

Degussa 

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Degussa
Corporation
April 14, 1995

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8EHQ-0495-13021

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Washington, D.C. 20460

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Attn.: Section 8(e) Coordinator



Re: **8EHQ-95-13021**
Substantial Risk Notification
Pursuant to TSCA Section 8(e)
Additional Information

Dear Sir:

We submitted a Substantial Risk Notification dated May 6, 1994 in accordance with Section 8(e) of the Toxic Substances Control Act (TSCA). The substance is a "new" chemical, 1,3-dioxolane, 2-ethenyl- (which we call 2-vinyl-1,3-dioxolane or VDL) CASRN 3984-22-3. This new chemical substance has been imported under a Research & Development exemption and we intend to submit a PMN in the near future.

In our submission we mentioned that we were informed about a preliminary result of an acute dermal toxicity study in rabbits that was likely to be reportable under TSCA Section 8(e). We have received a copy of the study and are submitting it now.

Acute Dermal Toxicity Study In Rabbits

Dosage/route/duration: 2-Vinyl-1,3-dioxolane was studied for acute toxicity after a single dermal application in rabbits (occlusive for 24 hours). The test substance was used undiluted and applied at 6.61 mg/kg, 66.1 mg/kg and 208.6 mg/kg on male and female

Results: Intoxication was characterized by hypokinesia, decrease in muscle tone, loss of righting reflexes, salivation, strenuous respiration and dark discolored eyes. Symptoms appeared about two hours after treatment and lasted until death.

Deaths occurred between five and 24 hours after treatment. The LD50 for males and females was 25.1 mg/kg.

Sincerely,



John Lewinson, Ph.D.
Manager, Product Regulatory Compliance



8EHQ-94-13021
SP001 04/18/95

JL-95-179

cc: R. Marion, DCA
Dr. Mayr, US-IT
Dr. Pieter, DCRP

mm
5/3/95



89950000180



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

John Lewinson, Ph.D.
Manager, Product Regulatory Compliance
Degussa Corporation
65 Challenger Road
Ridgefield Park, New Jersey 07660

OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

AUG 02 1994

EPA acknowledges the receipt of information submitted by your organization under Section 8(e) of the Toxic Substances Control Act (TSCA). For your reference, copies of the first page(s) of your submission(s) are enclosed and display the TSCA §8(e) Document Control Number (e.g., 8EHQ-00-0000) assigned by EPA to your submission(s). Please cite this number when submitting follow-up or supplemental information and refer to the reverse side of this page for "EPA Information Requests".

All TSCA 8(e) submissions are placed in the public files unless confidentiality is claimed according to the procedures outlined in Part X of EPA's TSCA §8(e) policy statement (43 FR 11110, March 16, 1978). Confidential submissions received pursuant to the TSCA §8(e) Compliance Audit Program (CAP) should already contain information supporting confidentiality claims. This information is required and should be submitted if not done so previously. To substantiate claims, submit responses to the questions in the enclosure "Support Information for Confidentiality Claims". This same enclosure is used to support confidentiality claims for non-CAP submissions.

Please address any further correspondence with the Agency related to this TSCA 8(e) submission to:

Document Processing Center (7407)
Attn: TSCA Section 8(e) Coordinator
Office of Pollution Prevention and Toxics
U.S. Environmental Protection Agency
Washington, D.C. 20460-0001

EPA looks forward to continued cooperation with your organization in its ongoing efforts to evaluate and manage potential risks posed by chemicals to health and the environment.

Sincerely,

Terry R. O'Bryan
Terry R. O'Bryan
Risk Analysis Branch

Enclosure

13021 A

DEGUSSA AG - US-IT - NR.
93 0017 DGT

2-Vinyl-1,3-Dioxolane

Acute Toxicity

**Testing the Acute Toxicity after
Single Dermal Application
in Rabbits**

REPORT

No. 1 of 2 Originals

July 11, 1994

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The report comprises 27 pages.

