect.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
	<b>NOEC</b>				

NOEC for 72 hours = 0.29 mg/L. Reported as TGK (toxicity threshold concentration) considered to be equal to a NOEC.

*General Comments* : This reference is also cited: Verschueren, K. (1983) Handbook of Environmental Data on Organic Chemicals. Van Nostrand Reinhold Comp., 2nd ed. 234.236.

## References

*Primary Reference* : **#BATUR\***  
Bayer. Bayer Institute of Toxicology Unpublished Report, (1990)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)



## Study

*End Point* : **AQUATIC TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**PROTO AQ FRESH**

*Species/strain/system* : Protozoa (Uronema parduzzi)

## Test Method and Conditions

*Test method description* : The tests carried out in a closed system; GLP: unknown

## Exposure

*Exposure Period* : **20 h**  
*Dose / Concentration* : **22 mg/L**

## Test Results

<u>Organ</u>	<u>Effect</u>	<u>Rev.</u>	<u>OnSet</u>	<u>Sex</u>	<u>Affected in Exposed - Controls</u>
<b>NOEC</b>					

NOEC for 20 hours = 22 mg/L. The observed toxicity threshold concentration (TGK) is considered to be equal to NOEC.

*General Comments* : This reference is also cited: Verschueren, K. (1983) Handbook of Environmental Data on Organic Chemicals. Van Nostrand Reinhold Comp., 2nd ed. 234.236.

## References

*Primary Reference* : **#BATUR\***  
Bayer. Bayer Institute of Toxicology Unpublished Report, (1990)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **TERRESTRIAL ACUTE TOXICITY**

*Chemical Name* : **Benzaldehyde**

*CAS Number* : **100-52-7**

*Geographic Area* : **NLD**

*Species/strain/system* : Lettuce (*Lactuca sativa*)

## Test Method and Conditions

*Test method description* : Benzaldehyde was tested in nutrient solution. No information provided on the test methods.

## Test Results

<u>Organism</u>	<u>Medium</u>	<u>Spec.</u>	<u>Route</u>	<u>Lifestage</u>	<u>Sex</u>	<u>Effect</u>	<u>Effect Comments</u>
<b>PLANT</b>						<b>LC50</b>	LC50 = 67 mg/L. (End point: germination).

## References

*Primary Reference* : **#RIVMR\***  
Hulzebos, E. M. RIVM Report I (Chemical), 710301001, (1990)

*Secondary Reference* : **!SIDSP\***  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

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## Study

*End Point* : **TERRESTRIAL TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

**PLANT**

*Species/strain/system* : Lettuce (*Lactuca sativa*)

## Test Method and Conditions

*Test method description* : Test methods not specified.  
*pH* : **7.5**  
*Organic Matter Content* : **1.4 %**

## Exposure

*Exposure Period* : **16 d**  
*Exposure comments* : Benzaldehyde tested in nutrient solution.

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
	<b>EC50</b>				

EC50 for 16 days = 29 mg/L. (Fresh weight of shoot-end point).

## References

*Primary Reference* : **ETOCDK**  
 Hulzebos, E. M. et al. Environmental Toxicology and Chemistry, (1993)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Study

*End Point* : **TERRESTRIAL TOXICITY**  
*Chemical Name* : **Benzaldehyde**  
*CAS Number* : **100-52-7**  
*Study type* : **LAB**  
*Geographic Area* : **NLD**

## Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

### PLANT

*Species/strain/system* : Lettuce (Lactuca sativa)

## Test Method and Conditions

*Test method description* : Test methods not specified.  
*pH* : **7.5**  
*Organic Matter Content* : **1.4 %**

## Exposure

*Exposure Period* : **14 d**  
*Exposure comments* : Growth of L. Sativa was tested in soil. (Clay content = 12%).

## Test Results

<i>Organ</i>	<i>Effect</i>	<i>Rev.</i>	<i>OnSet</i>	<i>Sex</i>	<i>Affected in Exposed - Controls</i>
-----	-----	-----	-----	-----	-----
	<b>EC50</b>				

EC50 for 14 days = 624 mg/L. (End point: fresh weight of shoot).

