BASF Corporation

PDCN: 88950000128

(B)

BASF

RECEIVED
95 AUG 18 AM 7:47

8EHQ-0895-13339

ORIGINAL

Certified Mail
Return Receipt Requested

August 15, 1995

Document Processing Center (TS-790)
Attention: 8(e) Coordinator
Office of Pollution Prevention and Toxics
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

Contains No CBI

Ladies and Gentlemen:

Subject: Supplement to EPA Document Control Number 8EHQ-95-13339 - N-vinylcaprolactam.

Attached is the final report on the inhalation toxicity of N-vinylcaprolactam, the subject of the referenced 8(e) submission. The study was recently received from BASF Aktiengesellschaft, Ludwigshafen, Germany, the sponsor of the study.

The study is entitled Study on the Inhalation Toxicity of Vinylcaprolactam as a Vapor in Rats - 90 Day test.

Please note that this submission does not contain Confidential Business Information. If you have any questions, please do not hesitate to contact me at (313) 246-6867.

8EHQ-95-13339
SP001 08/18/95

Very Truly Yours,

BASF Corporation

Teddi Konas

Teddi Konas
Product Stewardship and Product Safety

/Attachment

RECEIVED
9/18/95

89950000245

RECEIVED
OPPT NCIC
95 AUG 22 AM 8:34

1609 Biddle Avenue, Wyandotte, Michigan 48192 (313) 246-6100

CONTENTS

VOLUME I (Report Section and Summary Tables)

		Page
TITLE PAGE		I
SIGNATURES		II
GLP STATEMENT		III
STATEMENT OF THE QUALITY ASSURANCE UNIT		IV - XII
CONTENTS OF VOLUME I, II, III, IV		
1.	**SUMMARY**	1
2.	**INTRODUCTION AND CONCENTRATION SELECTION**	4
3.	**MATERIAL AND METHODS**	6
3.1.	TEST SUBSTANCE	6
3.2.	TEST ANIMALS	7
3.3.	HOUSING AND DIET	7
3.3.1.	Food analyses	7
3.3.2.	Drinking water analyses	7
3.4.	TEST GROUPS AND TARGET CONCENTRATIONS	8
3.5.	EXPERIMENTAL PROCEDURE	9
3.5.1.	Generation of the inhalation atmospheres	9
3.5.2.	Exposure system; exposure of the animals	10
3.5.3.	Measurement of the operation conditions (air flows, relative humidity, temperature and pressure conditions) of the exposure systems	11
3.6.	ANALYTICAL INVESTIGATIONS	13
3.6.1.	Nominal concentration	13
3.6.2.	Measured concentration	13
3.6.3.	Sampling of the atmospheres	13
3.6.4.	Gas chromatographical method of analysis	14
3.7.	CLINICAL EXAMINATIONS	16
3.7.1.	Mortality	16
3.7.2.	Body weight data	16
3.7.3.	General observation and clinical signs and findings	16
3.7.4.	Ophthalmoscopy	16

BEST COPY AVAILABLE

		Page
3.8.	CLINICAL CHEMISTRY, HEMATOLOGY AND URINALYSES	17
3.8.1.	Hematological examinations	17
3.8.2.	Clotting analyses	19
3.8.3.	Clinicochemical examinations	19
3.8.4.	Determination of GSH content in liver tissue	23
3.8.5.	Urinalyses	23
3.9.	PATHOLOGY	25
3.10.	STATISTICAL EVALUATION	25
3.10.1.	Clinical examinations	25
3.10.2.	Clinical chemistry, hematology and urinalyses	25
3.10.2.1.	Clinical chemistry and hematology	25
3.10.2.2.	Urinalyses	26
3.11.	RETENTION OF RECORDS	26
4.	**RESULTS AND ASSESSMENT OF FINDINGS**	27
4.1.	ANALYSES	27
4.1.1.	Food analyses	27
4.1.2.	Drinking water analyses	27
4.1.3.	Measurements of atmosphere parameters and operation conditions	27
4.1.3.1.	Concentration measurements in the exposure systems	27
4.1.3.2.	Technical measurements: operation conditions in the exposure systems	28
4.2.	CLINICAL EXAMINATIONS	29
4.2.1.	Mortality	30
4.2.2.	Clinical observations	30
4.2.3.	Body weight data	30
4.2.3.1.	Body weight	30
4.2.3.2.	Body weight change	30
4.2.4.	Ophthalmoscopy	30
4.3.	CLINICAL CHEMISTRY, HEMATOLOGY AND URINALYSES	31
4.3.1.	Hematology	31
4.3.2.	Clotting analyses	31
4.3.3.	Enzymes	31
4.3.4.	Blood chemistry	31
4.3.5.	GSH content in liver homogenate	32
4.3.6.	Urinalyses	32
4.3.7.	Other deviations	32
4.4.	PATHOLOGY	33
5.	**DISCUSSION**	34
6	**REFERENCES**	37

APPENDIX: Summary Tables

	Table
CLINICAL EXAMINATIONS	
Key to the abbreviations, page 39	
Summary of clinical observations	
Preflow period	
- males	001
- females	002
Exposure period	
- males	003 - 009
- females	010 - 016
Body weights	
- males	017 - 018
- females	019 - 020
Body weight change	
- males	021 - 022
- females	023 - 024
CLINICAL CHEMISTRY, HEMATOLOGY AND URINALYSES	
Key to the abbreviations, page 39 - 41	
Hematological examinations	
- males	025
- females	026
Differential blood count	
- males	027 - 028
- females	029 - 030
Reticulocytes	
- males	031
- females	032
Clotting analyses	
- males	033
- females	034
Enzymes	
- males	035
- females	037

	Table
Liver examinations	
- males	36
- females	38
Blood chemistry	
- males	039 - 040
- females	041 - 042
Urinalyses	
- males	043 - 044
- females	045 - 046

FIGURES	No.
Generator system	1 - 2
Exposure system	3
Body weight, male animals	4
Body weight, female animals	5

The individual values may be found in Volume II.

All data on PATHOLOGY may be found in the separate pathology report, Volume III.

BEST COPY AVAILABLE

CONTENTS

VOLUME II (Tables Section, Individual values)

	Page
TITLE PAGE	
CONTENTS	I - II
A CLINICAL EXAMINATIONS	Table
Individual values	
Key to the abbreviations, page A2	
Body weight	
- males	A 001 - A 004
- females	A 005 - A 008
Clinical observations	
- Preflow period	
- males	A 009 - A 012
- females	A 013 - A 016
- Exposure period	
- males	A 017 - A 033
- females	A 034 - A 050
B CLINICAL CHEMISTRY AND HEMATOLOGY	
Key to the abbreviations, pages B2 - B7	
Hematological examinations	
- individual values	
- male animals	B 001 - B 002
- female animals	B 003 - B 004
Differential blood count	
- individual values	
- male animals	B 005 - B 008
- female animals	B 009 - B 012
Reticulocytes	
- individual values	
- male animals	B 013 - B 014
- female animals	B 015 - B 016
Clotting analyses	
- individual values	
- male animals	B 017 - B 018
- female animals	B 019 - B 020

	Table
Enzymes	
- individual values	
- male animals	B 021 - B 022
- female animals	B 025 - B 026
Liver examinations	
- individual values	
- male animals	B 023 - B 024
- female animals	B 027 - B 028
Blood chemistry	
- individual values	
- male animals	B 029 - B 032
- female animals	B 033 - B 036
Urinalyses	
- individual values	
- male animals	B 037 - B 040
- female animals	B 041 - B 044

C ANALYTICAL DATA AND EXPOSURE PARAMETERS

Individual values

Key to the abbreviations, page C2

	Table
Daily means (concentrations)	C 001
Daily means (chamber parameters)	C 002 - C 005

CONTENTS

VOLUME III (Pathology Report)

	Page
TITLE PAGE	
TABLE OF CONTENTS1	
MATERIALS AND METHODS	2 - 5
RESULTS	6 - 7
DISCUSSION	8
CONCLUSIONS	9 - 10
LIST OF ABBREVIATIONS	11
ABSOLUTE WEIGHTS - MEAN VALUES (MALE)	12
ABSOLUTE WEIGHTS - MEAN VALUES (FEMALE)	13
RELATIVE WEIGHTS - MEAN VALUES (MALE)	14
RELATIVE WEIGHTS - MEAN VALUES (FEMALE)	15
INCIDENCE OF GROSS LESIONS	16
INCIDENCE OF MICROSCOPIC FINDINGS	17 - 19
INCIDENCE OF SELECTED MICROSCOPIC FINDINGS WITH GRADINGS	20
ABSOLUTE WEIGHTS - INDIVIDUAL VALUES	21 - 28
RELATIVE WEIGHTS - INDIVIDUAL VALUES	29 - 30
SINGLE ANIMAL SHEET	31 - 114

CONTENTS

VOLUME IV (Supplement)

I Study protocol; Project No.: 50I0044/92053

Date: Feb. 08, 1993

II Analysis of the substance; report dated May 06, 1993

Reanalysis of the substance; report dated Nov. 02, 1993

RECEIVED
OPPT CBIC
95 AUG 18 AM 7:48

BASF
Abteilung Toxikologie
Department of Toxicology

D-67056 Ludwigshafen, FRG

ga-bh; 0217

REPORT

Study on the inhalation toxicity
of

Vinylcaprolactam

as a vapor in rats
90-day test

Contains No CBI

Project No.: 50I0044/92053

Report Section and Summary Tables
VOLUME I

This report consists of Volume I (Report Section, Summary Tables), Volume II (Tables Section, Individual values), Volume III (Pathology) and Volume IV (Supplement).

Dieses Dokument enthält Betriebs- und Geschäftsgeheimnisse der BASF. Es ist Eigentum der BASF und darf nur zu dem von BASF vorgesehenen Zweck verwendet werden. Jede andere oder darüber hinausgehende Verwendung, Verwertung, Weitergabe, Vervielfältigung oder Veröffentlichung bedarf der Einwilligung der BASF.

This document contains manufacturing and trade secrets of BASF. It is the property of BASF and may be used only for that purpose for which it was intended by BASF. Every other or additional use, exploitation, reproduction, publication or submission to other parties require the written permission of BASF.

1. SUMMARY

Scope of examinations

Ten male and ten female Wistar rats per test group were exposed to vapors of **N-Vinylcaprolactam** (Vinylcaprolactam) for 6 hours per working day for about 90 days (65 exposures) in whole body inhalation chambers. The target concentrations of treatment groups were 5.8, 58 and about 174 mg/m³ (1, 10 and about 30 ppm*), the high concentration lying in the range of vapor saturation. A concurrent control was exposed to clean air.

Clinical examination was performed once each working day during preflow period and on post exposure day. On exposure days findings were recorded before, during and after exposure. Body weight of the animals was determined weekly. Ophthalmology was carried out prior to and at the end of exposure period.

Hematological and clinicochemical examination of numerous parameters was performed at the end of exposure period, including measurement of GSH and γ-GT content of liver homogenate.

A complete necropsy including weighing of selected organs and gross pathological evaluation was performed in all animals. Histopathology was performed on several organs and Tissues as required by the corresponding testing guidelines.

Results

Analytical concentrations of Vinylcaprolactam in the inhalation atmospheres are given in the following table:

Test group	Target concentration		Measured concentration ± SD	
	mg/m³	ppm	mg/m³	ppm
1	5.8	1	5.9 ± 0.78	1 ± 0.14
2	58	10	58 ± 7.6	10 ± 1.3
3	174	30	181 ± 22	32 ± 3.8

The following substance related findings occurred:

High concentration : (174 mg/m³ ≙ 30 ppm)

- Nasal secretion during the first days of the exposure period and salivation throughout the study during and after each exposure.
- Depression of body weight development in the male animals.
- Decrease in red blood cells, hemoglobin, hematocrit, total protein, albumin and urinary specific gravity in the females.
- Increase in platelet counts in both sexes.
- Increase in white blood cell counts and urinary volume in the females.
- Increase of GSH in liver homogenate of female animals.
- Decreased terminal body weight of male animals.
- Increase of absolute liver weights in females and of relative liver weights in males and females.
- Centrolobular hypertrophy of hepatocytes in females.
- Hyperplasia of transitional epithelium, disarrangement in the epithelium of the dorsal meatus, hyperplasia of basal cells and metaplasia of respiratory epithelium as well as atrophy or focal hyperplasia of olfactory epithelium in the nasal cavity.

Mid concentration (58 mg/m³ ≙ 10 ppm):

- Hyperplasia of transitional epithelium, disarrangement in the epithelium of the dorsal meatus, hyperplasia of basal cells as well as atrophy or focal hyperplasia of olfactory epithelium in the nasal cavity.

Low concentration (5.8 mg/m³ ≙ 1 ppm):

- Hyperplasia of transitional epithelium in the nasal cavity.

In conclusion, the exposure of Vinylcaprolactam to rats at a concentration level of 174 mg/m³ (≙ 30 ppm) for 3 months resulted in clinical signs of irritation of the nose and oral cavity and slight systemic toxicity characterized by depression of body weight development. The systemic effects of test substance exposure were substantiated by the clinico-pathological findings of mild anemia, adaptive response of liver and probably slight disturbance of renal tubular function. Pathomorphologically, correlates for nasal irritation and liver changes could be found.

No systemic toxicity occurred in rats exposed to 58 mg/m³ (≙ 10 ppm) and 5,8 mg/m³ (≙ 1 ppm) of the test compound, but nasal irritation was detectable histopathologically in a concentration-dependent manner down to the low exposure level.

Therefore the systemic NOAEL for Vinylcaprolactam under the conditions of this test was 58 mg/m³ (≙ 10 ppm). No NOAEL for nasal irritation was reached, based on the histopathological finding of hyperplasia of the transitional epithelium in the nasal cavity.

2. INTRODUCTION AND CONCENTRATION SELECTION

Aim of the study

The study was performed in order to characterise the toxicological profile and to estimate the toxic potency of Vinylcaprolactam after subchronic exposure to vapors, especially in relation to Vinylpyrrolidone.

Selection of concentrations

The following concentrations were selected for this 90-day study:

0, 5.8, 58 and 174* mg/m³ (0, 1, 10 and 30* ppm)

The selection of concentrations was based on results from subchronic inhalation studies with N-Vinyl-pyrrolidone (NVP, DFG 1991). Exposure of Spraque-Dawley rats to concentrations of 120, 45, 15, 5 and 1 ppm for 3 months resulted in:

- lethality at 120 ppm
- changes in nasal mucous membranes ≥ 5 ppm
- toxicity to the liver from 5 to 45 ppm

A NOAEC was reached at 1 ppm.

In 90-day gavage studies intended to compare the potency of liver damage, an equimolar dose of NVP (100 mg/kg) produced liver foci, whereas Vinylcaprolactam (130 mg/kg) did only increase relative liver weights of female animals. 260 mg/kg Vinylcaprolactam did lead to increase of liver weights in both sexes without histologically detectable damage. (BASF Proj. Nos. 35S0571/85132 and 12C0053/8404).

If N-Vinylcaprolactam would possess similar inhalation toxicity compared to NVP the high concentration was expected to elicit toxic effects. Nonetheless the toxicological profile of the substance in the range of vapor saturation would be determined.

---

* maximum technically attainable concentration ≈ 90% of saturated vapor concentration. (20°C) 0.24 hPa ≙ saturated vapor of 194 mg/m³ (34 ppm).

In the mid concentration marginal effects on upper respiratory tract and liver might occur.

The low concentration should represent a clear NOAEC.

Guidelines; dates of the study

The study was carried out according to the OECD guidelines for Testing of Chemicals, Section 4; Health Effects; Paris 1981, method 413 [OECD, 1981], the EEC Guidelines 87/302/EEC (EEC 1988), the EPA Guidelines (EPA 1988).

The test was performed according to the following time schedule:

Date		Action
male	female	
May 10, 1993	May 10, 1993	Arrival of the animals
May 21, 1993	May 24, 1993	Beginning of preflow
May 27, 1993	May 28, 1993	Ophthalmoscopy
May 28, 1993	June 01, 1993	Beginning of exposure
Aug. 17, 1993	Aug. 18, 1993	Urinalyses
Aug. 30, 1993	Aug. 31, 1993	End of exposure
Aug. 30, 1993	Aug. 31, 1993	Ophthalmoscopy
Aug. 31, 1993	Sept. 01, 1993	Blood sampling
Aug. 31, 1993	Sept. 01, 1993	Killing

3. MATERIAL AND METHODS

3.1. TEST SUBSTANCE

Name of test substance:	Vinylcaprolactam
Chemical name:	N-Vinylcaprolactcam
CAS No.:	2235-00-9
Test substance No.:	92/44-1
Batch No.:	Vers. 5/93*
Date of manufacture/ filling:	March 12, 1993
Purity:	99.6%
Physical state/ appearance:	solid (crystalline)/colorless to yellowish
Storage conditions:	room temperature, excluded from light; the bottles which were in actual use were stored in a thermostated heating cupboard at about 45°C to ensure that the substance remained liquid. The duration of storage under these conditions was documented and can be seen from the raw data.
Stability:	Stability was ensured for the period of the study under the specified storage conditions (see report ZAX, dated Nov. 2, 1993).

Further details of the test substance may be found in the raw data.

---

* stabilized with 10 ppm Kerobit BPD
Kerobit BPD = N,N'-di-sek-butyl-p-phenylendiamin

BEST COPY AVAILABLE

3.2. TEST ANIMALS

Male and female SPF-Wistar-rats/Chbb:THOM, supplied by Dr. K. Thomae GmbH, Biberach, FRG, were used at an age of about 6 weeks (on delivery).

The animals were delivered on May 10, 1993. They were clinically free from any signs of disease.

3.3. HOUSING AND DIET

During the period when the rats were not exposed they were housed singly in wire cages (type DK III of Becker, Castrop-Rauxel, FRG).

The animals were kept in fully air-conditioned rooms in which a temperature in the range of 20 - 24°C and relative humidity in the range of 30 - 70% were ensured by means of a central air-conditioning system.

A light/dark rhythm of 12 hours was maintained:

- 06.00 a.m. to 06.00 p.m. light
- 06.00 p.m. to 06.00 a.m. dark

Deviations from these specifications that might have had any adverse effect on the results of the study did not occur.

The animals were offered KLIBA rat/mouse/hamster laboratory diet 24-343-4, 10 mm pellets, Klingentalmühle AG, Kaiseraugst, Switzerland, and tap water ad libitum. During exposure food and water were withdrawn.

Details of the feed batches used may be found in the raw data.

3.3.1. Food analyses

The feed used in the study was assayed for chemical as well as for microbiological contaminants.

3.3.2. Drinking water analyses

The drinking water is regularly assayed for chemical contaminants by the municipal authorities of Frankenthal, FRG and the Technical Services of BASF Aktien-

BEST COPY AVAILABLE

3.4. TEST GROUPS AND TARGET CONCENTRATIONS

Test groups, body weight at randomization and target concentrations may be seen from the following tables.

The animals were allocated to the test groups strictly at random (WTALOC randomization program supplied by Instem). The purpose of this was to obtain test groups of equal weight.

The animals were identified by ear tattoo.

Males

Test group	Target concentation (mg/m³)	Number of animals	Animal No.	b.w. ± s.e. (g)
0	Air control	10	1 - 10	257 ± 2.6
1	5.8	10	11 - 20	257 ± 2.9
2	58	10	21 - 30	256 ± 3.0
3	174*	10	31 - 40	257 ± 2.6

Females

Test group	Target concentation (mg/m³)	Number of animals	Animal No.	b.w. ± s.e. (g)
0	Air control	10	41 - 50	171 ± 3.2
1	5.8	10	51 - 60	172 ± 3.3
2	58	10	61 - 70	171 ± 3.4
3	174*	10	71 - 80	172 ± 4.3

In the pathology report the test group numbers are indicated by the index letter F1.

* = maximum concentration that could be achieved technically
b.w. ± s.e. (g) = body weight at randomization ± standard error of the mean in grams of the animals exposed in the study

3.5. EXPERIMENTAL PROCEDURE

3.5.1. Generation of the inhalation atmospheres (see APPENDIX, figures 1 and 2)

Generator system

- continuous infusion pump PERFUSOR (B. Braun)
- glass mixing stage (BASF Aktiengesellschaft)
- glass vaporizer with thermostat (BASF Aktiengesellschaft)
- two-component atomizer (Beckmann)

The test substance was supplied to the vaporizer at a constant rate by means of the metering pump.

Test group 0:

To reach comparable temperatures with the test groups 1 to 3 the supply air of test group 0 was heatet electrically (heating wire).

Test group 1:

The generation was carried out using a heated glass evaporator with a downstream mixing unit (APPENDIX, Fig. 1).

Test groups 2 and 3:

The generation was carried out using a heated glass evaporator with a downstream mixing unit by means of spraying the substance with a two-component atomizer and compressed air into a counter current of blast air (APPENDIX, Fig. 2).

The vapor/air mixtures in test groups 1 to 3 were then additionally mixed with blast air and introduced to a whole-body exposure system.

The nominal concentration was determined from the consumption of test substance and the supply air flow.

The following values of test substance flow, air flow and evaporation temperature were scheduled:

Test group	Substance [ml/h]	Evaporation temperature [°C]	Supply air [m³/h]		Exhaust air [m³/h]
			Compressed air	Blast air	
0	Fresh air	-	-	21 - 28	20.5 - 27.5
1	0.12 - 0.32	45 - 55	-	21 - 28	21.5 - 28.5
2	1.2 - 3.2	45 - 55	0.2 - 0.6	20.6 - 27.6	21.1 - 28.1
3	3.6 - 9.7	45 - 55	0.2 - 0.6	20.6 - 27.6	21.1 - 28.1

3.5.2. Exposure system; exposure of the animals

Whole-body exposure system
(see schematic figure 3, APPENDIX)

The animals were kept singly in wire cages that were in a glass-steel inhalation chamber, volume V ~ 1,400 l (manufacturer: BASF Aktiengesellschaft).

In order to accustom the animals to the exposure conditions, they were exposed to supply air in whole-body exposure systems on 5 days before the exposure period (preflow period). Then all test groups were exposed for 6 hours on workdays over a time period of about 90 days. The number of exposure days was 65.

The animals did not have access to water or feed during the exposure.

Air conditions

During preflow period

A positive pressure was chosen for all test groups during the preflow period.

During exposure period

A positive pressure was maintained in test group 0 by adjusting the air flow of the exhaust air system. This ensured that no laboratory air reached the control animals.

A negative pressure was maintained in test groups 1-3 by adjusting the air flow of the exhaust air system. This ensured that the laboratory was not contaminated as the result of any leakages from the inhalation chambers.

3.5.3. Measurement of the operation conditions (air flows, relative humidity, temperature and pressure conditions) of the exposure systems

The air flow rates, pressure conditions within the chambers, as well as relative humidities and temperatures in the inhalation system were measured continuously by an automated measuring system, were monitored against preset limits and partially regulated. The generator parameters temperature and compressed air were also recorded by means of this system.

The partial flow rates of supply air through the generators and the compressed air used for spraying the substance into the generators of test groups 2 and 3 were measured with rotameters and recorded once per exposure day.

The pipes, used for the partial air flows through the generators were heated with warm water. These water temperatures were measured continuously with thermometers and recorded once per exposure day.

The amounts of substance dosed by the metering pumps were recorded once per exposure day.

Principles of recording with the automated measuring system

The measured values of the various parameters were recorded at the appropriate measuring points with suitable measuring equipment (sensors, orifice plates etc.), standardized (0-20 or 4-20 mA) and transferred to the instrumentation consoles.

There the measured parameters were indicated in an analog way (where this is provided for) and some were used as actual value for regulating the specific parameter.
In addition the measured values were scanned about every 12 seconds, converted from analog to digital, transferred to a personal computer and displayed on the screen. The computer checked the arriving values against the preset threshold values, calculated daily means and standard deviations for each parameter and generated daily protocols. Furthermore the start and the end of exposure is provided in the daily protocol. Malfunctions that led to any exceeding of threshold values caused reports on the daily protocol that indicated the type of disturbance, the affected measuring point as well as the duration and extreme value reached.

