FOREWORD INTRODUCTION

CYCLOHEXANONE

CAS N°: 108-94-1

Substance

End Point	:	**IDENTIFIERS, PHYSICAL AND CHEMICAL PROPERTIES**
Chemical Name	:	**Cyclohexanone**
Common Name	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
RTECS Number	:	**GW1050000**

Synonyms

Anon
Anone
Cyclohexyl ketone
Hexanon
Hytrol O
Ketohexamethylene
Nadone
Pimelic ketone
Pimelin ketone
Sextone

Properties & Definitions

Molecular Formula	:	**C6H10O**
Molecular Weight	:	**98.14**
Melting Point	:	**-32.1C**
Boiling Point	:	**155.65C**
State	:	**Liquid, oily**
Flash Point	:	**63C (c-cup)***
Flamable Limit	:	**1.1-9.4%; combustible**
Density	:	**0.9478 at 20C**
Vapour Pressure	:	**0.67 kPa (5 mmHg) at 25C**
Octanol/Water Partition Coefficient	:	**log Pow = 0.0805 calculated**
Water Solubility	:	**23 g/L at 25C**
Solubility in other Solvents	:	**Soluble in alcohol, ether, benzene and chloroform.**
Odour	:	**Reminiscent peppermint,acetone**
Additives	:	**None**
General Comments	:	*For FP the value 44 (c-cup) is also reported. Composition of the feedstok is typically 38% cyclohexanone mixed with 44% adipic acid, 3-4% other materials (valeric acid, hexyl valerate, pentanol, hexyl formate, valeraldehyde, caproaldehyde) and water. Refractive index n20/D = 1.4507. Autoignition temperature = 420C. Freezing point = -16.4C. Vapour harmful.

Overall Evaluation

CURRENTLY OF LOW PRIORITY FOR FURTHER WORK

SIDS INITIAL ASSESSMENT

Cyclohexanone is used in organic synthesis, particularly in the production of adipic acid and caprolactam (ca. 95%), polyvinyl chloride and its copolymers, and methacrylate ester polymers. Additional uses include wood stains, paint and varnish removers, spot remover, degreasing of metals, polishes, levelling agents, dyeing and delustering silk, lubricating oil additives, solvent for herbicides, cellulosics, natural and synthetic resins, waxes, fats, etc.

For processes involving closed systems, occupational and consumer exposure is expected to be minimal. Air monitoring at sites using closed systems has detected 1.5E-3 and 0.16 ppm cyclohexanone; personal monitoring values range from 0.07 to 0.5 ppm. Those values are significantly less than the international exposure standard for cyclohexanone which is 25 ppm (time weighted average). It is expected that occupational and consumer exposure may occur when cyclohexanone is used as a solvent; however, details regarding levels of use and exposure have not been provided by other countries.

This material degrades rapidly by reaction with sunlight and is biodegradable in water. On soil surfaces and in water, cyclohexanone is expected to be eliminated by volatilization, photolysis, and biodegradation. Based on the low Koc, this material is considered to be highly mobile in soil. Fugacity level Ib environmental modeling indicates that cyclohexanone will partition almost exclusively to the air (31%) and water (69%). Level III modeling for southern Ontario, Canada, indicates that emission of cyclohexanone will result in the partition of this material into air (16.3%) and water (83.6%) and that the concentrations in soil and sediment will be very low. Concentrations in ambient air in the vincinity of a U.S. industrial site ranged from 22 to 158 ng/m3 (5.5E-6 to 3.9E-5 ppm). The low octanol/water coefficient suggests that cyclohexanone is unlikely to bioconcentrate in aquatic organisms; therefore, potential for secondary poisoning is low.

Experimentally, cyclohexanone has exhibited low acute toxicity towards freshwater fish species and the microcrustaceon Daphnia magna, slight acute toxicity to algae and protozoa, and moderate acute toxicity to bacteria. QSAR-derived estimates of fish, daphnia, and algal acute toxicity compare favorably with those derived experimentally. Experimental data for chronic studies was not available. In addition, cyclohexanone meets the criteria of a Class I non-polar chemical; therefore, QSAR was used to estimate the NOECs for chronic toxicity in fish and daphnia.

This material exhibited low to slight acute toxicity by the oral and inhalation routes and was moderately toxic by the dermal route. It is an eye and skin irritant; however, it did not induce skin sensitization. Upon repeated administration to rats in drinking water, the NOAEL was 4700 ppm after 25 weeks and the LOAEL was 3300 ppm after 2 years. Effects at higher concentrations were primarily body weight decreases.
The NOAEL in published repeated dose inhalation studies was 100-190 ppm. Those values were based on either gray mottling of the lungs or ocular irritation and degenerative changes in the liver and kidney at higher concentrations. However, the NOAEL in those studies was not confirmed in more conclusive and GLP inhalation studies for reproductive and developmental effects (NOAEL = 650-1000 ppm). The majority of the experimental evidence indicates that cyclohexanone is not genotoxic, and this material was not considered to be carcinogenic in mice or rats following two years of exposure via the drinking water. In a two-generation reproduction study, decreased fertility was observed in rats exposed via inhalation at 1400 ppm but not at 500 ppm; however, the effect was found to be reversible following a post-exposure recovery period. The NOAEL of 500 ppm for this reproductive effect is 1000 times greater than the highest occupational personal monitoring value (0.5 ppm) reported. Developmental studies indicate that fetal toxicity was present only at concentrations which were maternally toxic, and no malformations were detected. There has been no consistent indication that cyclohexanone causes neurotoxicity, although signs of CNS depression were noted at doses near the LD50. Therefore, this material could not be classified regarding its potential neurotoxicity to humans.

EXPOSURE

General Discussion: very little information was provided by the OECD National Authorities regarding production levels, percentages of use for various applications, emissions, or occupational exposure. It should be noted that differences in use patterns would result in different exposure scenarios.

EMISSIONS

Germany - Air = 2.5 t/y during production
150 kg/year during processing and handling
- Water = 6.4 t/y during production, processing, and handling (effluent from waste water treatment plants)
- 1800-1900 t/y through plant protection products to air, water, and soil

Note: for a production site near the River Rhine, at low flow (10-percentile = 550 m3/s), a PEC value of 0.3 ug/L was calculated for an emission level of 6.4 t/y.

Sweden - almost 100% recovered or destroyed

ENVIRONMENTAL EXPOSURE

Biodegradability:

Cyclohexanone has been shown to biodegrade in natural water

Theoretical biological oxygen demand (BOD) = 2.61 mg O2/mg
Measured BOD after 20 days = 57% of theoritical BOD

Hydrolysis:

No information was available regarding the hydrolysis of cyclohexanone. In water, the important environmental fate processes are expected to be biodegradation, photolysis, and volatilization.

Photolysis:

In air cyclohexanone degrades rapidly by reaction with sunlight (t1/2 ca. 1 day) and by direct photolysis (t1/2 ca. 4.3 days). Since cyclohexanone photolyses in ambient air, direct photolysis in water and on soil surfaces is expected to occur.

Volatilization:

Based on vapor pressure (5 mmHg at 25C), cyclohexanone should exist almost entirely in the vapor phase (Henry's law constant = 1.2 x 10E-5 atm.m3/mol). Volatilization from shallow, rapidly moving water should be significant (t1/2 ca. 3.1 days). Volatilization from soil is also expected.

Sorption:

The calculated log10Koc for cyclohexanone is 1.823. This low value indicates that cyclohexanone is highly mobile in soil.

Environmental Fate Modeling:

The MacKay level Ib fugacity calculation indicates that approximately 69% of total cyclohexanone in the evaluative environment will partition into water and 31% into air. This is consistent with the moderate water solubility (23 g/L at 25C) and vapor pressure (5 mmHg at 25C) of this material. The Mackay Level III fugacity calculation for southern Ontario, Canada, indicates that emission of cyclohexanone will result in the partitioning of this material into air (16.3%) and water (83.6%) primarily and that the concentrations in soil and sediment will be very low.

Bioaccumulation:

The low Kow value (0.805) indicates that cyclohexanone is unlikely to bioconcentrate in aquatic organisms; therefore the potential for secondary poisoning is low.

Monitoring Data:

Concentrations measured in ambient air in the vicinity of the American Cyanamid Corporation site in the U.S. were from 22 to 158 ng/m3 (5.5E-6 to 3.9E-5 ppm). (Reference: Pellizari, E.D. Quantitation Chlorinated Hydrocarbons in Previously Collected Air Samples. EPA-450/3-78-112)

CONSUMER EXPOSURE

For DuPont Canada, no consumer exposure is expected to occur when the raw material is used in a closed system. For other countries, no information was provided regarding exposure during agricultural and solvent applications.

OCCUPATIONAL EXPOSURE

For DuPont Canada and DuPont US processes involving closed systems, occupational exposure is essentially zero. For other countries, no specific information was provided when cyclohexanone is utilized as a solvent or in agricultural formulations.

Monitoring Data:

Canada - For DuPont, personal monitoring = 0.07 - 0.5 ppm; air = 0.16 ppm

(0.5 ppm = ca. 0.3 mg/kg/day in humans assuming 100% absorption by a 70 kg man breathing 10 m3/8 hours and 1 ppm = 4.01 mg/m3)

Sweden - < 25 ppm (25 ppm = ca. 14 mg/kg/day in humans)

Italy - Indoor air 6 ug/m3 (1.5E-3 ppm)

(Reference: DeBortoli et al., 1986. Concentration of selected organic pollutants in indoor air in northern Italy. Environment International 12:343-350)

Exposure Standards:

25 ppm TWA with skin notation (ACGIH TLV, OSHA PEL, Ontario TWAEV, Swedish TLV)

(25 ppm = ca. 14 mg/kg/day in humans)

CALCULATION OF MAXIMUM TOLERABLE CONCENTRATION (MTC):

Experimentally, cyclohexanone exhibited low acute toxicity towards freshwater fish species and the microcurstaceon Daphnia magna. Applying an assessment factor of 100 to the lowest experimentally- or QSAR-derived LC50 or EC50 value for an algal, daphnid, or fish species, the MTC = 527 mg/L/100 or 5.3 mg/L.

No experimentally-derived chronic data for fish or daphnids are available. Since cyclohexanone meets the criteria of Class I non-polar narcotic chemicals and acute baseline toxicity values compared favorably with the experimental values for fathead minnow and daphnid (QSAR/experimental ca. 1.3), the appropriate QSAR.1 was used to estimate the NOECs for chronic toxicity. The QSAR-derived NOECs for Ps. putida and Microcystis were approximately eight and six times greater, respectively, than the NOECs calculated from the experimental threshold toxicity (TT) values (NOECs for bacterial and algal growth inhibition were calculated by dividing the TT, assumed to be synonymous with the LOEC, by 2). Applying an assessment factor of 10 to the lowest NOEC value, the MTC = 26/10 = 2.6 mg/L.

The potential for chronic exposure to cyclohexanone in the aquatic environment is greatest in situations where losses through biotic and abiotic degradative pathways are impeded such as in ground waters and in deep and/or slow-moving water bodies. The estimated MTC value is greater than 2 orders of magnitude less than the NOECs for growth and reproduction for D. Magna and En. sucatum, two of the species tested that represent organisms which commonly inhabit slow-moving or static waters. A MTC of 2.6 mg/L for cyclohexanone should be adequate to safeguard against long-term effects.

CONCLUSION AND RECOMMENDATIONS

Based on the breadth of the present data base for human health and aquatic toxicity effects, no additioal testing is required for cyclohexanone. For processes involving closed systems, this material should be placed in the category of low concern; however, international information on exposure is needed to assess the significance of solvent and agricultural applications and to develop exposure scenarios specific to other uses identified.

Production-Trade

Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **CAN**

Production

Quantity	*Year*
30000-45000 t - P	**1991**
30000-45000 t - P	**1992**
350 t/y - IM	

General Comments : The given quantities are produced by Du Pont, Canada. 350 tones/year imported by others. Very little information was provided by the OECD National Authorities regarding production levels.

References

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

Production-Trade

Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **USA**

Production

Quantity	*Year*
45000-227000 t - P	**1993**

General Comments : The given volumes are produced by Du Pont, United States.

References

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

Production-Trade

Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **DNK**

Production

Quantity	*Year*
680 t - IM	**1989**

References

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

Production-Trade

Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **FRG**

Production

Quantity	*Year*
>163000 t - P	**1990**
>=23000 t - EX	**1990**

References

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

Production-Trade

Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **FIN**

Production

Quantity	*Year*
50-100 t - IM	**1990**

References

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

Production-Trade

Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **RUS**

Production

Quantity	*Year*
>10000 t - EX	**1990**

General Comments : The reported quantity transported from Russia to western countries via Finland.

References

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

Processes

Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**

Process

Process comments : Canada - for Du Pont, cyclohexanone is a site-limited reaction intermediate in the production of adipic acid. It is produced in a closed system and consumed during production process.

References

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

Uses

Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **CAN**

Use

Quantity	*Year*	*Comments*
99.2 %		Category: industrial - used as intermediate in the production of adipic acid.
0.5 %		Category: agricultural - used as solvent in herbicides.
0.2 %		Category: other - use: unknown

References

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

Uses

Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **FIN**

Use

Quantity	*Year*	*Comments*
		Finland - Component of a "filling mass", glue hardener, equipment cleaner, activator, and solvent for cable marking paint.

References

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

Uses

Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **NOR**

Use

Quantity	*Year*	*Comments*
		Norway - Component in deodorizing agents, accelerators, floor paint, anti-corrosive paint, varnishes, ship primers, solvents, printing inks, and viscosity reducers.

References

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

Uses

Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **CAN**

Use

Quantity	*Year*	*Comments*
60 %		For others (producers excluding Du Pont), sixty percent of imported quantities is used as a solvent in herbicides. Application rate is estimated to be 200 mL/hectare. However, cyclohexanone is being replaced by other solvents; therefore its use in this application is expected to be reduced. The remainder is for undetermined uses.

References

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

Uses

Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **USA**

Use

Quantity	*Year*	*Comments*
		For Du Pont, cyclohexanone is produced and further processed in a closed system as an intermediate in the production of adipic acid.

References

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

Uses

Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **DNK**

Use

Quantity	*Year*	*Comments*
100-1000 t/y		Contained in 385 products; mainly as a solvent in paints and inks.

References

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

Uses

Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **FRG**

Use

Quantity	*Year*	*Comments*
119000 t/y		Intermediate for E. caprolactam
		Herbicides, insecticides, pharmaceuticals, polycondensates.
1800-1900 t/y		Used as solvent for plant protection agents
		Used as PVC dyes and varnish

References

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

Uses

Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **SWE**

Use

Quantity	*Year*	*Comments*
		When used in industrial coating processes, cyclohexanone is maintained within a closed vessel. Also used in such products as accelerators, developers, paints and lacquers, printing inks, laboratory chemicals, adhesives, regulators, cleaning agents and as diluents.

References

Secondary References : **!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 : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **CAN**

Pathway and Transport

Pathway description : Cyclohexanone is released into southern Ontario
Mecanism : Level III fugacity model of MacKay and Paterson (1991)

Quantity Transported

Medium	*to Medium*	*Quantity*	*Time*	*Year*	*to Year*
	to AIR	**16.3 %**			

Partitioning of cyclohexanone into air (emissions mol/ hour = 17.45)

to AQ **83.6 %**

Partitioning of cyclohexanone into water (emissions mol/ hour = 17.45)

to SOIL **0.08 %**

Partitioning of cyclohexanone into soil (emission was 0%)

to SED **0.01 %**

Partitioning of cyclohexanone into sediment (emission was 0%)

It was estimated that 30 tonnes/year of cyclohexanone were released in the proportions listed above.

General Comments : There are no "real" data on the environmental concentration and behaviour of cyclohexanone in the environment. This has necessitated the use of the Level III fugacity model of MacKay and Paterson (1991). The fugacity model for the region of southern Ontario accepts as input the following: the physical chemical properties of the chemical, its transformation half-lives and emission rates into the environmental media of air, water, soil, and sediment. It then calculates the prevailing steady state concentrations and the amounts and rates of degradation, advective flow, and intermedia transport. The concepts underlying this modelling approach are described in the text by MacKay (Multimedia Environmental models: The Fugacity Approach 1991).

References

Primary Reference : **MMFAM***
MacKay, D. Multimedia Models : the Fugacity Approach, (1991)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **CAN**

Test Method and Conditions

Test method description : MacKay Level Ib fugacity model

Temperature : **25 C**

Quantity Transported

Medium	*to Medium*	*Quantity*	*Time*	*Year*	*to Year*
	to AQ	**69 %**			

The MacKay Level Ib fugacity calculation indicates that approximately 69% of the total (cyclohexanone in the evaluative environment will partition into water compart- ment).

	to AIR	**31 %**			

Cyclohexanone which will partition into air (calculation as above). Both values (69 and 31%) are consistent with the moderate water solubilities and vapour pressure for cyclohexanone.

General Comments : A level Ib fugacity calculation was conducted to estimate the partitioning of cyclohexanone in the environment. This calculation simply estimates the equilibrated distribution of a substance in various compartments in an evaluative environment and does not address degradation pathways. It may be useful in identifying key environmental compartments to which a substance will partition.

References

Primary Reference : **MMFAM***

MacKay, D. Multimedia Models : the Fugacity Approach, (1991)

Secondary Reference : **!SIDSP***

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

Study

End Point	:	**CONCENTRATION**
Chemical Name	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Study type	:	**LAB**
Geographic Area	:	**ITA**

Test Subject

Organism	*Medium*	*Specification*	*Lifestage*	*Sex*
	AIR	**INDOR**		

Test Method and Conditions

Test method description : Monitoring study

Test Results

Matrix	*Concentrations*	*Spec.*	*Date*
AIR	**6 ug/m3**		

Indoor air 6 ug/m3 (1.5E-3 ppm)

References

Primary Reference : **ENVIDV**
De Bortoli et al. Environment International, 12, 343-350, (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	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Study type	:	**LAB**
Geographic Area	:	**USA**

Test Subject

Organism	*Medium*	*Specification*	*Lifestage*	*Sex*
	AIR	**AMBI**		

Species/strain/system : Ambient air in the vicinity of the American Cyanide Corporation site in the U.S.A.