## References

*Primary Reference* : **ETOC DK**  
 Hulzebos, E. M. et al. Environmental Toxicology and Chemistry, 12, (1993)

*Secondary Reference* : **!SIDSP\***  
 OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

## Substance

Chemical Name : BENZALDEHYDE  
 Reported Name : BENZALDEHYDE  
 CAS Number : 100-52-7

Area Type Subject Spec. Description Level / Summary Information :

CAN	REG	USE STORE LABEL	OCC	RQR	INGREDIENT DISCLOSURE LIST CONCENTRATION 1% WEIGHT/WEIGHT. THE WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) IS A NATIONAL SYSTEM TO PROVIDE INFORMATION ON HAZARDOUS MATERIALS USED IN THE WORKPLACE. WHMIS IS IMPLEMENTED BY THE HAZARDOUS PRODUCTS ACT AND THE CONTROLLED PRODUCTS REGULATIONS (ADMINISTERED BY THE DEPARTMENT OF CONSUMER AND CORPORATE AFFAIRS). THE REGULATIONS IMPOSE STANDARDS ON EMPLOYERS FOR THE USE, STORAGE AND HANDLING OF CONTROLLED PRODUCTS AND ADDRESS LABELLING AND IDENTIFICATION, EMPLOYEE INSTRUCTION AND TRAINING, AS WELL AS THE UPKEEP OF A MATERIALS SAFETY DATA SHEET (MSDS). THE PRESENCE IN A CONTROLLED PRODUCT OF AN INGREDIENT IN A CONCENTRATION EQUAL TO OR GREATER THAN SPECIFIED IN THE INGREDIENT DISCLOSURE LIST MUST BE DISCLOSED IN THE SAFETY DATA SHEET.
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Title :Reference \_\_\_\_\_ :Effective Date : 31DEC1987Last Amendment : CAGAAK, 122, 2, 551, 1988  
Canada Gazette Part IIEntry / Update : APR1991

## Substance

Chemical Name :  
 Reported Name : Benzaldehyde  
 CAS Number : 100-52-7

Area Type Subject Spec. Description Level / Summary Information :

CAN	REG	TRNSP LABEL PACK	-	CLASS RQR	SEE UNDER ALDEHYDES, N.O.S. PRESCRIBED BY THE TRANSPORTATION OF DANGEROUS GOODS REGULATIONS, UNDER THE TRANSPORTATION OF DANGEROUS GOODS ACT (ADMINISTERED BY THE DEPARTMENT OF TRANSPORT). THE ACT AND REGULATIONS ARE INTENDED TO PROMOTE SAFETY IN THE TRANSPORTATION OF DANGEROUS GOODS IN CANADA, AS WELL AS PROVIDE ONE COMPREHENSIVE SET OF RULES APPLICABLE TO ALL MODES OF TRANSPORT ACCROSS CANADA. THESE ARE BASED ON UNITED NATIONS RECOMMENDATIONS. THE ACT AND REGULATIONS SHOULD BE CONSULTED FOR DETAILS. RECORDS ARE ENTERED UNDER THE PROPER SHIPPING NAME FOUND IN THE REGULATIONS; THIS MAY INCLUDE VERY GENERAL GROUPS OF CHEMICAL SUBSTANCES.
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Title :Reference \_\_\_\_\_ :Effective Date : 06DEC1990Last Amendment : CAGAAK, 124, 26, 5523, 1990  
Canada Gazette Part IIEntry / Update : OCT1991

## Substance

Chemical Name : BENZALDEHYDE  
 Reported Name : BENZALDEHYDE  
 CAS Number : 100-52-7

*Area Type Subject Spec. Description Level / Summary Information :*

CSK REG AIR AMBI CLASS THE SUBSTANCE IS CLASSIFIED IN THE FOURTH GROUP OF AIR POLLUTANTS (ORGANIC GASES AND VAPOURS)  
Title : PROVISION OF FEDERAL COMMITTEE FOR ENVIRONMENT TO ACT NO. 309 FROM 9 JULY 1991 ON AIR PROTECTION AGAINST AIR POLLUTANTS  
Reference : SZCSR\*, 84, 2061, 1991 Effective Date : 1OCT1991  
 Sbírka Zakonu Ceske a Slovenske Federativni Republiky (Collection of the Law of Czech and Slovak Federal Republic)  
Last Amendment : Entry / Update : JAN1992

Substance

*Chemical Name* : BENZALDEHYDE  
*Reported Name* : BENZALDEHYDE  
*CAS Number* : 100-52-7