The daily records and printed 5-minute values of disturbances which lasted longer than 10 minutes, are considered raw data. Only relevant disturbances are reported in the section 4.1.3.

3.6. ANALYTICAL INVESTIGATIONS

3.6.1. Nominal concentration

The nominal concentration was calculated from the mean of the supplied substance and the amount of the supply air.

3.6.2. Measured concentration

Principle

The substance concentrations of the inhalation atmospheres for the test groups were analyzed by gas chromatography. Daily means were calculated based on the measured samples. From these daily mean values mean concentrations and standard deviations for the entire study were derived.

The constancy of the atmosphere concentrations was recorded by means of non-calibrated total hydrocarbon analyzers.

3.6.3. Sampling of the atmospheres

Sampling: apparatus and conditions

Apparatus

- Experimental gas meter, converted for counting impulses (Elster)
- Diaphragm pump (Neuberger)
- Impulse counter with automatic pump switch (BASF)
- 3 absorption vessels (glass)
- Sampling probe (glass), internal diameter: 4 mm

Volume flow of the sampling: 2 l/min

Sampling volumes: 9 to 90 l

The sampling volumes were adjusted to achieve comparable amounts of the test substance in the samples from the different concentration groups refering to the one-point calibration described below.

Sampling site: immediately adjacent to the animals' noses

Sampling frequency: as a rule, two samples per exposure day in the concentration groups, in which total hydrocarbon analysis was performed or 6 samples per day if total carbon analysis was not possible.

The samples were drawn through 3 absorption vessels connected in series, each of which was filled with about 10 ml of 2-propanol. After the sampling, the contents of the first 2 absorption vessels were transferred to a 50 ml graduated flask and analyzed.

After the final sampling of on the respective exposure day, the content of the last absorption vessel was transferred to a 50 ml graduated flask and analyzed separately to check the absorbing efficiency.

3.6.4. Gas chromatographical method of analysis

The following apparatus was used.

Gas chromatograph: Hewlett-Packard 5840 A

- Column: glass
- Length: 1 m
- Internal diameter: 2 mm
- Separation phase: 15% Carbowax 20M + 3% UCH Chromosorb WIHP
- Support: 80/100 mesh

The following operating conditions were used.

- Carrier gas:	He
- Carrier gas flow rate:	28.1 ml/min
- Hydrogen:	30 ml/min
- Air:	246 ml/min
- furnace temp.:	160°C
- Detector:	FID
- Detector temperature:	250°C
- Injector temperature:	250°C
- Calibr. retention time:	internal standard = 2.3 min sample = 4.1 min

Calibration of the gas chromatograph

Method set up

The gas chromatograph was calibrated by means of calibration solutions of N-Vinylcaprolactam in 2-propanol. Accurately weighed amounts of N-Vinylcaprolactam in concentration ranges of 0.34 - 2.02 mg/50 ml were used for this purpose. A calibration curve was determined.

Routine analysis during test period

For routine analyses one-point calibrations were performed based on the method described above (for details see raw data).

Analysis of the samples

1 ml of internal standard ($C_{18}KW$) were added to the samples. The 50 ml graduated flask was filled up to the calibration mark with 2-propanol. The injection volume was 1 μl.

Mass values N-Vinylcaprolactam were obtained from the area integrals using the calibration point. The concentrations of the test groups were calculated from these mass values in relation to the injected volume and the sample volume of the inhalation atmosphere.

3.7. CLINICAL EXAMINATIONS

3.7.1. Mortality

A check for dead animals was made daily.

3.7.2. Body weight data

The body weight of the animals was checked at the beginning of the preflow period, at the beginning of the exposure period and then once a week, generally. As a rule, the animals were weighed at the same time of the day.

Body weight change was calculated as the difference between body weight on the respective exposure day and body weight on the day of the beginning of exposure. From the individual differences group means were derived.

3.7.3. General observation and clinical signs and findings

A check for feed and drinking water, was made twice a day on workdays and once on weekends and public holidays.
The behavior and state of health of the test animals were checked on workdays at least 3 times on exposure days and, as a rule, once during the preflow period and the post-exposure observation day.

During exposure only a groupwise examination was possible.

3.7.4. Ophthalmoscopy

Before the beginning of the exposure period (day -1 for the male animals and day -4 for the female animals), the eyes of all animals and at the end of the study (day 94 for the male animals and day 91 for the female animals), the eyes of the animals of test group 0 (control group) and of test group 3 (high concentration) were examined with an ophthalmoscope (HEINE) for any changes to the refracting media.

3.8. CLINICAL CHEMISTRY, HEMATOLOGY AND URINALYSES

Blood was taken from the retroorbital venous plexus in the morning from non-fasted, not anesthetized animals. The blood sampling procedure and the subsequent analysis of the blood and serum samples were carried out in a randomized sequence. The list of randomization instructions was compiled with a computer using a random number generator. For urinalysis the individual animals were transferred to metabolism cages (withdrawal of food and water) and urine was collected overnight. The urine samples were evaluated in a randomized sequence.

The assays of blood and serum parameters were performed under internal laboratory quality control conditions with commercial reference controls to assure reliable test results.

The results of the clinicochemical and hematological examinations are expressed in units of the International System (SI).

The following examinations were carried out in 10 animals per test group and sex.

3.8.1. Hematological examinations

The following parameters were determined in blood with EDTA-K_3 as anticoagulant using a particle counter (H 1 E model, by Bayer, Munich, FRG):

- leukocytes
- erythrocytes
- hemoglobin
- hematocrit
- mean corpuscular volume
- mean corpuscular hemoglobin
- mean corpuscular hemoglobin concentration
- platelets

The data obtained were transferred to a computer (VAX; supplied by DEC, Munich, FRG).

The differential blood count and reticulocytes were evaluated visually. The data were transferred to the computer.

The methods used can be seen from the following table:

HEMATOLOGICAL EXAMINATIONS

Parameter	Unit	Method	References
Leukocyte count (WBC)	giga/l	peroxidase method	Operator's Guide for Technicon HI System
Erythrocyte count (RBC)	tera/l	flow cytometric laserlight scattering	
Hemoglobin (HGB)	mmol/l	cyanmethemoglobin method; according to ICSH	
Hematocrit (HCT)	l/l	calculation: MCV x erythrocytes	
Mean corpuscular volume (MCV)	fl	RBC/PLT method; mean of RBC volume (histogram) x MCV (cal)	
Mean corpuscular hemoglobin (MCH)	fmol	calculation: $\frac{\text{hemoglobin}}{\text{erythrocytes}}$	
Mean corpuscular hemoglobin concentration (MCHC)	mmol/l	calculation: $\frac{\text{hemoglobin}}{\text{hematocrit}}$	
Platelet count (PLT)	giga/l	flow cytometric laserlight scattering	
Differential blood count	% and giga/l	stained according to Wright; microscopic evaluation	Evaluation according to: Schermer, S., "The Blood Morphology of Laboratory Animals", F.A. Davis Co., Philadelphia (1967) Zeile, G., Baake, M. and Henrici, G., "Kompendium der praktischen Hämatologie" [Compendium of Practical Hematology], GIT Verlag Ernst Giebler, Darmstadt, FRG, page 196 (1980); laboratory modification
Reticulocytes (RETI)	‰ (10^{-3} erythrocytes)	vital staining with methylene blue; microscopic evaluation	

3.8.2. Clotting analyses

The clotting analyses were carried out using a ball coagulometer (KC 10 A model, by Amelung, Lemgo, FRG) and the results transferred to the computer.

The following parameter was determined:

- prothrombin time (Hepato Quick's test)

The following table lists the method used:

Parameter	Unit	Method	References
Prothrombin time (Hepato Quick´s test) (HQT)	seconds	citrated blood with calcium thromboplastin	Fischer, M. and Falkensammer, Ch., Klin. Wschr. 86, 577-583 (1974)

3.8.3. Clinicochemical examinations

An automatic analyzer (Hitachi 737; by Boehringer, Mannheim, FRG) was used to examine the clinico-chemical parameters.

The values obtained were transferred to a computer (VAX; by DEC, Munich, FRG).

The following parameters were determined:

1. Enzymes
   - alanine aminotransferase
   - aspartate aminotransferase
   - alkaline phosphatase
   - serum-γ-glutamyltransferase
   - liver-γ-glutamyltransferase

2. Blood chemistry
   - sodium
   - potassium
   - chloride
   - inorganic phosphate
   - calcium
   - urea
   - creatinine
   - glucose
   - total bilirubin
   - total protein
   - albumin
   - globulins
   - triglycerides
   - cholesterol
   - magnesium

The methods used can be seen from the following tables:

1. ENZYMES

Enzyme (systematic name and system number)	Unit	Method, wave-length and measuring temperature	References
Alanine amino-transferase (ALT) (L-alanine: 2-oxoglutarate aminotrans-ferase; EC 2.6.1.2.)	µkat/l	kinetic UV test, 340 nm, 37°C	Recommendations of the German Society for Clinical Chemistry: "Standardization of methods for determining enzyme activities in biological liquids". J. Clin. Chem. Clin. Biochem. 8, 658-660 (1970); J. Clin. Chem. Clin. Biochem. 9, 464-465 (1971); J. Clin. Chem. Clin. Biochem. 10, 182-192 (1972) BM working instructions
Aspartate amino-transferase (AST) (L-aspartate: 2-oxoglutarate aminotrans-ferase; EC 2.6.1.1.)	µkat/l	kinetic UV test, 340 nm; 37°C	
Alkaline posphatase (ALP) (orthophosphoric acid monoester phosphohydro-lase; EC 3.1.3.1.)	µkat/l	kinetic color test, 415 nm, 37°C	
γ-Glutamyltrans-ferase (GGT; ((γ-glutamyl) peptide: amino-acid-γ-glutamyl-transferase; EC 2.3.2.2.)	serum: nkat/l liver homo-genate: nkat/g protein	kinetic color test, 415 nm, 37°C	Szasz, G. et al. J. Clin. Chem. Clin. Biochem. 12, 228 (1974) BM working instructions

BM = Boehringer, Mannheim, FRG

2. BLOOD CHEMISTRY

Parameter	Unit	Method	References
Sodium (NA)	mmol/l	ion selective electrodes (ISE)	Hitachi 737 - working instructions
Potassium (K)	mmol/l		
Chloride (CL)	mmol/l	mercury(II)-thiocyanate method	Analogous to Küffer, H., Richterich, R., Kraft, R., Peheim, E. & Colombo, J.P., J. Clin. Chem. Biochem. 13, 203-211 (1975)
Inorganic phosphate (INP)	mmol/l	molybdate reaction	Henry, R.J. in: "Clinical Chemistry", Harper and Row Publishers, New York (1974); BM working instructions
Calcium (CA)	mmol/l	o-cresol-phthalein complex without deproteinization	Ray Sarkar, B.C. and Chauhan, U.P.S., Anal. Biochem. 20, 155 (1967); BM working instructions
Urea (UREA)	mmol/l	enzymatic determination with the urease/ glutamate dehydrogenase method	Neumann, U. and Ziegenhorn, J.: XVI, Nordiska kongressen for klinisk kemi och klinisk fysiologi 1977, Oulu, Finland; BM working instructions
Creatinine (CREA)	µmol/l	kinetic Jaffé method without deproteinization	Bartels, H. et al., Clin. Chim. Acta 37, 193 (1972); BM working instructions
Glucose (GLUC)	mmol/l	hexokinase/ glucose-6-phosphate dehydrogenase method	Schmidt, F.H., Klin. Wschr. 39, 1244-1247 (1961); BM working instructions
Total bilirubin (TBIL)	µmol/l	DPD method	Wahlefeld, A.W. et al., Scand. J. Clin. Lab. Invest. 29, Suppl. 126 (1972) Abstract 11.12; BM working instructions
Total protein (TPROT)	g/l	biuret method	Weichselbaum, T.E., Amer. J. Clin. Path. 10, 40 (1946); BM working instructions
Albumin (ALB)	g/l	bromocresol green method	Doumas et al., Clin. Chim. Acta 31, 87 (1971); BM working instructions

BM = Boehringer, Mannheim FRG

2. BLOOD CHEMISTRY (continued)

Parameter	Unit	Method	References
Globulins (GLOB)	g/l	difference between total protein and albumin	
Tri-glycerides (TRIG)	mmol/l	enzymatic color test with lipase esterase/ glycerokinase/ glycerol-3-phosphate oxidase/4-amino-phenazone	mod. method by Wahlefeld, A.W., in "Methoden der enzymatischen Analyse" [Methods of enzymatic analysis] (Bergmeyer, H.U., ed.) Vol. II, 3rd ed., Verlag Chemie Weinheim, FRG, pp. 1878-1882 (1974); BM working instructions
Cholesterol (CHOL)	mmol/l	enzymatic determination with cholesterol esterase/ cholesterol oxidase/4-amino-phenazone (CHOD-PAP method)	Siedel, J. et al., J. Clin. Chem. Clin. Biochem. 19, 838 (1981); BM working instructions
Magnesium (MG)	mmol/l	xylidylblue method	Mann, C.K. and Yoe, J.H., Anal. Chem. 28, 202-205 (1956) Bohnon, C., Clin. Chim. Acta 7, 811-817 (1962)

BM = Boehringer, Mannheim, FRG

3.8.4. Determination of GSH content in liver tissue

The GSH levels in liver homogenate were determined analytically according to the method described by J. Sedlak and R.M. Lindsay, Estimation of Total, Protein-Bound, and Nonprotein Sulfhydryl Groups in Tissue with Ellman's Reagent. Anal. Biochemistry 25, 192 - 205 (1968).

3.8.5. Urinalyses

With the exception of volume, color, turbidity, sediment examination and the specific gravity, all the urine constituents were determined semi-quantitatively using test strips (Combur-9-test RL, by Boehringer, Mannheim, FRG) and a reflection photometer (Urotron RL9 model by Boehringer, Mannheim, FRG).

The specific gravity was determined using an urine refractometer.

The sediment was evaluated microscopically.

The following examinations were carried out:

- volume
- color
- turbidity
- nitrite
- pH
- protein
- glucose
- ketones
- urobilinogen
- bilirubin
- blood
- specific gravity
- sediment

Details of the methods can be seen from the following table:

URINALYSIS

Parameter	Method	References
Nitrite	p-arsanilic acid diazonium salt; tetrahydroxybenzo(h)-quinolin-3-ol	Test strip book by Boehringer, Mannheim, FRG (1977)
pH	methyl red and bromothymol blue	
Protein	tetrabromophenol-phthaleinethylester (TBPE)	
Glucose	GOD-POD reaction	
Ketones	sodium nitroprusside	
Urobilinogen	p-methoxyaniline-diazonium-salt	
Bilirubin	2,5-dichloroaniline diazonium salt	
Blood	2,5-dimethylhexane-2,5-dihydroperoxide, tetramethylbenzidine	
Specific gravity	refractometer	Hamilton or Atago operating instructions
Sediment	microscopy	Hallmann, L., [Clinical Chemistry and Microscopy] 10, ed., 233-246, Georg Thieme, Stuttgart, FRG (1966)
Color, turbidity	by visual evaluation	
Volume	graduated tubes	

3.9. PATHOLOGY

(see separate pathology report, Volume III)

3.10. STATISTICAL EVALUATION

The statistical evaluation of the data was carried out on the computer systems of the Department of Toxicology (Dr. Hoffmann responsible).

3.10.1. Clinical examinations

For body weight data a parametric one-way analysis of variance was done via the F-test (ANOVA) [WINER 1971]. If the resulting p-value was equal or less than 0.05, a comparison of each dose group with the control group was carried out. These comparisons were performed simultaneously via DUNNETT's test [DUNNETT 1955; 1964] for the hypothesis of equal means. If the results of this test were significant, labels (* for $p \leq 0.05$, ** for $p \leq 0.01$) were printed together with the group means in the tables.

Both tests were performed two-sided.

3.10.2. Clinical chemistry, hematology and urinalyses

3.10.2.1. Clinical chemistry and hematology

For various parameters mean and standard deviation were calculated for each group and tabulated together with the individual values.

For all parameters, excepting the differential blood count, a parametric one-way analysis of variance was done via the F-test (ANOVA) [WINER 1971]. If the resulting p-value was equal or less than 0.05, a comparison of each dose group with the control group was carried out. These comparisons were performed simultaneously via DUNNETT's test [DUNNETT 1955; 1964] for the hypothesis of equal means. If the results of this test were significant, labels (* for $p \leq 0.05$, ** for $p \leq 0.01$) were printed together with the group means in the tables.

Both tests were performed two-sided.

3.10.2.2. Urinalyses

With the exception of volume, color, turbidity, pH and specific gravity the scale for the urine parameters is divided into 4 sections (0, 1, 2, 3). For the parameter "Nitrite" only a division in two sections (0, 1) is made.

A pairwise comparison of each dose group with the control was carried out using FISHER's exact test [SIEGEL 1956] for the hypothesis of equal proportions. If the results of this test are significant, labels (* for $p \leq 0.05$, ** for $p \leq 0.01$) were printed in the tables.

3.11. RETENTION OF RECORDS

The raw data, the reserve sample and the specimens, as well as the original of this report and of the study protocol, will be stored at BASF Aktiengesellschaft at least for the period of time specified in the GLP regulations. The specimens will be retained only for as long as the quality of the material allows evaluation.

(Details concerning responsibilities or locations of archiving can be seen from the respective SOP's and from the raw data.)

BEST COPY AVAILABLE

4. RESULTS AND ASSESSMENT OF FINDINGS

4.1. ANALYSES

4.1.1. Food analyses

In view of the aim and duration of the study the contaminants occurring in commercial feed might not have influenced the results.

4.1.2. Drinking water analyses

In view of the aim and duration of the study there are no special requirements exceeding the specification of drinking water.

4.1.3. Measurements of atmosphere parameters and operation conditions

4.1.3.1. Concentration measurements in the exposure systems

Daily means may be found in Volume II, Part C "Analysis", Table C 001.

Individual values may be found in the record sheets and are kept with the raw data.

The following mean concentrations ± standard deviation were obtained for the study.

Test group	Target concentration		Measured concentration		Nominal concentration	
	[mg/m³]	[ppm]	[mg/m³ ± SD]	[ppm]	[mg/m³]	[ppm]
1	5.8	1	5.9 ± 0.78	1	11.9	2.1
2	58	10	58 ± 7.6	10	87	15.3
3	174	30	181 ± 21.7	32	264	46.5

mg/m³ = milligrams per cubic meter
SD = standard deviation
ppm = parts per million

The recorder protocols of the total hydrocarbon analyses (archived in the raw data) showed nearly constant levels of chamber concentrations in test groups 1 and 2 on all exposure days and in test group 3 on all exposure days, on which the total hydrocarbon analyzer was working. The total hydrocarbon analyzer in test group 3 was not working (defect) from May 28, 1993 till June 04, 1993 and from August 24, 1993 onwards.

4.1.3.2. Technical measurements: operation conditions in the exposure systems

Daily means may be found in Volume II, Part C "Analysis", Tables C 002 - C 005.

Individual values may be found in the record sheets and are kept with the raw data.

Study means ± Standard deviations

Test group (Target concentration)	0 (control)	1 (5.8 mg/m³)	2 (58 mg/m³)	3 (174 mg/m³)
Blast air 1 [m³/h]*	21.1 ± 0.0	22.1 ± 0.4	21.4 ± 0.0	20.8 ± 0.3
Blast air 2 [m³/h]**	-	6.0 ± 0.0	6.0 ± 0.0	7.8 ± 0.6
Compressed air [m³/h]	-	-	0.4 ± 0.1	0.4 ± 0.0
Exhaust air [m³/h]	20.9 ± 0.0	22.7 ± 0.5	22.4 ± 0.3	22.3 ± 0.4
Chamber temperature [°C]	23.6 ± 2.0	24.2 ± 0.2	24.3 ± 0.2	24.4 ± 0.6
Relative humidity [%]	42.7 ± 1.0	44.5 ± 0.8	40.0 ± 0.9	53.0 ± 5.9
Chamber pressure [Pa]	10.6 ± 0.2	-10.8 ± 1.9	-14.0 ± 0.3	-10.0 ± 0.8
Test substance flow [ml/h]	-	0.26 ± 0.05	1.88 ± 0.42	5.54 ± 0.89

ml/h = milliliter per hour
m³/h = cubic meter per hour
°C = degree celsius
% = per cent
Pa = Pascal
* = Total blast air including blast air 2
** = Partial blast air 2 through the evaporator

An air change of about 15 times per hour can be calculated by dividing the exhaust air flow through the volume of the inhalation system.

4.2. CLINICAL EXAMINATIONS

The results of clinical examinations performed during the study may be found in the following summary tables and figures in the "APPENDIX".

	Table
Summary of clinical observations	
Preflow period	
- males	001
- females	002
Exposure period	
- males	003 - 009
- females	010 - 016
Body weight	
- males	017 - 018
- females	019 - 020
Body weight change	
- males	021 - 022
- females	023 - 024

Figures	No.
Body weight, male animals	4
Body weight, female animals	5

The pertinent tables of the individual clinical observations and body weights may be found in Part A of Volume II of this report.

4.2.1. Mortality

No deaths were recorded throughout the study.

4.2.2. Clinical observations

During the preflow period and the post-exposure observation day the animals showed no clinical signs and findings different from normal.

During the exposure period the animals of the test groups 0 - 2 (0, 5.8 and 58 mg/m³) showed no clinical signs and findings different from normal.

During the exposure period the animals of the test group 3 (174 mg/m³) showed clear nasal discharge on the first few days of exposure and salivation almoust throughout exposure.

4.2.3. Body weight data

4.2.3.1. Body weight

The body weights of the animals of the test groups 1 - 3, compared to the control group 0, were statistically not significantly different.

4.2.3.2. Body weight change

The body weight change of the animals of the test groups 1 and 2, compared to the control group 0, were statistically not significantly different.

The body weight change of the male animals of the test group 3, compared to the control group 0, was statistically significantly decreased from day 7 up to the end of the study but in females on days 7 and 14 only.

4.2.4. Ophthalmoscopy

The ophthalmological examinations did not show any impairment of the refracting media.

The individual findings may be seen from the raw data.

4.3. CLINICAL CHEMISTRY, HEMATOLOGY AND URINALYSES

The summary tables of the results are to be found in the Appendix of Volume I.

The tables on the individual values can be found in Part B of Volume II.

4.3.1. Hematology (Summary tables 025 - 032)

At the end of the study statistically significantly reduced red blood cell counts, hemoglobin concentrations and hematocrit values were found in the peripheral blood of the females exposed to the high concentration (174 mg/m³). However, no significant changes were seen in the erythrocyte indices and in the morphology of the red blood cells of the animals of this test group. Furthermore, in the blood of both sexes exposed to the high concentration increased platelet counts and in the females increased white blood cell counts were detected. No changes were seen in the differential white blood cell count.

4.3.2. Clotting analyses (Summary tables 033 - 034)

No test substance-related changes were observed in the results of the clotting analyses of both sexes.

4.3.3. Enzymes (Summary tables 035 - 038)

No test substance-related changes were observed in the results of the serum enzyme examinations of both sexes and in γ-GT levels in liver homogenate.

4.3.4. Blood chemistry (Summary tables 039 - 042)

Slightly but statistically signficantly decreased total protein and albumin concentrations were found in the sera of the females of test group 3 (174 mg/m³). No changes of toxicological concern were seen in the other blood chemistry parameters.

4.3.5. GSH content in liver homogenate

The following GSH concentrations were measured:

Concentration [mg/m³]	0	5.8	58	174
	male			
µmol GSH/g liver	6.97	6.77	6.85	7.67
SD	0.76	0.57	0.85	0.75
	female			
µmol GSH/g liver	6.04	6.64	6.73	7.13*
SD	0.80	0.89	0.60	0.87

* statistically significant $p \leq 0.05$

4.3.6. Urinalyses (Tables 043 - 046)

Females of test group 3 (174 mg/m³) excreted increased amounts of urine with decreased specific gravity. Although these findings were not statistically significantly different to the control and were seen in one sex only, the increased production of diluted urine in the females exposed to the high concentration is assessed as being treatment-related.