1. GENERAL INFORMATION

1.1 Study Specification

Sponsor : Initiative Umweltrelevante Altstoffe e.V.
Kennedyallee 93
D-60596 Frankfurt am Main

IUA No. : 5058

Scientific Supervision : Degussa AG/ZN Wolfgang
Industrielle Toxikologie (US-IT)
Rodenbacher Chaussee 4
D-63457 Hanau

DEGUSSA AG US-IT No. : 93-0017-DGT

Testing Facility : ASTA Medica AG
Institute of Toxicology
Kantstraße 2
D-33790 Halle/Westfalen

Study Director : Dr. rer. nat. K. Berthold
Representative of the
Study Director, Veterinary Care : Dr. med. vet. H.-J. Zechel
Study Performance : E. Kampher, R. Iselt
Pathology : Dr. med. vet. T. Nolte

Quality Assurance : K.E. Fichtner
Representative: Dr. B. Wilker

Test Substance : 2-Vinyl-1,3-dioxolane

Objective : Testing the acute toxicity after single dermal appli-
cation in rabbits.

Test Guidelines : OECD Guideline No. 402 (1)
EEC Guideline 92/32/EEC (2)

ASTA Study No. : 895432

Time Schedule : Protocol Nov 24 1993
First day of application Nov 30 1993
End of study Dec 16 1993
Final report July 11 1994

Quality Assurance : The study was performed according to the princi-
ples of Good Laboratory Practice (GLP) (3)

As enacted in the German Chemicals Act (Chemikaliengesetz) the Institute of Toxicology was inspected by the competent authority regarding compliance with the Principles of Good Laboratory Practice. Certificates, dated March 16, 1991 and June 17, 1993, are on file in ASTA Medica AG.

Archivation

: The approved protocol, all written raw data obtained in the course of the study, all preserved tissues, paraffin blocks, and slides as well as a sample of the test substance and a copy of the final report are kept in the archives of the Institute of Toxicology at least 30 years (starting with the report date). Afterwards the sponsor will decide on further use. The preserved tissues and the sample of the test substance may be discarded as soon as an inspection indicates that their quality does not allow any further evaluation. Data collected by the EDP-system are stored on hard disk. One copy of these data is kept in the archives of the Institute of Toxicology.

1.2 Authentication

I, the undersigned, hereby declare that to the best of my knowledge the study was performed under my supervision in accordance with current Good Laboratory Practice (as laid down in the German Chemicals Act).

In line with normal practice in this type of short-term study, the protocol did not require analysis of the dose form.

This report represents a true and accurate record of the results obtained.

Study Director

: K. Berthold 15.7.99
Dr. rer. nat. K. Berthold

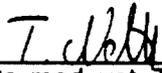
Report Review

Head of Institute of Toxicology

: W. Jahn 15.7.99
Dr. med. vet. W. Jahn

1.3 Signature List

Pathology

: 

Dr. med. vet. T. Nolte

1.4 ASTA Medica AG
Corporate Quality Assurance
Section GLP/GCP

Quality Assurance Statement

The non-clinical laboratory study

2-Vinyl-1,3-dioxolane
Testing the acute toxicity after single dermal application in rabbits

performed at ASTA Medica AG, Halle/Westfalen,

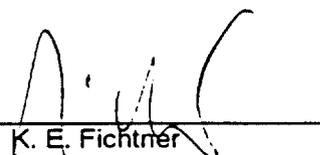
was inspected and audited for conformance to the principles of Good Laboratory Practice (GLP).

The dates of inspections and reports to study director and management are given below.

| <u>Phase of Study</u> | <u>Date of QA Inspection</u> | <u>Date of QA Report</u> |
|-----------------------|------------------------------|--------------------------|
| Protocol Review | Nov. 25, 1993 | Nov. 25, 1993 |
| Experimental Period | Nov. 30, 1993 | Nov. 30, 1993 |
| | Dec. 03, 1993 | Dec. 03, 1993 |
| | Feb. 15, 1994 | Feb. 15, 1994 |
| Final Report Audit | June 28, 1994 | June 28, 1994 |
| | July 11, 1994 | July 11, 1994 |

Date: July 26, 1994

Signed: _____


K. E. Fichtner

2. SUMMARY

2-Vinyl-1,3-dioxolane was studied for acute toxicity after single dermal application in rabbits (occlusive for 24 hours). The test substance, available as a colourless liquid, was used undiluted. The doses were 0.0068 ml/kg ($\hat{=}$ 6.61 mg/kg), 0.0681 ml/kg ($\hat{=}$ 66.1 mg/kg) and 0.215 ml/kg ($\hat{=}$ 208.6 mg/kg) in male and female animals.