*Area Type Subject Spec. Description Level / Summary Information :*

CSK REG FOOD - MPC LIMIT OF ADDITIVE PRESENT DUE TO PRODUCTION, PACKING, TRANSPORT AND STORAGE OF FOOD PRODUCTS: 0.4G/KG.  
Title : DIRECTIVE NO. 50/1978 ON FOREIGN SUBSTANCES IN FOODSTUFFS  
Reference : HPMZC\*, 43, 1978 Effective Date : 1JUL1986  
 HYGIENICKE PREDPISY MINISTERSTVA ZDRAVOTNICTVI CSR (HYGIENIC REGULATIONS OF MINISTRY OF HEALTH OF CSR)  
Last Amendment : HPMZC\*, 61, 1986 Entry / Update : DEC1991  
 HYGIENICKE PREDPISY MINISTERSTVA ZDRAVOTNICTVI CSR (HYGIENIC REGULATIONS OF MINISTRY OF HEALTH OF CSR)

Substance

*Chemical Name* : BENZALDEHYDE  
*Reported Name* : BENZALDEHYDE  
*CAS Number* : 100-52-7

*Area Type Subject Spec. Description Level / Summary Information :*

DEU REC AQ USE - INDST CLASS RQR THIS SUBSTANCE IS CLASSIFIED AS SLIGHTLY HAZARDOUS TO WATER (WATER-HAZARD CLASS: WGK 1). (THE DIFFERENT CLASSES ARE: WGK 3 = VERY HAZARDOUS; WGK 2 = HAZARDOUS; WGK 1 = SLIGHTLY HAZARDOUS; WGK 0 = IN GENERAL NOT HAZARDOUS.) THE CLASSIFICATION FORMS THE BASIS FOR WATER-PROTECTION REQUIREMENTS FOR INDUSTRIAL PLANTS IN WHICH WATER-HAZARDOUS SUBSTANCES ARE HANDLED.  
Title : ADMINISTRATIVE RULES CONCERNING WATER-HAZARDOUS SUBSTANCES (VERWALTUNGSVORSCHRIFT WASSERGEFAEHRDENDE STOFFE)  
Reference : GMSMA6, 8, 114, 1990 Effective Date :  
 Gemeinsames Ministerialblatt. Joint Ministerial Papers  
Last Amendment : Entry / Update : DEC1991

Substance

*Chemical Name* : BENZALDEHYDE  
*Reported Name* : BENZALDEHYDE  
*CAS Number* : 100-52-7

Area Type Subject Spec. Description Level / Summary Information :

DEU REG CLASS LABEL PACK - CLASS RQR RQR CLASSIFICATION AND LABELLING IN GERMANY IS GENERALLY THE SAME AS FOR THE EEC (SEE OJEC\*\* L 180, 1991). HOWEVER, SLIGHT MODIFICATIONS MAY BE INTRODUCED FOR SOME SUBSTANCES IN THE GERMAN LEGISLATION.  
Title : ORDINANCE ON HAZARDOUS SUBSTANCES. (GEFAHRSTOFFVERORDNUNG)  
Reference : BGZBAD, I, 1931, 1991 Effective Date : 15JUN1991  
 Bundesgesetzblatt (Federal Law Gazette)  
Last Amendment : Entry / Update : APR1992

## Substance

*Chemical Name* : BENZALDEHYDE  
*Reported Name* : BENZALDEHYDE  
*CAS Number* : 100-52-7

Area Type Subject Spec. Description Level / Summary Information :

GBR REG TRNSP LABEL - CLASS RQR LABELLING OF ROAD TANKERS: FLAMMABLE LIQUID. EMERGENCY ACTION CODE: 3(Z)  
Title : HAZARDOUS SUBSTANCES (LABELLING OF ROAD TANKERS) REGULATIONS 1978  
Reference : GBRSI\*, 1702, 1978 Effective Date : 28MCH1979  
 Statutory Instruments  
Last Amendment : Entry / Update : JAN1983

## Substance

*Chemical Name* : BENZALDEHYDE  
*Reported Name* : BENZALDEHYDE  
*CAS Number* : 100-52-7

Area Type Subject Spec. Description Level / Summary Information :

RUS REG AIR OCC MAC CLASS CLV: 5.0MG/M3 (VAPOUR) HAZARD CLASS: III  
Title :  
Reference : Effective Date : 01JAN1989  
Last Amendment : GOSTS\*, 12.1.005, 1988 Entry / Update : MAY1990  
 GOSUDARSTVENNYI STANDART SSSR  
 (STATE STANDARD OF USSR)

## Substance

*Chemical Name* : BENZALDEHYDE  
*Reported Name* : BENZALDEHYDE  
*CAS Number* : 100-52-7

Area Type Subject Spec. Description Level / Summary Information :