4.3.7. Other deviations

There are some further statistically significant intergroup differences in the results of the clinical pathology testing (Tables 025, 039 and 040). These deviations are marginal, incidental or sporadic, inconsistent, when compared with the other sex, or are not related to the concentration of the test compound. Accordingly, these findings are considered to be of no toxicological significance.

BEST COPY AVAILABLE

5. DISCUSSION

Clinical examination revealed nasal secretion during the first days of the exposure period and salivation throughout the study during and after each exposure to the high concentration (174 mg/m³ ≙ 30 ppm) as a clinical sign of irritation of the upper respiratory tract and the oral cavity.

Body weight development of the male animals but not in females was slightly depressed at the high concentration, indicating systemic toxicity.

The high concentration did also lead to a slight decrease in red blood parameters (RBC, HGB, HCT) and a slight increase in leucocyte counts in the female animals and a small increase in platelet counts in both sexes.
Although changes in red blood cell parameters were seen in one sex only, the decreases in erythrocytes, hemoglobin and hematocrit in the females exposed to the high concentration are assessed as being treatment-related. The observed findings are indicative of a mild anemic process. However, since no changes were found in red blood cell morphology and in erythrocyte indices it is difficult to explain the origin of the anemic process. The increased platelet and white blood cell counts are also related to test substance inhalation and are probably concomitant findings of the anemia.

The decreases in total protein and albumin levels in the sera of the females of test group 3 (174 mg/m³ ≙ 30 ppm) are considered to be exposure-related effects. These findings are possibly associated with increased urine volume indicative of polyuria in the females of the high-exposure group. Polyuria may have been a result of mild tubular dysfunction.

GSH content of liver homogenate was statistically significantly increased in female animals of the high concentration group. This finding is in line with the increase of liver weights especially in females and interpreted as adaptive response to the test substance exposure.

At necropsy a statistically significant decrease of male body weight was found in the high concentration. The absolute liver weight of females and the relative liver weights of both sexes were increased. Histopathologically centrolobular hypertrophy of hepatocytes was observed in female rats, which might be responsible for the increase of liver weight in this sex.

4.4. PATHOLOGY

(see separate pathology report, Volume III)

BEST COPY AVAILABLE

In the nasal cavity different types of focal hyperplasia occurred, including hyperplasia of transitional epithelium in all groups exposed to test substance as well as hyperplasia of basal cells and of olfactory epithelium in animals of the mid (58 mg/m³ ≙ 10 ppm) and high concentration groups (174 mg/m³ ≙ 30 ppm). Additionally, disarrangement and focal atrophy in the epithelium in the olfactory epithelium of the dorsal meatus metaplasia was found in high concentration animals.
Although focal metaplasia of respiratory epithelium into squamous cell epithelium was only seen in a single female rat of the high concentration group, this finding is considered to be treatment related.

According to the discussion above the following changes are judged to be test substance related:

High concentration : (174 mg/m³ ≙ 30 ppm)

- Nasal secretion during the first days of the exposure period and salivation throughout the study during and after each exposure.
- Depression of body weight development in the male animals.
- Decrease in red blood cells, hemoglobin, hematocrit, total protein, albumin and urinary specific gravity in the females.
- Increase in platelet counts in both sexes.
- Increase in white blood cell counts and urinary volume in the females.
- Increase of GSH in liver homogenate of female animals.
- Decreased terminal body weight of male animals.
- Increase of absolute liver weights in females and of relative liver weights in males and females.
- Centrolobular hypertrophy of hepatocytes in females.
- Hyperplasia of transitional epithelium, disarrangement in the epithelium of the dorsal meatus, hyperplasia of basal cells and metaplasia of respiratory epithelium as well as atrophy or focal hyperplasia of olfactory epithelium in the

Mid concentration (58 mg/m³ ≙ 10 ppm):

- Hyperplasia of transitional epithelium, disarrangement in the epithelium of the dorsal meatus, hyperplasia of basal cells as well as atrophy or focal hyperplasia of olfactory epithelium in the nasal cavity.

Low concentration (5.8 mg/m³ ≙ 1 ppm):

- Hyperplasia of transitional epithelium in the nasal cavity.

In conclusion, the exposure of Vinylcaprolactam to rats at a concentration level of 174 mg/m³ (≙ 30 ppm) for 3 months resulted in clinical signs of irritation of the nose and oral cavity and slight systemic toxicity characterized by depression of body weight development. The systemic effects of test substance exposure were substantiated by the clinico-pathological findings of mild anemia, adaptive response of liver and probably slight disturbance of tubular function.
Pathomorphologically, correlates for nasal irritation and liver changes could be found.

No systemic toxicity occurred in rats exposed to 58 mg/m³ (≙ 10 ppm) and 5,8 mg/m³ (≙ 1 ppm) of the test compound, but nasal irritation was detectable histopathologically in a concentration-dependent manner down to the low exposure level.

Therefore the systemic NOAEL for Vinylcaprolactam under the conditions of this test was 58 mg/m³ (≙ 10 ppm). No NOAEL for nasal irritation was reached, based on the histopathological finding of hyperplasia of the transitional epithelium in the nasal cavity.

6. REFERENCES

BASF Proj. Nos. 35S0571/85132 and 12C0053/8404 unpublished reports of BASF Aktiengesellschaft.

DFG Commission for the investigation of health hazards of chemical compounds in the work area, Rationale for NMP, 1991

DUNNETT, C.W.:
"A multiple comparison procedure for comparing several treatments with a control"
J. Amer. Statist. Assoc. 50, 1096 - 1121 (1955)

DUNNETT, C.W.:
"New tables for multiple comparisons with a control"
Biometrics 20, 482 - 491 (1964)

EEC Commission Directive 87/302/EEC, "Sub-Chronic Inhalation Toxicity Study", published in the Official Journal of teh European Communities L133, 30.05.88.

Environmental Protection Agency (EPA), Health Effects Testing Guidelines, Subpart C - Subchronic exposure - Inhalation Toxicity, 40CFR § 798.2450 considering the EPA-SEP (Standard Evaluation Procedure) Inhalation Toxicity Testing, PB 89-100366, Aug. 1988

JONGE H. de:
Inleiding tot de "Medische Statistiek" Delen I en II, 2e Druk (Nederlands Instituut voor Praeventieve Geneeskunde, 832 S.) Leiden 1963/64 (Bartlett's test)

Organization for Economic Cooperation and Development (OECD), OECD Guidelines for Testing of Chemicals, Section 4: Health Effects, No. 412, "Repeated Dose Inhalation Toxicity: 28-day or 14-day Study" / No. 413 "Sub-Chronic Inhalation Toxicity: 90-day Study" adopted 12.05.81

WINER B.J.:
Statistical principles in experimental design; 2nd ed. McGraw-Hill New York (1971)

APPENDIX:

SUMMARY TABLES

CLINICAL EXAMINATIONS

CLINICAL CHEMISTRY, HEMATOLOGY AND URINALYSES

and

FIGURES

(For SUMMARY TABLES of PATHOLOGY
see PATHOLOGY REPORT, Volume III)

KEY TO THE ABBREVIATIONS

CLINICAL EXAMINATIONS (Tables 001 - 024)

G	=	gram
M	=	mean
SD	=	standard deviation
N	=	number of animals
BODY WT	=	body weight
BW CHGE	=	body weight change
#	=	number

CLINICAL CHEMISTRY, HEMATOLOGY AND URINALYSES
(Tables 025 - 046)

M	=	mean
SD	=	standard deviation
N	=	number of values
p	=	probability value

HEMATOLOGICAL EXAMINATIONS

WBC	=	white blood cells (leukocytes)
RBC	=	red blood cells (erythrocytes)
HGB	=	hemoglobin
HCT	=	hematocrit
MCV	=	mean corpuscular volume
MCH	=	mean corpuscular hemoglobin
MCHC	=	mean corpuscular hemoglobin concentration
PLT	=	platelets
RETI	=	reticulocytes

DIFFERENTIAL BLOOD COUNT

WBC	=	white blood cells (leukocytes)
EOS	=	eosinophils
BASO	=	basophils
BAND	=	neutrophilic bands
POLY	=	polymorphonuclear neutrophils
LYMP	=	lymphocytes
MONO	=	monocytes

CLOTTING ANALYSES

HQT	=	prothrombin time (Hepato Quick's test)

ENZYMES

ALT	= alanine aminotransferase
AST	= aspartate aminotransferase
ALP	= alkaline phosphatase
SGGT	= serum-γ-glutamyltransferase
LGGT	= liver-γ-glutamyltransferase

BLOOD CHEMISTRY

NA	= sodium
K	= potassium
CL	= chloride
INP	= inorganic phosphate
CA	= calcium
UREA	= urea
CREA	= creatinine
GLUC	= glucose
TBIL	= total bilirubin
TPROT	= total protein
ALB	= albumin
GLOB	= globulins
TRIG	= triglycerides
CHOL	= cholesterol
MG	= magnesium

URINALYSES

Nitrite:

0	= negative
1	= positive

Protein:

0	= negative 0.15 g/l
1	= 0.30 g/l, 0.60 g/l
2	= 1.00 g/l, 3.00 g/l
3	= > 5.00 g/l

Glucose:

0	= normal
1	= 2.8 mmol/l
2	= 5.6 mmol/l
3	= 11.1 mmol/l, > 16.7 mmol/l

Ketones:

0	= negative
1	= 1 mmol/l
2	= 5 mmol/l
3	= > 15 mmol/l

Urobilinogen:

0	= normal
1	= 17 µmol/l

Bilirubin:
0 = negative
1 = 9 µmol/l
2 = 25 µmol/l
3 = 50 µmol/l, 100 µmol/l, > 200 µmol/l

Blood (erythrocytes):
0 = negative
1 = 10 ery/µl
2 = 50 ery/µl
3 = 150 ery/µl, > 250 ery/µl

SEDIMENT

0 = none
1 = few
2 = many
3 = masses

UNITS

MMOL/L	= mmol/l (millimole/liter)
MYMOL/L	= µmol/l (micromole/liter)
G/L	= g/l (gram/liter)
L/L	= l/l (liter/liter)
%	= per cent
‰	= per thousand
FMOL	= fmol (femtomole = 10^{-15} mole)
FL	= fl (femtoliter = 10^{-15} liter)
TERA/L	= Tera/l or T/l (Tera/liter = 10^{12}/liter)
GIGA/L	= Giga/l or G/l (Giga/liter = 10^{9}/liter)
MYKAT/L	= µkat/l (microkatal/liter)
NAKAT/L	= nkat/l (nanokatal/liter)
NAKAT/G P.	= nkat/g protein (nanokatal/gram protein)
µl	= microliter
ML	= ml (milliliter)

TABLE : 001

3

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

S

	GROUP#	DAY OF STUDY -8	-7	-6	-5	-4	-3	-2	-1	TOTAL
ANIMALS EXAMINED	0	0	10	0	0	10	10	10	10	
	1	0	10	0	0	10	10	10	10	
	2	0	10	0	0	10	10	10	10	
	3	0	10	0	0	10	10	10	10	
ORMAL										
ING ABNORMAL DETECTED	0	-	10	-	-	10	10	10	10	10
FLOW PERIOD)	1	-	10	-	-	10	10	10	10	10
	2	-	10	-	-	10	10	10	10	10
	3	-	10	-	-	10	10	10	10	10

BEST COPY AVAILABLE

TABLE : 002

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

ALES

	GROUP#	DAY OF STUDY -8	-7	-6	-5	-4	-3	-2	-1	TOTAL
F ANIMALS EXAMINED	0	10	10	10	10	10	0	0	0	
	1	10	10	10	10	10	0	0	0	
	2	10	10	10	10	10	0	0	0	
	3	10	10	10	10	10	0	0	0	
NORMAL										
THING ABNORMAL DETECTED (REFLOW PERIOD)	0	10	10	10	10	10	-	-	-	10
	1	10	10	10	10	10	-	-	-	10
	2	10	10	10	10	10	-	-	-	10
	3	10	10	10	10	10	-	-	-	10

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

	GROUP#	DAY OF STUDY 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
F ANIMALS EXAMINED	0	10	0	0	0	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	
	1	10	0	0	0	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	
	2	10	0	0	0	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	
	3	10	0	0	0	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	
NORMAL																								
HING ABNORMAL DETECTED (FORE EXPOSURE)	0	10	-	-	-	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	10
	1	10	-	-	-	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	10
	2	10	-	-	-	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	10
	3	10	-	-	-	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	10
HING ABNORMAL DETECTED (RING EXPOSURE)	0	10	-	-	-	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	10
	1	10	-	-	-	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	10
	2	10	-	-	-	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	10
	3	0	-	-	-	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	9	0	0	9
HING ABNORMAL DETECTED (TER EXPOSURE)	0	10	-	-	-	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	10
	1	10	-	-	-	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	10
	2	10	-	-	-	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	10
	3	0	-	-	-	0	0	0	0	-	-	9	0	0	-	0	-	-	9	9	9	9	9	9
NOSE																								
E, DISCHARGE, CLEAR RING EXPOSURE)	0	0	-	-	-	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	0
	1	0	-	-	-	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	0
	2	0	-	-	-	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	0
	3	10	-	-	-	10	10	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	10
E, DISCHARGE, CLEAR TER EXPOSURE)	0	0	-	-	-	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	0
	1	0	-	-	-	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	0
	2	0	-	-	-	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	0
	3	10	-	-	-	10	10	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	10
ORAL-BUCCAL																								
IVATION (DURING OSURE)	0	0	-	-	-	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	0
	1	0	-	-	-	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	0
	2	0	-	-	-	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	0
	3	10	-	-	-	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	1	10	10	10

BEST COPY AVAILABLE

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

-ES

	GROUP#	DAY OF STUDY 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
OF ANIMALS EXAMINED	0	10	0	0	0	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	
	1	10	0	0	0	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	
	2	10	0	0	0	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	
	3	10	0	0	0	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	
LIVATION (AFTER POSURE)	0	0	-	-	-	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	0
	1	0	-	-	-	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	0
	2	0	-	-	-	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	0
	3	10	-	-	-	10	10	10	10	-	-	1	10	10	-	10	-	-	1	1	1	1	1	10

AN-94

TABLE : 005

3

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

S

		DAY OF STUDY																					
	GROUP#	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43 TOTAL
ANIMALS EXAMINED	0	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0
	1	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0
	2	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0
	3	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0
NORMAL																							
HING ABNORMAL DETECTED	0	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	- 10
FORE EXPOSURE)	1	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	- 10
	2	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	- 10
	3	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	- 10
HING ABNORMAL DETECTED	0	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	- 10
RING EXPOSURE)	1	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	- 10
	2	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	- 10
	3	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	- 0
HING ABNORMAL DETECTED	0	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	- 10
TER EXPOSURE)	1	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	- 10
	2	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	- 10
	3	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	- 10
ORAL-BUCCAL																							
IVATION (DURING	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	- 0
OSURE)	1	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	- 0
	2	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	- 0
	3	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	- 10

BEST COPY AVAILABLE

TABLE : 006

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

	GROUP#	DAY OF STUDY 44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	TOTAL
OF ANIMALS EXAMINED	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	
	1	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	
	2	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	
	3	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	
NORMAL																								
THING ABNORMAL DETECTED	0	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10
EFORE EXPOSURE)	1	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10
	2	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10
	3	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10
THING ABNORMAL DETECTED	0	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10
URING EXPOSURE)	1	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10
	2	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10
	3	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0
THING ABNORMAL DETECTED	0	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10
FTER EXPOSURE)	1	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10
	2	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10
	3	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10
ORAL-BUCCAL																								
LIVATION (DURING	0	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0
XPOSURE)	1	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0
	2	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0
	3	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10

PROJECT NO. 5DI0044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

ES

	GROUP#	DAY OF STUDY 66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	TOTAL
F ANIMALS EXAMINED	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	
	1	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	
	2	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	
	3	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	
NORMAL																								
HING ABNORMAL DETECTED FORE EXPOSURE)	0	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10
	1	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10
	2	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10
	3	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10
HING ABNORMAL DETECTED RING EXPOSURE)	0	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10
	1	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10
	2	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10
	3	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0
HING ABNORMAL DETECTED TER EXPOSURE)	0	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10
	1	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10
	2	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10
	3	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10
ORAL-BUCCAL																								
IVATION (DURING OSURE)	0	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0
	1	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0
	2	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0
	3	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10

BEST COPY AVAILAB

TABLE : 008

53

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

ES

		DAY OF STUDY								
	GROUP#	88	89	90	91	92	93	94	95	TOTAL
F ANIMALS EXAMINED	0	10	10	10	10	0	0	10	10	
	1	10	10	10	10	0	0	10	10	
	2	10	10	10	10	0	0	10	10	
	3	10	10	10	10	0	0	10	10	
NORMAL										
HING ABNORMAL DETECTED	0	10	10	10	10	-	-	10	0	10
FORE EXPOSURE)	1	10	10	10	10	-	-	10	0	10
	2	10	10	10	10	-	-	10	0	10
	3	10	10	10	10	-	-	10	0	10
HING ABNORMAL DETECTED	0	10	10	10	10	-	-	10	0	10
RING EXPOSURE)	1	10	10	10	10	-	-	10	0	10
	2	10	10	10	10	-	-	10	0	10
	3	0	0	0	0	-	-	0	0	0
THING ABNORMAL DETECTED	0	10	10	10	10	-	-	10	0	10
TER EXPOSURE)	1	10	10	10	10	-	-	10	0	10
	2	10	10	10	10	-	-	10	0	10
	3	10	10	10	10	-	-	10	0	10
THING ABNORMAL DETECTED	0	0	0	0	0	-	-	0	10	10
OST-EXPOSURE)	1	0	0	0	0	-	-	0	10	10
	2	0	0	0	0	-	-	0	10	10
	3	0	0	0	0	-	-	0	10	10
DEAD										
HEDULED KILL	0	0	0	0	0	-	-	0	10	10
	1	0	0	0	0	-	-	0	10	10
	2	0	0	0	0	-	-	0	10	10
	3	0	0	0	0	-	-	0	10	10
ORAL-BUCCAL										
LIVATION (DURING	0	0	0	0	0	-	-	0	0	0
POSURE)	1	0	0	0	0	-	-	0	0	0
	2	0	0	0	0	-	-	0	0	0
	3	10	10	10	10	-	-	10	0	10

TABLE : 009

53

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

ES

		DAY OF STUDY								
	GROUP#	88	89	90	91	92	93	94	95	TOTAL
F ANIMALS EXAMINED	0	10	10	10	10	0	0	10	10	
	1	10	10	10	10	0	0	10	10	
	2	10	10	10	10	0	0	10	10	
	3	10	10	10	10	0	0	10	10	

BEST COPY AVAILABLE

-JAN-94

053

TABLE : 010

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

MALES

	GROUP#	DAY OF STUDY 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
OF ANIMALS EXAMINED	0	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	0	0	10	10	
	1	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	0	0	10	10	
	2	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	0	0	10	10	
	3	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	0	0	10	10	
NORMAL																								
THING ABNORMAL DETECTED (EFORE EXPOSURE)	0	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	-	-	10	10	10
	1	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	-	-	10	10	10
	2	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	-	-	10	10	10
	3	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	-	-	10	10	10
THING ABNORMAL DETECTED URING EXPOSURE)	0	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	-	-	10	10	10
	1	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	-	-	10	10	10
	2	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	-	-	10	10	10
	3	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	10	0	0	-	-	0	0	10
THING ABNORMAL DETECTED FTER EXPOSURE)	0	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	-	-	10	10	10
	1	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	-	-	10	10	10
	2	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	10	10	10	-	-	10	10	10
	3	0	0	0	0	-	-	9	0	0	-	0	-	-	9	9	10	9	9	-	-	10	10	10
NOSE																								
SE, DISCHARGE, CLEAR URING EXPOSURE)	0	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	-	-	0	0	0
	1	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	-	-	0	0	0
	2	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	-	-	0	0	0
	3	10	10	10	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	-	-	0	0	10
SE, DISCHARGE, CLEAR FTER EXPOSURE)	0	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	-	-	0	0	0
	1	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	-	-	0	0	0
	2	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	-	-	0	0	0
	3	10	10	10	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	-	-	0	0	10
ORAL-BUCCAL																								
ALIVATION (DURING XPOSURE)	0	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	-	-	0	0	0
	1	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	-	-	0	0	0
	2	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	-	-	0	0	0
	3	10	10	10	10	-	-	10	10	10	-	10	-	-	10	10	0	10	10	-	-	10	10	10

TABLE : 011

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

LES

	GROUP#	DAY OF STUDY 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
ANIMALS EXAMINED	0	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	0	0	10	10	
	1	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	0	0	10	10	
	2	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	0	0	10	10	
	3	10	10	10	10	0	0	10	10	10	0	10	0	0	10	10	10	10	10	0	0	10	10	
VATION (AFTER SURE)	0	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	-	-	0	0	0
	1	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	-	-	0	0	0
	2	0	0	0	0	-	-	0	0	0	-	0	-	-	0	0	0	0	0	-	-	0	0	0
	3	10	10	10	10	-	-	1	10	10	-	10	-	-	1	1	0	1	1	-	-	0	0	10

BEST COPY AVAILABLE

TABLE : 012

3

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

LES

		DAY OF STUDY																					
	GROUP#	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43 TOTAL
ANIMALS EXAMINED	0	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10
	1	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10
	2	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10
	3	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10
ORMAL																							
ING ABNORMAL DETECTED	0	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10 10
ORE EXPOSURE)	1	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10 10
	2	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10 10
	3	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10 10
HING ABNORMAL DETECTED	0	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10 10
RING EXPOSURE)	1	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10 10
	2	10	10	10	-	-	10	10	10	10	10	-	-	0	0	0	0	0	-	-	0	0	0 0
	3	0	0	0	-	-	0	0	0	0	0	-	-										
HING ABNORMAL DETECTED	0	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10 10
TER EXPOSURE)	1	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10 10
	2	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10 10
	3	10	10	10	-	-	10	10	10	10	10	-	-										
ORAL-BUCCAL																							
IVATION (DURING	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0 0
OSURE)	1	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0 0
	2	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0 0
	3	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10 10

AN-94

3

LES

TABLE : 013

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

	GROUP#	DAY OF STUDY 44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	TOTAL
ANIMALS EXAMINED	0	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	
	1	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	
	2	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	
	3	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	
ORMAL																								
ING ABNORMAL DETECTED	0	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10
ORE EXPOSURE)	1	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10
	2	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10
	3	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10
ING ABNORMAL DETECTED	0	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10
ING EXPOSURE)	1	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10
	2	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10
	3	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0
ING ABNORMAL DETECTED	0	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10
ER EXPOSURE)	1	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10
	2	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10
	3	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10
ORAL-BUCCAL																								
VATION (DURING	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0
SURE)	1	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0
	2	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0
	3	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10

TABLE : 014

3

PROJECT NO. 50I0044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

LES

		DAY OF STUDY																					
	GROUP#	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87 TOTAL
ANIMALS EXAMINED	0	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10
	1	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10
	2	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10
	3	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10	0	0	10	10	10	10	10
ORMAL																							
ING ABNORMAL DETECTED	0	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10 10
ORE EXPOSURE)	1	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10 10
	2	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10 10
	3	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10 10
ING ABNORMAL DETECTED	0	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10 10
ING EXPOSURE)	1	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10 10
	2	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10 10
	3	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0 0
ING ABNORMAL DETECTED	0	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10 10
ER EXPOSURE)	1	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10 10
	2	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10 10
	3	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10 10
RAL-BUCCAL																							
IVATION (DURING	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0 0
OSURE)	1	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0 0
	2	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0	-	-	0	0	0	0	0 0
	3	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10	-	-	10	10	10	10	10 10