Test Method and Conditions

Test method description : Monitoring study

Test Results

Matrix	*Concentrations*	*Spec.*	*Date*
	22-158 ng/m3		

Measured concentrations (5.5E-6 to 3.9E-5 ppm)

References

Primary Reference : **UEPEDY**
Pellizari, E. D. U.S. Environmental Protection Agency Office of Air Quality Planning Standard
(Technical Report), EPA-450/3-78(112)

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

Study

End Point : **CONCENTRATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Geographic Area : **CAN**

Test Subject

Organism	*Medium*	*Specification*	*Lifestage*	*Sex*
	AIR			
	AQ			
	SOIL			

Species/strain/system : Southern Ontario, Canada

Test Method and Conditions

Test method description : MacKay Level III fugacity model

Test Results

Matrix	*Concentrations*	*Spec.*	*Date*
AIR In air	**2.03E-4 ug/m3**		
AQ In water	**1.0E-1 ug/L**		
SOIL In soil	**2.0E-8 ug/g**		
SED In sediment	**5.3E-8 ug/L**		

References

Primary Reference : **MMFAM***
Mackay, D. Multimedia Models : the Fugacity Approach, (1991)

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	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Geographic Area	:	**CAN**

Test Method and Conditions

Test method description	:	Monitoring study

Test Results

Intake	*Spec.*	*Date*

0.5 ppm

0.5 ppm = ca. 0.3 mg/kg/day in humans assuming 100% absorption by a 70 kg man breathing 10 m3/8 hours and 1ppm = 4.01 mg/m3.

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	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Geographic Area	:	**CAN**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*
	AIR		**SKN**		

Test Results

General Comments	:	Exposure standards: ACGIH TLV = 25 ppm (100 mg/m3) (5th edition, 1986). OSHA PEL = 25 ppm. Ontario TWAEV = 25 ppm = ca. 14 mg/kg/day in humans (Ontario TWAEV).

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	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Geographic Area	:	**SWE**

Test Method and Conditions

Test method description : Monitoring study

Test Results

Intake	*Spec.*	*Date*

<25 ppm
25 ppm = ca. 14 mg/kg/day in humans

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	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Geographic Area	:	**WORLD**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*
HUMAN	**AIR**	**OCC** **CONSM**		**ADULT**	

Test Results

General Comments : Consumer exposure: for other countries (countries other than Canada) no information was provided regarding exposure during agricultural and solvent applications. Occupational exposure: for other countries, no specific information was provided when cyclohexanone is utilized as a solvent or in agricultural formulations.

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	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Geographic Area	:	**USA**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*
HUMAN	**AIR**	**OCC**	**IHL**	**ADULT**	

Test Results

General Comments : For Du Pont US processes involving closed systems, occupational exposure is essentially zero.

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	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Geographic Area	:	**CAN**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*
HUMAN	**AIR**	**OCC**	**IHL**	**ADULT**	

Species/strain/system : Du Pont (Canada) personal air monitoring at Maitland site

Test Method and Conditions

Test method description : Monitoring study

Test Results

Intake	*Spec.*	*Date*

0.07-0.5 ppm
Typical levels found by personal air monitoring at Maitland site, Du Pont.

0.16 ppm
The level yielded by area air monitoring.

General Comments : Consumer Exposure: for Du Pont, Canada, no consumer exposure is expected to occur when the raw material is used in a closed system. Occupational Exposure: for processes involving closed systems, occupational exposure is essentially zero.

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	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Study type	:	**LAB**
Geographic Area	:	**CAN**

Test Subject

Organism	*Medium*	*Specification*
AQ	**NATUR**	
SOIL		

Test Method and Conditions

Test method description	:	Biological screening studies

Test Results

General Comments	:	In water, one important environmental process for cyclohexanone appears to be biodegradation. Biological screening studies have found that cyclohexanone is biodegradable in various test systems, including natural water; this suggests that biodegradation in soil is possible.

References

Primary Reference	:	**HBEFE*** Handbook of Environmental Fate and Exposure Data for Organic Chemicals, 129-134, (1991)
Secondary Reference	:	**!SIDSP*** OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1994)

Study

End Point	:	**BIODEGRADATION**
Chemical Name	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Study type	:	**LAB**
Geographic Area	:	**CAN**

Test Subject

Organism	*Medium*	*Specification*
AQ		

Test Method and Conditions

Test method description : Biodegradation measurements were obtained using procedures which generally follow the biochemical oxygen demand (BOD), method published in Standard Methods for the Examination of Water and (for the following see the general comments).

(An)aerobic : **AEROB**

Test Results

Quantity	*Time*	*Comments on result*
2.61 mg/mg		The theoritical oxygen demand (BOD) (based on empirical formula) was calculated as 2.61 mg O2/mg cyclohexanone.
2.38-2.48		Measured chemical oxygen demand (COD) was 2.43 + 0.05.
48 %	**5 d**	When the biological oxygen demand (BOD) determined on day 5, was divided by the theoritical oxygen demand, the BOD5 value was 48%.
57 %	**20 d**	When BOD determined on day 20 was divided by the theoritical oxygen demand, the BOD20 value was 57%.

General Comments : Wastewater. 15th ed. Am. Public Health Association Washington, DC, (1980). Based on the results it is concluded that cyclohexanone is readily biodegradable.

References

Primary Reference : **NIPRO***
NIPRO/CNC TSEC laboratories, (1982)

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

Study

End Point	:	**PHOTODEGRADATION**
Chemical Name	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Study type	:	**FIELD**
Medium	:	**AIR** **AQ** **SOIL**
Geographic Area	:	**CAN**

Test Method and Conditions

Test method description	:	Not specified

Test Results

Quantity	*Time*	*Comments on result*
50 %	**1 d**	In air, cyclohexanone will degrade by reaction with sunlight to produce hydroxyl radicals (half-life of about 1 day).
50 %	**4.3 d**	By direct photolysis (half-life of about 4.3 days).
General Comments :		In water, one important environmental fate process for cyclohexanone appears to be photolysis. Since it photolyses in ambient air, direct photolysis in water and on soil surfaces is expected to occur; however, the photolysis rate in water will be slower. The following reference is also cited: Syracuse Research Corporation (Hazardous Substances Database).

References

Primary Reference : **HBEFE***
Handbook of Environmental Fate and Exposure Data for Organic Chemicals, 129-134, (1991)

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

Study

End Point	:	**SORPTION**
Chemical Name	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Specifications	:	**SOIL**
Geographic Area	:	**CAN**

Test Results

General Comments : In soil, cyclohexanone has been classified as highly mobile based on its Koc value which is 1.823. If released to soil, it will be susceptible to significant leaching.

References

Primary Reference : **CLOGP***
CLOGP Program, Medicinal Chemistry Project, 3.4.1, (1986)

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

Study

End Point	:	**EVAPORATION**
Chemical Name	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Medium	:	**AQ** **SOIL**
Geographic Area	:	**CAN**

Test Results

Quantity	*Time*	*Comments on result*
50 %	**3.1 d**	Volatilization from shallow, rapidly moving water should be significant (estimated half-life of 3.1 days for model stream 1 m deep). However, volatilization from deeper, less rapidly moving bodies of water, such as lakes and ponds, will be much slower. Volatilization from soil is also expected. Volatilization will occur on soil surface.

General Comments : In water, one important environmental fate process for cyclohexanone appears to be volatilization. Based on vapour pressure (5 mmHg at 25C), cyclohexanone should exist almost entirely in the vapour phase (Henry's law constant = 1.2E-5 atm. m3. mol) in the ambient atmosphere. The following reference is also cited: Syracuse Research Corporation (Hazardous Substances Database).

References

Primary Reference : **HBEFE***
Handbook of Environmental Fate and Exposure Data for Organic Chemicals, 129-134, (1991)

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

Study

End Point : **DISTRIBUTION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
DOG			**IVN**		**M**		

Species/strain/system : Beagle dogs

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **18-21 d**
Dose / Concentration : **284 mg/kg BW/d**
Exposure comments : Intravenous injection for 18 or 21 days. Rate of administration varied form 35.5 to 4200 mg/minutes.

Test Results

Organ	*Quantity*	*Time*	*Comments on result*
PLSMA	**140-220 ug/mL**	**5-30 mi**	Peak cyclohexanol concentrations in plasma following an ivn (intravenous) bolus dose ranged from 140-220 ug/mL and occurred from 5-30 minutes after injection. Half-life was 6.6 minutes.
PLSMA			The apparent plasma elimination half-life of the metabolite was 99 minutes.

General Comments : There was neither accumulation of cyclohexanone or cyclohexanol nor evidence of enzyme induction on repeated administration.

References

Primary Reference : **TXAPA9**
Martis, L. et al. Toxicology and Applied Pharmacology, 53(3), 545-553, (1980)

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

Study

End Point : **BIOCONCENTRATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

(An)aerobic : **CAN**

Test Results

General Comments : The low Kow value (0.805) indicate that cyclohexanone is unlikely to bioconcentrate in aquatic organisms; therefore the potential for secondary poisoning is low.

References

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

Study

End Point : **METABOLISM**
Chemical Name : **Cyclohexane**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
DOG			**IVN**		**M**		

Species/strain/system : Beagle dogs

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **18-21 d**
Dose / Concentration : **284 mg/kg BW/d**
Exposure comments : Intravenous injection of 248 mg/kg for 18 or 21 days. Rate of administration varied from 35.5 to 4200 mg/minute.

Test Results

Organ	*Quantity*		*Time*	*Comments on result*
URINE	**74-100 %**	**TOT**		Metabolites: From 74-100% of the administered dose was converted to cyclohexanol, 50% of which was excreted in the urine as the glucuronide conjugate.

References

Primary Reference : **TXAPA9**
Martis, L. et al. Toxicology and Applied Pharmacology, 53(3), 545-553, (1980)

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

Study

End Point : **METABOLISM**
Chemical Name : **Cyclohexane**
CAS Number : **108-94-1**
Study type : **CASE**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
HUMAN			**IVN**	**JUV**			

Species/strain/system : Human newborns

Test Method and Conditions

Test method description : GLP: no data; measurement of urinary excretion of acids.

Exposure

Exposure comments : The probable source of exposure was cyclohexanone which was found as a contaminant of intravenous dextrose and the parenteral feeding administration set. Cyclohexanone (0.89 mg) was recovered from 150 mL of (see general comments)

Test Results

Organ	*Quantity*	*Time*	*Comments on result*
URINE			Metabolites: trans-1,2-cyclohexanediol was always most abundant, with small amounts of 1,3- and 1,4-cyclohexanediol , and sometimes, traces of cis-1,2-cyclohexanediol.
URINE			Glucuronide conjugates were not detected.

General Comments : dextrose pumped throught the infusion apparatus of 24 hours.

References

Primary Reference : **CLCHAU**
Mills, G. A. and Walker, V. Clinical Chemistry (Winston-Salem, North Carolina), 36(6), 870-874, (1990)

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

Study

End Point : **METABOLISM**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
MOUSE			**IPR**				
GPIG							

Species/strain/system : Mice and guinea pigs

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure comments : Dose not specified

Test Results

Organ	*Quantity*	*Time*	*Comments on result*
URINE			Metabolites: adipic acid was found in urine

References

Primary Reference : **AFSPA2**
Fillipi, E. Archivio di Farmacologia Sperimentale e Scienze Affini (Archives of Experimental Pharmacology and Related Sciences), 18, 178, (1914)

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

Study

End Point : **METABOLISM**
Chemical Name : **Cyclohexane**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Rabbits and rats

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure comments : Dose not specified

Test Results

Organ	*Quantity*	*Time*	*Comments on result*
URINE			Metabolites: trace amounts of hydroxycyclohexylmercapturic acid and cis-2-hydroxycyclohexylmercapturic acid were excreted in the urine.

References

Primary Reference : **XENOBH**

James, S. P. and Waring, R. H. Xenobiotica, the Fate of Foreign Compounds in Biological Systems, 1(6), 573-580, (1971)

Secondary Reference : **!SIDSP***

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

Study

End Point : **EXCRETION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
DOG			**IVN**		**M**		

Species/strain/system : Beagle dogs

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Dose / Concentration : **284 mg/kg BW/d**
Exposure comments : Intravenous injection of 284 mg/kg/day for 18 or 21 days. Rate of administration varied from 35.5 to 4200 mg/minute.

Test Results

Organ	*Quantity*		*Time*	*Comments on result*
URINE	**<1 %**	**TOT**		Urinary excretion data suggested that less than 1% of the dose was excreted as cyclohexanone and cyclohexanol. The half-life and clearance values for cyclohexanone were 81 minutes and 27.4 mg/kg/minute, respectively.

References

Primary Reference : **TXAPA9**
Martis, L. et al. Toxicology and Applied Pharmacology, 53(3), 545-553, (1980)

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

Study

End Point : **EXCRETION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **ACUTE**
Exposure Period : **6 h**
Dose / Concentration : **1405-5937 mg/m3 AIR**
Exposure comments : Inhalation exposure at time-weight concentrations of 350 or 1479 ppm for 6 hours.

Test Results

Organ	*Quantity*	*Time*	*Comments on result*
URINE		**72 h**	Total 72-hour urinary excretion volumes of free cyclohexanone and cyclohexanol were 16.16 and 14.55 ug, respectively, at the high dose.
URINE		**72 h**	By 72 hours, the excretion of conjugated cyclohexanol (primarily excreted during the first 24 hours) and another conjugated product, tentatively cyclohexanone, occurred at levels of 13, 306.15 and 546.69 ug, respectively, at the low dose and 72, 446.56 and 890.94 ug, respectively, at the high dose.

General Comments : The material was rapidly eliminated from the blood. Only trace quantities of free cyclohexanol were seen at 24 hours.

References

Primary Reference : **TEGLA***
Tegeris Laboratories Inc. EPA/OTS, 0TS0513079, (1987)

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

Study

End Point : **EXCRETION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure comments : Dose not specified

Test Results

Organ	*Quantity*		*Time*	*Comments on result*
URINE	**45-50 %**	**TOT**		From 45-50% of the administered dose was excreted in conjugation with glucuronic acid.
URINE	**66 %**	**TOT**		Rabbits given 248 mg/kg by stomach tube eliminated 66% of the dose as cyclohexylglucuronide in urine.

References

Primary Reference : **BIJOAK**
Elliot, T. H. et al. Biochemical Journal, 72, 193-200, (1958)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Dose / Concentration : **1620 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RAT			**ORL**			**LD50**	Oral LD50 for rats was reported as 1620 mg/kg body weight

References

Primary Reference : **AIHAAP**
Smyth, H. F. American Industrial Hygiene Association Journal, 30(5), 470-476, (1969)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Dose / Concentration : **1840 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RAT			**ORL**			**LD50**	Oral LD50 for rats was referred as 1840 mg/kg body weight.

General Comments : ALD for rats was reported as 1400 mg/kg (the same reference).

References

Primary Reference : **JIHTAB**
Diechmann, W. B. and LeBlanc, T. J. Journal of Industrial Hygiene and Toxicology, 25(9), 415-417, (1943)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Dose / Concentration : **1296 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RAT			**ORL**		**M**	**LD50**	Oral LD50 for male rats was established as 1296 mg/kg body weight.

General Comments : At 900 mg/kg all rats survived; at 1350 mg/kg 3/5 rats died; at 2025 and 5000 mg/kg all rats died. Chemical burns and blood in the stomach and intestinal tract were observed in animals that died. Animals that survived to the end of the 14-day observation period appeared normal.

References

Primary Reference : **UCCYDF**
Union Carbide Company. Union Carbide Co-operation

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Dose / Concentration : **1800 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	Medium	Spec.	Route	Lifestage	Sex	Effect	Effect Comments
RAT			**ORL**		**M**	**LD50**	Oral LD50 for male rats was established as 1800 mg/kg body weight.

General Comments : Animals exhibited acute hypnotic signs and labored respiration, followed by death; the intensity of the responses were dose-related.

References

Primary Reference : **TXAPA9**
Gupta, P. K. et al. Toxicology and Applied Pharmacology, 49(3), 525-533, (1979)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Dose / Concentration : **1400 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	Medium	Spec.	Route	Lifestage	Sex	Effect	Effect Comments
MOUSE			**ORL**			**LD50**	Oral LD50 for mice was established as 1400 mg/kg body weight.

General Comments : MTD for mice was established as 1200 mg/kg body weight; the same reference.

References

Primary Reference : **PZVOAD**
Novogorodova, L. G. et al. Promyshlennye Zagryazneniya Vodoemov (Industrial Pollutants of Reservoirs), 8, 101-111, (1967)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Dose / Concentration : **2070-2110 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
MOUSE			**ORL**		**M F**	**LD50**	Oral LD50 for male and female rats was established as 2070 and 2110 mg/kg body weight, respectively.

General Comments : Animals exhibited acute hypnotic signs and labored repiration, followed by death; the intensity of these responses were dose-related.

References

Primary Reference : **TXAPA9**
Gupta, P. K. et al. Toxicology and Applied Pharmacology, 49(3), 525-533, (1979)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Exposure Period : **4 h**
Dose / Concentration : **32080 mg/m3 AIR**

Test Method and Conditions

Test method description : Exposure: 8000 ppm; GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RAT			**IHL**			**LC50**	4-hour inhalation LC50 for rats was established as 32080 mg/m3 (8000 ppm).

References

Primary Reference : **NPIRI***
Anon. NPIRI Raw Materials Data Handbook. Physical and Chemical Properties, Fire Hazard and Health Data, 1, 18, (1974)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Species/strain/system : Rabbit
Dose / Concentration : **1000 mg/kg BW**
Exposure comments : Dermal exposure, 24-hour covered contact.

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RBT			**SKN**			**LD50**	Dermal LD50 for rabbits was established as 1000 mg/kg body weight.

References

Primary Reference : **AIHAAP**
Smyth, H. F. et al. American Industrial Hygiene Association Journal, 30(5), 470-476, (1969)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Species/strain/system : Rabbit
Dose / Concentration : **948 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RBT			**SKN**			**LD50**	Dermal LD50 for rabbits was reported as 948 mg/kg body weight.

