FOREWORD INTRODUCTION

BENZALDEHYDE

CAS N°: 100-52-7

Substance

End Point	:	**IDENTIFIERS, PHYSICAL AND CHEMICAL PROPERTIES**
Chemical Name	:	**Benzaldehyde**
Common Name	:	**Benzaldehyde**
CAS Number	:	**100-52-7**
RTECS Number	:	**CU4375000**

Synonyms

Artificial almond oil
Benzaldehyde FFC
Benzenecarbonal
Benzenecarboxaldehyde
Benzoic aldehyde
Phenylformaldehyde
Phenylmethanal

Properties & Definitions

Molecular Formula	:	**C7H6O**
Molecular Weight	:	**106.12**
Melting Point	:	**-26C**
Boiling Point	:	**179.2C**
State	:	**Liquid**
Flash Point	:	**64C (c-cup)**
Density	:	**1.0415 g/cm3 at 20C**
Vapour Pressure	:	**0.130 kPa (0.97 mmHg) at 20C**
Octanol/Water Partition Coefficient	:	**log Pow = 1.48 experimental**
Water Solubility	:	**6.55 g/L at 25C**
Solubility in other Solvents	:	**Miscible with alcohol, ether, oils.**
Taste	:	**Burning aromatic**
Impurities	:	**Toluene, benzoic acid**
General Comments	:	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 m3/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/m3.
The benzaldehyde concentration inside a small hut made of artificial element materials was 0.01 mg/m3 (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:

produccion: 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 m3) = 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

Quantity	*Year*
15000-25000 t/y - P	**1987-1993**

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)

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)

Uses

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

Use

Quantity	*Year*	*Comments*
>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)

Study

[redacted]

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

Medium	*to Medium*	*Quantity*	*Time*	*Year*	*to Year*
	to AIR	**29 %**			
	to AQ	**68.8 %**			
	to SOIL	**1.8 %**			
	to SED	**4 %**			

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

Study

[redacted]

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

Medium	*to Medium*	*Quantity*	*Time*	*Year*	*to Year*
	to AQ	**<1 t**	**1 y**		

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)

Study

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

Quantity Transported

Medium	*to Medium*	*Quantity*	*Time*	*Year*	*to Year*
	to AIR	**1382 kg**	**/ y**		
Calculated emission to air (in Botlek)					
	to AIR	**5 kg**	**/ d**		
Calculated emission to air (in Botlek)					
	to AIR	**0.6 kg**	**/ d**		
Emission of toluene in the purification installation (in Gleen)					
	to AIR	**11.2 kg**	**/ d**		
Emission of benzaldehyde in the purification installation (in Gleen)					
	to AIR	**0.2 kg**	**/ d**		
Emission of benzylformiate in purification installation (in Gleen)					

General Comments : 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)

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

Matrix	*Concentrations*	*Spec.*	*Date*
AIR	**<0.1-13.5 ppm**		
In gasoline exhaust			
AIR	**0.3 ppm**		
In diesel exhaust			

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

Matrix	Concentrations	Spec.	Date
AIR	**0-1 ppb**		
In Claremont (California)			
AIR	**2 ppb**		
In Los Angeles			
AIR	**0-0.5 ppb**		
In Azuza 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)

Study

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

Test Results

Matrix	Concentrations	Spec.	Date
	0.02 mg/m3		
Emitted when cutting the painted metal components with propan-gas welding flame.			
	0.01 mg/m3		
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)

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**		

Test Results

Matrix	Concentrations	Spec.	Date

AQ **2.8 mg/L**
From releases to water during processing is estimated that the benzaldehyde concentration in the influent is 300 kg/(400X24 m3) = 2.8 mg/L.

AQ **94 ug/L**
Calculated effluent concentration applying the model USES.

AQ **2.9 ug/L**
Concentration in the surface water 1000 m from the discharge point, when using a dilution factor of 32.

General Comments : Using a NOEC of 132 mg/L a PEC/PNEC ratio of <0.01 for microorganisms in the IAZI (Integral Waste Water Purification Installation) is calculated. However, if the lowest EC50 of 4.85 mg/L is used there is still no risk for microorganisms in the waste water treatment plant.