Intoxication was characterized by hypokinesia, decrease of muscle tone, loss of righting reflexes, salivation, strenuous respiration, and dark discoloured eyes. Individuals additionally showed reddish salivation or loss of pain reflex.

Symptoms appeared about two hours after treatment and lasted until death.

Deaths occurred between five and 24 hours after application of the test substance.

At necropsy three animals exhibited pale areas on the surface of the liver.

Microscopical examination of the livers revealed focal necroses of liver parenchyma and swollen hepatocytes. Additionally dead animals showed agonal congestion.

The LD 50 value was

for male and female rabbits: 25.1 (5.19 - 65.7) mg/kg

The slope of the dose response curve was

for male and female rabbits: 3.33 (0.89 - 5.77)

3. INTRODUCTION

The study was conducted to investigate the acute toxicity of 2-vinyl-1,3-dioxolane after single dermal application in rabbits.

The objective of the study was to determine the signs of toxicity (clinical observations, macroscopical examination and microscopical examination of substance related macroscopically changed organs), the progress of intoxication, and the time of death (1, 2, 4). The observation period was 14 days. The findings obtained were supplemented by determination of the LD 50 for male and female animals together.

This study was conducted in accordance with the OECD Guideline No. 402 (1) and the EEC Guideline 92/32/EEC (2).

4. METHODS

4.1 Test Substance

Test Substance/Trade Name/Identity : 2-Vinyl-1,3-dioxolane
Chemical Name/Synonym : Vinylidioxolane (VDL)
CAS No. : 3984-22-3
Batch No. : 018-A3-001
Physical Appearance : Colourless liquid
Content/Purity : > 98% (HPLC)
Solubility : 115 g/l (20°C) in water
Density : 0.97 g/cm³ (25°C)
Storage : The test substance was kept in a closed container in a refrigerator protected against light.
Stability : According to information from the sponsor the test substance was stable throughout the experimental period.
Additional Information : See attachment 1 and under substance No. 91008 on file in Institute of Toxicology.

4.2 Test System

4.2.1 Animal Species

: Rabbit
Strain : White russian (Albino)
Origin/Breeder : ASTA Medica AG, D-33790 Halle/Westfalen

Justification for the Selection of the Test System

: The test system was selected on the basis of international recommendations. According to these, rabbits are suitable for detecting toxic properties of test substances.

Age of the Animals at Treatment

: Males 7 - 16 months; females 8 - 13 months

Body Weight of the Animals at Treatment

: Males 2.28 - 2.67 kg; females 2.54 - 3.18 kg

Total Number of Animals

: Males 9; females 9

4.2.2 Husbandry

Location : ASTA Medica AG
Institute of Toxicology
Room No. E.78
Kantstraße 2
D-33790 Halle/Westfalen

- Caging** : Stainless steel cages with grating floor, type ASTA, size: 48.5x40x36.5 cm (LxBxH)
- Number of Animals per Cage** : 1
- Diet** : Approx. 120 g/day x animal
Standard diet, ssniff K, Special diet for rabbits (composition of the diet see attachment 2) supplied by ssniff Spezialdiäten GmbH, D-59494 Soest
According to information from the manufacturer contaminant analyses of the diet are performed in appropriate intervals. Certificates of analyses are on file in the testing facility.
- Water** : Water was provided ad libitum in drinking water quality from the Stadtwerke Halle, using an automatic drinking water system with drinking nipples. According to information from the Stadtwerke Halle the water is investigated in appropriate intervals. Certificates of analyses are on file in the testing facility.
- The known contaminants present in diet and water are toxicologically insignificant in the quantities detected for the experiment performed.
- Room Temperature** : 19.0 - 20.5°C
- Relative Humidity** : 50 - 83%
- Room Lighting** : 6 a.m. - 6 p.m. CET artificial lighting
6 p.m. - 6 a.m. CET darkness
- Room Hygiene, Cage Cleaning** : The room and cages were cleaned regularly with commercial antiseptics.
- 4.2.3 Identification of the Animals and Cages** : The animals were individually identified with ear No. (tattoo).
The cages were labelled with: ASTA study No., name of the test substance, animal species, ear No., sex, dose, day and route of application
- 4.2.4 Acclimatization Period** : The animals were kept at least 5 days under test conditions before substance application after hair clipping. Veterinary supervision of the animals was done before start of the study.