References

Primary Reference : **AIHAAP**
Smyth, F. E. et al. American Industrial Hygiene Association Journal, 30(5), 470-476, (1969)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Dose / Concentration : **1130 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RAT			**IPR**			**LD50**	Intraperitoneal LD50 for rats was referred as 1130 mg/kg body weight.

General Comments : Animals exhibited acute hypnotic signs and labored respiration, followed by death; the intensity of these responses were dose-related.

References

Primary Reference : **TXAPA9**
Gupta, P. K. et al. Toxicology and Applied Pharmacology, 49(3), 525-539, (1979)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Dose / Concentration : **2170 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RAT			**SCU**			**LD50**	Subcutaneous LD50 for rats was referred as 2170 mg/kg body weight.

General Comments : Subcutaneous ALD was reported as 2100 mg/kg, the same reference.

References

Primary Reference : **JIHTAB**
Diechmann, W. B. and LeBlanc, T. J. Journal of Industrial Hygiene and Toxicology, 25(9), 415-417, (1943)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Dose / Concentration : **1230 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
MOUSE			**IPR**		**M**	**LD50**	Intraperitoneal LD50 for male mice was established as 1230 mg/kg body weight.

General Comments : No significant changes were observed in the phenobarbitol-induced sleeping time of male mice dosed with 48-240 mg/kg.

References

Primary Reference : **PHMCAA**
Gupta, P. K. Pharmacologist, 19(2), 182, (1977)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Species/strain/system : Rabbit
Dose / Concentration : **794-3160 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RBT			**SKN**			**LD50**	Dermal LD50 for rabbits was reported as >794, <3160 mg/kg body weight.

References

Primary Reference : **INBTL***
Industrial Bio-Test Laboratories EPA/OTS, (1975)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Dose / Concentration : **1500 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RAT			**ORL**			**LD50**	Oral LD50 for rats was established as 1500 mg/kg body weight.

General Comments : At 475 mg/kg to 950 mg/kg, rats only showed increased weight gain, no deaths. At 1900 or 3800 mg/kg, 4/5 or 5/5 rats died. Hemorrhage of lungs, congestion throughout abdominal viscera, and mottled liver were observed in gross pathology.

References

Primary Reference : **MELIN***
Mellon Institute EPA/OTS, (1967)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Species/strain/system : Guinea pig
Dose / Concentration : **930 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
GPIG			**IPR**		**M**	**LD50**	Intraperitoneal LD50 for male guinea pigs was established as 930 mg/kg body weight.

General Comments : When injected intraperitoneal with lethal doses, sleepiness and respiratory difficulties were observed prior to death.

References

Primary Reference : **TXAPA9**
Gupta, P. K. et al. Toxicology and Applied Pharmacology, 49(3), 525-533, (1979)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Species/strain/system : Rabbit
Dose / Concentration : **1540 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RBT			**IPR**			**LD50**	Intraperitoneal LD50 for rabbits was established as 1540 mg/kg body weight.

General Comments : When injected intraperitoneal with lethal doses, sleepiness and respiratory difficulties were observed prior to death. Cyclohexanone was a primary irritant when given intradermally to rabbits.

References

Primary Reference : **TXAPA9**
Gupta, P. K. et al. Toxicology and Applied Pharmacology, 49(3), 525-533, (1979)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Species/strain/system : Rabbit
Dose / Concentration : **950 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RBT			**SKN**			**LD50**	Dermal LD50 for rabbits was reported as 950 mg/kg body weight.

General Comments : 4/4 rabbits died within hours when exposed to 1900 mg/kg (2 mL/kg) under a covering. Severe skin necrosis and edema were observed.

References

Primary Reference : **MELIN***
Mellon Institute EPA/OTS, (1967)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Dose / Concentration : **674-2033 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	Medium	Spec.	Route	Lifestage	Sex	Effect	Effect Comments
RAT			**IPR**		**M F**	**LD50**	Intraperitoneal LD50 for male and female rats was established as 674 mg/kg and 2033 mg/kg body weight, respectively

General Comments : Subcutaenous ALD for rats was reported as 2100 mg/kg

References

Primary Reference : **MELIN***
Mellon Institute EPA/OTS, (1967)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Dose / Concentration : **1367 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	Medium	Spec.	Route	Lifestage	Sex	Effect	Effect Comments
RAT			**IPR**			**LD50**	Intraperitoneal LD50 for rats was reported as 1367 mg/kg body weight.

References

Primary Reference : **CRSBAW**
Caujolle, D. et al. Comptes-Rendus des Seances de la Societe de Biologie et de ses Filiales, 261(7), 1781-83, (1965)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Dose / Concentration : **1350 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
MOUSE			**IPR**			**LD50**	Intraperitoneal LD50 for mice was reported as 1350 mg/kg body weight.

General Comments : Non-lethal doses (unspecified) resulted in respiratory problems, hypothermia, restlessness, and aggression followed by torpor.

References

Primary Reference : **CRSBAW**
Caujolle, F. et al. Comptes-Rendus des Seances de la Societe de Biologie et de ses Filiales, 254, 2245-46, (1962)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Dose / Concentration : **2277 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	Medium	Spec.	Route	Lifestage	Sex	Effect	Effect Comments
MOUSE			**IPR**			**LD50**	Intraperitoneal LD50 for mice was established as 2277 mg/kg body weight.

References

Primary Reference : **CRSBAW**
Caujolle, D. et al. Comptes-Rendus des Seances de la Societe de Biologie et de ses Filiales, 261(7), 1781-83, (1965)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Dose / Concentration : **3460 mg/kg BW**

Test Method and Conditions

Test method description : GLP: no data

Test Results

Organism	Medium	Spec.	Route	Lifestage	Sex	Effect	Effect Comments
RAT			**ORL**			**LD50**	Oral LD50 for rats was established as 3460 mg/kg body weight.

References

Primary Reference : **VNIIVS**
Kan, P. T. et al. Vsesoyuznyi Nauchno-Issledovatel'skiiInstitut Veterinarnai Sanitarii, 39, 369-372, (1971)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Period : **1 h**
Dose / Concentration : **15254 mg/m3 AIR**

Test Results

Cats exposed for 1 hour to 3800 ppm (15254 mg/m3) cyclohexanone survived, but exhibited irritation, disturbances of equilibrium, and sleepiness.

References

Primary Reference : **TOHIS***
Gross, E. Toxicology Hygiene for Industrial Solvents, 254-307, (1943)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Species/strain/system : Guinea pig

Test Method and Conditions

Test method description : GLP: no data

Exposure

Dose / Concentration : **16057 mg/m3 AIR**

Test Results

Guinea pigs exposed to 4000 ppm(16057 mg/m3) for 10 minutes exhibited marked tearing and squinting. A 6-hour exposure caused narcosis, lacrimation, salivation, hypothermia, decreased respiratory and heart rates and opacity of the corneas. Recovery from narcosis was very slow.

References

Primary Reference : **XPHPAW**
Specht, H. et al. US Public Health Service Bulletin(176), (1940)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Species/strain/system : Guinea pig

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Period : **6 h**
Dose / Concentration : **15480 mg/m3 AIR**

Test Results

Guinea pigs exposed to 15480 mg/m3 in air for 6 hours showed no gross tissue changes attributable to the test compound after a 14-day observation period.

References

Primary Reference : **INBTL***
Industrial Bio-Test Laboratories EPA/OTS, (1975)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Species/strain/system : Guinea pig

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Period : **1 h**
Dose / Concentration : **15254 mg/m3 AIR**

Test Results

Guinea pigs exposed to cyclohexanone for 1 hour to 3800 ppm (15254 mg/m3) survived, but exhibited irritation, disturbances of equilibrium, and sleepiness.

References

Primary Reference : **TOHIS***
Gross, E. Toxicology Hygiene for Industrial Solvents, 254-307, (1943)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : The human sensory-irritation threshold for cyclohexanone was determined.

General Comments : The human sensory-irritation threshold for cyclohexanone: data showed nasal irritation at 0.28 mg/L of air (about 70 ppm). Eye, nasal, and throat irritations were seconded at 0.362 mg/L of air (about 90 ppm). The second exposure 2 weeks after the initial series indicated an increase in the sensory irritation threshold. In this series, at 0.547 mg/L of air (about 136 ppm), throat irritation was the only response recovered.

References

Primary Reference : **HAZLA***
Hazelton Laboratories America, Inc. Chemical and Biomedical Sciences Division, (1965)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : Concentrations of 184, 255, 282, 334, or 577 ppm cyclohexanone were used.
GLP: no data

Exposure

Exposure Period : **4 h**
Dose / Concentration : **738-2316 mg/m3 AIR**
General Comments : Mice exposed to 184, 255, 282, 334, or 577 ppm for 4 hours decreased their duration of immobility in a behavioral despoint swimming test when measured over 3 minutes by 20, 36, 47, 61 and 81%, respectively. LD50 (mean active atmospheric concentration associated with 50% decrease in immobility) was 308 ppm. A concentration of 184 ppm or higher resulted in CNS effects.

References

Primary Reference : **TXAPA9**
De Ceaurriz, J. et al. Toxicology and Applied Pharmacology, 67(3), 383-389, (1983)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **1-10 wk**
Frequency : **5 d/wk**
General Comments : At the end of one week, the LD50 was between 1/3rd and 1/4th of the acute LD50. After 10 weeks, the LD50 was about 1/10th the acute LD50. This indicated a significant cumulative toxicity.

References

Primary Reference : **TXAPA9**
Gupta, P. K. et al. Toxicology and Applied Pharmacology, 49(3), 525-533, (1979)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Period : **6 h**
Dose / Concentration : **15480 mg/m3 AIR**

Test Results

Mice exposed to 15480 mg/m3 in air for 6 hours showed no gross tissue changes attributable to the test compound after a 14-day observation period.

References

Primary Reference : **INBTL***
Industrial Bio-Test Laboratories EPA/OTS, (1975)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Dose / Concentration : **0.5 mL**
Exposure comments : Mice were injected with 0.5 mL of cyclohexanone.
General Comments : Mice injected with 0.5 mL of cyclohexanone exhibited excitation, paresis of hind quarters, marked hypothermia, muscular convulsions and death.

References

Primary Reference : **JIHTAB**
Treon, J.F. et al. Journal of Industrial Hygiene and Toxicology, 25(6), 199-214, (1943)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure comments : Mice were injected with lethal doses.
General Comments : When mice were injected intraperitoneal with lethal doses, sleepiness and respiratory difficulties were observed prior to death.

References

Primary Reference : **TXAPA9**
Gupta, P. K. et al. Toxicology and Applied Pharmacology, 49(3), 525-533, (1979)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Period : **1 h**
Dose / Concentration : **15254 mg/m3 AIR**

Test Results

Mice exposed for 1 hour to 3800 ppm (15254 mg/m3) survived, but exhibited irritation, disturbances of equilibrium, and spleenpiness.

References

Primary Reference : **TOHIS***
Gross, E. Toxicology Hygiene for Industrial Solvents, 254-307, (1943)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Dose / Concentration : **16040-32080 mg/m3 AIR**

Test Results

No rats died after a 4-hour exposure to 4000 ppm (16040 mg/m3). A 4-hour exposure to 8000 ppm (32080 mg/m3) resulted in deaths due to anesthesia.

References

Primary Reference : **AIHQA5**
Smyth, H. F., Jr. American Industrial Hygiene Association Quarterly, 17, 129-185, (1956)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Period : **4 h**
Dose / Concentration : **2986-6760 mg/m3 AIR**

Test Results

Rats exposed to 744 - 1684 ppm (2986 - 6760 mg/m3) for 4 hours exhibited an increase in activity of certain liver enzymes, including cytochrome P450 enzymes.

References

Primary Reference : **TOLED5**
Brondeau, M. T. et al. Toxicology Letters, 49, 69, (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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Period : **1-3 h**
Dose / Concentration : **15053 mg/m3 AIR**

Test Results

In an interlaboratory study, all animals survived in 6/6 laboratories exposing groups of 10 rats to an atmosphere of approximately 3750 ppm (15053 mg/m3) for 1 hour. In 5/6 laboratories, deaths occurred if exposure was continued for 3 hours.

References

Primary Reference : **ARTODN**
Klimishch, H. J. et al. Archives of Toxicology, 61, 318, (1988)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Dose / Concentration : **0.2 mL**
Exposure comments : Aspiration of cyclohexanone (0.2 mL).

Test Results

When 0.2 mL cyclohexanone was aspired, rats died. Cause was attributed to respiratory arrest or cardiac failure or both, rather than pulmonary edema, as indicated by rapid cessation of respiratory or cardiac action after dosing, lung weights and the macroscopic appearance of the lungs.

References

Primary Reference : **FADIU***
Fairleigh Dickinson University, (1968)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
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: no data

Exposure

Exposure Period : **6 h**
Dose / Concentration : **15480 mg/m3 AIR**

Test Results

Rats exposed to 15.48 mg/L of cyclohexanone in air for 6 hours showed no gross tissue changes attributable to the test compound after a 14-day observation period.

References

Primary Reference : **INBTL***
Industrial Bio-Test Laboratories EPA/OTS, (1975)

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	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
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: no data

Exposure

Exposure Type	:	**SHORT**
Exposure Period	:	**7 d** **6 mo**
Frequency	:	**4 h/d** **4 h/d**
Dose / Concentration	:	**6-11 mg/m3 AIR**
Exposure comments	:	7-day exposure at 0.011 and 0.006 mg/L for 4 hours per day and 6-month exposure at 0.011 and 0.006 mg/mL for 4 hours per day.
General Comments	:	"Toxicity effects of cyclohexanone at low concentrations can be additive".

References

Primary Reference	:	**21TEAA** Alfeeva, R. I. Materialy Nauchno-Prakticheskoi Konferentsii Molodykh Gigienistov i Sanitarnykh Vrachei (Materials of the Scientific-Practical Conference of Young Hygienists and Physicians), 11, 5-7, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **21 d**
Frequency : **5 x/wk**
Dose / Concentration : **142-284 mg/kg BW**
Exposure comments : Single doses of 142 and 284 mg/kg were administered by intravenous injection over a 21-day period.

Test Results

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

One dog died after 8 injections of 284 mg/kg; the death appeared to be the result of respiratory depression.

CNS	**FUNCT**				

Clinical signs of CNS toxicity were observed.

RBC	**STRUC**				
BMW	**STRUC**				
SPLN	**STRUC**				

Erythroid hyperplasia was the most significant finding in dogs. The bone marrow effects were accomplished by extramedullary hematopoiesis in the spleen.

References

Primary Reference : **TXAPA9**
Koeferl, M. T. et al. Toxicology and Applied Pharmacology, 37, 115, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
DOG			**IVN**			**4/GROUP**	

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **18-21 d**
Dose / Concentration : **284 mg/kg BW/d**
Exposure comments : Groups of dogs received the same dose level (284 mg/kg/day), however, dosing solution concentrations and rates of injection varied (group I - 0.6% solution at 75 mL/minute, group II - 0.6% solution at 5 mL/minute, group III - 0.75% solution at 75 mL/minute, group IV-0.75% solution at 5 mL/minute).

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
EYE	**EXOC**				
GIT	**EXOC**				
Lacrimation Salivation					
EYE	**FUNCT**				
EYE	**FUNCT**				
Scleral vasodilation Mydriasis					
URINE	**INCR**				
FECES	**INCR**				
Urination Defecation					
-	**BEHAV**				
CNS	**FUNCT**				
CNS	**MUSCL**				
Restlessness Stupor Ataxia					

GNS MUSCL
RESPI ACTIV
RESPI FUNCT
Occasional convulsive movements Hyperpnea Dyspnea

BLOOD BIOCH
RESPI FUNCT
Regimen I produced metabolic acidosis with an apparent respiratory component.

RBC DECR
BMW STRUC
Hemolysis Bone marrow hyperplasia

General Comments : The severity of the responses correlated well with maximal plasma concentrations obtained and conditions of administration as follows I > II > III > IV. This distinction was more apparent with repeated administration and affected pragnosis for recovery. The concentration administered was more critical than the rate of injection in producing localized tissue inflammation at the injection sites, hemolysis, secondary responses, bone marrow hyperplasia and extramedullary hematopoiesis. The rate of administration was important since at either concentration used, the group that received the compound at the faster rate had a greater response.

References

Primary Reference : **TXAPA9**
Koeferl, M. T. et al. Toxicology and Applied Pharmacology, 59(2), 215-229, (1981)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Dose / Concentration : **630 mg/kg BW**

Test Results

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

Intravenous LDLo for dogs was established as 630 mg/kg body weight.

General Comments : Dogs dosed with 630 mg/kg exhibited increased respiration rate, followed by decreased heart rate and blood pressure.

References

Primary Reference : **TSPMA6**
Caujolle, F. et al. Travaux de la Societe de Pharmacie de Montpellier, 14, 329-330, (1954)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
GPIG			**SKN**			**11**	**11**

Species/strain/system : Guinea pig

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **3 wk**
Frequency : **3 d/wk**
Dose / Concentration : **0.5 mL/ ANIMAL**
Exposure comments : 0.5 mL of neat material or saline was applied dermally and left uncovered. Animals were observed for 6 months.

Test Results

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

No statistically significant differences in occurrence/ development of cataracts between treated and salined group (7/11 animals affected in each group; the frequency for untreated animals was 20/93).

NEF

Cyclohexanone treatment produced no effect on growth or behavior during the treatment period.

General Comments : Authors concluded that cataracts observed were an inherent characteristic of the guinea pigs, making the animal an unsuitable model for the assessment of cataractogenic potential.

References

Primary Reference : **FAATDF**
Greener, Y. and Yorkilis, E. Fundamental and Applied Toxicology, 4, 1055, (1984)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
GPIG			**SKN** **SCU**				

Species/strain/system : Guinea pig

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **8 wk**
Exposure comments : Small, multiple doses were administered either topically or subcutaneously on the backs of guinea pigs.

Test Results

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

Cataracts produced in 29 of 120 animals. Lens changes as early as 8 weeks and as late as 6 months.

General Comments : OECD/SIDS Comment: "EPA (1984) indicates that guinea pigs are prone to spontaenous cataract development. Early data not confirmed in more recent studies".