TABLE : 015

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

	GROUP#	DAY OF STUDY 88	89	90	91	92	TOTAL
ANIMALS EXAMINED	0	0	0	10	10	10	
	1	0	0	10	10	10	
	2	0	0	10	10	10	
	3	0	0	10	10	10	
ORMAL							
ING ABNORMAL DETECTED	0	-	-	10	10	0	10
ORE EXPOSURE)	1	-	-	10	10	0	10
	2	-	-	10	10	0	10
	3	-	-	10	10	0	10
ING ABNORMAL DETECTED	0	-	-	10	10	0	10
ING EXPOSURE)	1	-	-	10	10	0	10
	2	-	-	10	10	0	10
	3	-	-	0	0	0	0
ING ABNORMAL DETECTED	0	-	-	10	10	0	10
ER EXPOSURE)	1	-	-	10	10	0	10
	2	-	-	10	10	0	10
	3	-	-	10	10	0	10
ING ABNORMAL DETECTED	0	-	-	0	0	10	10
T-EXPOSURE)	1	-	-	0	0	10	10
	2	-	-	0	0	10	10
	3	-	-	0	0	10	10
EAD							
DULED KILL	0	-	-	0	0	10	10
	1	-	-	0	0	10	10
	2	-	-	0	0	10	10
	3	-	-	0	0	10	10
RAL-BUCCAL							
VATION (DURING	0	-	-	0	0	0	0
SURE)	1	-	-	0	0	0	0
	2	-	-	0	0	0	0
	3	-	-	10	10	0	10

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
SUMMARY OF CLINICAL OBSERVATIONS

ES

	GROUP#	DAY OF STUDY 88	89	90	91	92	TOTAL
ANIMALS EXAMINED	0	0	0	10	10	10	
	1	0	0	10	10	10	
	2	0	0	10	10	10	
	3	0	0	10	10	10	

TOXICOLOGY - DATATOX RC.7
CT NUMBER 5010044/92053 N-VINYLCAPROLACTAM

MEANS BODY WEIGHT PRINT DATE 6-JAN-94

E S		Day -7 BODYWT G	Day 0 BODYWT G	Day 7 BODYWT G	Day 14 BODYWT G	Day 21 BODYWT G	Day 28 BODYWT G	Day 35 BODYWT G	Day 42 BODYWT G	Day 49 BODYWT G
0										
	M	281.0	309.6	336.5	366.5	388.4	417.6	440.7	459.0	477.6
	SD	9.7	9.9	12.4	13.0	16.8	17.3	20.8	21.5	23.7
	N	10	10	10	10	10	10	10	10	10
1										
	M	282.9	310.3	337.9	365.4	388.2	411.5	433.2	447.8	465.5
	SD	11.1	15.3	21.5	25.5	29.0	32.7	36.2	39.3	43.3
	N	10	10	10	10	10	10	10	10	10
2										
	M	281.3	309.1	334.7	360.0	385.1	409.0	427.2	444.1	458.2
	SD	12.6	15.5	19.6	24.8	26.1	31.2	35.2	35.6	36.9
	N	10	10	10	10	10	10	10	10	10
3										
	M	285.9	312.2	325.1	348.7	370.4	390.4	409.8	422.9	437.3
	SD	12.0	15.5	16.8	18.7	20.5	24.8	25.0	26.3	26.1
	N	10	10	10	10	10	10	10	10	10

istics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

TOXICOLOGY - DATATOX RC.7
ECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

PRINT DATE 6-JAN-94

F MEANS

BODY WEIGHT

L E S		Day 56 BODYWT G	Day 63 BODYWT G	Day 70 BODYWT G	Day 77 BODYWT G	Day 84 BODYWT G	Day 91 BODYWT G
P 0							
	M	490.4	503.3	517.7	528.4	525.9	539.8
	SD	27.5	24.6	27.7	27.2	28.9	27.6
	N	10	10	10	10	10	10
IP 1							
	M	477.6	489.8	499.7	510.3	510.8	521.3
	SD	43.9	48.3	50.8	51.2	53.0	54.7
	N	10	10	10	10	10	10
IP 2							
	M	469.6	484.4	495.0	502.4	501.9	512.5
	SD	38.6	41.8	44.2	42.1	44.2	44.0
	N	10	10	10	10	10	10
IP 3							
	M	448.4	457.6	469.4	480.0	477.3	489.9
	SD	26.8	25.7	28.1	27.5	27.5	29.1
	N	10	10	10	10	10	10

tistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

TOXICOLOGY - DATATOX RC.7
CT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

MEANS

BODY WEIGHT

PRINT DATE 6-JAN-94

MALES		Day -8 BODYWT G	Day 0 BODYWT G	Day 7 BODYWT G	Day 14 BODYWT G	Day 21 BODYWT G	Day 28 BODYWT G	Day 35 BODYWT G	Day 42 BODYWT G	Day 49 BODYWT G
P 0										
	M	195.2	210.9	226.1	238.8	248.5	260.6	269.6	276.7	283.0
	SD	11.8	11.7	13.8	15.7	17.9	15.5	17.0	20.4	18.5
	N	10	10	10	10	10	10	10	10	10
P 1										
	M	195.0	213.5	228.3	238.9	245.3	255.5	267.1	274.8	279.3
	SD	16.5	18.1	18.2	15.3	21.3	22.1	22.3	21.2	22.9
	N	10	10	10	10	10	10	10	10	10
P 2										
	M	197.0	213.6	225.3	238.8	246.7	255.9	263.8	274.7	279.6
	SD	10.8	10.1	8.9	12.5	14.8	16.5	16.0	18.9	22.3
	N	10	10	10	10	10	10	10	10	10
P 3										
	M	202.2	222.1	226.6	238.4	249.8	265.7	275.6	284.9	291.6
	SD	19.0	21.3	21.7	25.2	23.5	26.3	27.4	27.8	26.8
	N	10	10	10	10	10	10	10	10	10

istics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

TABLE 020

TOXICOLOGY - DATATOX RC.7
JECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

PRINT DATE 6-JAN-94

UP MEANS

BODY WEIGHT

M A L E S		Day 56 BODYWT G	Day 63 BODYWT G	Day 70 BODYWT G	Day 77 BODYWT G	Day 84 BODYWT G	Day 91 BODYWT G
UP 0	M	288.5	293.4	297.3	299.4	301.1	305.8
	SD	19.3	18.5	20.5	19.2	17.2	18.4
	N	10	10	10	10	10	10
UP 1	M	286.3	294.3	298.8	297.6	299.5	303.3
	SD	23.4	22.2	20.5	24.8	26.7	27.4
	N	10	10	10	10	10	10
UP 2	M	286.6	292.2	296.9	297.9	297.6	302.5
	SD	21.9	23.0	21.3	24.4	23.2	21.3
	N	10	10	10	10	10	10
	M	299.2	304.4	306.4	308.7	310.7	311.4
	SD	30.0	28.6	28.7	27.4	29.2	29.7
	N	10	10	10	10	10	10

+ Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

TOXICOLOGY - DATATOX RC.7
CT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

MEANS

BODY WEIGHT CHANGE

PRINT DATE 6-JAN-94

E S		Day -7 BW CHGE G	Day 0 BW CHGE G	Day 7 BW CHGE G	Day 14 BW CHGE G	Day 21 BW CHGE G	Day 28 BW CHGE G	Day 35 BW CHGE G	Day 42 BW CHGE G	Day 49 BW CHGE G
0										
	M	-28.6	0.0	26.9	56.9	78.8	108.0	131.1	149.4	168.0
	SD	6.1	0.0	4.9	6.3	13.7	11.7	14.9	14.7	18.4
	N	10	10	10	10	10	10	10	10	10
1										
	M	-27.4	0.0	27.6	55.1	77.9	101.2	122.9	137.5	155.2
	SD	8.0	0.0	9.7	13.1	16.5	21.6	24.1	26.8	30.9
	N	10	10	10	10	10	10	10	10	10
2										
	M	-27.9	0.0	25.6	50.8	76.0	99.9	118.0	134.9	149.1
	SD	5.7	0.0	5.9	14.6	14.7	19.0	23.4	23.3	25.0
	N	10	10	10	10	10	10	10	10	10
3										
	M	-26.3	0.0	12.9**	36.5**	58.2**	78.2**	97.6**	110.7**	125.1**
	SD	7.2	0.0	5.2	6.7	7.8	12.0	10.2	12.1	12.1
	N	10	10	10	10	10	10	10	10	10

stics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

TOXICOLOGY - DATATOX RC.7
ECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

P MEANS

BODY WEIGHT CHANGE

PRINT DATE 6-JAN-94

L E S		Day 56 BW CHGE G	Day 63 BW CHGE G	Day 70 BW CHGE G	Day 77 BW CHGE G	Day 84 BW CHGE G	Day 91 BW CHGE G
IP 0							
	M	180.8	193.7	208.1	218.8	216.3	230.2
	SD	22.1	19.2	21.9	21.4	23.4	21.3
	N	10	10	10	10	10	10
IP 1							
	M	167.3	179.5	189.4	200.0	200.5	211.0
	SD	31.7	36.2	38.2	38.3	40.4	42.6
	N	10	10	10	10	10	10
IP 2							
	M	160.5	175.3	185.8	193.3	192.7	203.3
	SD	26.3	29.5	32.4	30.1	32.7	31.7
	N	10	10	10	10	10	10
IP 3							
	M	136.2**	145.4**	157.2**	167.8**	165.1**	177.7**
	SD	12.3	10.6	13.8	13.2	12.9	14.6
	N	10	10	10	10	10	10

tistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

TABLE 023

TOXICOLOGY - DATATOX RC.7
CT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

MEANS

BODY WEIGHT CHANGE

PRINT DATE 6-JAN-94

A L E S		Day -8 BW CHGE G	Day 0 BW CHGE G	Day 7 BW CHGE G	Day 14 BW CHGE G	Day 21 BW CHGE G	Day 28 BW CHGE G	Day 35 BW CHGE G	Day 42 BW CHGE G	Day 49 BW CHGE G
0										
	M	-15.8	0.0	15.1	27.9	37.5	49.7	58.6	65.8	72.1
	SD	3.8	0.0	7.6	7.0	9.1	7.8	9.7	12.2	10.9
	N	10	10	10	10	10	10	10	10	10
1										
	M	-18.6	0.0	14.8	25.4	31.8	42.0	53.6	61.3	65.8
	SD	4.3	0.0	4.8	4.5	8.5	7.3	8.3	7.5	12.0
	N	10	10	10	10	10	10	10	10	10
2										
	M	-16.6	0.0	11.7	25.2	33.0	42.3	50.2	61.1	66.0
	SD	4.2	0.0	4.8	5.9	7.5	10.1	9.7	11.8	15.2
	N	10	10	10	10	10	10	10	10	10
3										
	M	-20.0	0.0	4.5**	16.3**	27.6	43.5	53.5	62.8	69.5
	SD	5.3	0.0	2.7	5.8	7.3	7.3	7.8	8.2	7.5
	N	10	10	10	10	10	10	10	10	10

istics: Anova + Dunnett's test (two-sidec): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

TOXICOLOGY - DATATOX RC.7
ECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

P MEANS

BODY WEIGHT CHANGE

PRINT DATE 6-JAN-94

M A L E S		Day 56 BW CHGE G	Day 63 BW CHGE G	Day 70 BW CHGE G	Day 77 BW CHGE G	Day 84 BW CHGE G	Day 91 BW CHGE G
UP 0							
	M	77.5	82.5	86.4	88.4	90.1	94.9
	SD	13.0	12.3	13.8	11.9	12.0	13.9
	N	10	10	10	10	10	10
UP 1							
	M	72.7	80.8	85.3	84.0	85.9	89.8
	SD	9.3	8.0	9.3	13.9	13.5	15.6
	N	10	10	10	10	10	10
UP 2							
	M	73.0	78.6	83.3	84.2	84.0	88.9
	SD	14.9	15.9	14.1	17.3	16.2	14.3
	N	10	10	10	10	10	10
UP 3							
	M	77.1	82.2	84.3	86.6	88.5	89.2
	SD	11.0	9.8	10.4	9.8	11.9	12.2
	N	10	10	10	10	10	10

tistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

SF TOXICOLOGY - DATATOX RC.7
OJECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

OUP MEANS

HEMATOLOGICAL EXAMINATIONS

PRINT DATE 15-JUN-94

minal days in study 95

A L E S		WBC GIGA/L	RBC TERA/L	HGB MMOL/L	HCT L/L	MCV FL	MCH FMOL	MCHC MMOL/L	PLT GIGA/L
OUP 0									
	M	6.26	8.13	9.2	0.421	51.8	1.14	21.98	717
	SD	1.35	0.49	0.3	0.018	1.6	0.05	0.75	89
	N	10	10	10	10	10	10	10	10
OUP 1									
	M	6.36	8.56	9.5	0.447**	52.3	1.12	21.31	796
	SD	1.21	0.39	0.4	0.021	0.9	0.04	0.58	85
	N	10	10	10	10	10	10	10	10
OUP 2									
	M	6.82	8.34	9.5	0.432	51.8	1.13	21.89	754
	SD	0.95	0.23	0.3	0.016	1.7	0.04	0.60	68
	N	10	10	10	10	10	10	10	10
OUP 3									
	M	7.05	8.26	9.1	0.420	50.9	1.10	21.70	841**
	SD	1.32	0.34	0.3	0.014	1.7	0.04	0.24	85
	N	10	10	10	10	10	10	10	10

atistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

: TOXICOLOGY - DATATOX RC.7
JECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

UP MEANS

HEMATOLOGICAL EXAMINATIONS

PRINT DATE 15-JUN-94

inal days in study 92

M A L E S

		WBC GIGA/L	RBC TERA/L	HGB MMOL/L	HCT L/L	MCV FL	MCH FMOL	MCHC MMOL/L	PLT GIGA/L
UP 0									
	M	4.24	8.08	9.4	0.425	52.6	1.16	22.08	754
	SD	0.45	0.27	0.3	0.017	1.1	0.03	0.34	63
	N	10	10	10	10	10	10	10	10
UP 1									
	M	4.63	8.15	9.6	0.436	53.5	1.17	21.95	775
	SD	0.75	0.43	0.4	0.025	1.1	0.03	0.60	42
	N	10	10	10	10	10	10	10	9
UP 2									
	M	4.17	8.04	9.4	0.425	52.9	1.17	22.18	755
	SD	1.01	0.41	0.5	0.018	1.1	0.04	0.61	102
	N	10	10	10	10	10	10	10	9
OUP 3									
	M	5.79**	7.35**	8.7**	0.390**	53.1	1.19	22.37	872**
	SD	0.75	0.53	0.6	0.027	0.6	0.02	0.39	69
	N	10	10	10	10	10	10	10	10

atistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

F TOXICOLOGY
JECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

DIFFERENTIAL BLOOD COUNT

15-JUN-94

UP MEANS

inal days in study 95

L E S

		WBC GIGA/L	EOS %	BASO %	BAND %	POLY %	LYMP %	MONO %
UP 0								
0 MG/L	M	6.26	3.60	0.30	0.20	10.70	79.70	5.50
	SD	1.35	2.27	0.48	0.42	4.50	8.51	3.34
	N	10	10	10	10	10	10	10
UP 1								
5.8 MG/L	M	6.36	3.70	0.10	0.00	8.30	83.60	4.30
	SD	1.21	1.83	0.32	0.00	3.95	5.52	1.49
	N	10	10	10	10	10	10	10
UP 2								
58 MG/L	M	6.82	2.00	0.10	0.00	8.00	85.60	4.30
	SD	0.95	1.15	0.32	0.00	5.72	6.47	2.91
	N	10	10	10	10	10	10	10
UP 3								
174 MG/L	M	7.05	2.30	0.50	0.10	14.80	77.20	5.10
	SD	1.32	1.64	0.53	0.32	7.61	7.50	2.18
	N	10	10	10	10	10	10	10

SF TOXICOLOGY
OJECT NUMBER 50I0044/92053 N-VINYLCAPROLACTAM

OUP MEANS DIFFERENTIAL BLOOD COUNT 15-JUN-94

minal days in study 95

A L E S

		WBC GIGA/L	EOS GIGA/L	BASO GIGA/L	BAND GIGA/L	POLY GIGA/L	LYMP GIGA/L	MONO GIGA/L
OUP 0								
0 MG/L								
	M	6.26	0.21	0.02	0.01	0.66	5.03	0.33
	SD	1.35	0.13	0.03	0.02	0.28	1.39	0.17
	N	10	10	10	10	10	10	10
OUP 1								
5.8 MG/L								
	M	6.36	0.23	0.01	0.00	0.51	5.35	0.27
	SD	1.21	0.10	0.02	0.00	0.21	1.22	0.12
	N	10	10	10	10	10	10	10
OUP 2								
58 MG/L								
	M	6.82	0.13	0.01	0.00	0.56	5.82	0.30
	SD	0.95	0.07	0.02	0.00	0.43	0.76	0.20
	N	10	10	10	10	10	10	10
OUP 3								
174 MG/L								
	M	7.05	0.15	0.03	0.01	1.05	5.46	0.35
	SD	1.32	0.09	0.03	0.02	0.65	1.26	0.13
	N	10	10	10	10	10	10	10

SF TOXICOLOGY
OJECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

OUP MEANS

DIFFERENTIAL BLOOD COUNT

15-JUN-94

minal days in study 92

E M A L E S

		WBC GIGA/L	EOS %	BASO %	BAND %	POLY %	LYMP %	MONO %
OUP 0								
0 MG/L	M	4.24	2.60	0.10	0.30	14.90	76.60	5.50
	SD	0.45	1.17	0.32	0.48	4.43	6.69	2.59
	N	10	10	10	10	10	10	10
OUP 1								
5.8 MG/L	M	4.63	2.90	0.10	0.20	10.50	83.20	3.10
	SD	0.75	2.18	0.32	0.42	3.69	4.61	2.51
	N	10	10	10	10	10	10	10
OUP 2								
58 MG/L	M	4.17	2.00	0.40	0.10	12.50	81.30	3.70
	SD	1.01	1.25	0.70	0.32	6.24	7.53	2.75
	N	10	10	10	10	10	10	10
OUP 3								
174 MG/L	M	5.79	2.30	0.20	0.30	13.40	79.40	4.40
	SD	0.75	2.54	0.42	0.48	6.20	9.00	2.91
	N	10	10	10	10	10	10	10

SF TOXICOLOGY
OJECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

OUP MEANS

DIFFERENTIAL BLOOD COUNT

15-JUN-94

minal days in study 92

E M A L E S

		WBC GIGA/L	EOS GIGA/L	BASO GIGA/L	BAND GIGA/L	POLY GIGA/L	LYMP GIGA/L	MONO GIGA/L
IOUP 0								
0 MG/L	M	4.24	0.11	0.00	0.01	0.63	3.25	0.23
	SD	0.45	0.04	0.01	0.02	0.20	0.46	0.10
	N	10	10	10	10	10	10	10
ROUP 1								
5.8 MG/L	M	4.63	0.13	0.00	0.01	0.49	3.85	0.14
	SD	0.75	0.09	0.02	0.02	0.19	0.67	0.11
	N	10	10	10	10	10	10	10
ROUP 2								
58 MG/L	M	4.17	0.08	0.02	0.00	0.51	3.41	0.15
	SD	1.01	0.04	0.03	0.01	0.26	0.98	0.11
	N	10	10	10	10	10	10	10
ROUP 3								
174 MG/L	M	5.79	0.13	0.01	0.02	0.77	4.61	0.25
	SD	0.75	0.13	0.03	0.03	0.36	0.85	0.16
	N	10	10	10	10	10	10	10

F TOXICOLOGY - DATATOX RC.7
JECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

UP MEANS

RETICULOCYTES

PRINT DATE 15-JUN-94

inal days in study 95

L E S		RETI 0/00
UP 0		
	M	34
	SD	6
	N	10
UP 1		
	M	30
	SD	3
	N	10
UP 2		
	M	33
	SD	6
	N	10
UP 3		
	M	35
	SD	6
	N	10

tistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

TABLE 032

;F TOXICOLOGY - DATATOX RC.7
)JECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

)UP MEANS

RETICULOCYTES

PRINT DATE 15-JUN-94

ninal days in study 92

E M A L E S

		RETI 0/00
OUP 0		
	M	25
	SD	4
	N	10
OUP 1		
	M	24
	SD	4
	N	10
OUP 2		
	M	25
	SD	4
	N	10
IOUP 3		
	M	29
	SD	6
	N	10

tatistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

TABLE 033

F TOXICOLOGY - DATATOX RC.7
JECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

UP MEANS

CLOTTING ANALYSES

PRINT DATE 15-JUN-94

inal days in study 95

L E S		HQT SECONDS
UP 0		
	M	28.6
	SD	1.0
	N	10
UP 1		
	M	27.5
	SD	1.0
	N	9
UP 2		
	M	28.2
	SD	1.2
	N	10
UP 3		
	M	27.8
	SD	1.4
	N	10

tistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

F TOXICOLOGY - DATATOX RC.7
JECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

UP MEANS

CLOTTING ANALYSES

PRINT DATE 15-JUN-94

inal days in study 92

E M A L E S

		HQT SECONDS
UP 0		
	M	25.4
	SD	0.7
	N	10
UP 1		
	M	25.3
	SD	1.1
	N	10
UP 2		
	M	25.1
	SD	1.1
	N	9
UP 3		
	M	25.3
	SD	1.3
	N	10

atistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

TOXICOLOGY - DATATOX RC.7
ECT NUMBER 50I0044/92053 N-VINYLCAPROLACTAM

P MEANS ENZYMES PRINT DATE 15-JUN-94

nal days in study 95

L E S

		ALT MYKAT/L	AST MYKAT/L	ALP MYKAT/L	SGGT NAKAT/L
P 0					
	M	1.17	2.31	5.07	11
	SD	0.13	0.44	0.56	19
	N	10	10	10	10
P 1					
	M	1.06	1.77	4.56	19
	SD	0.16	0.25	0.70	27
	N	10	10	10	10
P 2					
	M	1.21	1.97	5.42	9
	SD	0.18	0.82	0.41	12
	N	10	10	10	10
P 3					
	M	1.29	2.18	4.96	7
	SD	0.20	0.42	0.43	7
	N	10	10	10	10

istics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

SF TOXICOLOGY - DATATOX RC.7
OJECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

OUP MEANS

LIVER EXAMINATIONS

PRINT DATE 15-JUN-94

minal days in study 95

A L E S

		LGGT NAKAT/G P.
OUP 0		
	M	22.81
	SD	11.19
	N	10
OUP 1		
	M	28.89
	SD	19.03
	N	10
OUP 2		
	M	25.40
	SD	21.05
	N	10
OUP 3		
	M	36.90
	SD	29.23
	N	10

tatistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

TABLE 037

F TOXICOLOGY - DATATOX RC.7
JECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

UP MEANS

ENZYMES

PRINT DATE 15-JUN-94

inal days in study 92

M A L E S		ALT MYKAT/L	AST MYKAT/L	ALP MYKAT/L	SGGT NAKAT/L
UP 0					
	M	0.99	2.04	3.68	6
	SD	0.15	0.52	0.54	14
	N	10	10	10	10
UP 1					
	M	0.92	1.74	3.86	4
	SD	0.11	0.31	0.77	10
	N	10	10	10	10
UP 2					
	M	0.97	1.68	3.28	1
	SD	0.10	0.54	0.57	4
	N	10	10	10	10
UP 3					
	M	1.09	1.81	3.26	4
	SD	0.22	0.40	0.50	10
	N	10	10	10	10

atistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

SF TOXICOLOGY - DATATOX RC.7
OJECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

OUP MEANS

LIVER EXAMINATIONS

PRINT DATE 15-JUN-94

minal days in study 92

E M A L E S

		LGGT NAKAT/G P.
OUP 0		
	M	94.61
	SD	76.68
	N	10
OUP 1		
	M	72.27
	SD	44.99
	N	10
OUP 2		
	M	81.02
	SD	46.36
	N	10
OUP 3		
	M	127.67
	SD	56.88
	N	10

tatistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

SF TOXICOLOGY - DATATOX RC.7
OJECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