4.3 Procedure

Application of the Test Substance : Single dermal application
The test substance was given to the shorn skin between shoulder and sacral region using an occlusive bandage including a patch for 24 hours. At the end of the exposure period bandage and patch were removed and the skin was cleaned from the residual test substance by washing with tapwater as far as possible.

Justification for the Selection of the Route of Application : The test substance was examined on its toxicity after single dermal application, because of the potential dermal exposure of man.

Dose/Dose Groups :

| Dose (ml/kg) | Animals per Dose |
|----------------|------------------|
| Males | |
| 0.0068 | 3 |
| 0.0681 | 3 |
| 0.215 | 3 |
| Females | |
| 0.0068 | 3 |
| 0.0681 | 3 |
| 0.215 | 3 |

4.4 Observations/Findings

4.4.1 Clinical Examinations

Behaviour, General Condition, and Clinical Symptoms : The animals were continuously observed for the first 4 to 6 hours after application and then once daily. The nature of the toxicity as well as the onset, the intensity, and the duration of the signs were recorded (1, 2, 4).

Mortality : Mortality was checked twice daily (a.m. and p.m.), on Saturdays, Sundays, on national and business holidays only once daily. If ascertainable, the time of death of the deceased animals was documented. Animals found dead were recorded correspondingly.

Body Weight : The body weights were recorded at the beginning and also 7 and 14 days after application or after death of the animals on days 2 to 14.

Observation Period : 14 days after start of exposure

4.4.2 Pathology

Sacrifice : At the end of the observation period the animals were sacrificed with T 61[®] (supplied by Hoechst Veterinär GmbH, D-85716 Unterschleißheim).

- Gross Necrospy** : A gross necropsy was performed on all animals. Macroscopical examination included external appearance, body orifices, body cavities (thoracic and abdominal), and their contents.
- Histopathology** : Samples of the livers of 8/9 male and female rabbits each were fixed in a 4% neutral buffered (LILLIE) formaldehyde solution (10% formalin). The preserved tissues were trimmed, embedded in paraffin wax, sectioned at approximately 4 μ m, stained with Hematoxylin and Eosin (H&E), and examined microscopically.
- 4.5 Evaluation of Data** : The LD 50 values were determined for both sexes together with 95% confidence interval by probit analysis (5 - 8).
The dose groups used for determination of the LD 50 value were marked with * in table 3.
- 4.6 Protocol Adherence** : The study was conducted in accordance with the original protocol with the following exception:

The relative humidity was above the range stated in the protocol. The occasional temporary excess did not influence the results of the study.

The LD 50 values could only be determined for both sexes together.

5. RESULTS

Clinical Observations

Dermal treatment of male and female rabbits with 0.0068 ml/kg did not cause any effects.

A dose of 0.0681 ml/kg resulted in slight to moderate hypokinesia in three of six animals and death within five to 24 hours in all of them.

The highest dose (0.215 ml/kg) led to moderate to severe hypokinesia, decrease of muscle tone, loss of righting reflexes, salivation, dark discoloured eyes, and strenuous respiration. One animal each exhibited reddish salivation or loss of pain reflex.

Clinical symptoms are shown in table 1 separately for surviving and deceased animals. The individual body weights are listed in table 2. Mortality data are given in table 3.

Pathology

At necropsy some dead animals showed pale areas on the surface of the liver.

The histopathologic examination of the livers revealed treatment related changes in animals treated with the mid and high dose of the test substance. Treatment related changes were focal necrosis of the liver parenchyma and swollen hepatocytes.

The focal necroses of the liver parenchyma were graded as minimal to slight. They were small in size and occurred in all zones of the liver lobule. The necroses were acute as indicated by a minimal demarcation with granulocytes. The finding showed a dose related increase in incidence.

Swollen hepatocytes predominantly occurred centrilobular. In H&E stained sections swollen hepatocytes had a granulated and pale eosinophilic cytoplasm. The finding was graded as minimal to moderate.

The livers of most animals which died intercurrently were congested. The macroscopic observation of pale areas in some mid and high dose group animals correlates with an irregular dissemination of intrahepatic blood which was histologically diagnosed as focal congestion. The focal congestion and the macroscopic correlate of pale areas were regarded as agonal changes and not as substance related effects.

Focal vacuolation of hepatocytes occurred in rabbits of all treatment groups. The finding showed no dose related increase in incidence and severity and was therefore regarded as not related to the treatment.