References

Primary Reference : **XADRCH**
Rengstorff, R. H. et al. National Technical Information Service (AD Report), (1971)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
GPIG			**IVN** **SCU**			**12/GROUP**	

Test Method and Conditions

Test method description : Ophthalmic examinations were conducted monthly for 6 months; GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **3 wk**
Frequency : **3 x/wk**
Dose / Concentration : **0.5-5 mg/kg BW/d**
Exposure comments : Intravenous injection at 0.5 and 5 mg/kg/day and precutaneous injection at 0.5 mg/kg/day. Treatments were 3 times a week for 3 consecutive weeks.

Test Results

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

Cataracts and eye changes were found in all treated animals.

General Comments : The authors concluded that the guinea pig was not an appropriate model.

References

Primary Reference : **FAATDF**
Greener, Y. and Youkilis, E. Fundamental and Applied Toxicology, 4(6), 1055-66, (1984)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
GPIG			**SCU**			**6/GROUP**	

Species/strain/system : Guinea pig

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **20-40 d**
Dose / Concentration : **10-100 mg/kg BW/d**
Exposure comments : Groups of guinea pigs were given increasing doses of cyclohexanone: 10 mg/kg/day for 20 days, followed by 50 mg/kg/day for 40 days and 100 mg/kg/day for 20-40 days.

Test Results

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

After 100 days, none of the animals developed tumors.

References

Primary Reference : **MELAAD**
Ceresa, C. and Grazioli, C. Medicina del Lavoro, 42, 253-257, (1951)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Species/strain/system : Guinea Pig

Test Method and Conditions

Test method description : GLP: no data

Exposure

Dose / Concentration : **760 mg/kg BW**

Test Results

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

LDLo for guinea pigs was reported as 760 mg/kg body weight.

References

Primary Reference : **NTIS2***
National Technical Information Service, Conf-Number., AD-A066-307

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Guinea pig

Test Substance

Vehicle - Solvent : Saline

Test Method and Conditions

Test method description : GLP: yes

Exposure

Exposure Type : **SHORT**
Exposure Period : **3 wk**
Frequency : **3 d/wk**
Exposure comments : A 2% solution of neat cyclohexanone in saline, saline alone, or a positive control (DMSO) was applied to shaved back of guinea pigs.

Test Results

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

No compound related ophthalmoscopic changes. Ophthalmosocpic changes were noted in all groups including saline controls However, the type of changes (lens vacuoles) were identical regardless of material tested (including control) and incidences were also comparable.

References

Primary Reference : **#WIRLA***
Wil Research Laboratory EPA/OTS, (1983)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	Medium	Specification	Route	Lifestage	Sex	Number exposed	Number controls
GPIG			**SKN**			**12**	**500**

Species/strain/system : Guinea pig

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **8 wk**
Frequency : **3 d/wk**
Dose / Concentration : **0.5 mL /ANIMAL**

Test Results

Organ	Effect	Rev.	OnSet	Sex	Affected in Exposed - Controls
EYE	**STRUC**				**3/12 0/500**

3 of 12 guinea pigs developed cataracts 5 months after treatment of 500 untreated controls, none developed cataracts.

General Comments : OECD/SIDS Comment: "EPA (1984) indicates that guinea pigs are prone to spontaneous cataract development. Early data not confirmed in more recent studies".

References

Primary Reference : **OVSCET**
Rengstorff, R. H. et al. Optometry and Vision Science. Former Titles : American Journal of Optometry and Physiological Optics (until 1974) : American Journal of Optometry and Archives of American Academy of Optometry, 49, 308, (1972)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Exposure

Exposure Period : **3-5 mi**
Dose / Concentration : **200-301 mg/m3 AIR**
Exposure comments : Humans exposed to 50 or 75 ppm cyclohexanone.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
EYE	**IRRIT**		**3-5 mi**		
NOSE	**IRRIT**				

Humans exposed for 3-5 minutes found 50 and 75 ppm irritating to the eyes, nose and throat. A concentration of 25 ppm was unobjectionable.

General Comments : Cyclohexane is a strong irritant and a narcotic agent.

References

Primary Reference : **JIHTAB**
Nelson, K. W. et al. Journal of Industrial Hygiene and Toxicology, 25, 282-285, (1943)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **CASE**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
HUMAN			**ORL**		**M**		

Exposure

Exposure comments : A man ingested a mixture providing approximately 39 g cyclohexanone (about 640 mg/kg) as well as 28 g methyl ethyl ketone, 18 g acetone and 15 g polyvinyl chloride.

Test Results

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

A man suffered anesthesia and coma

General Comments : It is not possible to conclude that cyclohexanone alone was responsible for the observed effects.

References

Primary Reference : **CTOXAO**
Sakata, M. et al. Clinical Toxicology, 27, 67, (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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
HUMAN			**IHL**			**23**	

Test Method and Conditions

Test method description : A battery of psychological tests were conducted.

Exposure

Exposure Type : **OCC**

Exposure comments : Workers occupationally exposed for at least 4 years (and possibly up to a mean of 21 years) to a mixture of solvents. This included cyclohexanone at concentrations of 150-630 mg/m3 (38-158 ppm) and acetone, toluene and methyl ethyl ketone at concentrations ranging from 50-600 mg/m3.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
CNS	**FUNCT**				**23**

Some evidence of impaired cognitive performance (e.g., poorer memory and comprehension).

General Comments : It is not possible to conclude that cyclohexanone alone was responsible for the observed effects.

References

Primary Reference : **NETEEC**
Milanovic, L. et al. Neurotoxicology and Teratology, 12, 657, (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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Species/strain/system : Female workers

Exposure

Exposure Type : **OCC**

Exposure comments : Daily contact with cyclohexanone

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
-	**NEF**			**F**	
-	**SUBJ**				
RBC	**DECR**				

No ill effects except drowsiness or hypochromic anemia in female workers were observed when in daily contact with cyclohexanone.

References

Primary Reference : **BJOPAL**
Carpenter, C. P. and Smyth, H. P. Jr. British Journal of Opthalmology, 29, 1363-72, (1946)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Monkey

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **21 d**
Frequency : **5 x/wk**
Dose / Concentration : **142-284 mg/kg BW**
Exposure comments : Single doses of 142 and 284 mg/kg were administered over a 21-day period.

Test Results

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

After the first injection of 284 mg/kg, one monkey died; the death appeared to be the result of respiratory depression.

CNS	**FUNCT**				

Clinical signs of CNS toxicity were observed.

References

Primary Reference : **TXAPA9**
Koeferl, M. T. et al. Toxicology and Applied Pharmacology, 37, 115, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
MONKY			**IHL**			**1**	

Species/strain/system : Rhesus monkey

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **10 wk**
Frequency : **6 h/d**
5 d/wk
Dose / Concentration : **2432 mg/m3 AIR**
Exposure comments : 10-week exposure at a concentration of 608 ppm cyclohexanone.

Test Results

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

Conjunctival irritation

HEART	**STRUC**				
LUNG	**STRUC**				
LIVER	**STRUC**				

Extensive injury to heart muscle, lungs, liver and kidney were observed.

KIDNY	**STRUC**				
	NEF				

No hematological or pathological changes were observed.

General Comments : Author's remark: "Extensive injury to heart muscle, lungs, liver and kidney may not be attributable to exposure because the animal was suffering from bronchopulmonary injection".

References

Primary Reference : **JIHTAB**
Treon, J. F. et al. Journal of Industrial Hygiene and Toxicology, 25(8), 323-347, (1943)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : Not specified

Exposure

Dose / Concentration : **1300 mg/kg BW**

Test Results

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

Oral LDLo for mouse was established as 1300 mg/kg body weight.

References

Primary Reference : **AEXPBL**
Archiv fuer Experimentelle Pathologie und Pharmakologie, 50, 199, (1903)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Period : **90 mi**
Dose / Concentration : **19200 mg/m3 AIR**

Test Results

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

Inhalation LCLo for mice amounted 19200 mg/m3/90 minutes.

General Comments : Mice exposed to 19200 mg/m3 died within 90.9 minutes (mean). Histological examination showed acute congestion and edema of the lungs, focal to diffuse hemorrhage of the lung parenchyma, and hyperplasia in the spleen.

References

Primary Reference : **TXAPA9**
Gupta, P. K. et al. Toxicology and Applied Pharmacology, 49(3), 525-533, (1979)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Dose / Concentration : **1300 mg/kg BW**

Test Results

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

LDLo for mice was reported as 1300 mg/kg body weight.

References

Primary Reference : **AEXPBL**
Archiv fuer Experimentelle Pathologie und Pharmakologie, 50, 199, (1903)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **25 d**
Dose / Concentration : **280 mg/kg BW/d**

Test Results

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

No adverse effects were observed except decreased work efficiency.

References

Primary Reference : **PZVOAD**
Novogorodova, L. G. et al. Promyshlennye Zagryazneniya Vodoemov (Industrial Pollutants of Reservoirs), 8, 101-111, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **13 wk**
Dose / Concentration : **400-47000 mg/L AQ/DRINK**
Exposure comments : Mice were exposed via drinking water to concentrations of 400, 2300, 6500, 13000, 25000, 34000 or 47000 ppm cyclohexanone for 13 weeks.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
	DEATH				**9/20**

47000 ppm was toxic to both sexes; 6/10 males and 3/10 females died during the treatment period.

	DEATH	**M**	**1/10**

34000 ppm was lethal to 1/10 male mice.

At treatment levels less than 47000 ppm, pathological changes were minimal.

LOAEL

LOAEL was determined to be 25000 ppm in females and 13000 ppm in males, based on weight gain data.

References

Primary Reference : **JNCIAM**
Lijinsky, W. and Kovatch, R. M. Journal of the National Cancer Institute (United States), 77(4), 941-949, (1986)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Test Method and Conditions

Test method description : Exposure: 2000 ppm; GLP: no data

Exposure

Exposure Period : **4 h**
Dose / Concentration : **8020 mg/m3 AIR**

Test Results

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

4-hour Acute Lethal Concentration (ALC) for rats was established as 8020 mg/m3 (2000 ppm).

General Comments : Rats exposed to a concentrated vapor of cyclohexanone died within 30 minutes. 1/6 rats exposed to 2000 ppm for 4 hours died; survivors were anesthetized within 2.5 hours. 6/6 rats exposed to 4000 ppm for 4 hours died. Gross pathology of non-survivors showed dark red color in liver, kidneys, and blood.

References

Primary Reference : **AIHAAP**
Smyth, H. F. et al. American Industrial Hygiene Association Journal, 30(5), 470-476, (1969)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Wistar and Gunn rats

Test Method and Conditions

Test method description : Parameters evaluated were: daily observations, weights, ophthalmology, hematology, clinical chemistry, gross pathology and histophathology. GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **28 d**
Dose / Concentration : **50-100 mg/kg BW/d**
Exposure comments : Groups of rats received 50 and 100 mg/kg/day of cyclohexanone in a constant dose volume of 20 mL/kg for 28 consecutive days.

Test Results

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

Subtle signs of CNS effects were observed in one strain at 100 mg/kg/day.

	NEF				

No other adverse effects were noted in either strain.

References

Primary Reference : **JTEHD6**
Greener, Y. et al. Journal of Toxicology and Environmental Health, 10(3), 385-396, (1982)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RAT			**IVN**	**3d**		**10/GROUP**	

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **18 d**
Dose / Concentration : **<25-25 mg/kg BW**
Exposure comments : Doses of up to 25 mg/kg were administered to groups of rats for 18 consecutive days.

Test Results

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

No effects seen

References

Primary Reference : **TJADAB**
Greener, Y. et al. Teratology, Journal of Abnormal Development, 35(2), 187-194, (1987)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **6-13 wk**
Frequency : **2 x/d**
5 d/wk
Dose / Concentration : **200 mg/kg BW**
Exposure comments : One group of rats received intraperitoneal injections of 200 mg/kg for a maximum of 6 weeks. Another group received the same doses for 13 weeks.

Test Results

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

No evidence of damage to peripheral nervous system, as measured by electrophysiological and neuropathological tests conducted during and after exposure.

References

Primary Reference : **MELAAD**
Perbellini, L. et al. Medicina del Lavoro, 72(2), 102-106, (1981)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RAT			**IVN**			**10/GROUP**	

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **3 wk**
Frequency : **5 d/wk**
Dose / Concentration : **142-568 mg/kg BW/d**
Exposure comments : Groups of rats were administered injections of 142, 254 and 568 mg/kg/day.

Test Results

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

Immediately after the first injection of 568 mg/kg/day, 9/10 rats died.

NEF

There was 100% survival in the 254 mg/kg/day-treated group.

CNS FUNCT
SKIN STRUC

Clinical signs of CNS toxicity and tissue damage at the injection site occurred.

References

Primary Reference : **TXAPA9**
Koeferl, M. T. et al. Toxicology and Applied Pharmacology, 37, 115, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **3 mo**
Dose / Concentration : **0.01-0.05 mg/kg BW**
Exposure comments : Exposure to 0.01 or 0.05 mg/kg body weight cyclohexanone.

Test Results

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

No effects at 0.01 mg/kg.

CNS	**FUNCT**				

Conditioned reflexes were affected at 0.05 mg/kg.

References

Primary Reference : **PZVOAD**
Novogorodova, L. G. et al. Promyshlennye Zagryazneniya Vodoemov (Industrial Pollutants of Reservoirs), 8, 101-111, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **6 mo**
Exposure comments : Combined oral and inhalation exposure. Rats were dosed with 0.005 mg/kg/day and simultaneously exposed to 1.5 ppm vapor (0.066 mg/L) for 4 hours/day.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
CNS	**FUNCT**				
Increased latent period of conditioned reflexes					
BLOOD	**CHNG**				
Changes in blood morphology					
LIVER	**CHNG**				
Changes in liver functions					

References

Primary Reference : **GISAAA**
Pavlenko, S. M. Gigiena i Sanitariya (Hygiene and Sanitary), 37, 40, (1972)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **7 mo**
Exposure comments : Combined oral and inhalation exposure.

Test Results

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

CNS effects (details not specified).

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

CNS excitation during first 1.5 - 2 months, followed by inhibition processes (2-3 months) and normalisation (4-5 or 6-7 months).

References

Primary Reference : **GISAAA**
Pavlenko, S. M. and Guseva, V. A. Gigiena i Sanitariya (Hygiene and Sanitary)(1), 15-20, (1973)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **25 wk**
Dose / Concentration : **190-6500 mg/L AQ/DRINK**
Exposure comments : 25 weeks exposure via drinking water. Concentrations up to 6500 ppm were used.

Test Results

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

No effects on survival were observed.

BW	**DECR**
BW	**NEF**

Decreased weight gain was observed at 6500 ppm but not at 4700 ppm.

NEF

No histopathological changes were observed in the tissues examined.

LOAEL
NOAEL

LOAEL = 6500 ppm; NOAEL = 4700 ppm

References

Primary Reference : **JNCIAM**
Lijinsky, W. and Kovatch, R. M. Journal of the National Cancer Institute (United States), 77(4), 941-949, (1986)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
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: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **81 d**
Dose / Concentration : **0.042 mg/m3 AIR**
Exposure comments : Exposure to a concentration of 0.01 ppm (0.042 mg/m3) for 81 days.

Test Results

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

No observable changes in muscular chronaxy, cholinesterase activity, sulfhydryl blood concentrations or ascorbic acid concentration in the brain and kidney.

References

Primary Reference : **GISAAA**
Dobrinskii, A. A. Gigiena i Sanitariya
(Hygiene and Sanitary), 29(12), 8-13, (1964)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Period : **5-20 TDP**
Frequency : **7 h/d**
Dose / Concentration : **400-2000 mg/m3 AIR**
Exposure comments : Pregnant rats were exposed to cyclohexanone on days 5-20 of gestation to concentrations of 0, 100, 250 or 500 ppm for 7 hours/day.

Test Results

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

Grey mottling of lungs in several animals in highest two levels.

BW	**RETAR**				

Evidence of reduced weight gain in all groups.

	NOAEL				

NOAEL = 100 ppm (based on grey mottling of lungs at 250 and 500 ppm).

References

Primary Reference : **TIHEEC**
Samimi, B. S. et al. Toxicology and Industrial Health, 5, 1035, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : Olfactory bulbs were examined for development of spines on external dendrites of granule cells; GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **3-7 wk**
Exposure comments : Exposures for 3-7 weeks from post-natal day 1. Pups were exposed to either cyclohexanone vapors, deodorized air or rat odour.

Test Results

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

After 3 weeks exposure, deodorized air reduced spine density on medial and lateral side of bulb; cyclohexanone decreased spine density on lateral side only. Reductions were evident in other animals at 7 weeks exposure.

With all treatments spine density was maximal at postnatal day 21 and decreased markedly during the next month.

References

Primary Reference : **DBRRDB**
Rehn, B. et al. Developmental Brain Research, 40(1), 143-147, (1988)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RAT			**IHL**			**5**	

Test Method and Conditions

Test method description : Olfactory bulbs were examined; GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **10 wk**
Dose / Concentration : **32 mg/m3 AIR**
Exposure comments : Continuous exposure for 10 weeks at a concentration of 8 ppm(32 mg/m3) cyclohexanone.

Test Results

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

Growth and overt behavior normal.

SENSE	**CHNG**

Adult rats had significantly smaller mitral cells than controls.

General Comments : Authors suggest that exposure to single predominant odor has two effects: it directly deprives many mitral cells of excitation, and (via intraneurons) it reduces activity in others by inhibiting their excitatory afferents.

References

Primary Reference : **DBRRDB**
Pahuber, H. et al. Developmental Brain Research, 31(2), 307-311, (1987)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
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: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **100 d**
Frequency : **5-6 h/d**
Dose / Concentration : **2000 mg/m3 AIR**

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
LUNG	**FUNCT**				
SERUM	**BIOCH**				

Hypoxia and decreases in copper, iron and nickel levels in lungs and blood serum.

References

Primary Reference : **29LJA7**
Voronin, A. P. and Usol'tseva, V. A. Sovremennye Problemy Biokhimii Dykhaniya i Klinika, Materialy Vsesoyuznoi Konferentsii (Current Problems of the Biochemistry of Respiration and its Clinical Aspects, Materials of the All-Union Conference), 1, 356-359, (1971)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: yes

Exposure

Exposure Type : **SHORT**
Exposure Period : **3-13 wk**
Exposure comments : 3- or 13-week dermal exposure to neat cyclohexanone. Additional group received 2% cyclohexanone for 13 weeks. Animals were observed for 6 months.