OUP MEANS

BLOOD CHEMISTRY

PRINT DATE 15-JUN-94

minal days in study 95

A L E S		NA MMOL/L	K MMOL/L	CL MMOL/L	INP MMOL/L	CA MMOL/L	UREA MMOL/L	CREA MYMOL/L	GLUC MMOL/L	TBIL MYMOL/L
OUP 0										
	M	146.0	6.75	112.6	1.98	2.65	6.41	56.3	8.68	1.95
	SD	2.1	0.26	1.5	0.19	0.04	0.49	3.3	0.59	0.76
	N	10	10	10	10	10	10	10	10	10
OUP 1										
	M	148.7*	7.03	113.1	2.16	2.75**	6.59	56.9	7.93	2.03
	SD	2.3	0.37	2.6	0.24	0.11	0.54	3.8	0.77	0.40
	N	10	10	10	10	10	10	10	10	10
OUP 2										
	M	147.9	7.20**	113.1	2.15	2.72*	6.80	54.8	7.92	2.08
	SD	1.9	0.33	1.9	0.19	0.05	0.45	2.2	0.80	0.48
	N	10	10	10	10	10	10	10	10	10
OUP 3										
	M	146.4	6.88	112.7	2.00	2.69	6.24	54.6	8.21	2.29
	SD	2.4	0.30	2.4	0.10	0.06	0.46	2.3	0.74	0.92
	N	10	10	10	10	10	10	10	10	10

atistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

ASF TOXICOLOGY - DATATOX RC.7
ROJECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

ROUP MEANS

BLOOD CHEMISTRY

PRINT DATE 15-JUN-94

lominal days in study 95

I A L E S		TPROT G/L	ALB G/L	GLOB G/L	TRIG MMOL/L	CHOL MMOL/L	MG MMOL/L
ROUP 0							
	M	66.83	31.08	35.75	4.54	2.16	0.83
	SD	1.53	0.79	0.97	1.46	0.33	0.07
	N	10	10	10	10	10	10
ROUP 1							
	M	69.72*	32.31*	37.41	3.74	2.46	0.87
	SD	3.37	1.24	3.06	0.96	0.49	0.06
	N	10	10	10	10	10	10
ROUP 2							
	M	69.55*	32.22*	37.33	4.66	2.26	0.89
	SD	1.79	0.89	1.58	1.31	0.34	0.06
	N	10	10	10	10	10	10
ROUP 3							
	M	68.14	32.11	36.02	4.85	2.44	0.88
	SD	2.30	0.98	1.75	1.44	0.38	0.07
	N	10	10	10	10	10	10

Statistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

SF TOXICOLOGY - DATATOX RC.7
OJECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

OUP MEANS

BLOOD CHEMISTRY

PRINT DATE 15-JUN-94

minal days in study 92

E M A L E S

		NA MMOL/L	K MMOL/L	CL MMOL/L	INP MMOL/L	CA MMOL/L	UREA MMOL/L	CREA MYMOL/L	GLUC MMOL/L	TBIL MYMOL/L
OUP 0	M	142.4	5.81	113.9	1.59	2.62	6.35	54.1	7.17	2.52
	SD	3.5	0.42	1.4	0.25	0.09	0.55	3.8	0.65	0.65
	N	10	10	10	10	10	10	10	10	10
OUP 1	M	143.5	5.94	114.1	1.74	2.65	6.10	54.2	7.37	2.81
	SD	3.1	0.52	0.7	0.18	0.08	0.55	3.3	0.48	0.69
	N	10	10	10	10	10	10	10	10	10
OUP 2	M	140.8	5.96	113.7	1.76	2.67	6.09	54.4	7.44	2.34
	SD	2.5	0.36	1.5	0.25	0.07	0.54	3.2	0.60	0.63
	N	10	10	10	10	10	10	10	10	10
OUP 3	M	141.5	5.81	112.6	1.84	2.62	6.03	51.5	7.16	3.15
	SD	2.6	0.37	1.0	0.15	0.06	1.43	2.7	0.47	1.02
	N	10	10	10	10	10	10	10	10	10

atistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

SF TOXICOLOGY - DATATOX RC.7
OJECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

PRINT DATE 15-JUN-94

OUP MEANS

BLOOD CHEMISTRY

minal days in study 92

E M A L E S		TPROT G/L	ALB G/L	GLOB G/L	TRIG MMOL/L	CHOL MMOL/L	MG MMOL/L
ROUP 0							
	M	69.36	35.07	34.29	3.04	2.15	0.92
	SD	2.79	2.08	1.52	0.86	0.25	0.08
	N	10	10	10	10	10	10
ROUP 1							
	M	68.41	35.47	32.95	2.30	2.18	0.96
	SD	2.92	1.82	1.65	0.94	0.38	0.06
	N	10	10	10	10	10	10
ROUP 2							
	M	70.33	35.85	34.48	3.23	2.23	0.96
	SD	2.94	1.48	2.10	1.50	0.43	0.08
	N	10	10	10	10	10	10
ROUP 3							
	M	66.11*	32.86*	33.25	3.83	2.46	0.95
	SD	2.57	0.92	2.35	1.45	0.43	0.07
	N	10	10	10	10	10	10

tatistics: Anova + Dunnett's test (two-sided): * P<=0.05 ** P<=0.01 (Statistical unit = Animal)

TOXICOLOGY
ECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

ARY TABLES

URINALYSIS: CHEMICAL EXAMINATIONS

NAL DAYS IN STUDY 81

L E S

METER		ASSESSMENT-LIMITS	GROUP 0	GROUP 1	GROUP 2	GROUP 3
ITE	[2]	= 0 ≥ 1	10 0	9 1	9 1	9 1
ALUE	[2]	≤ 7 > 7	10 0	10 0	10 0	10 0
EIN	[2]	≤ 2 3	10 0	10 0	10 0	10 0
OSE	[1]	= 0 ≥ 1	10 0	10 0	10 0	10 0
NE	[1]	≤ 1 = 2	10 0	10 0	10 0	10 0
ILINOGEN	[2]	≤ 1 ≥ 2	10 0	9 1	10 0	9 1
RUBIN	[2]	≤ 1 ≥ 2	10 0	10 0	10 0	10 0
D	[1]	≤ 1 ≥ 2	7 3	10 0	8 2	10 0
IME		MEAN	4.9	4.1	4.6	4.7
.GRAVITY)	[2]	≤ 1040 > 1040	2 8	1 9	2 8	2 8

istics: Fisher's exact test (one - sided) [1]: * p < = 0.05 ** p < = 0.01
Fisher's exact test (two - sided) [2]: * p < = 0.05 ** p < = 0.01

F TOXICOLOGY
JECT NUMBER 50I0044/92053 N-VINYLCAPROLACTAM

IMARY TABLES URINALYSIS: SEDIMENT

INAL DAYS IN STUDY 81

L E S

AMETER		ASSESSMENT-LIMITS	GROUP 0	GROUP 1	GROUP 2	GROUP 3
	[1]	≤ 1	10	9	10	10
		> 1	0	1	0	0
STALS	[2]	< 3	4	4	7	6
		3	6	6	3	4
AL TUBULAR	[1]	≤ 1	8	10	9	10
		> 1	2	0	1	0
NSITIONAL	[1]	≤ 1	8	10	10	10
		> 1	2	0	0	0
AMOUS	[1]	≤ 1	9	10	9	9
		> 1	1	0	1	1
TS	[1]	= 0	9	10	9	10
		≥ 1	1	0	1	0
THROCYTES	[1]	≤ 1	9	10	8	10
		> 1	1	0	2	0
COCYTES	[1]	≤ 1	10	10	10	10
		> 1	0	0	0	0
TERIA	[2]	< 3	10	9	8	9
		3	0	1	2	1

tistics: Fisher's exact test (one sided) [1]: * p < = 0.05 ** p < = 0.01
Fisher's exact test (two sided) [2]: * p < = 0.05 ** p < = 0.01

TOXICOLOGY
ECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

ARY TABLES

URINALYSIS: CHEMICAL EXAMINATIONS

NAL DAYS IN STUDY 81

M A L E S

METER		ASSESSMENT-LIMITS	GROUP 0	GROUP 1	GROUP 2	GROUP 3
ITE	[2]	= 0	7	10	9	8
		≥ 1	3	0	1	2
VALUE	[2]	≤ 7	10	10	10	10
		> 7	0	0	0	0
TEIN	[2]	≤ 1	10	10	10	10
		≥ 2	0	0	0	0
OSE	[1]	= 0	10	10	10	10
		≥ 1	0	0	0	0
ONE	[1]	≤ 1	10	10	10	10
		= 2	0	0	0	0
BILINOGEN	[2]	≤ 1	9	9	10	10
		≥ 2	1	1	0	0
IRUBIN	[2]	≤ 1	9	10	10	10
		≥ 2	1	0	0	0
OD	[1]	≤ 1	10	10	10	9
		≥ 2	0	0	0	1
UME		MEAN	2.2	2.3	3.8	5.3
)						
C.GRAVITY	[2]	≤ 1040	1	0	4	5
L)		> 1040	9	10	6	5

tistics: Fisher's exact test (one - sided) [1]: * p < = 0.05 ** p < = 0.01
Fisher's exact test (two - sided) [2]: * p < = 0.05 ** p < = 0.01

F TOXICOLOGY
JECT NUMBER 50I0044/92053 N-VINYLCAPROLACTAM

MARY TABLES URINALYSIS: SEDIMENT

INAL DAYS IN STUDY 81

M A L E S

AMETER		ASSESSMENT-LIMITS	GROUP 0	GROUP 1	GROUP 2	GROUP 3
	[1]	≤ 1	8	9	9	9
		> 1	2	1	1	1
STALS	[2]	< 3	10	9	10	9
		3	0	1	0	1
AL TUBULAR	[1]	≤ 1	10	10	10	10
		> 1	0	0	0	0
NSITIONAL	[1]	≤ 1	10	10	10	10
		> 1	0	0	0	0
JAMOUS	[1]	≤ 1	9	8	10	8
		> 1	1	2	0	2
STS	[1]	= 0	10	10	10	10
		≥ 1	0	0	0	0
YTHROCYTES	[1]	≤ 1	10	10	9	7
		> 1	0	0	1	3
UCOCYTES	[1]	≤ 1	10	10	8	8
		> 1	0	0	2	2
CTERIA	[2]	< 3	9	10	10	9
		3	1	0	0	1

atistics: Fisher's exact test (one sided) [1]: * p < = 0.05 ** p < = 0.01
Fisher's exact test (two sided) [2]: * p < = 0.05 ** p < = 0.01