Animals of all treatment groups had minimal to slight focal mononuclear infiltrates of the liver. This finding was regarded as incidental and not related to the treatment.

The macroscopic and microscopic findings are given in tables 4 and 5 separately for surviving and deceased animals.

Statistics

The LD 50 value as well as the slope of the dose response curve were calculated for male and female rabbits together with a confidence limit of 95% by probit analysis.

LD 50 value male and female rabbits: 25.1 (5.19 - 65.7) mg/kg

Slope male and female rabbits: 3.33 (0.89 - 5.77)

6. TABLES

Table 1a : Acute Toxicity - Clinical Symptoms

Test Substance : 2-Vinyl-1,3-Dioxolane
Species : Rabbit
Application : Dermal

Sex : Male, Surviving Animals

| Symptoms | Dose ml/kg |
|-------------|---------------|
| | 0.0068 x/3 |
| No symptoms | 3 |

Sex : Male, Deceased Animals

| Symptoms | | Dose ml/kg | |
|-------------------------|----------|---------------|--------------|
| | | 0.0681 x/3 | 0.215 x/3 |
| Hypokinesia | moderate | 2 | 1 |
| | severe | | 2 |
| Decrease of muscle tone | AP | | 3 |
| Loss of righting reflex | LP | | 2 |
| Salivation | | | 2 |
| Strenuous respiration | | | 2 |
| Dark discoloured eyes | | | 3 |
| No symptoms | | 1 | |

AP = Abdominal Position, LP = Lateral Position

Table 1b : Acute Toxicity - Clinical Symptoms

Test Substance : 2-Vinyl-1,3-Dioxolane
Species : Rabbit
Application : Dermal

Sex : Female, Surviving Animals

| Symptoms | Dose ml/kg | |
|-------------|---------------|--|
| | 0.0068 x/3 | |
| No symptoms | 3 | |

Sex : Female, Deceased Animals

| Symptoms | | Dose ml/kg | |
|-------------------------|----------|---------------|--------------|
| | | 0.0681 x/3 | 0.215 x/3 |
| Hypokinesia | slight | 1 | |
| | moderate | | 2 |
| | severe | | 1 |
| Decrease of muscle tone | AP | | 3 |
| Loss of righting reflex | LP | | 1 |
| | DP | | 1 |
| Loss of pain reflex | | | 1 |
| Salivation (reddish) | | | 1 |
| Strenuous respiration | | | 2 |
| Dark discoloured eyes | | | 3 |
| No symptoms | | 2 | |

AP = Abdominal Position, LP = Lateral Position, DP = Dorsal Position

Table 2 : Acute Toxicity - Body Weights (kg) - Individual Values

Test Substance : 2-Vinyl-1,3-Dioxolane
Species : Rabbit
Application : Dermal

Sex : Male

| Dose (ml/kg) | Animal No. | Day 0 | Day 7 | Day 14 |
|--------------|------------|-------|-------|--------|
| 0.0068 | 019 | 2.34 | 2.28 | 2.29 |
| | 021 | 2.60 | 2.59 | 2.64 |
| | 2657 | 2.64 | 2.62 | 2.63 |
| 0.0681 | 2645 | 2.67 | | |
| | 2643 | 2.65 | | |
| | 017 | 2.43 | | |
| 0.215 | 2601 | 2.41 | | |
| | 2631 | 2.28 | | |
| | 2647 | 2.57 | | |

Sex : Female

| Dose (ml/kg) | Animal No. | Day 0 | Day 7 | Day 14 |
|--------------|------------|-------|-------|--------|
| 0.0068 | 018 | 2.54 | 2.57 | 2.57 |
| | 020 | 3.09 | 3.06 | 3.05 |
| | 022 | 3.05 | 3.04 | 3.03 |
| 0.0681 | 2674 | 3.18 | | |
| | 2682 | 2.98 | | |
| | 016 | 3.16 | | |
| 0.215 | 028 | 2.56 | | |
| | 2670 | 2.56 | | |
| | 2684 | 2.77 | | |