Test Results

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

The only cyclohexanone-related effect noted was skin irritation at the application site.

CNS	**BEHAV**	**RV**

Transient lethargy was observed immediately post-dosing.

NEF

No effects were noted on body weight and hematology.

NEF

No treatment-related cataracts or less vacuole formation were found.

References

Primary Reference : **TOLED5**
Mayhew, D. A. et al. Toxicology Letters, 31 Suppl., 51, (1986)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Exposure

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

Test Results

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

Lowest Lethal Dose (ALD) for rabbits was refered as 1600 mg/kg body weight.

General Comments : At 900-1600 mg/kg narcosis was seen. Doses from 10000 - 19000 mg/kg were fatal to 3 rabbits in 18-39 hours. Pathology of dead animals showed damage to lungs, hepatic cirrhosis, and nephritis. Widespread blood vessel damage occurred in heart muscle, liver, spleen, and kidneys; and severe damage occurred in lungs.

References

Primary Reference : **JIHTAB**
Treon, J. F. et al. Journal of Industrial Hygiene and Toxicology, 25(6), 199-214, (1943)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Test Subject

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

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Exposure

Dose / Concentration : **10200 mg/kg BW**
Exposure comments : Applications of undiluted cyclohexanone to clipped, uncovered skin.

Test Results

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

LDLo was 10200 mg/kg.

General Comments : Rabbits died when exposed to a few applications of undiluted cyclohexanone (10200-23000 mg/kg). Results ranged from slight anesthesia to marked hypothermia, convulsions, narcosis and death.

References

Primary Reference : **JIHTAB**
Treon, J. F. et al. Journal of Industrial Hygiene and Toxicology, 25(6), 199-214, (1943)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RBT			**IVN SCU**			**12/GROUP**	

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : Ophthalmic examinations were conducted monthly for 6 months; GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **3 wk**
Frequency : **3 x/wk**
Dose / Concentration : **0.5-5 mg/kg BW/d**
Exposure comments : Intravenous injection at 0.5 and 5 mg/kg/day and precutaneous injection at 0.5 mg/kg/day. Treatments were 3 times a week for 3 consecutive weeks.

Test Results

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

No effects on growth, behavior or eye structure during a 6- month observation period were noted.

References

Primary Reference : **FAATDF**
Greener, Y. and Youkilis, E. Fundamental and Applied Toxicology, 4(6), 1055-66, (1984)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RBT			**IHL**			**4/GROUP**	

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **3-10 wk**
Frequency : **6 h/d**
5 d/wk
Dose / Concentration : **760-12328 mg/m3 AIR**
Exposure comments : 10-week exposure at 190, 309, 773, or 1414 ppm for 6 hours/day, 5 days/week; 3-week exposure at 3082 ppm, 6 hours/day, 5 days/week.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
BW	**DECR**				
ANS	**TEMP**				
CNS	**MUSCL**				

Animals at 3082 ppm lost weight, showed decreased body temperature and incoordination.

DEATH

At 3082 ppm 50% mortality was observed.

EAR **CIRC**
GIT **EXOC**
EYE **IRRIT**

At 3082 and 1414 ppm, rabbits had distended ear veins, excess salivation, and conjunctival irritation throughout, the daily exposures.

EYE **IRRIT**

Less ocular irritation was observed in 309 ppm and 773 ppm groups.

NEF

Exposure at 190 ppm for 300 hours produced no behavioral changes and induced barely demonstrable degenerative changes in livers and kidneys.

NOAEL

NOAEL = 190 ppm (762 mg/m3)

References

Primary Reference : **JIHTAB**
Treon, J. F. et al. Journal of Industrial Hygiene and Toxicology, 25(8), 323-347, (1943)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RBT			**SKN**			**3**	

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **5 d**
Dose / Concentration : **10-55 mL /ANIMAL**
Exposure comments : 10 mL of cylohexanone was applied daily to shaved belly for a total exposure over five days of 47000 mg/kg. Daily treatments consisted of 2x5 mL applications, given at one-half hour intervals; after 1 hour of contact, material was removed by washing. 2 additional animals were treated with 30 or 50 mL of cyclohexanone.

Test Results

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

Animal treated with 10 mL of cyclohexanone for 5 days showed CNS effects (tremors, athetoid movements, and hypothermia). Death occurred 18 hours after last treatment.

SKIN	**DEATH**				
	IRRIT				

The rabbit treated with 55 mL died within 4 hours. Treated area was "greatly irritated".

References

Primary Reference : **JIHTAB**
Treon, J. F. et al. Journal of Industrial Hygiene and Toxicology, 25(6), 199-214, (1943)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RBT			**SKN**			**12**	

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **3 wk**
Frequency : **3 d/wk**
Dose / Concentration : **0.5 mL /ANIMAL**
Exposure comments : 0.5 mL of cyclohexanone was applied dermally, uncovered, to rabbits. Animals were observed for 6 months.

Test Results

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

No effects on growth, behavior or eye structure were observed.

References

Primary Reference : **FAATDF**
Greener, Y. J. and Yorkilis, E. Fundamental and Applied Toxicology, 4, 1055, (1984)

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

Study

End Point : **CARCINOGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	Medium	Specification	Route	Lifestage	Sex	Number exposed	Number controls
MOUSE			**ORL**		**M**	**47-52**	
					F	**41-52**	

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **LONG**
Exposure Period : **104 wk**
Dose / Concentration : **6500-25000 mg/L AQ/DRINK**
Exposure comments : Male: 4752/group; female: 41-52/group. Two-year exposure via drinking water at concentrations of 0, 6500, or 13000 ppm for males and 0, 6500, 1300 or 25000 ppm for females.

Test Results

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

Survivality of females at 13000 and 25000 ppm was poor. Fewer than 20% at 25000 ppm and approximately 50% at 13000 ppm were alive at 75 weeks. 80% of the males in the 13000 ppm group were alive at week 90.

LYMPH	**CAR**			**F**	

A increase in the incidence of malignant lymphoma was noted in the females treated with 6500 ppm but not at 13000 ppm.

LIVER	**NEO**			**M**	

Increased hepatocellular neoplasms were observed in males at 6500 ppm but not at 13000 ppm.

	NEO			**M**	
	CAR				

In males, combined adenomas and carcinomas were increased at the low but not the high dose.

LIVER	**CHNG**			**M**	
LUNG	**CHNG**				

The most significant histologcical findings in male mice involved proliferative lesions of liver and lung.

	LOAEL				
	-				
	NOAEL				

LOAEL = 13000 ppm (based on 18% decrease in body weight in males, and decreased survival in females). NOAEL = 6500 ppm.

General Comments : Lack of a dose response for increased numbers of tumours already having a high background incidence prompted the authors to conclude that evidence of carcinogenicity was marginal and the effects, if any, were weak.

References

Primary Reference : **JNCIAM**
Lijinsky, W. and Kovatch, R. Journal of the National Cancer Institute (United States), 74(4), 941-949, (1986)

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

Study

End Point : **CARCINOGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RAT			**ORL**		**M**	**52/GROUP**	**52**
					F	**52/GROUP**	**52**

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **LONG**
Exposure Period : **104 wk**
Dose / Concentration : **3300-5600 mg/L AQ/DRINK**
Exposure comments : Two year exposure via drinking water at concentrations of 0, 3300 or 6500 ppm.

Test Results

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

No marked effects on survival were observed.

BW	**RETAR**		

A dose-related decrease in weight gain was evident in both male and female rats.

Many neoplasms were seen in the treated animals; however, few neoplasms differed in incidences from the controls.

ADREN	**NEO**	**M**

Only adenoma of the adrenal cortex in males at 3300 ppm occured a statistically higher incidence than the controls. In the absence of a dose response, it is doubtful that this was a carcinogenic effect.

LOAEL

LOAEL = 3300 ppm (based on ca. 13% decrease in body weight).

General Comments : Lack of a dose response for increased numbers of tumors already having a high background incidence prompted the authors to conclude that evidence of carcinogenicity was marginal and the effects, if any, were weak.

References

Primary Reference : **JNCIAM**
Lijinsky, W. and Kovatch, R. M. Journal of the National Cancer Institute (United States), 77(4), 941-949, (1986)

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

Study

End Point : **MUTAGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Salmonella typhimurium strains TA1535, TA1537, TA98

Test Method and Conditions

Test method description : Ames Test; GLP: no data

Exposure

Exposure comments : Test was performed 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 : **TXCYAC**
Florin, I. et al. Toxicology, 15(3), 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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

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

Test Method and Conditions

Test method description : Ames Test; GLP: no data

Test Results

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

Positive results without metabolic activation.

References

Primary Reference : **MUREAV**
Massoud, A. et al. Mutation Research, 74(3), 174, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Bacillus subtilis

Test Method and Conditions

Test method description : Unspecified; GLP: no data

Test Results

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

Positive results without metabolic activation. Mutants obtained required different amino acids, and leucine-requiring mutants had the maximum percentage of all. Functional mutants were obtained for leucine, methionine, phenylalanine, uracil and tryptophan; a large number of

revertants also appeared.

CELL

Severe effects on survival were shown.

References

Primary Reference : **MUREAV**
Massoud, A. et al. Mutation Research, 74(3), 174, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Escherichia coli

Test Method and Conditions

Test method description : E. coli, polA assay; GLP: no data

Test Results

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

DNA damage occurred

References

Primary Reference : **CMMUAO**
Rosenkranz, H. S. and Leifer, Z. Chemical Mutagens. Principles and Methods for their Detection, 6, 109, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
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 : Gene mutation at the HGPRT locus; GLP: no data

Exposure

Exposure Period : **1 h**
Dose / Concentration : **2.5-12.5 uL/mL**

Test Results

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

Positive result without metabolic activation.

CELL

In a separate experiment, exposure to 6-10 uL/mL proved cytotoxic.

References

Primary Reference : **ENMUDM**
Aaron, C. S. et al. Environmental Mutagenesis, 7 Suppl.3, 60-61, (1985)

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

Study

End Point : **MUTAGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
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: no data

Exposure

Exposure Period : **1 h**
Dose / Concentration : **2.5-12.5 uL/mL**
Exposure comments : Cells were exposed for one hour at 2.5 to 12.5 uL/mL with and without metabolic activation.

Test Results

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

Positive genotoxic effects without metabolic activation.

NEF

Negative effects with metabolic activation.

References

Primary Reference : **ENMUDM**
Aaron, C. S. et al. Environmental Mutagenesis, 7 Suppl.3, 60-61, (1985)

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

Study

End Point : **MUTAGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
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 Assay (for detection of chromosome aberrations); GLP: no data

Exposure

Exposure Period : **1 h**
Dose / Concentration : **2.5-12.5 uL/mL**
Exposure comments : Test was performed with and without metabolic activation.

Test Results

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

No genotoxic effects with and without metabolic activation.

References

Primary Reference : **ENMUDM**
Aaron, C. S. et al. Environmental Mutagenesis, 7 Suppl.3, 60-61, (1985)

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

Study

End Point : **MUTAGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
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 : Cytogenetic Assay for Chromosomal Aberrations; GLP: no data

Exposure

Dose / Concentration : **9.8-980 mg/L**
Exposure comments : Concentrations of 10-2 M, 10-3 M and 10-4 M were used.

Test Results

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

Achromatic regions, breaks, and deletions were observed in human lymphocytes.

References

Primary Reference : **DIAEAZ**
Collin, V. P. Diabetes, 19(4), 215-221, (1971)

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

Study

End Point : **MUTAGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
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 : Cytogenetic Assay for Chromosomal Aberrations; GLP: no data

Exposure

Dose / Concentration : **0.005-0.1 mg/L**
Exposure comments : Concentrations of 0.005, 0.01 and 0.1 mg/L were tested.

Test Results

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

The yield of chromosome aberrations (single fragments) showed a 2.2 - 4 fold increase compared with the spontaneous frequency of aberrations.

References

Primary Reference : **GISAAA**
Dyshlovoi, V. D. et al. Gigiena i Sanitariya (Hygiene and Sanitary), 46(5), 76-77, (1981)

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

Study

End Point : **MUTAGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Human cells

Test Method and Conditions

Test method description : Unscheduled DNA synthesis; GLP: no data

Test Results

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

Negative results for genotoxicity with and without metabolic activation.

References

Primary Reference : **!NTPSE***
National Toxicology Program. Technical Report Series, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Human fibroblasts

Test Method and Conditions

Test method description : Unscheduled DNA synthesis; GLP: no data

Exposure

Exposure Period : **3 h**
Dose / Concentration : **<9.48-9.48 mg/mL**
Exposure comments : Exposures for 3 hours at concentrations up to 9.48 mg/mL.

Test Results

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

Negative results for genotoxicity with and without metabolic activation.

References

Primary Reference : **TOLED5**
Pevocco, P. et al. Toxicology Letters, 16(1-2), 69-76, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Drosophila melanogaster

Test Method and Conditions

Test method description : Sex-Linked Recessive Lethal Assay; GLP: no data

Exposure

Dose / Concentration : **200-1600 mg/m3 AIR**
Exposure comments : Flies were exposed to 50 ppm for 7 hours or 400 ppm for 40 minutes.

Test Results

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

Negative effects of genotoxicity. Signs of toxicity were evident at 400 ppm.

References

Primary Reference : **#XPBRCA**
McGregor, D. B. National Technical Information Service (PB number), PB-83-127571, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Drosophila melanogaster

Test Method and Conditions

Test method description : Phenocopies of tumor mutations; GLP: no data

Exposure

Exposure Period : **3 d**
Exposure comments : Exposure of male fruit flies to 0.1 mL cyclohexanone/100 mL for 3 days.

Test Results

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

No genotoxic effects

General Comments : A study of larvae reported the production of phenocopies of tumor mutations; however, other studies observed no effects.

References

Primary Reference : **TGANAK**
Goncharova, R. I. Tsitologiya i Genetika (Cytology and Genetics), 137-142, (1970)

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

Study

End Point : **MUTAGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Drosophila melanogaster

Test Method and Conditions

Test method description : Sex-Linked Recessive Lethal Assay; GLP: yes

Test Results

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

Negative result. Male sterility was only slightly increased over the controls.

References

Primary Reference : **WISUM***
Wisconsin University

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

Study

End Point : **MUTAGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : Cell transformation; GLP: no data

Test Results

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

Cyclohexanone did not cause behavior of cells to move closely resemble the cancerous state. (It is not clear if metabolic activation was used).

References

Primary Reference : **JNCIAM**
Lijinsky, W. and Kovatch, R. M. Journal of the National Cancer Institute (United States), 77(4), 941-949, (1986)

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

Study

[redacted]

End Point : **MUTAGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : L51784 th+/tk- mouse lymphoma cells

Test Method and Conditions

Test method description : Forward mutation assay; GLP: no data

Exposure

Exposure comments : Concentrations up to 5000 ug/mL were used.

Test Results

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

No significant reductions in survival or increases in mutant fractions occurred at concentration up to 5000 ug/mL with and without metabolic activation.

References

Primary Reference : **EMMUEG**
McGregor, D. B. et al. Environmental and Molecular Mutagenesis, 12, 85-154, (1988)

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

Study

[redacted]

End Point : **MUTAGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : Dominant Lethal Assay; GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **5 d**
Frequency : **7 h/d**
Dose / Concentration : **200-1600 mg/m3 AIR**
Exposure comments : Exposure to cyclohexanone vapors of 50 or 400 ppm for 5 days.

Test Results

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

No effects on pregnancy frequency, numbers of corpora lutea and implantations, or the frequency of early deaths.

General Comments : Noted were some problems relating to reproducibility, the response of the positive indicators, and viral infection of the animals.

References

Primary Reference : **#XPBRCA**
McGregor, D. B. National Technical Information Service (PB number), PB83-127571, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : Sperm morphology; GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **5 d**
Frequency : **7 h/d**
Dose / Concentration : **200-1600 mg/m3 AIR**
Exposure comments : Mice were exposed to vapors of 50 or 400 ppm cyclohexanone for 5 days.

Test Results

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

Negative result. Abnormal sperm frequency was not affected.

General Comments : Noted were some problems relating to reproducibility, the response of the positive indicators, and viral infection of the animals.

References

Primary Reference : **#XPBRCA**
McGregor, D. B. National Technical Information Service (PB number), PB83-127571, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : In vivo Cytogenetic Assay; Chromosome Aberrations in Bone Marrow; GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **1-5 d**
Frequency : **7 h/d**
Dose / Concentration : **200-1600 mg/m3 AIR**
Exposure comments : Animals were sacrificed 6, 24, and 48 hours following inhalation exposure to vapors of 50 or 400 ppm for 50 or 400 ppm for 1 or 5 days.

Test Results

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

Negative result. The frequency of chromosome aberrations were not increased.

General Comments : Noted were some problems relating to reproducibility, the response of the positive indicators, and viral infection of the animals.

References

Primary Reference : **#XPBRCA**
McGregor, D. B. National Technical Information Service (PB number), PB83-127571, (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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : Cytogenetic Assay In vivo; Chromosome Aberrations in Bone Marrow; GLP: no data

Exposure

Exposure Type : **ACUTE**
Dose / Concentration : **100-1000 mg/kg BW**
Exposure comments : Animals were sacrificed 6, 24, and 48 hours following subcutaneous injection of 100, 500 or 1000 mg/kg of cyclohexanone.

Test Results

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

Chromosome aberrations were induced at all doses and time intervals. Incidence of abnormalities increased with dose and decreased with time. They consisted of chromatid gaps and break, centric fusions, centrometric attenuation, chromatid exchanges and polyploidy.