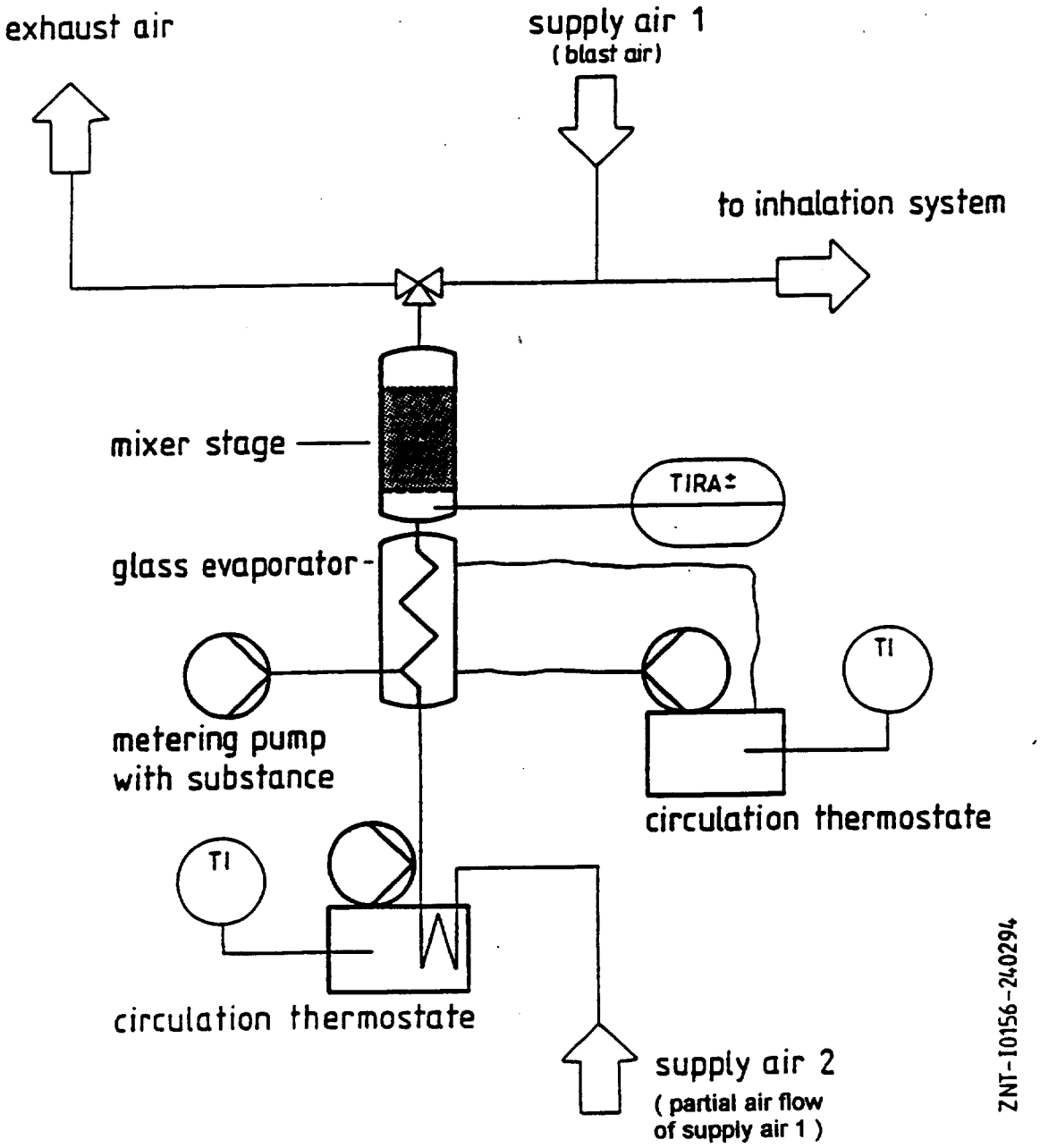
"FIGURES" ANNEX

Figures 001 - 005

Report; Project No.: 5010044 / 92053

ANNEX figure 1

generator system

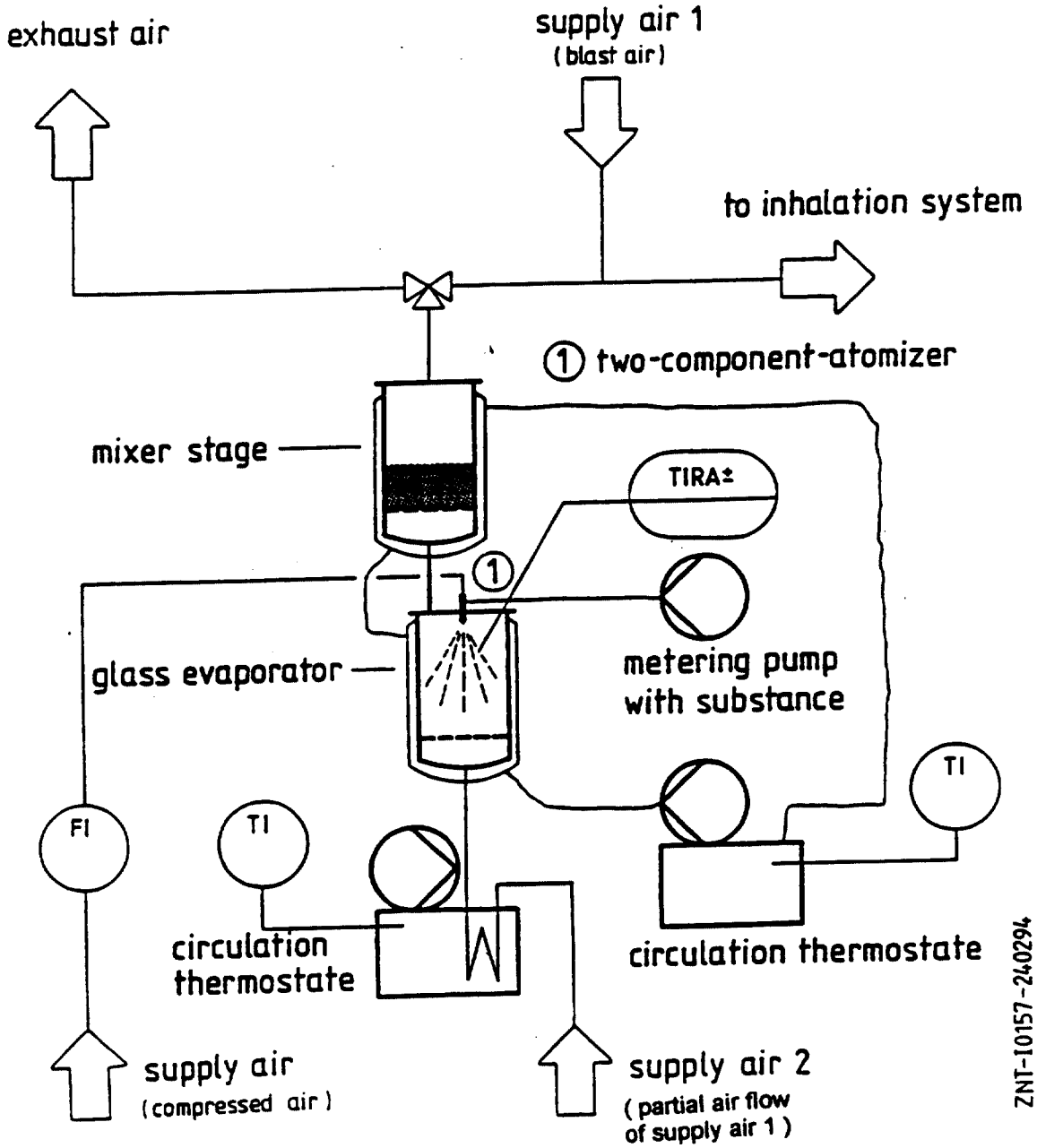


Report; Project No.: 5010044 / 92053

ANNEX

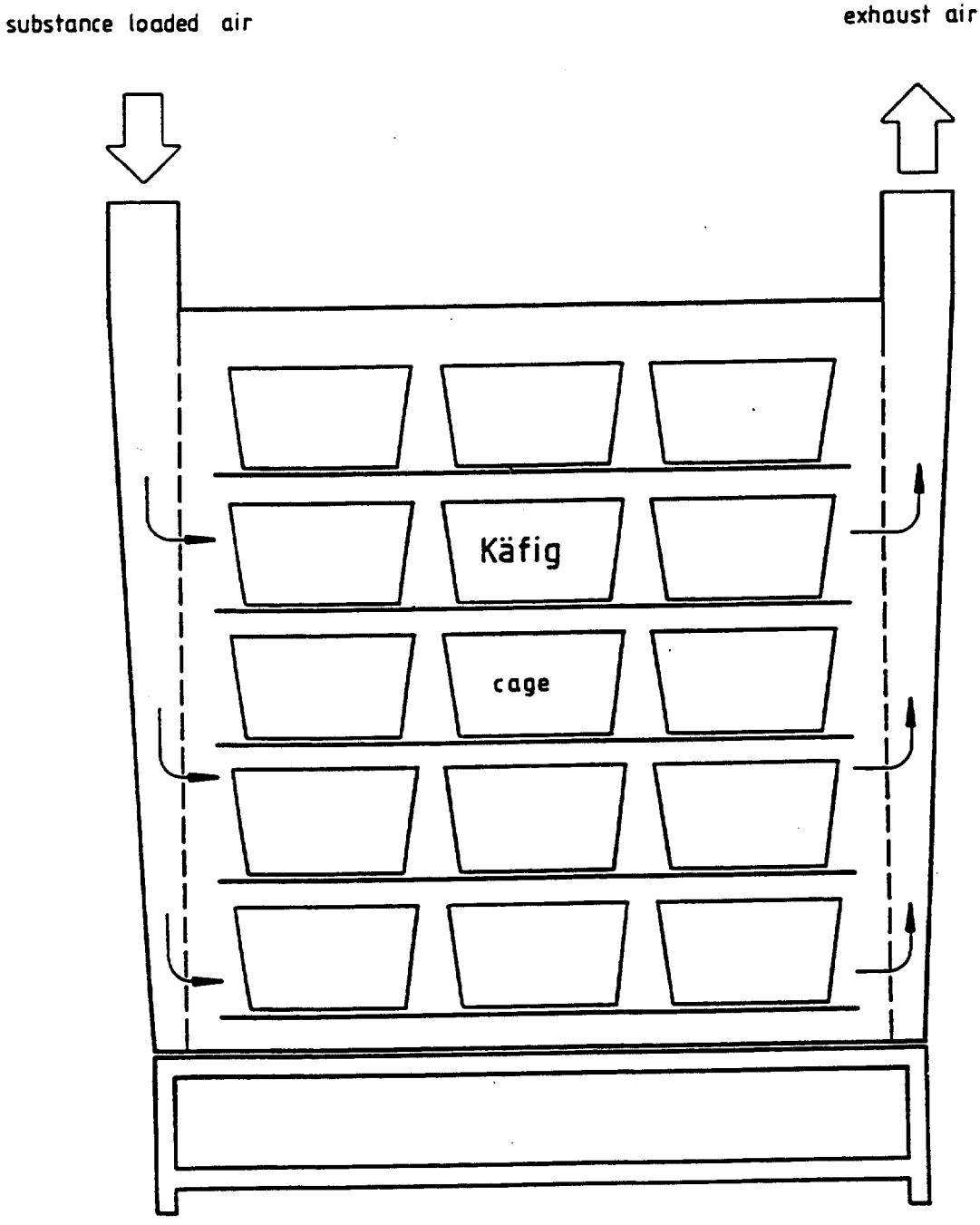
figure 2

generator system

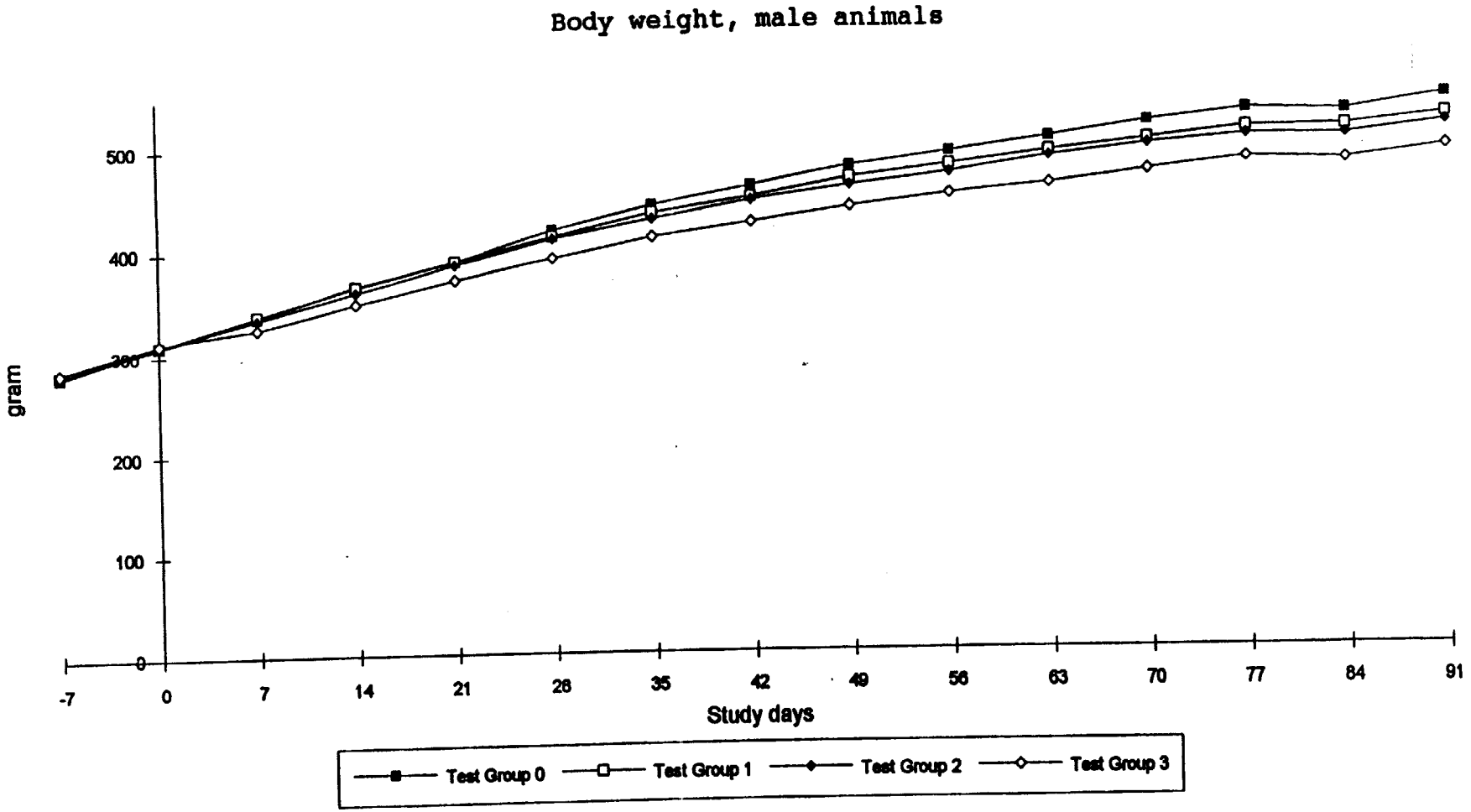


Report; Project No.: 5010044 / 92053

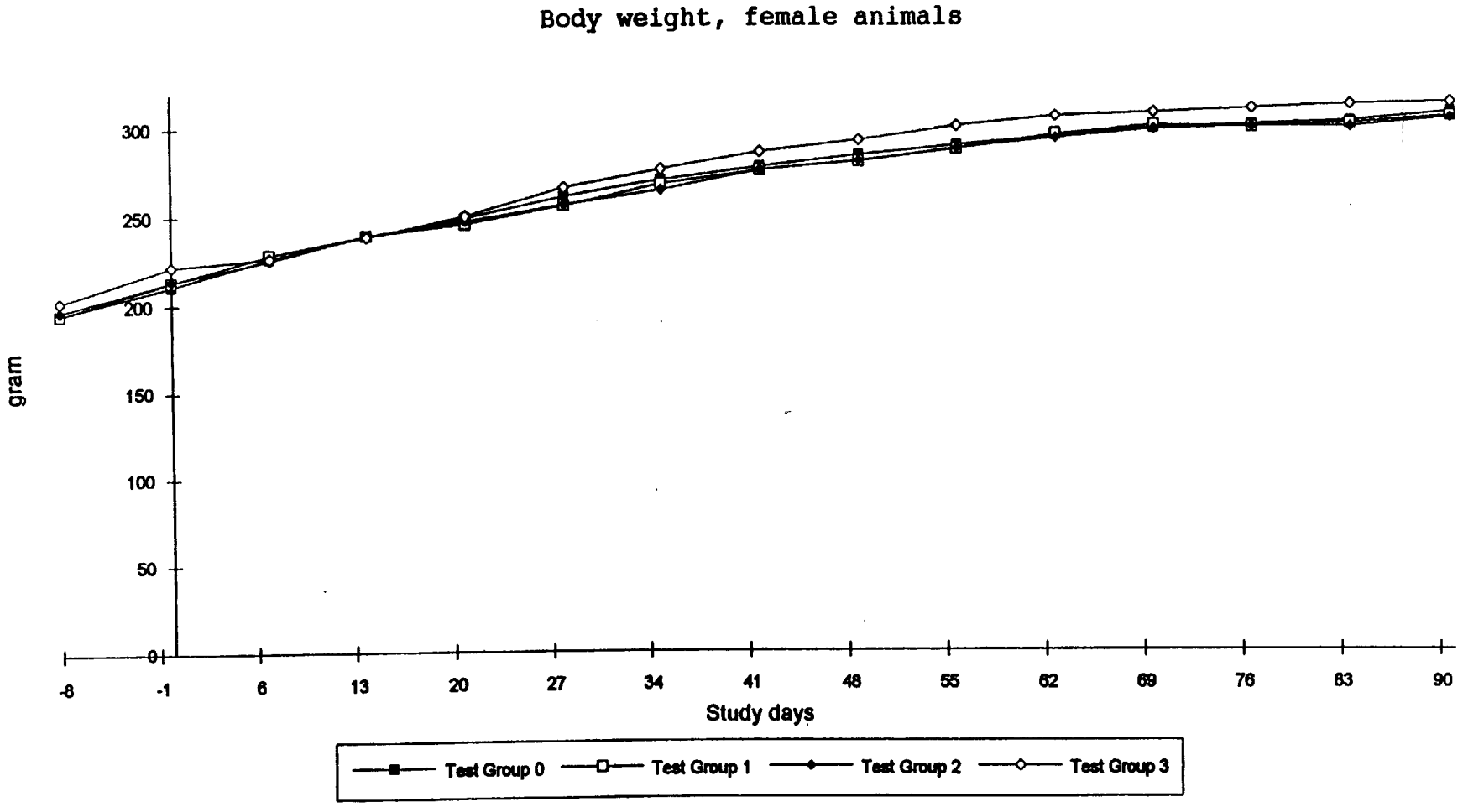
ANNEX figure 3



inhalation chamber (horizontal flow)



BASF
Abteilung Toxikologie
Department of Toxicology



BASF
Abteilung Toxikologie
Department of Toxicology

Report; Project No.: 50I0044/92053

From the Department of Toxicology of
BASF Aktiengesellschaft, D-67056 Ludwigshafen, FRG
Head: Prof. Dr.med. Dr.rer.nat. H.-P. Gelbke

Study Director
(conduct of study, summary and editing):

A.O. Gamer, May 12, 1995
Dr.med.vet. A.O. Gamer

Clinical chemistry and hematology:

Deckardt, May 12, 1995
Dr.phil.nat. K. Deckardt

Pathology:

Küttler, May 12, 1995
Dr.med.vet. K. Küttler

Head of Section:

May 12, 1995
Dr.rer.nat. H.D. Hoffmann

BASF
Abteilung Toxikologie II
Department of Toxicology

GLP STATEMENT

Title of study: Report: Study on the inhalation toxicity of **Vinylcaprolactam** as a vapor in rats 90-day test

Project No.: 50I0044/92053

This study was conducted in accordance with the GLP provisions of the Chemikaliengesetz" (Chemicals Act; "Bundesgesetzblatt, Jahrgang 1994, Teil I, 29.07.94) and with the "OECD Principles of Good Laboratory Practice" (Paris, 1981).

May 12, 1995

.....
Head of Section

May 12th, 1995

.....
Study Director

STATEMENT

OF THE QUALITY ASSURANCE UNIT

Title of study: Report: Study on the inhalation toxicity of **Vinylcaprolactam** as a vapor in rats 90-day test

Project No.: 50I0044/92053

The Quality Assurance Unit inspected the study, audited the final report, and reported findings to the Study Director and to Management.

Phase of study/ inspection	Date of inspection	Report to Study Director and to Management
Protocol:	Feb. 12, 1993	June 07, 1993
Conduct of study:	June 01, 1993 July 20, 1993 Sept. 01, 1993	June 07, 1993 July 20, 1993 Sept. 01, 1993
Audit of the report:	April 30, 1995	May 02, 1995

Remarks: Parts of analytics were inspected independently by the Quality Assurance Unit of the analytical laboratory.

Ludwigshafen/Rhein, May 16, 1995 ..... J. Hajok .....

J. Hajok
(Head of Quality Assurance Unit)

BASF
Abteilung Toxikologie
Department of Toxicology
D-67056 Ludwigshafen, FRG

ga-bh; 0217

REPORT

Study on the inhalation toxicity
of

Vinylcaprolactam

as a vapor in rats
90-day test

Contains No CBI

Project No.: 50I0044/92053

Tables Section, Individual values
VOLUME II

Dieses Dokument enthält Betriebs- und Geschäftsgeheimnisse der BASF. Es ist Eigentum der BASF und darf nur zu dem von der BASF vorgesehenen Zweck verwendet werden. Jede andere oder darüber hinausgehende Verwendung, Verwertung, Weitergabe, Vervielfältigung oder Veröffentlichung bedarf der Einwilligung der BASF.

This document contains manufacturing and trade secrets of BASF. It is the property of BASF and may be used only for that purpose for which it was intended by BASF. Every other or additional use, exploitation, reproduction, publication or submission to other parties require the written permission of BASF.

CONTENTS

VOLUME II (Tables Section, Individual values)

page

TITLE PAGE I - II
CONTENTS

Table

A CLINICAL EXAMINATIONS

Individual values

Key to the abbreviations, page A2

Body weight
- males A 001 - A 004
- females A 005 - A 008

Clinical observations
- **Preflow period**
  - males A 009 - A 012
  - females A 013 - A 016
- **Exposure period**
  - males A 017 - A 033
  - females A 034 - A 050

B CLINICAL CHEMISTRY AND HEMATOLOGY

Key to the abbreviations, pages B1 - B7

Tables

Hematological examinations
- male animals B 001 - B 002
- female animals B 003 - B 004

Differential blood count
- male animals B 005 - B 008
- female animals B 009 - B 012

Reticulocytes
- male animals B 013 - B 014
- female animals B 015 - B 016

Clotting analyses
- male animals B 017 - B 018
- female animals B 019 - B 020

Enzymes
- male animals B 021 - B 022
- female animals B 025 - B 026

Liver examinations
- male animals B 023 - B 024
- female animals B 027 - B 028

Blood chemistry
- male animals B 029 - B 032
- female animals B 033 - B 036

Urinalyses
- male animals B 037 - B 040
- female animals B 041 - B 044

C ANALYTICAL DATA AND EXPOSURE PARAMETERS

Individual values

Key to the abbreviations, page C2

Daily means (concentrations) C 001

Daily means (chamber parameters) C 002 - C 005

BEST COPY AVAILABLE

Report; Project No.: 50I0044/92053

PART A "CLINICAL EXAMINATIONS"

Tables A 001 - A 050

KEY TO THE ABBREVIATIONS

G	=	gram
M	=	mean
SD	=	standard deviation
N	=	number of animals
BODY WT	=	body weight
No., #	=	animal number
MG/M*3	=	milligrams per cubic meter

BEST COPY AVAILABLE

TOXICOLOGY - DATATOX RC.7
ECT NUMBER 5DI0044/92053

N-VINYLCAPROLACTAM

PRINT DATE 6-JAN-94

VIDUAL DATA LISTING WITH MEANS

BODY WEIGHT

L E S	Animal No.	Day -7 BODYWT G	Day 0 BODYWT G	Day 7 BODYWT G	Day 14 BODYWT G	Day 21 BODYWT G	Day 28 BODYWT G	Day 35 BODYWT G	Day 42 BODYWT G	Day 49 BODYWT G
P 0	1	285.2	310.4	343.4	376.9	400.5	431.7	456.4	476.5	496.7
	2	275.0	296.9	323.6	357.9	379.3	402.1	415.7	430.7	447.1
	3	277.1	309.2	327.0	358.6	377.9	405.6	424.1	438.5	452.8
	4	266.6	291.5	312.4	343.8	368.9	391.0	411.9	427.8	448.1
	5	272.0	313.3	338.7	364.8	358.9	408.9	429.7	458.6	473.4
	6	294.2	322.2	347.1	381.2	398.7	424.9	450.0	469.9	478.6
	7	295.9	324.4	354.7	386.9	411.4	442.1	467.6	486.9	507.3
	8	288.9	310.2	341.8	360.0	395.9	426.9	457.2	468.3	492.4
	9	276.3	310.6	341.5	374.0	404.5	438.0	465.2	482.9	510.6
	10	278.5	307.3	334.9	360.5	388.2	404.9	429.4	449.7	468.9
	M	281.0	309.6	336.5	366.5	388.4	417.6	440.7	459.0	477.6
	SD	9.7	9.9	12.4	13.0	16.8	17.3	20.8	21.5	23.7
	N	10	10	10	10	10	10	10	10	10
P 1	11	300.7	320.6	354.9	384.9	408.1	441.9	466.9	478.7	496.7
	12	266.3	289.1	306.2	331.8	348.9	376.8	389.2	404.4	411.3
	13	273.0	300.1	324.7	350.6	364.1	389.5	408.8	420.8	437.1
	14	273.1	306.0	333.8	366.1	391.2	422.8	442.2	464.3	475.4
	15	286.6	314.8	340.5	363.1	390.0	402.1	434.4	446.7	460.1
	16	295.5	341.4	380.3	419.5	445.3	471.8	498.6	528.7	548.7
	17	289.8	318.6	333.4	363.4	387.7	408.6	433.3	447.7	471.7
	18	284.5	313.1	336.9	356.6	380.0	393.5	410.4	421.1	437.4
	19	286.0	308.1	354.5	381.8	412.3	440.5	463.3	467.2	503.8
	20	273.5	291.2	314.0	336.1	354.5	367.2	385.1	398.4	412.8
	M	282.9	310.3	337.9	365.4	388.2	411.5	433.2	447.8	465.5
	SD	11.1	15.3	21.5	25.5	29.0	32.7	36.2	39.3	43.3
	N	10	10	10	10	10	10	10	10	10

BEST COPY AVAILABLE

F TOXICOLOGY - DATATOX RC.7
JECT NUMBER 5010044/92053 N-VINYLCAPROLACTAM

IVIDUAL DATA LISTING WITH MEANS BODY WEIGHT PRINT DATE 6-JAN-94

L E S	Animal No.	Day -7 BODYWT G	Day 0 BODYWT G	Day 7 BODYWT G	Day 14 BODYWT G	Day 21 BODYWT G	Day 28 BODYWT G	Day 35 BODYWT G	Day 42 BODYWT G	Day 49 BODYWT G
UP 2										
	21	295.2	323.3	350.4	385.4	410.5	437.2	454.0	479.5	494.1
	22	270.1	291.6	316.0	344.7	368.5	389.4	405.4	426.4	444.1
	23	278.3	308.3	341.1	377.4	408.1	433.3	459.2	469.8	491.2
	24	257.3	289.3	311.7	332.5	353.0	375.4	391.7	406.6	418.5
	25	277.3	307.6	329.5	352.6	372.5	388.3	404.7	418.8	432.8
	26	290.7	320.8	343.2	345.0	381.1	406.1	421.9	446.0	458.0
	27	294.3	326.5	360.1	392.7	412.8	446.8	476.1	496.4	504.9
	28	295.8	331.3	363.4	394.4	423.3	455.5	474.7	483.9	503.0
	29	277.8	297.8	312.7	332.5	355.4	376.6	388.9	405.0	420.7
	30	276.0	294.9	319.2	342.3	365.7	381.4	395.2	408.1	414.8
	M	281.3	309.1	334.7	360.0	385.1	409.0	427.2	444.1	458.2
	SD	12.6	15.5	19.6	24.8	26.1	31.2	35.2	35.6	36.9
	N	10	10	10	10	10	10	10	10	10
UP 3										
	31	301.0	332.8	353.5	374.5	399.2	421.4	440.4	454.6	465.2
	32	268.9	292.3	307.7	317.6	343.6	360.5	375.5	382.3	398.0
	33	279.6	306.3	314.1	334.3	352.2	373.2	394.3	409.8	417.8
	34	269.2	298.7	310.4	339.0	357.2	380.5	390.6	404.0	416.5
	35	288.9	317.3	338.4	357.9	378.3	381.0	417.4	431.0	452.0
	36	298.4	316.7	329.6	351.0	377.8	402.3	418.3	426.8	445.2
	37	289.4	305.3	312.3	335.8	351.1	368.6	391.6	404.6	424.5
	38	295.9	333.6	344.2	374.0	398.0	429.2	446.3	467.0	481.4
	39	293.2	326.2	332.9	363.9	388.4	416.9	435.0	443.0	453.2
	40	274.5	293.0	307.6	338.7	358.3	370.8	388.3	405.7	419.0
	M	285.9	312.2	325.1	348.7	370.4	390.4	409.8	422.9	437.3
	SD	12.0	15.5	16.8	18.7	20.5	24.8	25.0	26.3	26.1
	N	10	10	10	10	10	10	10	10	10

BEST COPY AVAILABLE

TOXICOLOGY - DATATOX RC.7
CT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

IDUAL DATA LISTING WITH MEANS

BODY WEIGHT

PRINT DATE 6-JAN-94

E S	Animal No.	Day 56 BODYWT G	Day 63 BODYWT G	Day 70 BODYWT G	Day 77 BODYWT G	Day 84 BODYWT G	Day 91 BODYWT G
0							
	1	513.7	523.3	534.5	550.6	543.1	555.5
	2	464.3	477.2	484.2	497.0	490.5	507.1
	3	458.7	474.4	492.3	499.9	496.8	514.4
	4	455.0	474.7	481.0	497.3	493.5	501.0
	5	487.2	500.4	514.7	521.6	507.7	535.6
	6	490.2	512.2	518.1	535.4	528.4	544.9
	7	529.0	533.4	555.0	568.8	569.7	578.8
	8	505.0	523.1	539.8	535.2	542.0	550.5
	9	526.8	532.7	554.9	565.6	565.0	580.1
	10	473.9	481.9	502.5	512.2	521.8	530.1
	M	490.4	503.3	517.7	528.4	525.9	539.8
	SD	27.5	24.6	27.7	27.2	28.9	27.6
	N	10	10	10	10	10	10
1							
	11	513.7	524.5	539.7	544.0	552.5	561.4
	12	428.9	431.5	433.5	438.2	437.8	456.5
	13	449.2	457.0	466.0	485.0	477.8	499.0
	14	484.0	505.9	504.7	524.1	527.7	535.7
	15	467.0	475.3	490.4	504.7	500.9	509.6
	16	562.9	579.8	592.5	612.5	607.9	631.5
	17	482.1	503.1	515.7	513.3	520.3	529.7
	18	449.6	457.1	466.8	482.7	481.6	471.3
	19	517.0	533.8	548.1	548.9	556.6	560.8
	20	421.9	430.0	439.1	449.2	445.2	457.8
	M	477.6	489.8	499.7	510.3	510.8	521.3
	SD	43.9	48.3	50.8	51.2	53.0	54.7
	N	10	10	10	10	10	10

BEST COPY AVAILABLE

TOXICOLOGY - DATATOX RC.7
CT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

IDUAL DATA LISTING WITH MEANS

BODY WEIGHT

PRINT DATE 6-JAN-94

E S	Animal No.	Day 56 BODYWT G	Day 63 BODYWT G	Day 70 BODYWT G	Day 77 BODYWT G	Day 84 BODYWT G	Day 91 BODYWT G
2							
	21	504.5	516.9	531.7	540.5	538.5	555.5
	22	448.9	464.2	476.1	484.3	484.1	490.8
	23	508.3	526.8	539.6	543.0	549.8	557.7
	24	424.7	440.0	453.1	463.6	462.0	467.2
	25	443.6	457.3	461.1	469.7	469.7	481.6
	26	476.0	489.9	508.6	509.6	508.1	521.6
	27	518.2	535.6	555.1	554.6	556.8	559.3
	28	513.1	537.5	537.7	551.6	551.2	565.3
	29	426.7	439.6	439.8	456.7	447.7	465.2
	30	431.9	436.6	446.9	450.7	450.7	460.3
	M	469.6	484.4	495.0	502.4	501.9	512.5
	SD	38.6	41.8	44.2	42.1	44.2	44.0
	N	10	10	10	10	10	10
3							
	31	485.4	494.3	508.1	518.7	513.0	532.5
	32	403.3	418.9	421.5	433.1	433.0	440.7
	33	431.9	442.2	455.5	465.2	461.4	473.5
	34	429.7	438.2	445.9	455.1	454.5	466.7
	35	458.0	464.7	488.2	494.1	492.3	506.3
	36	454.4	466.4	478.9	490.8	479.3	495.7
	37	438.5	448.6	456.0	468.8	468.2	481.5
	38	484.4	490.5	502.0	512.1	515.3	523.3
	39	470.5	480.2	489.9	500.9	500.9	512.4
	40	428.2	431.7	447.7	461.0	454.9	466.2
	M	448.4	457.6	469.4	480.0	477.3	489.9
	SD	26.8	25.7	28.1	27.5	27.5	29.1
	N	10	10	10	10	10	10

BEST COPY AVAILABLE

TOXICOLOGY - DATATOX RC.7
CT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

IDUAL DATA LISTING WITH MEANS

BODY WEIGHT

PRINT DATE 6-JAN-94

A L E S	Animal No.	Day -8 BODYWT G	Day 0 BODYWT G	Day 7 BODYWT G	Day 14 BODYWT G	Day 21 BODYWT G	Day 28 BODYWT G	Day 35 BODYWT G	Day 42 BODYWT G	Day 49 BODYWT G
0										
	41	193.2	206.3	224.7	234.9	245.0	263.0	274.1	278.4	286.0
	42	189.1	206.8	221.2	232.8	243.9	251.4	260.0	263.2	268.8
	43	183.3	199.9	210.9	213.7	224.7	236.8	236.8	243.1	252.8
	44	208.6	222.7	245.8	254.5	261.4	270.8	279.6	288.8	292.0
	45	188.1	208.4	205.6	233.9	245.4	259.5	265.4	267.1	285.0
	46	199.2	208.5	223.0	228.3	231.3	251.2	265.2	268.7	273.5
	47	217.1	237.6	250.5	271.5	290.7	294.6	304.4	322.0	324.2
	48	193.8	206.8	228.3	242.9	245.2	268.5	275.6	284.8	289.7
	49	201.8	214.9	229.8	243.5	251.4	258.4	269.9	277.2	280.0
	50	177.6	197.5	220.8	232.2	245.6	251.7	264.5	273.8	278.4
	M	195.2	210.9	226.1	238.8	248.5	260.6	269.6	276.7	283.0
	SD	11.8	11.7	13.8	15.7	17.9	15.5	17.0	20.4	18.5
	N	10	10	10	10	10	10	10	10	10
P 1										
	51	202.2	223.1	235.5	244.9	264.4	276.6	285.1	295.8	305.6
	52	182.8	203.5	215.7	231.6	236.3	248.7	262.7	263.5	270.4
	53	182.5	198.1	207.7	222.2	230.9	237.8	237.6	256.1	261.0
	54	220.0	244.0	263.9	262.3	279.0	295.8	305.3	310.8	318.4
	55	180.7	201.6	221.1	236.1	241.4	242.1	257.9	269.6	272.6
	56	193.5	209.0	219.6	234.9	248.3	251.6	263.7	270.1	282.4
	57	208.6	219.6	229.3	247.5	254.8	251.7	279.9	287.5	294.3
	58	206.6	231.1	245.0	252.8	250.3	264.7	271.7	279.7	282.7
	59	206.5	223.4	240.3	247.0	248.8	269.1	277.5	280.2	267.1
	60	166.5	182.0	205.1	209.8	199.0	216.9	229.5	235.0	238.8
	M	195.0	213.5	228.3	238.9	245.3	255.5	267.1	274.8	279.3
	SD	16.5	18.1	18.2	15.3	21.3	22.1	22.3	21.2	22.9
	N	10	10	10	10	10	10	10	10	10

BEST COPY AVAILABLE

TOXICOLOGY - DATATOX RC.7
CT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