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
PLANT	**-**			
FISH	**AQ**			

Test Method and Conditions

Test method description : Model USES

Test Results

Matrix	*Concentrations*	*Spec.*	*Date*

PLANT **0.6 mg/kg**

Calculated PNEC (predicted no effect concentration) for lettuce.

10.7 ug/L

For fish. 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.

<0.01

Calculated ratio (PEC/PNEC) based on an EC50 of 624 mg/kg for lettuce a PNEC of 0.6 mg/kg is calculated for soil organisms. Applying a senario of USES model in which sewage sludge is applied on agricultural land a PEC/PNEC ratio of <0.01 is calculated.

General Comments : There are no indication for a risk to the environment.

References

Secondary Reference :

!SIDSP*

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

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)

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)

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 CO2 evolution and DOC removal; (1981).
Temperature	:	**20 C**
(An)aerobic	:	**AEROB**

Exposure

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

Test Results

Quantity	*Time*	*Comments on result*
100 %	**21 d**	CO2 evolution
100 %	**21 d**	CO2 removal
0 %	**21 d**	CO2 evolution in sterile control
45 %	**2 d**	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

Quantity	*Time*	*Comments on result*
99 %	**120 h**	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 CO2 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

Quantity	*Time*	*Comments on result*
62.5 %	**1-10 d**	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

Quantity	*Time*	*Comments on result*
100 %	**2 d**	BOD value
80 %	**21 d**	DOC removal in sterile control

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**

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

Quantity	*Time*	*Comments on result*
>95 %		DOC-removal within the first 30 minutes
100 %	**>2 d**	DOC-removal after 2 days

General Comments : 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

Quantity	*Time*	*Comments on result*
41.4 %	**3 h**	BOD value
70 %		Phenol (reference compound)

General Comments : 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

Quantity	*Time*	*Comments on result*
T/2	**9.4 h**	Rate constant of 1.2E-11 cm3/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/cm3.

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 NO2 (0.06) ppm as sensitizers.

Test Results

Quantity	*Time*	*Comments on result*
		Benzaldehyde was almost unreactive.

General Comments : Photolyzation rate was 1.52 ppb/minutes, expressed as rate of NO2 formation and yield of reaction products (concentration of benzaldehyde = 1 ppm).

References

Primary Reference : **JPCAAC**
Dimitriades, 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)

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 benzaldeyhde 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

Organ	*Quantity*		*Time*	*Comments on result*
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)

Study

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

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

Test Results

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

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RAT			**ORL**		**M** **F**	**LD50**	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

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
GPIG			**ORL**		**M** **F**	**LD50**	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

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RBT			**SKN**			**LD50**	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

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
GPIG			**SKN**			**LD50**	

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

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

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

Eye irritation.

RESPI	**IRRIT**				

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

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

An increased incidence of respiratory illness was observed in workers exposed to atmospheric concentrations of benzaldehyde not exceeding 5 mg/m3.

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

Organism	Medium	Specification	Route	Lifestage	Sex	Number exposed	Number controls
MOUSE			**ORL**		**M**	**5/GROUP**	**5**
					F	**5/GROUP**	**5**

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 onece daily, 5 days/week (12 doses) at doses of 0, 200, 400, 800, 1600 or 3200 mg/kg/day.

Test Results

Organ	Effect	Rev.	OnSet	Sex	Affected in Exposed - Controls
	DEATH		**3 d**		**100%**

All mice receiving 1600 or 3200 mg/kg died by day 3.

	DEATH	**10 d**	**M**	**1/5**

At 800 mg/kg 1 male died at day 10.

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

Organism	Medium	Specification	Route	Lifestage	Sex	Number exposed	Number controls
MOUSE			**ORL**		**M**	**10/GROUP**	**10**
					F	**10/GROUP**	**10**

Species/strain/system : B6C3F1

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

Test Results

Organ	Effect	Rev.	OnSet	Sex	Affected in Exposed - Controls
	DEATH				**10/20**

9/10 males and 1/10 females died during the first week at 1200 mg/kg

BW	**DECR**		**M**

Final mean body weight was 9% lower than in controls, in males at 600 mg/kg.