References

Primary Reference : **EJGCA9**
De Hondt, H. A. et al. Egyptian Journal of Genetics and Cytology, 12(1), 31-40, (1983)

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

Study

End Point	:	**NEUROTOXICITY**
Chemical Name	:	**Cyclohexanone**
CAS Number	:	**108-94-1**

Evaluations

Evaluation text	:	The neurotoxicity of cyclohexanone has been examined in several animals species (rats, dogs, mice, guinea pigs). However , there has been no consistent indication of specific neurotoxic effects. At highest doses near the LD50, signs of CNS depression occurred. Behavioral changes may be due to general anesthetic effects of cyclohexanone. On the basis of the existing data, this material could not be classified as having potential neurotoxicity to humans. (Criteria Document for Evaluation of Existing Data, Nordic Council of Ministers and National Institute of Occupational Health, Denmark, 1992).

References

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

Study

End Point : **SENSITIZATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Guinea pig

Test Method and Conditions

Test method description : "Buehler-style" closed patch assay; GLP: no data

Exposure

Exposure comments : Multiple skin applications of neat cyclohexanone (used in both the inductions and challenge phases).

Test Results

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

Multiple skin applications of neat cyclohexanone did not cause local reactions in guinea pigs.

References

Primary Reference : **TXAPA9**
Gad, S. C. et al. Toxicology and Applied Pharmacology, 84, 93, (1986)

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

Study

End Point : **SENSITIZATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
GPIG			**SKN** **SCU**			**15**	

Species/strain/system : Guinea pig

Test Method and Conditions

Test method description : Maximization test; GLP: no data

Exposure

Exposure comments : A maximization procedure involving covered skin applications and injections of neat cyclohexanone, along with an adjuvant known to stimulate the immune system, was used.

Test Results

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

No sensitization was induced

References

Primary Reference : **TXAPA9**
Gad, S. C. et al. Toxicology and Applied Pharmacology, 84, 93, (1986)

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

Study

End Point : **SENSITIZATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	Medium	Specification	Route	Lifestage	Sex	Number exposed	Number controls
GPIG			**SKN** **SCU**			**20**	

Species/strain/system : Guinea pig

Test Method and Conditions

Test method description : Maximization test; GLP: no data

Exposure

Exposure comments : The induction phase consisted of covered skin applications of 25% cyclohexanone and injection of 8% cyclohexanone along with an adjuvant known to stimulate the immune system and the challenge phase was covered skin application of 20% cyclohexanone.

Test Results

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

No sensitization was induced

References

Primary Reference : **CODEDG**
Bruze, M. et al. Contact Dermatitis, 18, 46, (1988)

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

Study

End Point : **SENSITIZATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Guinea pig

Test Method and Conditions

Test method description : Maximization test; GLP: no data

Test Results

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

Cyclohexanone did not induce skin allergy in the guinea pig maximization test.

References

Primary Reference : **!IARMB8**
IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, 47, 157-169, (1989)

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

Study

End Point : **SENSITIZATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : An ear swelling test; GLP: no data

Exposure

Exposure comments : The mice were treated with 2 injections of adjuvant and three uncovered skin applications of neat cyclohexanone during the 1 week induction period. 1 week later 1 uncovered application of neat cyclohexanone was made to the left ear of each mouse.

Test Results

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

No sensitization was induced

References

Primary Reference : **TXAPA9**
Gad, S. C. et al. Toxicology and Applied Pharmacology, 84, 93, (1986)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Guinea pig

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **ACUTE**
Exposure Period : **6 h**
Dose / Concentration : **16057 mg/m3 AIR**
Exposure comments : Exposure to 4000 ppm cyclohexanone vapor for 6 hours.

Test Results

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

Exposure to 4000 ppm cyclohexanone vapor for 6 hours resulted in eye watering and corneal opacity.

References

Primary Reference : **XPHPAW**
Specht, H. et al. US Public Health Service Bulletin, 176, (1940)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **10 wk**
Frequency : **6 h/d**
5 d/wk
Dose / Concentration : **2440 mg/m3 AIR**
Exposure comments : Exposure to 608 ppm cyclohexanone vapor for 10 weeks.

Test Results

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

Exposure to 608 ppm cyclohexanone vapor for 10 weeks resulted in slight eye irritation in a monkey.

References

Primary Reference : **JIHTAB**
Treon, J. F. et al. Journal of Industrial Hygiene and Toxicology, 25(8), 323-347, (1943)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Rabbit

Test Substance

Vehicle - Solvent : Cottonseed oil

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **ACUTE**
Exposure Period : **24 h**
Exposure comments : A 21.4% solution of cyclohexanone in cottonseed oil was app lied to rabbit skin and covered.

Test Results

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

A slight transient irritation was observed

General Comments : Covered exposure to neat solution for 24 hours resulted in severe irritation.

References

Primary Reference : **TXAPA9**
Gupta, P. K. et al. Toxicology and Applied Pharmacology, 49(3), 523-533, (1979)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RBT			**SKN**			**6/GROUP**	

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **ACUTE**
Dose / Concentration : **0.5 mL**
Exposure comments : Application of 0.5 mL cyclohexanone under a covering. Two different samples of 0.5 mL cyclohexanone were applied.

Test Results

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

5/6 rabbits exhibited necrosis within 5 hours, 2/6 rabbits had also minor to moderate erythema, 4/6 rabbits had minor to moderate erythema after application of one sample of cyclohexanone.

SKIN **IRRIT**

In a second test with a different 0.5 mL sample of cyclohexanone, 3/6 rabbits exhibited minor to moderate erythema, and 1/6 rabbits had minor edema. No rabbits had necrosis.

General Comments : One product was classified as corrosive. The second sample was not considered corrosive.

References

Primary Reference : **UCCYDF**
Union Carbide Co-operation, (1982)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **ACUTE**
Exposure comments : One application of neat cyclohexanone with 24-hour open contact.

Test Results

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

One application of neat chemical with 24-hour open contact was non-irritating to rabbit skin.

References

Primary Reference : **AIHAAP**
Smyth, J. F. Jr. et al. American Industrial Hygiene Association Journal, 30, 470, (1969)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure comments : 11 open applications of neat chemical made at 20-minute intervals.

Test Results

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

Severe irritation

References

Primary Reference : **JIHTAB**
Treon, J. F. et al. Journal of Industrial Hygiene and Toxicology, 25(6), 139-214, (1943)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Rabbit

Test Substance

Vehicle - Solvent : Cottonseed soil

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **ACUTE**
Exposure comments : 2.5, 5, and 40% solutions of cyclohexanone diluted in cottonseed oil were applied to the eye.

Test Results

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

5 and 40% solutions of cyclohexanone were very slightly irritating and markedly irritating, respectively, to rabbit eyes.

EYE **NEF**

2.5% solution of cyclohexanone was non-irritating to rabbit eyes.

References

Primary Reference : **TXAPA9**
Gupta, P. K. et al. Toxicology and Applied Pharmacology, 49(3), 525-533, (1979)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Rabbit

Test Substance

Vehicle - Solvent : Water

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **ACUTE**
Exposure comments : 0.1 mL of 10, 15, or 25% solution of cyclohexanone was applied to the eye.

Test Results

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

0.1 mL of 10, 15 and 25% solutions of cyclohexanone were mildly irritating, severely irritating or corrosive, respectively, to rabbit eyes.

References

Primary Reference : **FCTOD7**
Treon, J. F. et al. Food and Chemical Toxicology, 25(8), 323-347, (1943)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RBT			**IHL**			**4/DOSE**	

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **10 wk**
Frequency : **6 h/d**
5 d/wk
Dose / Concentration : **763-1240 mg/m3 AIR**
Exposure comments : Groups of rabbits were exposed to 190 or 309 ppm cyclohexanone vapor.

Test Results

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

Groups of rabbits exposed to 190 or 309 ppm cyclohexanone exhibited no irritation or slight irritation of the eyes, respectively.

References

Primary Reference : **JIHTAB**
Treon, J. F. et al. Journal of Industrial Hygiene and Toxicology, 25(8), 323-347, (1943)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **ACUTE**
Dose / Concentration : **0.01 mL**
Exposure comments : 0.01 mL of undiluted cyclohexanone was applied to the eye.

Test Results

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

0.01 mL of undiluted cyclohexanone produced moderate corneal necrosis; a grade of 5 on a scale of 1 to 10.

References

Primary Reference : **WGTOE***
Grant, M. W. Toxicology of the Eye, 3rd ed., 296, (1986)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **ACUTE**
Exposure Period : **24 h**
Dose / Concentration : **250 ug**
Exposure comments : A 24-hour exposure of rabbit eyes to 250 ug of cyclohexanone

Test Results

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

A 24-hour exposure of rabbit eyes to 250 ug of cyclohexanone resulted in severe irritation.

References

Primary Reference : **85JCAE**
Marhold, J. Prehled Prumyslove Toxikol. Org. Latky, 289, (1986)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **ACUTE**
Dose / Concentration : **0.1 mL**

Test Results

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

0.1 mL of undiluted cyclohexanone produced generalized moderate but penetrating corneal injury, mild iritis, and conjunctivitis in rabbit eyes. Corneal injury was reversible in all treated eyes. 14 days after dosing, the treated unwashed eyes showed generally mild corneal damage, washing

the treated eyes 20 seconds after exposure did reduce ocular effects somewhat, but the eyes still showed very mild to microscopic corneal changes at 14 days.

References

Primary Reference : **#HASLR***
H8-88-69. Haskell Laboratory Report, (1969)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Exposure

Dose / Concentration : **200-794 mg/kg**

Test Results

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

Cyclohexanone was severely irritating to rabbits skin at doses of 200 and 794 mg/kg.

SKIN	**IRRIT**
SKIN	**COR**

Pale red erythema and moderate edema were observed after 24 hours at 200 mg/kg dose; second-degree burns, focal escharosis and mild desquamation at day 7 and focal escharosis and mild desquamation at day 14 were observed.

SKIN	**IRRIT**
SKIN	**COR**

At 794 mg/kg dose pale red to red well-defined erythema, severe edema, subdermal hemorrhaging, and focal second- and third-degree burns were observed at 24 hours and escharosis and moderate desquamation at days 7 and 14.

General Comments : Necropsy showed gastroenteritis and hemorrhaging in the colon of 1 rabbit dosed with 200 mg/kg; red lungs in 2 rabbits at 794 mg/kg; and focal discoloration of the liver and red lungs in 2 rabbits in the high dose. 4/4 rabbits died when dosed with 3160 mg/kg.

References

Primary Reference : **INBTL***
Industrial Bio-Test Laboratories EPA/OTS, (1975)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Test Results

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

Cyclohexanone produced no irritation to rabbit skin

References

Primary Reference : **MELIN***
Mellon Institute EPA/OTS, (1967)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RBT			**SKN**		**M**		
					F		

Species/strain/system : Rabbit

Test Results

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

General Comments : In an evaluation for corrosiveness in male and female rabbits, no erythema, edema, other dermal effects or deaths occurred in any rabbit.

References

Primary Reference : **HAZLA***
Hazelton Laboratories America, Inc. Chemical and Biomedical Sciences Division, (1982)

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

Study

End Point : **IRRITATION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Rabbit

Test Method and Conditions

Test method description : GLP: no data

Test Results

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

Cyclohexanone produced slight irritation to rabbit skin.

References

Primary Reference : **VNIIVS**
Kan, P. T. et al. Vsesoyuznyi Nauchno-Issledovatel'skiiInstitut Veterinarnai Sanitarii, 39, 362-372, (1971)

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

Study

End Point : **REPRODUCTION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	Medium	Specification	Route	Lifestage	Sex	Number exposed	Number controls
MOUSE			**IPR**		**F**	**8**	

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **28 d**
Dose / Concentration : **50 mg/kg BW/d**
Exposure comments : Intraperitoneal injection of 8 females at 50 mg/kg/day for 28 days; animals were mated on day 10 with untreated males.

Test Results

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

All females became pregnant and yielded 83% viable fetuses/ litter with 46% resorptions/litter.

General Comments : No clear effect on fertility or on the numbers of early fetal deaths and live offsprings per litter.

References

Primary Reference : **JMCMAR**
Hall, J. H. et al. Journal of Medicinal Chemistry, 17(12), 1253-57, (1974)

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

Study

End Point : **REPRODUCTION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	Medium	Specification	Route	Lifestage	Sex	Number exposed	Number controls
RAT			**IHL**		**M**	**10/GROUP**	

Test Method and Conditions

Test method description : Females were sacrificed on gestation day 20, and the uterine contents were examined; GLP: yes

Exposure

Exposure Type : **LONG**
Exposure Period : **160-168 d**
Dose / Concentration : **1000-5600 mg/m3 AIR**
Exposure comments : 10 males from a second F1 generation were selected from each treatment group from the above study. Each group consisted of 4 fertile and 6 non-fertile males. They had received 160-168 exposures to 0, 250, 500 or 1400 ppm. They were mated weekly to 2 untreated virgin females for 4 consecutive weeks.

Test Results

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

Exposure prenatally, post-natally, and throughout sexual maturity did not result in adverse effects on reproductive performance during a post-exposure recovery period. Treatment-related depressions in fertility of the F1 males exposed to 1400 ppm were considered reversible.

References

Primary Reference : **AMEBC***
American Biogenics Corporation, (1986)

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

Study

End Point : **REPRODUCTION**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RAT			**IHL**		**M**	**30/GROUP**	**30**
					F	**30/GROUP**	**30**

Test Method and Conditions

Test method description : Neurotoxicological/neuropathological evaluations were done pre-weaning and post-weaning in each F1 litter; GLP: yes

Exposure

Exposure Type : **LONG**
Exposure Period : **2 GN**
Frequency : **6 h/d**
Dose / Concentration : **1000-5600 mg/m3 AIR**
Exposure comments : Groups of rats were exposed to 0, 250, 500, or 1000 ppm during the first (F0) generation. Selected F1 generation animals were exposed similarly to 0, 250, 500, or 1400 ppm. .

Test Results

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

Exposure to 1000 ppm for one generation and 250 or 500 ppm for two consecutive generations did not adversely effect the growth, development, and reproductive performance.

NEF

There were no consistent differences in the behavioral/ neurotoxicologic development of selected F1 progeny.

REPRO **DECR** **M**

Exposure of the F1 generation to 1400 ppm resulted in reduced male fertility.

OFSPR **DEATH**

Exposure of the F1 generation to 1400 ppm resulted in reduced progeny survival and body weight.

NOAEL

NOAEL for P generation: 1000 ppm; NOAEL for F1 generation: 500 ppm; NOAEL for F2 generation: 500 ppm.

General Comments : To be continued

References

Primary Reference : **AMEBC***
American Biogenics Corporation, (1986)

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

Study

End Point : **TERATOGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Species/strain/system : Chicken eggs

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Period : **3-12 h**
Exposure comments : Chicken eggs were exposed at the 0- or 96-hour incubation age to vapors of cyclohexanone for 3, 6, or 12 hours (levels unspecified). Embryos sacrificed at 13-day incubation age.

Test Results

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

Embryos displayed a significant lower weight than controls, but no changes in gross morphology or blood biochemistry were seen.

Newly patched chicks, however, did exhibit "severe locomotor difficulties" and excessive toxic symptoms.

References

Primary Reference : **TJADAB**
Weller, E. M. and Griggs, J. H. Teratology, Journal of Abnormal Development, 7(3), A-30, (1973)

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

Study

End Point : **TERATOGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
MOUSE			**ORL**		**F**		

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Dose / Concentration : **10 g/kg DIET**
Exposure comments : Pregnant animals were fed a diet containing 1% cyclohexanone (approximately 1500 mg/kg/day).

Test Results

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

Mortality rate of the young during the first 21 days of live was increased.

References

Primary Reference : **JETOAS**
Gondry, E. European Journal of Toxicology and Environmental Hygiene. Former title (until 1976) : European Journal of Toxicology and Hygiene of the Environment
(Until 1974) : Journal Europeen de Toxicologie, 5(4), 227-238, (1973)

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

Study

End Point : **TERATOGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
MOUSE			**ORL**		**F**		

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **8-12 TDP**
Dose / Concentration : **1100-2200 mg/kg BW/d**
Exposure comments : Administration of 1100 and 2200 mg/kg/day cyclohexanone by gavage on gestation days 8-12.

Test Results

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

Average weight gain of dams was significantly reduced at 2200 mg/kg/day.

OFSPR	**SIZE**

A significant reduction in birth weight of the pups occurred at both doses.

References

Primary Reference : **TCMUD8**
Seidenberg, J. M. and Becker, R. A. Teratogenesis, Carcinogenesis, Mutagenesis, 7(1), 17-28, (1987)

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

Study

End Point : **TERATOGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	Medium	Specification	Route	Lifestage	Sex	Number exposed	Number controls
MOUSE			**ORL**		**F**		

Test Method and Conditions

Test method description : Dams were allowed to deliver; offspring assessed for post-natal viability, growth, and morphology on day 1 and 3 of age. On days 1, 3, 21, 50 and 210 day of age, offspring were observed for locomotor activity. GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **8-12 TDP**
Dose / Concentration : **800 mg/kg BW/d**
Exposure comments : 800 mg/kg/day of cyclohexanone was administered by gavage on gestation days 8-12.

Test Results

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

Number of live pups on day 3 were not reduced more than 10% and no subsequent mortality of pups occurred.

OFSPR	**NEF**

Reactive locomotor activity levels in mazes were not altered .

References

Primary Reference : **PCBRD2**
Gray, L. F. Jr. et al. Progress in Clinical and Biological Research, 140, 39-62, (1983)

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

Study

End Point : **TERATOGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: yes

Exposure

Exposure Type : **SHORT**
Exposure Period : **6-17 TDP**
Frequency : **6 h/d**
Dose / Concentration : **5620 mg/m3 AIR**
Exposure comments : Whole-body inhalation exposure to 0 or 1400 ppm cyclohexanone on gestation days 6-17.

Test Results

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

No effect on maternal mortality. Statistical differences between treated and controls for mean body weights and mean weight gains.

NEF

No effect on pregnancy data, and mean number of viable fetuses/pregnant female.

FETUS **SIZE**
NEF

Fetuses exhibited a significant decrease in mean body weight . No external malformations were reported.

FETUS **STRUC**

The incidence of visceral malformations was significantly greater in the treated group compared to control; however, treatment-related effect was not indicated based on the nature of the malformations. The incidence of skeletal malformations was comparable between controls and treated

animals.