/IDUAL DATA LISTING WITH MEANS

BODY WEIGHT

PRINT DATE 6-JAN-94

M A L E S	Animal No.	Day -8 BODYWT G	Day 0 BODYWT G	Day 7 BODYWT G	Day 14 BODYWT G	Day 21 BODYWT G	Day 28 BODYWT G	Day 35 BODYWT G	Day 42 BODYWT G	Day 49 BODYWT G
P 2										
	61	198.1	214.7	225.8	239.3	248.8	250.8	258.7	266.6	277.5
	62	198.1	217.7	233.5	251.1	259.5	268.7	261.4	285.1	299.3
	63	191.8	213.2	232.6	240.0	249.1	257.9	274.6	279.8	280.5
	64	201.0	221.0	223.5	250.7	263.1	278.4	288.8	307.3	319.1
	65	186.8	209.0	220.6	237.9	243.2	241.5	255.4	264.0	265.9
	66	201.0	213.6	222.6	225.9	231.0	238.6	252.2	259.5	261.0
	67	208.5	219.4	227.9	238.6	249.3	255.0	261.1	274.3	276.8
	68	196.6	207.1	218.9	232.7	242.6	254.5	257.2	265.7	271.7
	69	213.2	229.2	239.6	257.1	263.9	281.8	289.8	300.0	302.5
	70	174.9	191.3	208.0	215.0	216.0	231.9	239.2	245.0	242.1
	M	197.0	213.6	225.3	238.8	246.7	255.9	263.8	274.7	279.6
	SD	10.8	10.1	8.9	12.5	14.8	16.5	16.0	18.9	22.3
	N	10	10	10	10	10	10	10	10	10
P 3										
	71	198.0	218.8	219.0	228.8	237.8	254.5	266.7	275.9	278.3
	72	177.4	190.2	196.9	206.1	218.2	224.7	230.3	246.1	253.1
	73	200.2	228.4	231.4	242.4	256.1	279.3	288.6	291.6	303.9
	74	220.6	241.8	247.8	262.5	256.8	286.1	298.6	310.3	314.7
	75	185.0	199.8	201.5	207.5	222.5	244.2	247.7	253.4	259.2
	76	197.2	213.9	218.1	232.3	246.7	252.4	266.8	274.5	278.3
	77	236.2	262.4	266.4	285.5	301.1	317.4	325.2	335.7	338.1
	78	197.0	216.5	219.5	226.0	244.3	252.5	262.3	268.3	285.1
	79	224.3	238.7	247.4	262.3	267.3	283.2	296.5	311.5	317.2
	80	185.6	210.8	218.2	230.6	246.7	262.4	273.3	282.1	288.2
	M	202.2	222.1	226.6	238.4	249.8	265.7	275.6	284.9	291.6
	SD	19.0	21.3	21.7	25.2	23.5	26.3	27.4	27.8	26.8
	N	10	10	10	10	10	10	10	10	10

BEST COPY AVAILABLE

TOXICOLOGY - DATATOX RC.7
T NUMBER 5010044/92053

N-VINYLCAPROLACTAM

IDUAL DATA LISTING WITH MEANS

BODY WEIGHT

PRINT DATE 6-JAN-94

A L E S	Animal No.	Day 56 BODYWT G	Day 63 BODYWT G	Day 70 BODYWT G	Day 77 BODYWT G	Day 84 BODYWT G	Day 91 BODYWT G
0							
	41	296.6	300.4	302.6	306.4	305.6	314.2
	42	272.7	279.3	283.9	287.1	288.1	292.1
	43	256.0	259.5	258.7	265.3	269.3	271.0
	44	293.9	300.5	305.1	310.9	304.1	307.7
	45	285.1	287.7	289.7	297.5	295.5	297.7
	46	281.2	287.8	293.0	289.1	299.0	306.0
	47	326.8	328.6	337.9	338.2	333.9	338.8
	48	306.7	310.0	313.6	310.9	319.1	325.6
	49	286.3	293.6	295.6	296.3	300.2	302.7
	50	279.4	286.6	293.2	292.1	296.0	302.6
	M	288.5	293.4	297.3	299.4	301.1	305.8
	SD	19.3	18.5	20.5	19.2	17.2	18.4
	N	10	10	10	10	10	10
1							
	51	310.6	310.3	318.7	321.1	323.3	326.2
	52	275.4	279.4	283.2	278.2	284.1	284.9
	53	264.7	265.3	274.9	276.1	271.3	272.6
	54	321.0	331.4	327.4	334.3	336.0	336.4
	55	282.9	291.7	303.4	304.0	303.6	314.6
	56	285.7	294.9	295.8	301.5	299.0	303.9
	57	297.7	307.3	312.5	316.5	318.4	327.4
	58	293.1	302.6	302.6	293.4	301.0	304.5
	59	293.1	303.5	308.4	301.4	312.6	314.2
	60	238.4	256.9	261.2	249.0	245.4	248.4
	M	286.3	294.3	298.8	297.6	299.5	303.3
	SD	23.4	22.2	20.5	24.8	26.7	27.4
	N	10	10	10	10	10	10

TOXICOLOGY - DATATOX RC.7
ECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

/IDUAL DATA LISTING WITH MEANS

BODY WEIGHT

PRINT DATE 6-JAN-94

M A L E S	Animal No.	Day 56 BODYWT G	Day 63 BODYWT G	Day 70 BODYWT G	Day 77 BODYWT G	Day 84 BODYWT G	Day 91 BODYWT G
P 2							
	61	279.1	287.9	293.5	298.7	294.7	297.6
	62	306.7	314.9	319.3	324.3	321.4	325.6
	63	294.5	301.0	299.4	304.3	302.8	311.5
	64	321.4	326.8	331.3	337.1	336.2	336.2
	65	266.7	271.8	282.5	273.3	274.0	288.2
	66	268.3	272.4	280.5	281.5	283.7	287.1
	67	285.4	288.0	294.1	293.3	292.9	299.9
	68	279.7	279.2	287.3	286.6	287.0	288.2
	69	311.7	321.2	319.8	320.9	321.6	323.2
	70	252.6	258.8	261.0	258.6	261.5	267.2
	M	286.6	292.2	296.9	297.9	297.6	302.5
	SD	21.9	23.0	21.3	24.4	23.2	21.3
	N	10	10	10	10	10	10
P 3							
	71	284.3	290.9	291.4	289.7	290.6	296.3
	72	252.7	264.0	265.9	271.4	263.5	264.8
	73	315.6	324.5	326.7	330.0	333.8	335.3
	74	330.2	334.1	339.2	335.5	344.5	344.2
	75	265.4	273.2	271.1	274.5	282.9	272.4
	76	284.6	288.3	294.5	298.1	294.7	305.5
	77	346.5	349.1	349.8	351.4	348.7	348.5
	78	287.0	289.4	291.9	297.5	302.8	300.2
	79	326.7	332.3	330.5	333.3	339.4	339.6
	80	299.4	297.8	303.4	305.6	305.6	306.7
	M	299.2	304.4	306.4	308.7	310.7	311.4
	SD	30.0	28.6	28.7	27.4	29.2	29.7
	N	10	10	10	10	10	10

TABLE : A 009

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

GROUP 0 (CONTROL)

AL#	OBSERVATIONS	DAY OF STUDY 8	7	6	5	4	3	2	1
1	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
2	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
3	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
4	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
5	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
6	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
7	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
8	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
9	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
10	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P

1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

TABLE : A 010

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ES GROUP 1 (5.8 MG/M*3)

IMAL#	OBSERVATIONS	DAY OF STUDY 8	7	6	5	4	3	2	1
11	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
12	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
13	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
14	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
15	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
16	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
17	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
18	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
19	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
20	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P

)E: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

53

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ES GROUP 2 (58 MG/M*3)

IMAL#	OBSERVATIONS	DAY OF STUDY 8	7	6	5	4	3	2	1
21	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
22	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
23	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
24	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
25	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
26	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
27	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
28	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
29	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P
30	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P				P	P	P	P

DE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

53

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ES GROUP 3 (174 MG/M**3)

IMAL#	OBSERVATIONS	DAY OF STUDY	- 8	- 7	- 6	- 5	- 4	- 3	- 2	- 1
31	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)			P			P	P	P	P
32	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)			P			P	P	P	P
33	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)			P			P	P	P	P
34	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)			P			P	P	P	P
35	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)			P			P	P	P	P
36	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)			P			P	P	P	P
37	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)			P			P	P	P	P
38	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)			P			P	P	P	P
39	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)			P			P	P	P	P
40	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)			P			P	P	P	P

)E: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

SEP-94

53

TABLE : A 013

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ALES GROUP 0 (CONTROL)

IMAL#	OBSERVATIONS	DAY OF STUDY	8	7	6	5	4	3	2	1
41	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
42	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
43	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
44	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
45	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
46	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
47	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
48	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
49	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
50	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			

E: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

53

PROJECT NO. 5OI0044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ALES GROUP 1 (5.8 MG/M*3)

IMAL#	OBSERVATIONS	DAY OF STUDY	8	7	6	5	4	3	2	1
51	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
52	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
53	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
54	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
55	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
56	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
57	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
58	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
59	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
60	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			

DE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

TABLE : A 015

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

LES GROUP 2 (58 MG/M*3)

MAL#	OBSERVATIONS	DAY OF STUDY	8	7	6	5	4	3	2	1
61	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
62	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
63	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
64	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
65	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
66	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
67	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
68	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
69	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			
70	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)		P	P	P	P	P			

: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ES GROUP 3 (174 MG/M*3)

MAL#	OBSERVATIONS	DAY OF STUDY 8	7	6	5	4	3	2	1
71	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P	P	P	P	P			
72	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P	P	P	P	P			
73	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P	P	P	P	P			
74	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P	P	P	P	P			
75	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P	P	P	P	P			
76	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P	P	P	P	P			
77	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P	P	P	P	P			
78	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P	P	P	P	P			
79	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P	P	P	P	P			
80	NOTHING ABNORMAL DETECTED (PREFLOW PERIOD)	P	P	P	P	P			

: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

-SEP-94

053

TABLE : A 017

PROJECT NO. 5010044/82053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

LES GROUP 0 (CONTROL)

NIMAL#	OBSERVATIONS	DAY OF STUDY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
2	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
3	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
4	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
5	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
6	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
7	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
8	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
9	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
10	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P

ODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

2053

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ALES GROUP 1 (5.8 MG/M*3)

ANIMAL#	OBSERVATIONS	DAY OF STUDY 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
11	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
12	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
13	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
14	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
15	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
16	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
17	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
18	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
19	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
20	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P				P	P	P	P			P	P	P	P		P			P	P	P	P	P		P	P	P	P	P		P	P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

TABLE : A 019

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ES GROUP 2 (58 MG/M**3)

IMAL#	OBSERVATIONS	DAY OF STUDY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
21	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
22	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
23	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
24	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
25	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
26	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
27	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
28	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
29	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
30	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P

ODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

2053

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ALES GROUP 3 (174 MG/M*3)

ANIMAL#	OBSERVATIONS	DAY OF STUDY 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
31	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)											P							P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)																																	
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)	P				P	P																											
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P		P	P			P	P	P	P	P			P	P
	SALIVATION (DURING EXPOSURE)	P				P	P	P	P				P	P		P																		
	SALIVATION (AFTER EXPOSURE)																																	
32	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)											P							P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)																																	
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)	P				P	P																											
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P		P	P			P	P	P	P	P			P	P
	SALIVATION (DURING EXPOSURE)	P				P	P	P	P				P	P		P																		
	SALIVATION (AFTER EXPOSURE)																																	
33	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)											P							P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)																																	
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)	P				P	P																											
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P		P	P			P	P	P	P	P			P	P
	SALIVATION (DURING EXPOSURE)	P				P	P	P	P				P	P		P																		
	SALIVATION (AFTER EXPOSURE)																																	
34	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)											P							P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)																																	
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)	P				P	P																											
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P		P	P			P	P	P	P	P			P	P
	SALIVATION (DURING EXPOSURE)	P				P	P	P	P				P	P		P																		
	SALIVATION (AFTER EXPOSURE)																																	
35	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)											P							P	P	P	P	P			P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)																																	
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)	P				P	P																											
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P		P	P			P	P	P	P	P			P	P
	SALIVATION (DURING EXPOSURE)	P				P	P	P	P				P	P		P																		
	SALIVATION (AFTER EXPOSURE)																																	

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

3

PROJECT NO. 50I0044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

S GROUP 3 (174 MG/M*3)

MAL#	OBSERVATIONS	DAY OF STUDY 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
36	(CONTINUED)																																
36	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P	P	P	P		P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)																				P												
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)											P							P	P	P	P	P		P	P	P	P	P			P	P
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)	P				P	P																										
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)	P				P	P																										
	SALIVATION (DURING EXPOSURE)	P				P	P	P	P	P		P	P	P		P			P	P		P	P		P	P	P	P	P			P	P
	SALIVATION (AFTER EXPOSURE)	P				P	P	P	P					P	P	P																	
37	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P	P	P	P		P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)																				P												
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)											P							P	P	P	P	P		P	P	P	P	P			P	P
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)	P				P	P																										
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)	P				P	P																										
	SALIVATION (DURING EXPOSURE)	P				P	P	P	P	P		P	P	P		P			P	P		P	P		P	P	P	P	P			P	P
	SALIVATION (AFTER EXPOSURE)	P				P	P	P	P					P	P	P																	
38	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P	P	P	P		P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)																				P												
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)											P							P	P	P	P	P		P	P	P	P	P			P	P
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)	P				P	P																										
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)	P				P	P																										
	SALIVATION (DURING EXPOSURE)	P				P	P	P	P	P		P	P	P		P			P	P		P	P		P	P	P	P	P			P	P
	SALIVATION (AFTER EXPOSURE)	P				P	P	P	P					P	P	P																	
39	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P	P	P	P		P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)																				P												
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)											P							P	P	P	P	P		P	P	P	P	P			P	P
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)	P				P	P																										
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)	P				P	P																										
	SALIVATION (DURING EXPOSURE)	P				P	P	P	P	P		P	P	P		P			P	P		P	P		P	P	P	P	P			P	P
	SALIVATION (AFTER EXPOSURE)	P				P	P	P	P					P	P	P																	
40	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P	P	P	P		P	P	P	P	P			P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)																								P	P	P	P	P			P	P
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)	P				P	P																										
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)	P				P	P	P	P	P		P	P	P		P			P	P	P	P	P		P	P	P	P	P			P	P
	SALIVATION (DURING EXPOSURE)	P				P	P	P	P			P	P	P		P			P	P	P	P	P										
	SALIVATION (AFTER EXPOSURE)																																

NOTE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 50I0044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

.ES GROUP 0 (CONTROL)

NIMAL#	OBSERVATIONS	DAY OF STUDY	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
1	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
2	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
3	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
4	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
5	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
6	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
7	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
8	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
9	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
10	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P

)DE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 50I0044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

LES GROUP 1 (5.8 MG/M*3)

NIMAL#	OBSERVATIONS	DAY OF STUDY	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
11	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
12	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
13	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
14	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
15	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
16	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
17	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
18	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
19	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
20	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P	P	P	P	P					

DE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 50I0044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

LES GROUP 2 (58 MG/M*3)

NIMAL#	OBSERVATIONS	DAY OF STUDY	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
21	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
22	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
23	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
24	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
25	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
26	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
27	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
28	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
29	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
30	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P		P		P	P	P	P	P			

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ALES GROUP 3 (174 MG/M*3)

ANIMAL#	OBSERVATIONS	DAY OF STUDY	33	34	35	36	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
31	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	SALIVATION (DURING EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
32	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	SALIVATION (DURING EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
33	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	SALIVATION (DURING EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
34	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	SALIVATION (DURING EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
35	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	SALIVATION (DURING EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
36	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	SALIVATION (DURING EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
37	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	SALIVATION (DURING EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
38	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	SALIVATION (DURING EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
39	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	SALIVATION (DURING EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
40	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			
	SALIVATION (DURING EXPOSURE)		P	P	P		P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	P			

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

LES GROUP 0 (CONTROL)

NIMAL#	OBSERVATIONS	DAY OF STUDY 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95
1	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P
	SCHEDULED KILL	P
2	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P
	SCHEDULED KILL	P
3	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P
	SCHEDULED KILL	P
4	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P
	SCHEDULED KILL	P
5	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P
	SCHEDULED KILL	P
6	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P
	SCHEDULED KILL	P
7	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P

ODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ES GROUP 0 (CONTROL)

IMAL#	OBSERVATIONS	DAY OF STUDY	66 67	66 78	66 89	77 01	77 12	77 23	77 34	77 45	77 56	77 67	77 78	77 89	78 90	88 01	88 12	88 23	88 34	88 45	88 56	88 67	88 78	88 89	99 01	99 12	99 23	99 34	99 45
7	(CONTINUED)																												P
	SCHEDULED KILL																												
8	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																												P
	SCHEDULED KILL																												P
9	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																												P
	SCHEDULED KILL																												P
10	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																												P
	SCHEDULED KILL																												P

)E: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

.LES GROUP 1 (5.8 MG/M*3)

ANIMAL#	OBSERVATIONS	DAY OF STUDY	66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95
11	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)		P
	SCHEDULED KILL		P
12	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)		P
	SCHEDULED KILL		P
13	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)		P
	SCHEDULED KILL		P
14	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)		P
	SCHEDULED KILL		P
15	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)		P
	SCHEDULED KILL		P
16	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)		P
	SCHEDULED KILL		P
17	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)		P

ODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

53

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ES GROUP 1 (5.8 MG/M**3)

IMAL#	OBSERVATIONS	DAY OF STUDY	66	66	66	67	77	77	77	77	77	77	77	78	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
			67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
																														P
17	(CONTINUED)																													
	SCHEDULED KILL																												P	
18	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																												P	
	SCHEDULED KILL																												P	
19	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																												P	
	SCHEDULED KILL																												P	
20	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																												P	
	SCHEDULED KILL																												P	

DE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

LES GROUP 2 (58 MG/M*3)

NIMAL#	OBSERVATIONS	DAY OF STUDY	66 67	66 78	66 89	67 90	70 01	71 12	72 23	73 34	74 45	75 56	76 67	77 78	78 89	79 90	80 01	81 12	82 23	83 34	84 45	85 56	86 67	87 78	88 89	89 90	90 01	91 12	92 23	93 34	94 45	95
21	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																															P
	SCHEDULED KILL																															P
22	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																															P
	SCHEDULED KILL																															P
23	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																															P
	SCHEDULED KILL																															P
24	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																															P
	SCHEDULED KILL																															P
25	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																															P
	SCHEDULED KILL																															P
26	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																															P
	SCHEDULED KILL																															P
27	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																															P

ODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

53

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ES GROUP 2 (58 MG/M**3)

IMAL#	OBSERVATIONS	DAY OF STUDY	66	66	66	66	77	77	77	77	77	77	77	77	88	88	88	88	88	88	88	88	89	99	99	99	99	99
			67	68	69	70	01	02	03	04	05	06	07	08	09	00	01	02	03	04	05	06	07	08	09	01	02	03	04	05
27	(CONTINUED)																													P
	SCHEDULED KILL																													
28	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																													P
	SCHEDULED KILL																													P
29	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																													P
	SCHEDULED KILL																													P
30	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																													P
	SCHEDULED KILL																													P

DE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ALES GROUP 3 (174 MG/M*3)

ANIMAL#	OBSERVATIONS	DAY OF STUDY	66 67	66 68	66 69	66 70	77 01	77 12	77 23	77 34	77 45	77 56	77 67	77 78	77 89	78 90	88 01	88 12	88 23	88 34	88 45	88 56	88 67	88 78	88 89	89 90	99 01	99 12	99 23	99 34	99 45
31	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																													P	
	SCHEDULED KILL																													P	
	SALIVATION (DURING EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
32	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																													P	
	SCHEDULED KILL																													P	
	SALIVATION (DURING EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
33	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																													P	
	SCHEDULED KILL																													P	
	SALIVATION (DURING EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
34	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																													P	
	SCHEDULED KILL																													P	
	SALIVATION (DURING EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
35	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																													P	
	SCHEDULED KILL																													P	
	SALIVATION (DURING EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
36	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																													P	
	SCHEDULED KILL																													P	
	SALIVATION (DURING EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
37	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P				P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																													P	
	SCHEDULED KILL																													P	

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

53

PROJECT NO. 50I0044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ES GROUP 3 (174 MG/M*3)

IMAL#	OBSERVATIONS	DAY OF STUDY	66	66	66	67	77	77	77	77	77	77	78	88	88	88	88	88	88	88	89	99	99	99	99
			67	68	69	70	01	12	23	34	45	56	67	78	89	90	01	12	23	34	45	56	67	78	89	90	01	12	23	34	45
37	(CONTINUED) SALIVATION (DURING EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
38	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																														P
	SCHEDULED KILL																														P
	SALIVATION (DURING EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
39	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																														P
	SCHEDULED KILL																														P
	SALIVATION (DURING EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
40	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																														P
	SCHEDULED KILL																														P
	SALIVATION (DURING EXPOSURE)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	

DE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

053

TABLE : A 034

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

MALES GROUP 0 (CONTROL)

NIMAL#	OBSERVATIONS	DAY OF STUDY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
41	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
42	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
43	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
44	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
45	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
46	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
47	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
48	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
49	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
50	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ALES GROUP 1 (5.8 MG/M*3)

IMAL#	OBSERVATIONS	DAY OF STUDY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
51	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
52	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
53	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
54	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
55	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
56	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
57	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
58	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
59	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
60	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P		P	P	P		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P	P	P

DE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

MALES GROUP 2 (58 MG/M*3)

NIMAL#	OBSERVATIONS	DAY OF STUDY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
61	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
62	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
63	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
64	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
65	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
66	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
67	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
68	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
69	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
70	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

53

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ALES GROUP 3 (174 MG/M*3)

IMAL#	OBSERVATIONS	DAY OF STUDY 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
71	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)																P																
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)							P							P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)	P	P	P																													
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)	P	P	P																													
	SALIVATION (DURING EXPOSURE)	P	P	P	P			P	P	P		P			P	P			P	P		P	P	P	P	P			P	P	P	P	P
	SALIVATION (AFTER EXPOSURE)	P	P	P	P				P	P		P																					
72	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)																P																
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)							P							P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)	P	P	P																													
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)	P	P	P																													
	SALIVATION (DURING EXPOSURE)	P	P	P	P			P	P	P		P			P	P			P	P		P	P	P	P	P			P	P	P	P	P
	SALIVATION (AFTER EXPOSURE)	P	P	P	P				P	P		P																					
73	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)																P																
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)							P							P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)	P	P	P																													
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)	P	P	P	P			P	P	P		P			P	P			P	P		P	P	P	P	P			P	P	P	P	P
	SALIVATION (DURING EXPOSURE)	P	P	P	P				P	P		P																					
	SALIVATION (AFTER EXPOSURE)																																
74	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)																P																
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)							P							P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)	P	P	P																													
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)	P	P	P																													
	SALIVATION (DURING EXPOSURE)	P	P	P	P			P	P	P		P			P	P			P	P		P	P	P	P	P			P	P	P	P	P
	SALIVATION (AFTER EXPOSURE)	P	P	P	P				P	P		P																					
75	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)																P																
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)							P							P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)	P	P	P																													
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)	P	P	P																													
	SALIVATION (DURING EXPOSURE)	P	P	P	P			P	P	P		P			P	P			P	P		P	P	P	P	P			P	P	P	P	P
	SALIVATION (AFTER EXPOSURE)	P	P	P	P				P	P		P																					

DE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

MALES GROUP 3 (174 MG/M*3)