KIDNY	**TUBUL**		**M**

Mild-to-moderate renal tubule degeneration was observed in all males at 1200 mg/kg and in 1/10 males at 600 mg/kg.

NOEL

NOEL was established as 300 mg/kg/day and 600 mg/kg/day on males and females, respectively.

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

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 : **4 mo**
Frequency : **5 h/d**
Dose / Concentration : **6-26 mg/m3**

Test Results

Organ	Effect	Rev.	OnSet	Sex	Affected in Exposed - Controls
BLOOD - BW	**CHNG - DECR**	**RV**			

Changes in blood and body weight occured at 26 mg/m3, but the rats were normal after an unspecified recovery period.

NOEL

NOEL: 6 mg/m3

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/m3**
Exposure comments : Rats were exposed to 185 ppm concentration of benzaldehyde for 2 weeks.

Test Results

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

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

Organism	Medium	Specification	Route	Lifestage	Sex	Number exposed	Number controls
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

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

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)

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			**ORL**		**M**	**10/GROUP**	**10**
					F	**10/GROUP**	**10**

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 : **13 wk**
Frequency : **1 x/d**
5 d/wk
Dose / Concentration : **50-800 mg/kg BW**
Exposure comments : Benzaldehyde was administered by gavage at doses of 0, 50, 100, 200, 400 or 800 mg/kg/day.

Test Results

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

6/10 males and 3/10 females died before the end of the study at 800 mg/kg

BW	**DECR**		**M**

Surviving high dose male rats had 26% lower final body weight than the control rats.

BRAIN	**STRUC**

Necrotic and degenerative lesions were seen in the cerebellar and hippocampal regions of the brain in both sexes at 800 mg/kg.

LIVER	**STRUC**

Degeneration and/or necrosis of the liver occured at 800 mg/ kg.

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 occured 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

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

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
	DEATH		**2 d**		**100%**

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

Organism	Medium	Specification	Route	Lifestage	Sex	Number exposed	Number controls
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

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

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 : **!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

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

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

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

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

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

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

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

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)

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

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

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)

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

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

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

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

Positive results in sister chromatid exchange assay.

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
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

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

Negative results for mutagenicity with and without metabolic activation.

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*
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

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

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)

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

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

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

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

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

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

Species/strain/system : 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

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

Positive results without metabolic activation.

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 : **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

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
SKN	**ALLER**				
Sensitizing					

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

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

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

Organism	Medium	Specification	Route	Lifestage	Sex	Number exposed	Number controls
HUMAN			**SKN**			**100**	

Test Method and Conditions

Test method description : Patch test; GLP: unknown

Test Results

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

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

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
HUMAN			**SKN**			**25**	

Test Method and Conditions

Test method description : Maximization test; GLP: unknown

Test Results

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

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

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

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

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

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)

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

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

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

[redacted]

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

[redacted]

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

Organism	Medium	Spec.	Route	Lifestage	Sex	Effect	Effect Comments
FISH	**AQ**	**FRESH**				**LC50**	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

General Comments : 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 fur Altstoffe uker 1000 JATO. Bayer, Leverkusen, FGR.

References

Primary Reference : **ENVPAF**
Phipps, G. L. and Holcombe, G. W. Environmental Pollution, A 38, 141-157, (1985)

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 : Trout rainbow (Oncorhynchus mykiss)
Exposure Period : **96 h**

Test Method and Conditions

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

Test Results

Organism	Medium	Spec.	Route	Lifestage	Sex	Effect	Effect Comments
FISH	**AQ**	**FRESH**				**LC50**	LC50 for 96 hours = 11.2 mg/L. Results based on measured concentrations.

General Comments : The chemical is acute toxic to fish.