LOAEL

LOAEL for Maternal Toxicity: 1400 ppm; LOAEL for Fetal Toxicity: 1400 ppm; LOAEL for Fetal Malformations >1400 ppm (no malformations).

References

Primary Reference : **BIDSA2**
Bio-Dynamics, (1984)

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

Study

End Point : **TERATOGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: no data

Exposure

Exposure Type : **SHORT**
Exposure Period : **5-20 TDP**
Frequency : **7 h**
Dose / Concentration : **400-2000 mg/m3 AIR**
Exposure comments : Inhalation exposure to 100, 250 or 500 ppm on days 5-20 of pregnancy.

Test Results

Maternal weight gain at 250 and 500 ppm was only slightly lower than control. Gray mottling of the lung was seen in a few of the cyclohexanone-exposed dams.

NEF

No significant differences between the treated and control groups in fetal weight, resorption sites, fetal death or sex ratio.

FETUS **NEF**

External and soft-tissue examinations revealed no significant incidence of malformations or variations in the treated animals.

FETUS **STRUC**
-
NEF

A slight increase in the mean percent of rudimentary ribs/ litter was seen in the 250 and 500 ppm groups. However, no significant numbers of skeletal malformations were noted.

References

Primary Reference : **TIHEEC**
Samini, B. S. et al. Toxicology and Industrial Health, 5(6), 1035-43, (1989)

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

Study

End Point : **TERATOGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

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

Test Method and Conditions

Test method description : GLP: yes

Exposure

Exposure Type : **SHORT**
Exposure Period : **6-19 TDP**
Dose / Concentration : **803-6423 mg/m3 AIR**
Exposure comments : Administration of cyclohexanone on gestation days 6-19 at target levels of 200, 400, 800 or 1600 ppm (cumulative mean- exposure levels were 100, 224, 473, and 1400 ppm).

Test Results

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

No adverse treatment-effect on maternal gross post-mortem observations.

Mean body weight data during gestation in the 800 and 1600 ppm groups were lower than controls on days 15 and 20. Lacrimation was noted with increased frequency in the 1600 ppm group; miosis was seen in 2 dams at 1600 ppm.

NEF

No adverse treatment-effect was noted on mortality, corpora lutea, uterine implantation data.

FETUS **NEF**

No adverse treatment-effect on fetal sex distribution data or fetal external examination data.

FETUS **SIZE**

Mean fetal weight data was lower than controls at 1600 ppm.

References

Primary Reference : **BIDSA2**
Bio-Dynamics, (1983)

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

Study

End Point : **TERATOGENICITY**
Chemical Name : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**

Test Subject

Organism	Medium	Specification	Route	Lifestage	Sex	Number exposed	Number controls
RAT			**IHL**		**F**	**26/DOSE**	**26**

Test Method and Conditions

Test method description : GLP: yes

Exposure

Exposure Type	:	**SHORT**
Exposure Period	:	**6-19 TDP**
Frequency	:	**6 h/d**
Dose / Concentration	:	**1204-5620 mg/m3 AIR**
Exposure comments	:	Whole-body inhalation exposure to groups of animals at nominal concentrations of 0, 300, 650, or 1400 ppm cyclohexanone on gestation days 6-19.

Test Results

No effect on maternal mortality. Maternal body weight and body weight gain in the high-dose group were statistically different from control.

NEF

No effect on pregnancy rate and uterine implantation data.

FETUS SIZE
FETUS STRUC

Fetuses derived from the high-dose group exhibited significantly lower body weights. At 1400 ppm, the incidence of fetuses with at least one ossification variation was increased.

FETUS NEF

No increases in external, visceral, or skeletal malformations occurred at any concentration.

NOAEL

NOAEL for Maternal Toxicity: 650 ppm; NOAEL for Fetal Toxicity: 650 ppm; NOAEL for Fetal Malformations: 1400 ppm (no malformations).

References

Primary Reference : **BIDSA2**
Bio-Dynamics, (1984)

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	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Species/strain/system	:	Golden orfe(Idus idus melanotous)
Dose / Concentration	:	**96 h**

Test Method and Conditions

Test method description	:	Static, aerated system; chlorine-free drinking water used as dilution water; dissolved oxygen > 54%; calcium - magnesium ion conc. of 2.7 +- 0.5 mmol/L; ten 1-year old fish per 10 liter of test solution.
Temperature	:	**19-21 C**
Dissolved Oxygen	:	**>5**

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
FISH	**AQ**	**FRESH**				**LC50**	LC50 for 96 hours = 536 - 752 mg/L; LC100 for 96 hours = 564 - 940 mg/L;

General Comments : The acute toxicity of cyclohexanone to golden orfe is low.

References

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

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

Study

End Point	:	**AQUATIC ACUTE TOXICITY**
Chemical Name	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Species/strain/system	:	Fathead minnow (Pimephales promelas)
Dose / Concentration	:	**96 h**

Test Method and Conditions

Test method description	:	Flow-through system; the test method conforms to OECD Guideline 203 with the exception that the pH and dissolved oxygen were not measured daily as required. Lake Superior water used as dilution water (see general comments).
Temperature	:	**24-26 C**
pH	:	**7.5**
Hardness of Water	:	**45.5 mg/L**

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
FISH	**AQ**	**FRESH**				**LC50**	LC50 for 96 hours = 527 mg/L.

General Comments : Dissolved oxygen (DO) > 60%. Five concentrations plus control, two replicates per concentration, twenty five 30-day old fish per replicate. The acute toxicity of cyclohexanone to fathead minnow is low.

References

Primary Reference : **CJFSDX**
Veith, G. D. et al. Canadian Journal of Fishery and Aquatic Science, 40(6), 743-748, (1983)

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 : **Cyclohexanone**
CAS Number : **108-94-1**

Species/strain/system : Fathead minnow (Pimephales promelas)
Exposure Period : **96 h**

Test Method and Conditions

Test method description : Flow-through system. The test method conforms to OECD Guideline 203 with the exception that the pH and dissolved oxygen were not measured daily as required (see general comments).
Temperature : **24-26 C**
pH : **7.5**
Hardness of Water : **45.5**

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
FISH	**AQ**	**FRESH**				**LC50**	LC50 for 96 hours = 732 mg/L.

General Comments : Lake Superior water used as dilution water; dissolved oxygen (DO) > 60%. Five concs. plus control, two replicates per conc.; twenty five 30-day old fish per replicate. The acute toxicity of cyclohexanone to fathead minnow is low. Test concentrations are calculated.

References

Primary Reference : **CLSES***
Center for Lake Superior Environment Studies. Wisconsin Univ. - Superior, (1984)

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	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Study type	:	**LAB**
Geographic Area	:	**SWE**

Test Subject

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

Species/strain/system : Blue-green algae (Microcystis)

Test Method and Conditions

Test method description	:	Seven-day exposure; constant lighting; test vessels shaken once per day.
Temperature	:	**27 C**
pH	:	**7**

Exposure

Exposure Period	:	**7 d**
Exposure comments	:	10-day old cultures

Test Results

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

Toxic limit concentration (TGKmi) = TT = 52 mg/L.

NOEC

NOEC (no observed effect concentration) = TT/2 = 26 mg/L.

General Comments : The concentrations are calculated. Cyclohexanone is moderately toxic to Microcystis. Algal growth inhibition estimated by change in turbidity compared to control.

References

Primary Reference : **GWWAAQ**

Bringmann, G. and Kuehn, R. GWF, Das Gas - und Wasserfach: Wasser/Abwasser, 117, 410-413, (1976)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**
Geographic Area : **SWE**

Test Subject

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

Species/strain/system : Green algae (Scenedesmus quadricauda)

Test Method and Conditions

Test method description : Seven-day exposure; constant lighting; test vessels shaken once per day.
Temperature : **27 C**
pH : **7**

Exposure

Exposure Period : **7 d**
Exposure comments : 10-day old cultures

Test Results

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

Toxicity threshold = 370 mg/L.

CHNG

NOEC

NOEC (no observed effect concentration) = TT/2 = 185 mg/L.

General Comments : Test concentration are calculated. Cyclohexanone is slightly toxic to S. quadricauda. Algal growth inhibition estimated by change in turbidity compared to control.

References

Primary Reference : **WATRAG**
Bringmann, G. and Kuehn, R. Water Research, 14(3), 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	:	**Cyclohexanone**
CAS Number	:	**108-94-1**
Study type	:	**LAB**
Geographic Area	:	**SWE**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
CRUS	**AQ**	**FRESH**		**JUV**		**10**	

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

Test Method and Conditions

Test method description	:	Static; unaerated system; reconstituted water used as dilution water; dissolved oxygen < 22%; calcium - magnesium ion concentration of 2.5 mmol/L.
Temperature	:	**20 C**
pH	:	**7.8-8.2**
Dissolved Oxygen	:	**<2**

Exposure

Exposure Period	:	**24 h**
Exposure comments	:	Ten(24-hour) neonate daphnids at the maximum test concentration in a volume of 50 mL, two replicater per concentration. 2 replicates per concentration.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
---	---	---	---	---	---
	LC100				
	BEHAV				

LC100 for 24 hours = 1540 mg/L (immobilization)

	LC50				
	BEHAV				

LC50 for 24 hours = 800 mg/L (immobilization)

	LC0				
	BEHAV				

LC0 for 24 hours = 540 mg/L (immobilization)

References

Primary Reference : **ZWABAQ**
Bringmann, G. and Kuehn, 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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**
Geographic Area : **SWE**

Test Subject

Organism	Medium	Specification	Route	Lifestage	Sex	Number exposed	Number controls
CRUS	**AQ**	**FRESH**		**JUV**		**10**	

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

Test Method and Conditions

Test method description : Static; unaerated system; reconstituted water used as dilution water; dissolved oxygen < 22%; calcium - magnesium ion concentration of 2.5 mmol/L.
Temperature : **20 C**
pH : **7.8-8.2**
Dissolved Oxygen : **<2 mg/L**

Exposure

Exposure Period : **24 h**
Exposure comments : Ten (24-hour) neonate daphnids at the maximum test concentration in a volume of 50 mL, two replicates per concentration.

Test Results

Organ	Effect	Rev.	OnSet	Sex	Affected in Exposed - Controls
	EC100				
	BEHAV				

EC100 for 24 hours = 1240 mg/L (immobilization)

	EC50				
	BEHAV				

EC50 for 24 hours = 820 mg/L (immobilization)

	EC0				
	BEHAV				

EC0 for 24 hours = 526 mg/L (immobilization)

General Comments : Test concentrations are calculated. Acute toxicity of cyclohexanone of D. magna is low.

References

Primary Reference : **ZWABAQ**
Bringmann, G. and Kuehn, R. Zeitschrift fuer Wasser und Abwasser Forschung, 15(1), 1-6, (1982)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**
Geographic Area : **SWE**

Test Subject

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

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

Test Method and Conditions

Test method description : Inhibition of cell multiplication estimated from differences in cell number between test solutions and control at the end of 72-hour exposure period.

Exposure

Exposure Period : **72 h**
Exposure comments : 72-hour cultures

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
CELL	**TCLO**				
	INCR				
	INHIB				

Toxicity threshold = 545 mg/L

NOEC

NOEC (no observed effect concentration) = TT/2 = 273 mg/L

General Comments : Cyclohexanone exhibited moderate toxicity to E. sulcatum. Test concentrations are calculated.

References

Primary Reference : **WATRAG**
Bringmann, G. and Kuehn, R. Water Research, 14(3), 231-241, (1980)

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 : **Cyclohexanone**
CAS Number : **108-94-1**
Study type : **LAB**
Geographic Area : **SWE**

Test Subject

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

Species/strain/system : Soil bacteria (Pseudomonas putida)

Test Method and Conditions

Test method description : Minimal medium containing glucose and trace elements used as dilution water.
Temperature : **25 C**
pH : **7**

Exposure

Exposure Period : **16 h**
Exposure comments : 24-hour cultures on agar slants.

Test Results

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

Toxicity threshold = 180 mg/L

NOEC

NOEC (no observed effect concentration) = TT/2 = 90 mg/L.

General Comments : Growth inhibition estimated by change in turbidity compared to control. Cyclohexanone is moderately toxic to P. putida. The given concentrations are calculated. In similar test the toxicity limit concentration obtained was (TGKmi) = 180 mg/L. Reported in: Brigmann, G. and Kuehn, R. GWF Wasser/Abwasser, 117:410-413 (1976).

References

Primary Reference : **WATRAG**
Bringmann, G. and Kuehn, R. Water Research, 14(3), 231-241, (1980)

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

Substance

[redacted]

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	*Type*	*Subject*	*Spec.*	*Description*	*Level / Summary Information :*
ARG	**REG**	**AIR**	**OCC**	**MPC**	8H-TWA: 100MG/M3 (25PPM). SKIN ABSORPTION.

Title : LIMIT VALUES FOR CHEMICAL SUBSTANCES IN THE W ORKING ENVIRONMENT-RESOLUTION NO. 444/1991 OF THE MINISTRY OF WORK AND SOCIAL SECURITY (AM ENDING REGULATION DECREE NO. 351/1979 UNDER L AW NO. 19587/1972: HYGIENE AND SAFETY AT WORK)

Reference : **ARGOB*, 24170, I, 1, 1979** ***Effective Date :*** 29MAY1991
Boletin Oficial de la Republica Argentina (Argentinian Official Bulletin)

Last Amendment : **ARGOB*, 27145, I, 4, 1991** ***Entry / Update :*** OCT1991
Boletin Oficial de la Republica Argentina (Argentinian Official Bulletin)

Substance

[redacted]

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	*Type*	*Subject*	*Spec.*	*Description*	*Level / Summary Information :*
CAN	**REG**	**AIR**	**OCC**	**TLV**	TWA: 25 PPM, 100 MG/M3; SKIN ABSORPTION. PRESCRIBED BY THE CANADA OCCUPATIONAL SAFETY AND HEALTH REGULATIONS, UNDER THE CANADA LABOUR CODE (ADMINISTERED BY THE DEPARTMENT OF LABOUR). THE REGULATIONS STATE THAT NO EMPLOYEE SHALL BE EXPOSED TO A CONCENTRATION OF AN AIRBORNE CHEMICAL AGENT IN EXCESS OF THE VALUE FOR THAT CHEMICAL AGENT ADOPTED BY ACGIH (AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS) IN ITS PUBLICATION ENTITLED: "THRESHOLD LIMIT VALUE AND BIOLOGICAL EXPOSURE INDICES FOR 1985-86".

Title :

Reference : ***Effective Date :*** 13MCH1986

Last Amendment : **CAGAAK, 120, 6, 1105, 1986** ***Entry / Update :*** MAY1991
Canada Gazette Part II

Substance

[redacted]

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	*Type*	*Subject*	*Spec.*	*Description*	*Level / Summary Information :*
CAN	**REG**	**TRNSP LABEL PACK**	**-**	**CLASS RQR**	PIN (PRODUCT IDENTIFICATION NO.): UN1915. CLASS (3.3): FLAMMABLE LIQUID. PACKING GROUP III, (I=GREAT DANGER, III=MINOR DANGER). MAXIMUM AMOUNT PER PACKAGE THAT MAY BE TRANSPORTED ON A PASSENGER AIRCRAFT OR VEHICLE: 60 L. MAXIMUM AMOUNT PER PACKAGE THAT MAY BE TRANSPORTED ON A CARGO AIRCRAFT: 220 L. 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** **Canada Gazette Part II** ***Entry / Update :*** OCT1991

Substance

[redacted]

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

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** **Canada Gazette Part II** ***Entry / Update :*** APR1991

Substance

[redacted]

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
CSK	REG	AIR	OCC	MAC	TWA: 200.0MG/M3; CLV: 400MG/M3

Title : DIRECTIVE NO. 46/1978 ON HYGIENIC REQUIREMENT S ON OCCUPATIONAL ENVIRONMENT

Reference : **HPMZC*, 39, 1978** **Effective Date :** MCH1985

HYGIENICKE PREDPISY MINISTERSTVA ZDRAVOTNICTVI CSR (HYGIENIC REGULATIONS OF MINISTRY OF HEALTH OF CSR)

Last Amendment : **HPMZC*, 58, 1985** **Entry / Update :** DEC1991

HYGIENICKE PREDPISY MINISTERSTVA ZDRAVOTNICTVI CSR (HYGIENIC REGULATIONS OF MINISTRY OF HEALTH OF CSR)

Substance

[redacted]

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

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

[redacted]

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
DEU	REG	AIR	EMI	MPC	THIS SUBSTANCE BELONGS TO CLASS II. THE AIR E MISSIONS OF ORGANIC COMPOUNDS MUST NOT EXCEED (AS THE SUM OF ALL COMPOUNDS IN ONE CLASS) T HE FOLLOWING MASS CONCENTRATIONS: CLASS I - 2 0 MG/M3 AT A MASS FLOW OF >= 0.1 KG/H; CLASS II - 100 MG/M3 AT A MASS FLOW OF >= 2 KG/H; C LASS III - 150 MG/M3 AT A MASS FLOW OF >= 3 K G/H. IF COMPOUNDS FROM DIFFERENT CLASSES ARE PRESENT, THE MASS CONCENTRATION MUST NOT EXCE ED 150 MG/M3 AT A TOTAL MASS FLOW OF >= 3 KG/ H.

Title : TECHNICAL GUIDELINES FOR AIR POLLUTION CONTRO L (TECHNISCHE ANLEITUNG ZUR REINHALTUNG DER L UFT)

Reference : **GMSMA6, 7, 93, 1986** **Effective Date :** 01MCH1986

Gemeinsames Ministerialblatt. Joint Ministerial Papers

Last Amendment : **Entry / Update :** JAN1992

Substance

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
DEU	REC	AIR	OCC	MAK	8H-TWA: 50 ML/M3 (PPM); 200 MG/M3 (20C, 101.3 KPA). SUBSTANCE WITH SYSTEMIC EFFECTS. ONSET OF EFFECT <= 2H. HALF-LIFE < 2H. 30MIN-STEL: 100 ML/M3 (PPM); 400 MG/M3; AVERAGE VALUE; 4 X/SHIFT. PREGNANCY GROUP C: THERE IS NO REASO N TO FEAR A RISK OF DAMAGE TO THE DEVELOPING EMBRYO OR FETUS WHEN MAK AND BAT VALUES ARE A DHERED TO. VAPOUR PRESSURE: 0.5 KPA AT 20C.