Table 3 : Acute Toxicity - Mortality Data

Test Substance : 2-Vinyl-1,3-Dioxolane
Species : Rabbit
Application : Dermal

Sex : Male

| Dose ml/kg | Mortality Rate | | Time of Survival until | | | | | | | | | | | | | | | | | | | |
|---------------|-------------------|-----|-------------------------|---|-----|---|---|---|------------------------|----|---|---|---|---|---|---|---|---|----|----|----|----|
| | | | Hours after application | | | | | | Days after application | | | | | | | | | | | | | |
| | | | x/n | % | 0.5 | 1 | 2 | 4 | 6 | 24 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 0.0068* | 0/3 | 0 | | | | | | | | | | | | | | | | | | | | |
| 0.0681* | 3/3 | 100 | | | | | 1 | 2 | | | | | | | | | | | | | | |
| 0.215* | 3/3 | 100 | | | | | 2 | 1 | | | | | | | | | | | | | | |

Sex : Female

| Dose ml/kg | Mortality Rate | | Time of Survival until | | | | | | | | | | | | | | | | | | | |
|---------------|-------------------|-----|-------------------------|---|-----|---|---|---|------------------------|----|---|---|---|---|---|---|---|---|----|----|----|----|
| | | | Hours after application | | | | | | Days after application | | | | | | | | | | | | | |
| | | | x/n | % | 0.5 | 1 | 2 | 4 | 6 | 24 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 0.0068* | 0/3 | 0 | | | | | | | | | | | | | | | | | | | | |
| 0.0681* | 3/3 | 100 | | | | | 1 | 2 | | | | | | | | | | | | | | |
| 0.215* | 3/3 | 100 | | | | | 2 | 1 | | | | | | | | | | | | | | |

* Dose groups used for calculation of the LD 50 value

Table 4a : Acute Toxicity - Macroscopical Examination

Test Substance : 2-Vinyl-1,3-Dioxolane
Species : Rabbit
Application : Dermal

Sex : Male, Surviving Animals

| Organ/Finding | Dose ml/kg | |
|---------------------------|---------------|--|
| | 0.0068 x/3 | |
| No abnormalities detected | 3 | |

Sex : Male, Deceased Animals

| Organ/Finding | Dose ml/kg | |
|---------------------------|---------------|--------------|
| | 0.0681 x/3 | 0.215 x/3 |
| Liver/ Several pale areas | 1 | 1 |
| No abnormalities detected | 2 | 2 |

Table 4b : Acute Toxicity - Macroscopical Examination

Test Substance : 2-Vinyl-1,3-Dioxolane
Species : Rabbit
Application : Dermal

Sex : Female, Surviving Animals

| Organ/Finding | Dose ml/kg | |
|----------------------------|---------------|--|
| | 0.0068 x/3 | |
| Uterus/ Estrus cycle state | 1 | |
| No abnormalities detected | 2 | |

Sex : Female, Deceased Animals

| Organ/Finding | Dose ml/kg | |
|---------------------------|---------------|--------------|
| | 0.0681 x/3 | 0.215 x/3 |
| Liver/ Several pale areas | 1 | |
| No abnormalities detected | 2 | 3 |

Table 5a : Acute Toxicity - Microscopical Examination

Test Substance : 2-Vinyl-1,3-Dioxolane
Species : Rabbit
Application : Dermal

Sex : Male, Surviving Animals

| Organ/Finding | Dose ml/kg | |
|--|---------------|--|
| | 0.0068 x/3 | |
| Liver/ - Mononuclear infiltrate(s) focal, minimal | 1 | |
| - No abnormalities detected | 2 | |

Sex : Male, Deceased Animals

| Organ/Finding | Dose ml/kg | |
|--|---------------|--------------|
| | 0.0681 x/3 | 0.215 x/2 |
| Liver/ - Mononuclear infiltrate(s) focal, minimal | 1 | |
| - Congestion diffuse, minimal to moderate | 2 | 1 |
| - Congestion focal, slight to moderate | 1 | 1 |
| - Swollen hepatocytes, minimal to moderate | 3 | 1 |
| - Necrosis focal, slight | | 2 |
| - Vacuolation hepatocytes focal, minimal | | 1 |

Table 5b : Acute Toxicity - Microscopical Examination

Test Substance : 2-Vinyl-1,3-Dioxolane
Species : Rabbit
Application : Dermal

Sex : Female, Surviving Animals

| Organ/Finding | Dose ml/kg | |
|--|---------------|--|
| | 0.0068 x/3 | |
| Liver/ - Mononuclear infiltrate(s) focal, minimal | 1 | |
| - Vacuolation hepatocytes focal, minimal associated with vacuolation of Kupffer cells | 1 | |
| - No abnormalities detected | 1 | |