References

Primary Reference : **EPEBD7**
Phipps, G. L. and Halcombe, G. W. Environmental Pollution Series A: Ecological and Biological, A 38, 141-157, (1985)

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 (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

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

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

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

NOEC

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 plantonic 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

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

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

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

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

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

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

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

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

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

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

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
---	---	---	---	---	---
	LC0				

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

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
---	---	---	---	---	---
	LC0				

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

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

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

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

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 Reinhoid 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 parduczi)

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

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

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 Reinhoid 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

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
PLANT						**LC50**	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)

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

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

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

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

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

References

Primary Reference : **ETOCDK**
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

[redacted]

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. ***Title :*** ***Reference :*** ***Effective Date :*** 31DEC1987 ***Last Amendment :*** **CAGAAK, 122, 2, 551, 1988** ***Entry / Update :*** APR1991 **Canada Gazette Part II**

Substance

[redacted]

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. ***Title :*** ***Reference :*** ***Effective Date :*** 06DEC1990 ***Last Amendment :*** **CAGAAK, 124, 26, 5523, 1990** ***Entry / Update :*** OCT1991 **Canada Gazette Part II**

Substance

[redacted]

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 GRO UP OF AIR POLLUTANTS (ORGANIC GASES AND VAPOU RS)

Title : PROVISION OF FEDERAL COMMITTEE FOR ENVIRONMEN T TO ACT NO. 309 FROM 9 JULY 1991 ON AIR PROT ECTION AGAINST AIR POLLUTANTS

Reference : **SZCSR*, 84, 2061, 1991** ***Effective Date :*** 1OCT1991

Sbirka 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 PRODUC TS: 0.4G/KG.

Title : DIRECTIVE NO. 50/1978 ON FOREIGN SUBSTANCES I N 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 HAZA RDOUS TO WATER (WATER-HAZARD CLASS: WGK 1). (THE DIFFERENT CLASSES ARE: WGK 3 = VERY HAZAR DOUS; WGK 2 = HAZARDOUS; WGK 1 = SLIGHTLY HAZ ARDOUS; WGK 0 = IN GENERAL NOT HAZARDOUS.) TH E CLASSIFICATION FORMS THE BASIS FOR WATER-PR OTECTION REQUIREMENTS FOR INDUSTRIAL PLANTS I N WHICH WATER-HAZARDOUS SUBSTANCES ARE HANDLE D.

Title : ADMINISTRATIVE RULES CONCERNING WATER-HAZARDO US SUBSTANCES (VERWALTUNGSVORSCHRIFT WASSERGE FAEHRDENDE 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 GE NERALLY THE SAME AS FOR THE EEC (SEE OJEC** L 180, 1991). HOWEVER, SLIGHT MODIFICATIONS MAY BE INTRODUCED FOR SOME SUBSTANCES IN THE GER MAN LEGISLATION. ***Title :*** ORDINANCE ON HAZARDOUS SUBSTANCES. (GEFAHRSTO FFVERORDNUNG) ***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 TANKE RS) 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 O N AND BELOW DECK.; Summary - THIS REGULATION LISTS AND CLASSIFIES THOSE MATERIALS WHICH TH E DEPARTMENT OF TRANSPORTATION HAS DESIGNATED AS HAZARDOUS MATERIALS FOR SHIPPING PAPERS, PACKAGE MARKING, LABELING, AND TRANSPORT VEHI CLE PLACARDING APPLICABLE TO THE SHIPMENT AND TRANSPORT OF THOSE HAZARDOUS MATERIALS.

Title : HAZARDOUS MATERIALS REGULATIONS, PART 172--HA ZARDOUS MATERIALS TABLES AND HAZARDOUS MATERI ALS 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 SUBSTA NCE IS INCLUDED ON A LIST OF ACTIVE INGREDIEN TS CONTAINED IN A PRODUCT FIRST REGISTERED BE FORE NOVEMBER 1, 1984, FOR WHICH A REGISTRATI ON STANDARD HAS NOT BEEN ISSUED. PUBLICATION OF THIS LIST INITIATES AN ACCELERATED REREGIS TRATION AND DATA C ALL-IN FOR PRODUCTS CONTAI NING THE LISTED ACTIVE INGREDIENTS. IN PARTIC ULAR THE LIST INCLUDES A NUMBER OF ACTIVE ING REDIENT CASES HAVING INDIRECT FOOD OR FEED US ES.

Title : FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICI DE 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).

Title : 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

Reference : **OJEC**, 196, 1, 1967** ***Effective Date :*** 1JUL1992
Official Journal of the European (Communities)/Union

Last Amendment : **OJEC**, L 180, 79, 1991** ***Entry / Update :*** APR1992
Official Journal of the European (Communities)/Union