RUS REG AQ SURF MAC CLASS 0.003MG/L HAZARD CLASS: IV  
**Title :**  
**Reference :** **Effective Date :** 1JAN1989  
**Last Amendment :** SPNPV\*, 4630-88, 1988 **Entry / Update :** JUL1990  
 SANITARNYE PRAVILA I NORMY OKHRANY POVERKHNOSTNYKH VOD OT ZAGRIAZNENIA (HEALTH REGULATION AND STANDARDS OF SURFACE WATER PROTECTION FROM CONTAMINATION)

Substance

**Chemical Name :** BENZALDEHYDE  
**Reported Name :** BENZALDEHYDE  
**CAS Number :** 100-52-7

Area Type Subject Spec. Description Level / Summary Information :

USA REG TRNSP PACK LABEL - PRMT CNTRL RQR NO LIMIT FOR PASSENGER AIRCRAFT AND PASSENGER RAILCAR. NO LIMIT FOR CARGO AIRCRAFT. MAY BE TRANSPORTED IN CARGO AND PASSENGER VESSELS ON AND BELOW DECK.; Summary - THIS REGULATION LISTS AND CLASSIFIES THOSE MATERIALS WHICH THE DEPARTMENT OF TRANSPORTATION HAS DESIGNATED AS HAZARDOUS MATERIALS FOR SHIPPING PAPERS, PACKAGE MARKING, LABELING, AND TRANSPORT VEHICLE PLACARDING APPLICABLE TO THE SHIPMENT AND TRANSPORT OF THOSE HAZARDOUS MATERIALS.  
**Title :** HAZARDOUS MATERIALS REGULATIONS, PART 172--HAZARDOUS MATERIALS TABLES AND HAZARDOUS MATERIALS COMMUNICATIONS REGULATIONS  
**Reference :** CFRUS\*, 49, 172, 101, 1984 **Effective Date :** OCT1991  
 Code of Federal Regulations  
**Last Amendment :** CFRUS\*, 49, 172, 101, 1990 **Entry / Update :** NOV1991  
 Code of Federal Regulations

Substance

**Chemical Name :** BENZALDEHYDE  
**Reported Name :** BENZALDEHYDE  
**CAS Number :** 100-52-7

Area Type Subject Spec. Description Level / Summary Information :

USA REG CLASS MANUF FOOD PESTI PESTI ADDIT RQR PRMT RQR CASE NAME BENZALDEHYDE; Summary - THIS SUBSTANCE IS INCLUDED ON A LIST OF ACTIVE INGREDIENTS CONTAINED IN A PRODUCT FIRST REGISTERED BEFORE NOVEMBER 1, 1984, FOR WHICH A REGISTRATION STANDARD HAS NOT BEEN ISSUED. PUBLICATION OF THIS LIST INITIATES AN ACCELERATED REREGISTRATION AND DATA CALL-IN FOR PRODUCTS CONTAINING THE LISTED ACTIVE INGREDIENTS. IN PARTICULAR THE LIST INCLUDES A NUMBER OF ACTIVE INGREDIENT CASES HAVING INDIRECT FOOD OR FEED USES.  
**Title :** FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT PESTICIDES REQUIRED TO BE REREGISTERED ; LIST C.  
**Reference :** FEREAC, 54, 140, 30846, 1989 **Effective Date :** 1988  
 Federal Register  
**Last Amendment :** FEREAC, 54, 140, 30846, 1989 **Entry / Update :** JAN1992  
 Federal Register



## Substance

Chemical Name : BENZALDEHYDE  
 Reported Name : BENZALDEHYDE  
 CAS Number : 100-52-7

Area Type Subject Spec. Description Level / Summary Information :

EEC	REG	CLASS LABEL PACK	-	CLASS RQR RQR	CLASS: XN - HARMFUL; HARMFUL IF SWALLOWED (R 22). LABEL: XN - HARMFUL; HARMFUL IF SWALLOW ED (R 22); AVOID CONTACT WITH SKIN (S 24). <u>Title :</u> COUNCIL DIRECTIVE 67/548/EEC OF 27 JUNE 1967 ON THE APROXIMATION OF THE LAWS, REGULATIONS AND ADMINISTRATIVE PROVISIONS RELATING TO THE CLASSIFICATION, PACKAGING AND LABELLING OF D ANGEROUS SUBSTANCES <u>Reference</u> OJEC**, 196, 1, 1967 <u>Effective Date :</u> 1JUL1992 Official Journal of the European (Communities)Union <u>Last Amendment :</u> OJEC**, L 180, 79, 1991 <u>Entry / Update :</u> APR1992 Official Journal of the European (Communities)Union
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