Sex : Female, Deceased Animals

| Organ/Finding | Dose ml/kg | |
|--|---------------|--------------|
| | 0.0681 x/3 | 0.215 x/2 |
| Liver/ - Mononuclear infiltrate(s) focal, minimal to slight | 2 | 2 |
| - Congestion diffuse, slight | | 2 |
| - Congestion focal, minimal to moderate | 2 | |
| - Swollen hepatocytes, minimal to slight | 3 | 2 |
| - Necrosis focal, minimal to slight | 1 | 2 |
| - Vacuolation hepatocytes focal, minimal | 1 | 1 |

Table 6 : Acute Toxicity - LD 50 Values

Test Substance : 2-Vinyl-1,3-Dioxolane
Species : Rabbit
Application : Dermal

Method : Probit Analysis (5 - 8), Confidence Limit 95%

| | LD 50 (mg/kg) | Slope |
|-------------------------|-----------------------|-----------------------|
| Male and Female Animals | 25.1 (5.19 - 65.7) | 3.33 (0.89 - 5.77) |

7. REFERENCES

1. OECD (1987), "Acute Dermal Toxicity", In: OECD Guidelines for Testing of Chemicals, Section 4: Health Effects, Method No. 402, Organisation for Economic Cooperation and Development (OECD), Paris, ISBN-92-64-12221-4.
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8. ATTACHMENTS 1 - 2

Attachment 1

Data on the Test Substance

Attachment 2

Composition of the Diet



Attachment 1

Data on Test Substance No.

Study No.

Supplier : Degussa AG

Test Substance/
Trade Name/Identity : 2-Vinyl-1,3-dioxolan

Synonym : Vinyldioxolan (VDL)

CAS No. : 3984-22-3

Batch No./Date of
Production : 018-A3-001

Physical Appearance : liquid

Purity (Method)/
Known Impurities : > 98 % (HPLC)

Solubility : 115 g/l (20 °C) in water

Density : 0,97 g/cm³ (25 °C)

pH-Value :

Storage : Cool and dark

Stability : Under the a.m. storage conditions the test
substance is stable until 06.1994

Wolfgang, 19.5.93
Place, Date

A handwritten signature in black ink, appearing to be "C. B. Z.", written over a horizontal line.

Signature

Attachment 2

s s n i f f K
Special Diet for Rabbits

Nutrients (in % Diet)

| | |
|-------------|--------|
| Raw Protein | 19.50% |
| Raw Fat | 3.00% |
| Raw Fiber | 15.00% |
| Raw Ash | 8.50% |

| | |
|------------|-------|
| Calcium | 1.20% |
| Phosphorus | 0.75% |
| Sodium | 0.20% |
| Magnesium | 0.20% |
| Potassium | 1.50% |

Amino Acids (in 1 kg Diet)

| | |
|---------------|-------|
| Lysine | 1.15% |
| Methionine | 0.35% |
| Cystine | 0.30% |
| Glycine | 1.00% |
| Leucine | 1.40% |
| Isoleucine | 1.10% |
| Arginine | 1.25% |
| Phenylalanine | 1.00% |
| Tryptophane | 0.30% |
| Histidine | 0.50% |
| Valine | 1.10% |

Vitamins (in 1 kg Diet)

| | |
|------------------|-------------|
| A | 18,000 I.E. |
| D ₃ | 1,800 I.E. |
| E | 70 mg |
| C | 1,000 mg |
| B ₁ | 15 mg |
| B ₂ | 30 mg |
| B ₆ | 12 mg |
| B ₁₂ | 70 mcg |
| Biotin | 250 mcg |
| Pantothenic Acid | 40 mg |
| Choline | 1,600 mg |
| Folic Acid | 1.5 mg |
| Nicotinic Acid | 90 mg |
| K ₃ | 4 mg |

Trace Elements (in kg Diet)

| | |
|-----------|--------|
| Manganese | 80 mg |
| Copper | 17 mg |
| Zinc | 60 mg |
| Iodine | 0.5 mg |
| Ferrum | 250 mg |
| Fluorine | 10 mg |

Aliphatic Acids

Data available on request