Title : MAXIMUM CONCENTRATIONS AT THE WORKPLACE AND B IOLOGICAL TOLERANCE VALUES FOR WORKING MATERI ALS (MAXIMALE ARBEITSPLATZKONZENTRATIONEN UND BIOLOGISCHE ARBEITSSTOFFTOLERANZWERTE)

Reference : **MPGFDF, XXVII, 17, 1991** ***Effective Date :***

MITTEILUNG DER SENATSKOMMISSION ZUR PRUEFUNG GESUNDHEITSSCHAEDLICHER ARBEITSSTOFFE (DEUTSCHE FORSCHUNGSGEMEINSCHAFT)

Last Amendment : ***Entry / Update :*** JAN1992

Substance

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

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 : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
GBR	REG	TRNSP LABEL	-	CLASS RQR	LABELLING OF ROAD TANKERS : FLAMMABLE LIQUID. EMERGENCY ACTION CODE : 3(Y)

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 : **CYCLOHEXANONE**
Reported Name : **cyclohexanone**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
GBR	REG	TRNSP	MARIN	RQR	CATEGORY D SUBSTANCE: DISCHARGE INTO THE SEA IS PROHIBITED; DISCHARGE OF RESIDUAL MIXTURES IS SUBJECT TO RESTRICTIONS.
		AQ	MARIN	RSTR	
		AQ	EMI	RSTR	

Title : THE MERCHANT SHIPPING (CONTROL OF POLLUTION B Y NOXIOUS LIQUID SUBSTANCES IN BULK) REGULATI ONS 1987, SCHEDULE 1

Reference : **GBRSI*, 551, 15, 1987** ***Effective Date :*** 06APR1987
Statutory Instruments
Last Amendment : **GBRSI*, 2604, 2, 1990** ***Entry / Update :*** 1992
Statutory Instruments

Substance

Chemical Name : **CYCLOHEXANONE**
Reported Name : **cyclohexanone**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
GBR	REG	AIR	OCC	OES	8H-TWA: 100MG/M3 (25PPM). STEL(10MIN-TWA): 40 0MG/M3 (100PPM).

Title : EH40 OCCUPATIONAL EXPOSURE LIMITS FOR USE WIT H THE CONTROL OF SUBSTANCES HAZARDOUS TO HEAL TH REGULATIONS

Reference : **GBRSI*, 1657, 10, 1988** ***Effective Date :*** 01JAN1992
Statutory Instruments
Last Amendment : **GNHSE*, EH40, 11, 1992** ***Entry / Update :*** 1992
Guidance Note from the Health and Safety Executive

Substance

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
IND	REG	MANUF	-	RQR	These rules define the responsabilities of oc cupiers of any industrial activity in which t his toxic and hazardous substance may be invo lved. These responsabilities encompass: (a) a ssessment of major hazards (causes, occurrenc e, frequency); (b) measures to prevent accide nts and limit eventual impairment to human he alth and pollution of the environment; (c) pr ovision of relevant factual knowledge and ski lls to workers in order to ensure health and environmental safety when handling equipments and the foregoing chemical; (d) notification of the competent authorities in case of majo r accidents; (e) notification of sites to the competent authorities 3 months before commen cing; (f)preparation of an on-site emergency plan as to how major accidents should be cope d with; (g) provision of competent authoritie s with information and means to respond quick ly and efficiently to any off-site emergency; (h) provision of information to persons outs ide the site, liable to be affected by a majo r accident; (i) labelling of containers as to clearly identify contents, manufacturers, ph ysical, chemical and toxicological data; (j) preparation of a safety data sheet including any significant information regarding hazard of this substance and submission of safety re ports to the competent authorities; (k) for t he import of a hazardous chemical to India, i mporters must supply the competent authoritie s with specified information regarding the sh ipment.
		SAFTY		RQR	
		STORE		RQR	
		IMPRT		RQR	

Title : THE MANUFACTURE, STORAGE AND IMPORT OF HAZARD OUS CHEMICALS RULES. 1989

Reference : **GAZIN*, 787, 1989** ***Effective Date :*** 27NOV1989

THE GAZETTE OF INDIA

Last Amendment : ***Entry / Update :*** SEP1992

Substance

[redacted]

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
JPN	REC	AIR	OCC	MAC	TWA: 100MG/M3 (25PPM)

Title : MAXIMUM ALLOWABLE CONCENTRATIONS RECOMMENDED BY THE JAPANESE ASSOCIATION OF INDUSTRIAL HEA LTH.

Reference : **SAIGBL, 33, 4, 277-287, 1991** ***Effective Date :***

Japanese Journal of Industrial Health

Last Amendment : ***Entry / Update :*** DEC1991

Substance

[redacted]

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
MEX	REG	AIR	OCC	MXL	AT ANY WORKPLACE WHERE THIS SUBSTANCE IS PROD UCED, STORED OR HANDLED A MAXIMUM PERMISSIBLE LEVEL OF 200MG/M3 (50PPM) MUST BE OBSERVED F OR A PERIOD OF 8 HOURS OR 400MG/M3 (100PPM) F OR 15 MINUTES FOUR TIMES A DAY WITH INTERVALS OF AT LEAST 1 HOUR.

Title : INSTRUCTION NO.10 RELATED TO SECURITY AND HYG IENIC CONDITIONS AT WORKPLACES. (INSTRUCTIVO NO. 10, RELATIVO A LAS CONDICIONES DE SEGURID AD E HIGIENE DE LOS CENTROS DE TRABAJO).

Reference : **DOMEX*, 1984** ***Effective Date :*** 28MAY1984

Diario Oficial

Last Amendment : **DOMEX*, 1989** ***Entry / Update :*** DEC1991

Diario Oficial

Substance

[redacted]

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
RUS	**REG**	**AQ**	**SURF**	**MAC CLASS**	0.2 MG/L HAZARD CLASS: II

Title :

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

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

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

Substance

[redacted]

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
RUS	**REG**	**AIR**	**AMBI**	**MAC**	0.04 MG/M3 1X/D.

Title :

Reference : ***Effective Date :*** AUG1984

Last Amendment : **PDKAV*, 3086-84, 1984** ***Entry / Update :*** SEP1985

PREDELNO DOPUSTIMYE KONTSENTRATSII (PDK) ZAGRYAZNYAYUSHCHIKH VESHCHESTV V ATMOSFERNOM VOZDUKHE NASELENNYKH MEST
(MAXIMUM ALLOWABLE CONCENTRATIONS (MAC) OF CONTAMINANTS IN THEAMBIENT AIR OF RESIDENTIAL AREAS)

Substance

[redacted]

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
RUS	**REG**	**AIR**	**OCC**	**MAC CLASS**	CLV : 10.0 MG/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 : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
RUS	**REG**	**USE**	**OCC**	**MAC**	MAXIMUM ALLOWABLE LEVEL OF SKIN CONTAMINATION OF HAND COMING IN CONTACT WITH SUBSTANCE: 1. 5MG/CM3

Title :

Reference : ***Effective Date :*** MAY1988

Last Amendment : **PDUZK*, 4618-88, 1988** ***Entry / Update :*** JUL1990

PREDELNO DOPSTIMYE UROVNI ZAGRIAZNENIA KOZHI RUK RABOTAIUSHCHIKHVREDNYMI BESHCHESTVAMI (MAXIMUM ALLOWABLE LEVELS OF CONTAMINATION OF HANDS OF WORKERS BY HAZARD SUBSTANCES)

Substance

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
SWE	**REG**	**AIR**	**OCC**	**HLV**	1D-TWA: 100MG/M3 (25PPM). 15MIN-STEL: 200MG/M 3 (50PPM). SKIN ABSORPTION.

Title : HYGIENIC LIMIT VALUES.

Reference : **AFS***, 1990:13, 5-64, 1990** ***Effective Date :*** 01JUL1991

ARBETARSKYDDSSTYRELSENS FOERFATTNINGSSAMLING

Last Amendment : ***Entry / Update :*** 1992

Substance

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
USA	**REG**	**MANUF**	**REQ**	**PRMT**	; Summary - THE FOLLOWING CHEMICAL IS INCLUDE D ON A LIST OF CHEMICALS AND MIXTURES FOR WHI CH REPORTING IS CURRENTLY REQUIRED UNDER THE TOXIC SUBSTANCES CONTROL ACT SECTION 2607A. T HIS TOXIC SUBSTANCE IS SUBJECT TO PRELIMINARY ASSESSMENT INFORMATION RULES ON PRODUCT ION QUANTITIES, USES, EXPOSURES, AND ADVERSE EFFE CTS. MANUFACTURERS INCLUDING IMPORTERS MUST S UBMIT A REPORT FOR THIS LISTED CHEMICAL MANUF ACTURED AT EACH SITE.
		USE	**OCC**	**PRMT**	
		SAFTY	**OCC**	**MXL**	

Title : PRELIMINARY ASSESSMENT INFORMATION RULES

Reference : **FEREAC, 47, 26998, 1982** ***Effective Date :*** 1982

Federal Register

Last Amendment : **CFRUS*, 40, 712, 30, 1990** ***Entry / Update :*** OCT1991

Code of Federal Regulations

Substance

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
USA	REG	CLASS	INDST	RQR	5000 (2270); Summary - RELEASES OF THIS HAZAR DOUS SUBSTANCE, IN QUANTITIES EQUAL TO OR GRE ATER THAN ITS REPORTABLE QUANTITY (RQ), REPOR TED AS óLBS (KG)|, ARE SUBJECT TO REPORTING T O THE NATIONAL RESPONSE CENTER UNDER THE COMP REHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATIO N, AND LIABILITY ACT. (#)- RQ IS SUBJECT TO C HANGE
		AIR	EMI	RQR	
		AQ	EMI	RQR	

Title : CERCLA: LIST OF HAZARDOUS SUBSTANCES AND REPO RTABLE QUANTITIES

Reference : **CFRUS*, 40, 302, 4, 1990** **Code of Federal Regulations** ***Effective Date :*** 1990

Last Amendment : **CFRUS*, 40, 302, 4, 1990** **Code of Federal Regulations** ***Entry / Update :*** SEP1991

Substance

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
USA	REG	CLASS	PESTI	RQR	CASE NAME CYCLOHEXANONE; Summary - THIS SUBST ANCE IS INCLUDED ON A LIST OF ACTIVE INGREDIE NTS CONTAINED IN A PRODUCT FIRST REGISTERED B EFORE NOVEMBER 1, 1984, FOR WHICH A REGISTRAT ION STANDARD HAS NOT BEEN ISSUED. PUBLICATION OF THIS LIST INITIATES AN ACCELERATED REREGI STRATION AND DATA C ALL-IN FOR PRODUCTS CONTA INING THE LISTED ACTIVE INGREDIENTS. IN PARTI CULAR THE LIST INCLUDES A NUMBER OF ACTIVE IN GREDIENT CASES HAVING INDIRECT FOOD OR FEED U SES.
		MANUF	PESTI	PRMT	
		FOOD	ADDIT	RQR	

Title : FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICI DE ACT PESTICIDES REQUIRED TO BE REREGISTERED ; LIST C.

Reference : **FEREAC, 54, 140, 30846, 1989** **Federal Register** ***Effective Date :*** 1988

Last Amendment : **FEREAC, 54, 140, 30846, 1989** **Federal Register** ***Entry / Update :*** JAN1992

Substance

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
USA	REC	SAFTY	OCC	MXL	5000 PPM
		USE	OCC	MXL	

Title : POCKET GUIDE TO CHEMICAL HAZARDS

Reference : **XPHPAW, 90, 117, 78, 1990** **US Public Health Service Bulletin** ***Effective Date :*** JUN1990

Last Amendment : **XPHPAW, 90, 117, 78, 1990** **US Public Health Service Bulletin** ***Entry / Update :*** OCT1991

Substance

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	*Type*	*Subject*	*Spec.*	*Description*	*Level / Summary Information :*
USA	**REG**	**WASTE STORE TRNSP**	**INDST - REMOV**	**CLASS RQR RQR**	IGNITABLE; Summary - THIS CHEMICAL, IF DISCAR DED, MUST BE TREATED AS AN ACUTE HAZARDOUS WA STE. ACUTE HAZARDOUS WASTES REGULATIONS ARE M ORE RESTRICTIVE FOR EXCLUSION. ANY RESIDUE OF THIS CHEMICAL LABELED AS ACUTELY HAZARDOUS A ND REMAINING IN A CONTAINER, OR AN INNER LINE R R EMOVED FROM A CONTAINER, IS CONSIDERED A HAZARDOUS WASTE IF DISCARDED UNLESS TRIPLE RI NSING OR OTHER CLEANING MEASURES ARE TAKEN (4 0 CFR 261.33E).

Title : RCRA-RESOURCE AND CONSERVATION RECOVERY ACT: DISCARDED COMMERCIAL CHEMICAL PRODUCTS, OFF-S PECIFICATION SPECIES, CONTAINER RESIDUES, AND SPILL RESIDUES THEREOF.

Reference : **FEREAC, 45, 78541, 1980** ***Effective Date :*** 1980
Federal Register
Last Amendment : **CFRUS*, 40, 261, 33, 1990** ***Entry / Update :*** JAN1992
Code of Federal Regulations

Substance

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	*Type*	*Subject*	*Spec.*	*Description*	*Level / Summary Information :*
USA	**REC**	**AIR**	**OCC**	**TLV**	Time Weighted Avg (TWA) 25 ppm, 100 MG/M3, sk in; Summary - THIS THRESHOLD LIMIT VALUE IS I NTENDED FOR USE IN THE PRACTICE OF INDUSTRIAL HYGIENE AS A GUIDELINE OR RECOMMENDATION IN THE CONTROL OF POTENTIAL HEALTH HAZARDS.

Title : THRESHOLD LIMIT VALUES

Reference : **ACGIH*, 11, 1989** ***Effective Date :*** 1989
Threshold Limit Values and Biological Exposure Indices
Last Amendment : **ACGIH*, 11, 1991** ***Entry / Update :*** DEC1991
Threshold Limit Values and Biological Exposure Indices

Substance

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
USA	REG	MONIT	-	RQR	; Summary - THIS IS A CHEMICAL OR MIXTURE FOR WHICH REPORTING IS CURRENTLY REQUIRED UNDER THE TOXIC SUBSTANCE CONTROL ACT HEALTH AND SA FETY STUDIES SECTION 2607D. PERSONS WHO CURRE NTLY MANUFACTURE OR PROCESS CHEMICAL SUBSTANC ES OR MIXTURES FOR COMMERCIAL PURPOSES, THOSE WHO PROPOSE TO DO SO, AND THOSE WHO ARE NOT CURRENTLY INVOLVED WITH A LISTED CHEMICAL BUT WHO MANUFACTURED OR PROCESSED IT OR PROPOSED TO DO SO ANY TIME DURING THE TEN YEAR PERIOD PRIOR TO THE TIME IT BECAME LISTED MUST SUBM IT TO THE ADMINISTRATOR OF THE U.S. EPA STUDI ES OR LISTS OF HEALTH AND SAFETY STUDIES COND UCTED ON THIS SUBSTANCE FOR EVALUATION. ***Title :*** HEALTH AND SAFETY DATA REPORTING RULES SECTIO N 8(D) ***Reference :*** **FEREAC, 51, 32726, 1986** ***Effective Date :*** 1986 **Federal Register** ***Last Amendment :*** **CFRUS*, 40, 716, 120, 1990** ***Entry / Update :*** OCT1991 **Code of Federal Regulations**

Substance

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
EEC	REG	CLASS LABEL PACK	-	CLASS RQR RQR	CLASS: FLAMMABLE (R 10). XN - HARMFUL; HARMFU L BY INHALATION (R 20). LABEL: XN - HARMFUL; FLAMMABLE (R 10); HARMFUL BY INHALATION (R 20); AVOID CONTACT WITH EYES (S 25). CLASSIFICA TION OF PREPARATIONS CONTAINING THE SUBSTANCE CONCENTRATION RANGE: ABOVE 25%: XN - HARMFUL ; HARMFUL BY INHALATION (R 20). ***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**

Substance

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
IMO	REC	TRNSP LABEL PACK	MARIN	CLASS	HAZARD CLASS: 3 = INFLAMMABLE LIQUID. PACKING GROUP: III = SUBSTANCE PRESENTING MINOR DANG ER. UN NO.1915. ***Title :*** ***Reference :*** ***Effective Date :*** ***Last Amendment :*** **!, IMCOC*, 10004, 1990** ***Entry / Update :*** JAN1991 **International Maritime Dangerous Goods Code**

Substance

Chemical Name :
Reported Name : **Cyclohexanone**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
IMO	**REG**	**AQ** **AQ**	**EMI** **MARIN**	**PRO** **PRO**	Category D substance (substance which is practically non-toxic to aquatic life): discharge into the sea of this substance, of ballast water, tank washings, or other residues of the substance shall be prohibited except where specified conditions are satisfied. Requirements prescribe port facilities for receiving residues or mixtures containing the regulated substance. Technical assistance for training of scientific and technical personnel shall be promoted where requested by the Parties of this Convention. (Applies to cyclohexanone and to cyclohexanone/cyclohexanol mixture) ***Title :*** International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78). ***Reference :*** ***Effective Date :*** ***Last Amendment :*** **IMODC*,** ***Entry / Update :*** SEP1994

Substance

Chemical Name : **CYCLOHEXANONE**
Reported Name : **CYCLOHEXANONE**
CAS Number : **108-94-1**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
UN	**REC**	**TRNSP** **LABEL** **PACK**	**-**	**CLASS**	HAZARD CLASS: 3 = INFLAMMABLE LIQUID. PACKING GROUP: III = SUBSTANCE PRESENTING MINOR DANG ER. UN NO.1915. ***Title :*** ***Reference :*** ***Effective Date :*** ***Last Amendment :*** **!, UNTDG*, 15, 1989** ***Entry / Update :*** SEP1982 **UN Transport of Dangerous Goods, Recommendation prepared by theCommittee of Experts on the Transport of Dangerous Goods**