NIMAL#	OBSERVATIONS	DAY OF STUDY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
76	(CONTINUED)																																		
76	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)																	P																	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)								P							P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)		P	P	P																														
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)		P	P	P																														
	SALIVATION (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P		P	P			P	P	P	P	P			P	P	P	P	P
	SALIVATION (AFTER EXPOSURE)		P	P	P	P				P	P		P																						
77	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)																	P																	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)																	P					P	P	P	P	P			P	P	P	P	P
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)		P	P	P																														
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)		P	P	P																														
	SALIVATION (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P		P	P			P	P	P	P	P			P	P	P	P	P
	SALIVATION (AFTER EXPOSURE)		P	P	P	P			P	P	P		P			P	P		P	P															
78	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)																	P																	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)								P							P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)		P	P	P																														
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)		P	P	P																														
	SALIVATION (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P		P	P			P	P	P	P	P			P	P	P	P	P
	SALIVATION (AFTER EXPOSURE)		P	P	P	P				P	P		P																						
79	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)																	P																	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)								P							P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)		P	P	P																														
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)		P	P	P																														
	SALIVATION (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P		P	P			P	P	P	P	P			P	P	P	P	P
	SALIVATION (AFTER EXPOSURE)		P	P	P	P				P	P		P																						
80	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P	P	P	P			P	P	P		P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)																	P																	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)								P							P	P	P	P	P			P	P	P	P	P			P	P	P	P	P
	NOSE, DISCHARGE, CLEAR (DURING EXPOSURE)		P	P	P																														
	NOSE, DISCHARGE, CLEAR (AFTER EXPOSURE)		P	P	P																														
	SALIVATION (DURING EXPOSURE)		P	P	P	P			P	P	P		P			P	P		P	P			P	P	P	P	P			P	P	P	P	P
	SALIVATION (AFTER EXPOSURE)		P	P	P	P				P	P		P																						

DE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

-SEP-94

TABLE : A 039

053

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

MALES GROUP 0 (CONTROL)

NIMAL#	OBSERVATIONS	DAY OF STUDY 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65
41	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
42	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
43	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
44	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
45	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
46	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
47	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
48	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
49	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
50	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P P

DDE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

EMALES GROUP 1 (5.8 MG/M**3)

ANIMAL#	OBSERVATIONS	DAY OF STUDY	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
51	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
52	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
53	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
54	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
55	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
56	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
57	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
58	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
59	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
60	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P		P	P	P	P	P			P	P	P	P	

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

MALES GROUP 2 (58 MG/M**3)

ANIMAL#	OBSERVATIONS	DAY OF STUDY 33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
61	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
62	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
63	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
64	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P	R	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
65	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
66	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
67	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
68	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
69	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
70	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P	P	P	P	P			P	P	P	P	P				P	P	P	P	P			P	P	P	P	P			P	P	P	P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

EMALES GROUP 3 (174 MG/M**3)

ANIMAL#	OBSERVATIONS	DAY OF STUDY	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
71	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	SALIVATION (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
72	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	SALIVATION (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
73	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	SALIVATION (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
74	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	SALIVATION (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
75	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	SALIVATION (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
76	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	SALIVATION (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
77	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	SALIVATION (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
78	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	SALIVATION (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
79	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	SALIVATION (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
80	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P
	SALIVATION (DURING EXPOSURE)			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P	P			P	P	P	P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

SEP-94

TABLE : A 043

053

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

MALES GROUP 0 (CONTROL)

ANIMAL#	OBSERVATIONS	DAY OF STUDY	66 67	66 68	66 69	67 70	67 71	67 72	67 73	67 74	67 75	67 76	67 77	67 78	67 79	78 80	78 81	78 82	78 83	78 84	78 85	78 86	78 87	78 88	78 89	89 90	89 91	89 92
41	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																										P	
	SCHEDULED KILL																										P	
42	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																										P	
	SCHEDULED KILL																										P	
43	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																										P	
	SCHEDULED KILL																										P	
44	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																										P	
	SCHEDULED KILL																										P	
45	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																										P	
	SCHEDULED KILL																										P	
46	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																										P	
	SCHEDULED KILL																										P	
47	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																											P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

:MALES GROUP 0 (CONTROL)

ANIMAL#	OBSERVATIONS	DAY OF STUDY	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
47	(CONTINUED)																												
	SCHEDULED KILL																												P
48	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P			P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P			P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P			P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																												P
	SCHEDULED KILL																												P
49	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P			P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P			P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P			P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																												P
	SCHEDULED KILL																												P
50	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P			P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P			P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P			P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																												P
	SCHEDULED KILL																												P

ODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

53

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

ALES GROUP 1 (5.8 MG/M*3)

IMAL#	OBSERVATIONS	DAY OF STUDY	66	66	66	67	77	77	77	77	77	77	77	78	78	78	78	78	78	78	78	79	79	79
			67	78	89	90	01	12	23	34	45	56	67	78	89	90	01	12	23	34	45	56	67	78	89	90	01	12
51	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																										P	
	SCHEDULED KILL																										P	
52	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																										P	
	SCHEDULED KILL																										P	
53	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																										P	
	SCHEDULED KILL																										P	
54	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																										P	
	SCHEDULED KILL																										P	
55	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																										P	
	SCHEDULED KILL																										P	
56	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																										P	
	SCHEDULED KILL																										P	
57	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P				
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																										P	

DE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

MALES GROUP 1 (5.8 MG/M*3)

NIMAL#	OBSERVATIONS	DAY OF STUDY	66	66	66	67	77	77	77	77	77	77	77	78	88	88	88	88	88	88	88	89	99	99
			67	78	89	90	01	12	23	34	45	56	67	78	89	90	01	12	23	34	45	56	67	78	89	90	01	12
57	(CONTINUED)																							
	SCHEDULED KILL																							P
58	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P		
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P		
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P		
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																									P
	SCHEDULED KILL																									P
59	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P		
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P		
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P		
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																									P
	SCHEDULED KILL																									P
60	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P		
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P		
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P		
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																									P
	SCHEDULED KILL																									P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

053

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

MALES GROUP 2 (58 MG/M*3)

NIMAL#	OBSERVATIONS	DAY OF STUDY: 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92
61	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P P
	SCHEDULED KILL	
62	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P P
	SCHEDULED KILL	
63	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P P
	SCHEDULED KILL	
64	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P P
	SCHEDULED KILL	
65	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P P
	SCHEDULED KILL	
66	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P P
	SCHEDULED KILL	
67	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

MALES GROUP 2 (58 MG/M**3)

NIMAL#	OBSERVATIONS	DAY OF STUDY	66 67	66 68	66 69	67 00	67 01	67 02	67 03	67 04	67 05	67 06	67 07	67 08	67 09	68 00	68 01	68 02	68 03	68 04	68 05	68 06	68 07	68 08	68 09	69 00	69 01	69 02
67	(CONTINUED)																											
	SCHEDULED KILL																											P
68	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																											P
	SCHEDULED KILL																											P
69	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																											P
	SCHEDULED KILL																											P
70	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (DURING EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)		P		P	P	P	P	P		P	P	P	P	P		P	P	P	P	P		P	P			
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																											P
	SCHEDULED KILL																											P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

FEMALES GROUP 3 (174 MG/M*3)

ANIMAL#	OBSERVATIONS	DAY OF STUDY 66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
71	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																											P
	SCHEDULED KILL																											P
	SALIVATION (DURING EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
72	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																											P
	SCHEDULED KILL																											P
	SALIVATION (DURING EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
73	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																											P
	SCHEDULED KILL																											P
	SALIVATION (DURING EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
74	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																											P
	SCHEDULED KILL																											P
	SALIVATION (DURING EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
75	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																											P
	SCHEDULED KILL																											P
	SALIVATION (DURING EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
76	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																											P
	SCHEDULED KILL																											P
	SALIVATION (DURING EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
77	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P			P	P	P	P	P		P	P	P	P	P	P		P	P	P	P	P			P	P	
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)																											P
	SCHEDULED KILL																											P

CODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

PROJECT NO. 5010044/92053
N-VINYLCAPROLACTAM
INDIVIDUAL CLINICAL OBSERVATIONS

EMALES GROUP 3 (174 MG/M**3)

ANIMAL#	OBSERVATIONS	DAY OF STUDY 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92
77	(CONTINUED)	
	SALIVATION (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
78	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P
	SCHEDULED KILL	P
	SALIVATION (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
79	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P
	SCHEDULED KILL	P
	SALIVATION (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P
80	NOTHING ABNORMAL DETECTED (BEFORE EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (AFTER EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P
	NOTHING ABNORMAL DETECTED (POST-EXPOSURE)	P
	SCHEDULED KILL	P
	SALIVATION (DURING EXPOSURE)	P P P P P P P P P P P P P P P P P P P P P P P P P

ODE: 1-SLIGHT 2-MODERATE 3-MARKED P-PRESENT

Report; Project No.: 50I0044/92053

PART B "CLINICAL CHEMISTRY, HEMATOLOGY AND URINALYSES"

Tables B 001 - B 044

Report; Project No.: 50I0044/92053

Tables B 001 - B 044 (Clinical chemistry, hematology and urinalyses)

KEY TO THE ABBREVIATIONS USED IN PART B OF THE TABLES

M	= mean
SD	= standard deviation
N	= number of values
X	= value not relevant
NM	= parameter not measured
NO.	= number

HEMATOLOGICAL EXAMINATIONS

WBC	= white blood cells (leukocytes)
RBC	= red blood cells (erythrocytes)
HGB	= hemoglobin
HCT	= hematocrit
MCV	= mean corpuscular volume
MCH	= mean corpuscular hemoglobin
MCHC	= mean corpuscular hemoglobin concentration
PLT	= platelets
RETI	= reticulocytes

DIFFERENTIAL BLOOD COUNT

WBC	= white blood cells (leukocytes)
EOS	= eosinophils
BASO	= basophils
BAND	= neutrophilic bands
POLY	= polymorphonuclear neutrophils
LYMP	= lymphocytes
MONO	= monocytes
CODE NO.	= see explanations on the differential blood count (page B7)

CLOTTING ANALYSES

HQT	= prothrombin time (Hepato Quick's test)

ENZYMES

ALT	= alanine aminotransferase
AST	= aspartate aminotransferase
ALP	= alkaline phosphatase
SGGT	= serum-γ-glutamyltransferase
LGGT	= liver-γ-glutamyltransferase

BLOOD CHEMISTRY

NA	= sodium
K	= potassium
CL	= chloride
INP	= inorganic phosphate
CA	= calcium
UREA	= urea
CREA	= creatinine
GLUC	= glucose
TBIL	= total bilirubin
TPROT	= total protein
ALB	= albumin
GLOB	= globulins
TRIG	= triglycerides
CHOL	= cholesterol
MG	= magnesium

URINALYSES

Nitrite:
0 = negative
1 = positive

Protein:
0 = negative 0.15 g/l
1 = 0.30 g/l, 0.60 g/l
2 = 1.00 g/l, 3.00 g/l
3 = > 5.00 g/l

Glucose:
0 = normal
1 = 2.8 mmol/l
2 = 5.6 mmol/l
3 = 11.1 mmol/l, > 16.7 mmol/l

Ketones:
0 = negative
1 = 1 mmol/l
2 = 5 mmol/l
3 = > 15 mmol/l

Urobilinogen:
0 = normal
1 = 17 µmol/l
2 = 68 µmol/l
3 = 135 µmol/l, > 270 µmol/l

Bilirubin:
0 = negative
1 = 9 µmol/l
2 = 25 µmol/l
3 = 50 µmol/l, 100 µmol/l, > 200 µmol/l

Blood (erythrocytes):
0 = negative
1 = 10 ery/µl
2 = 50 ery/µl
3 = 150 ery/µl, > 250 ery/µl

SEDIMENT

TP	= triple phosphate
ERY	= erythrocytes
LEUCO	= leukocytes
BACT.	= bacteria
GC	= granulated cast
V	= clusters
0	= none
1	= few
2	= many
3	= masses

COLOR, TURBIDITY

Y C	= yellow, clear
Y CL	= yellow, cloudy
D Y C	= dark yellow, clear
D Y CL	= dark yellow, cloudy

UNITS

MMOL/L	= mmol/l (millimole/liter)
MYMOL/L	= µmol/l (micromole/liter)
G/L	= g/l (gram/liter)
L/L	= l/l (liter/liter)
%	= per cent
‰	= per thousand
FMOL	= fmol (femtomole = 10^{-15} mole)
FL	= fl (femtoliter = 10^{-15} liter)
TERA/L	= Tera/l or T/l (Tera/liter = 10^{12}/liter)
GIGA/L	= Giga/l or G/l (Giga/liter = 10^{9}/liter)
MYKAT/L	= µkat/l (microkatal/liter)
NAKAT/L	= nkat/l (nanokatal/liter)
NAKAT/G P.	= nkat/g protein (nanokatal/gram protein)
µl	= microliter
ML	= ml (milliliter)

Report; Project No.: 50I0044/92053

EXPLANATIONS ON THE DIFFERENTIAL BLOOD COUNT (CODE NO.)

White blood count	Red blood count
GRANULOCYTES NEUTROPHIL PRELIMINARY STAGES 01 = myeloblast 02 = promyelocyte 03 = myelocyte 04 = metamyelocyte EOSINOPHIL PRELIMINARY STAGES 05 = eosinophilic myelocyte 06 = eosinophilic band BASOPHIL PRELIMINARY STAGES 07 = basophilic myelocyte ATYPICAL CHANGES 08 = toxic granulation 09 = hypersegmentation 10 = if both changes (08 + 09) occur in the same cell 11 = change in plasma of neutrophils (color, shape) 12 = change in nucleus of neutrophils (nucleus large, loosened) 13 = if both changes (11 + 12) occur in the same cell	61 = polychromasia 62 = hyperchromasia 63 = hypochromasia 64 = anisocytosis 65 = poikilocytosis 66 = microcytosis 67 = macrocytosis 68 = erythroblast 69 = normoblast 70 = Howell Jolly body 72 = basoph. stippling
LYMPHOCYTES LYMPHOCYTIC PRELIMINARY STAGES 21 = lymphoblast 22 = juvenile lymphocyte 23 = plasma cell ATYPICAL CHANGES 24 = atypical lymphoblast (nucleus enlarged, lobed) 25 = change in nucleus of lymphocyte (polynuclear lobed, vacuolated, loosened) 26 = change in plasma of lymphocyte (color change, vacuolated, enlarged) 27 = if both changes (25 + 26) occur in the same cell	**Grades of assessment for variations:** **code No.: 01 - 51** number per 100 differentiated leukocytes **code No.: 61 - 67, 71** - = none 1 = slight 2 = moderate 3 = marked
MONOCYTES MONOCYTIC PRELIMINARY STAGES 41 = monoblast 42 = juvenile monocyte ATYPICAL CHANGES 43 = change in nucleus of monocyte (large, loosened, lobed) 44 = change in plasma of monocyte (vacuolation, color change) 45 = if both changes (43 + 44) occur in the same cell	**code No.: 68 - 70** number per 1000 erythrocytes
PLATELETS 51 = megakaryocyte	

SF TOXICOLOGY - DATATOX RC.7
OJECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

DIVIDUAL DATA LISTING WITH MEANS

HEMATOLOGICAL EXAMINATIONS

PRINT DATE 15-JUN-94

minal days in study 95

A L E S

	Animal No.	WBC GIGA/L	RBC TERA/L	HGB MMOL/L	HCT L/L	MCV FL	MCH FMOL	MCHC MMOL/L	PLT GIGA/L
ROUP 0									
	1	5.24	8.70	9.7	0.432	49.6	1.11	22.40	721
	2	6.00	8.06	9.5	0.427	52.9	1.18	22.33	629
	3	5.49	8.02	9.4	0.425	53.0	1.17	21.98	738
	4	6.79	8.45	9.2	0.443	52.4	1.08	20.69	740
	5	4.79	7.54	8.6	0.397	52.6	1.15	21.78	700
	6	8.17	8.07	9.2	0.430	53.3	1.14	21.47	694
	7	5.81	7.52	9.2	0.391	52.1	1.23	23.58	613
	8	7.18	8.07	9.2	0.416	51.6	1.14	22.11	816
	9	8.47	9.07	9.4	0.439	48.4	1.04	21.49	898
	10	4.65	7.77	8.9	0.405	52.1	1.15	21.98	623
	M	6.26	8.13	9.2	0.421	51.8	1.14	21.98	717
	SD	1.35	0.49	0.3	0.018	1.6	0.05	0.75	89
	N	10	10	10	10	10	10	10	10
ROUP 1									
	11	6.41	8.37	9.5	0.440	52.5	1.14	21.61	775
	12	5.98	8.60	9.2	0.437	50.8	1.07	21.01	763
	13	7.96	8.64	9.0	0.438	50.8	1.04	20.50	880
	14	4.48	8.35	9.7	0.442	52.9	1.16	21.93	720
	15	7.61	9.25	10.3	0.483	52.2	1.12	21.41	705
	16	6.44	8.63	9.5	0.457	53.0	1.10	20.68	863
	17	5.04	7.81	9.0	0.413	52.8	1.15	21.81	789
	18	5.49	8.35	9.5	0.437	52.4	1.14	21.75	720
	19	8.05	8.99	9.9	0.480	53.4	1.10	20.52	974
	20	6.15	8.59	9.8	0.447	52.0	1.14	21.85	768
	M	6.36	8.56	9.5	0.447	52.3	1.12	21.31	796
	SD	1.21	0.39	0.4	0.021	0.9	0.04	0.58	85
	N	10	10	10	10	10	10	10	10

ASF TOXICOLOGY - DATATOX RC.7
ROJECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

NDIVIDUAL DATA LISTING WITH MEANS

HEMATOLOGICAL EXAMINATIONS

PRINT DATE 15-JUN-94

ominal days in study 95

I A L E S

	Animal No.	WBC GIGA/L	RBC TERA/L	HGB MMOL/L	HCT L/L	MCV FL	MCH FMOL	MCHC MMOL/L	PLT GIGA/L
ROUP 2									
	21	5.97	8.45	9.3	0.416	49.3	1.10	22.35	786
	22	7.56	8.00	9.3	0.419	52.3	1.17	22.33	764
	23	9.06	8.18	9.2	0.425	52.0	1.12	21.60	750
	24	6.69	8.22	9.4	0.437	53.1	1.15	21.56	601
	25	6.62	8.75	9.8	0.456	52.1	1.12	21.42	722
	26	5.93	8.34	9.2	0.417	50.0	1.10	22.02	848
	27	6.91	8.33	9.5	0.428	51.4	1.14	22.22	719
	28	6.77	8.46	9.3	0.420	49.6	1.09	22.06	831
	29	5.81	8.58	9.5	0.462	53.8	1.11	20.63	749
	30	6.86	8.10	10.0	0.440	54.4	1.23	22.71	769
	M	6.82	8.34	9.5	0.432	51.8	1.13	21.89	754
	SD	0.95	0.23	0.3	0.016	1.7	0.04	0.60	68
	N	10	10	10	10	10	10	10	10
ROUP 3									
	31	7.97	8.54	9.2	0.421	49.3	1.07	21.77	835
	32	7.19	7.61	9.1	0.419	55.0	1.20	21.85	777
	33	9.80	7.78	8.6	0.394	50.7	1.10	21.80	909
	34	5.54	8.34	8.9	0.414	49.6	1.06	21.46	686
	35	6.43	8.37	9.1	0.415	49.6	1.09	21.90	966
	36	6.76	8.28	9.0	0.411	49.7	1.09	21.84	929
	37	7.90	8.34	9.3	0.429	51.5	1.12	21.71	861
	38	7.13	8.75	9.8	0.446	51.0	1.12	22.00	810
	39	6.68	8.17	8.8	0.413	50.5	1.08	21.30	762
	40	5.12	8.40	9.3	0.434	51.7	1.10	21.35	877
	M	7.05	8.26	9.1	0.420	50.9	1.10	21.70	841
	SD	1.32	0.34	0.3	0.014	1.7	0.04	0.24	85
	N	10	10	10	10	10	10	10	10

inal days in study 92

E M A L E S

	Animal No.	WBC GIGA/L	RBC TERA/L	HGB MMOL/L	HCT L/L	MCV FL	MCH FMOL	MCHC MMOL/L	PLT GIGA/L
OUP 0									
	41	4.17	7.91	9.2	0.417	52.7	1.17	22.11	699
	42	3.86	8.15	9.4	0.431	52.8	1.15	21.76	820
	43	4.02	8.44	9.6	0.431	51.0	1.14	22.26	779
	44	4.47	8.14	9.5	0.429	52.6	1.16	22.08	867
	45	4.66	7.89	8.9	0.403	51.1	1.13	22.18	772
	46	4.27	8.46	10.0	0.459	54.3	1.18	21.80	686
	47	3.59	7.77	9.0	0.405	52.1	1.16	22.36	693
	48	4.30	7.64	9.4	0.413	54.1	1.23	22.78	748
	49	3.88	8.23	9.4	0.430	52.2	1.14	21.90	787
	50	5.15	8.13	9.4	0.435	53.5	1.15	21.60	684
	M	4.24	8.08	9.4	0.425	52.6	1.16	22.08	754
	SD	0.45	0.27	0.3	0.017	1.1	0.03	0.34	63
	N	10	10	10	10	10	10	10	10
ROUP 1									
	51	5.10	8.75	9.7	0.475	54.3	1.11	20.44	811
	52	3.10	7.54	9.1	0.402	53.3	1.20	22.58	359X
	53	5.33	8.74	10.0	0.459	52.6	1.14	21.75	744
	54	4.11	8.21	9.6	0.434	52.9	1.17	22.15	847
	55	4.35	7.91	9.4	0.425	53.7	1.19	22.15	785
	56	4.86	7.91	9.4	0.425	53.7	1.19	22.18	767
	57	4.93	8.03	9.8	0.446	55.6	1.22	21.87	732
	58	5.65	7.59	8.9	0.395	52.0	1.17	22.48	814
	59	3.96	8.31	9.8	0.451	54.3	1.18	21.73	722
	60	4.92	8.53	9.9	0.449	52.6	1.16	22.13	752
	M	4.63	8.15	9.6	0.436	53.5	1.17	21.95	775
	SD	0.75	0.43	0.4	0.025	1.1	0.03	0.60	42
	N	10	10	10	10	10	10	10	9

SF TOXICOLOGY - DATATOX RC.7
OJECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

DIVIDUAL DATA LISTING WITH MEANS

HEMATOLOGICAL EXAMINATIONS

PRINT DATE 15-JUN-94

minal days in study 92

E M A L E S

	Animal No.	WBC GIGA/L	RBC TERA/L	HGB MMOL/L	HCT L/L	MCV FL	MCH FMOL	MCHC MMOL/L	PLT GIGA/L
OUP 2									
	61	4.39	8.38	9.4	0.431	51.5	1.13	21.88	744
	62	3.43	7.83	9.2	0.415	53.0	1.17	22.07	741
	63	3.61	8.39	9.9	0.448	53.4	1.18	22.05	752
	64	3.79	8.61	10.0	0.446	51.9	1.16	22.32	582
	65	3.94	8.15	9.7	0.429	52.6	1.18	22.52	859
	66	4.68	8.31	9.8	0.450	54.1	1.17	21.67	214X
	67	3.54	7.49	9.4	0.403	53.8	1.26	23.35	686
	68	2.78	7.82	9.5	0.414	52.9	1.21	22.89	734
	69	6.17	7.34	8.5	0.401	54.6	1.16	21.34	755
	70	5.37	8.03	9.0	0.414	51.5	1.12	21.71	946
	M	4.17	8.04	9.4	0.425	52.9	1.17	22.18	755
	SD	1.01	0.41	0.5	0.018	1.1	0.04	0.61	102
	N	10	10	10	10	10	10	10	9
ROUP 3									
	71	6.31	7.19	8.6	0.381	52.9	1.20	22.67	941
	72	6.20	7.51	9.2	0.394	52.5	1.22	23.28	775
	73	5.81	7.26	8.5	0.383	52.7	1.18	22.31	942
	74	5.32	7.56	8.9	0.398	52.6	1.18	22.39	882
	75	4.99	7.72	9.1	0.411	53.3	1.18	22.07	850
	76	5.70	7.98	9.2	0.416	52.2	1.15	22.02	896
	77	6.98	6.01	7.2	0.323	53.8	1.20	22.25	731
	78	4.96	7.36	8.9	0.396	53.8	1.21	22.43	885
	79	4.90	7.23	8.7	0.387	53.6	1.20	22.40	902
	80	6.75	7.67	9.0	0.412	53.8	1.18	21.88	915
	M	5.79	7.35	8.7	0.390	53.1	1.19	22.37	872
	SD	0.75	0.53	0.6	0.027	0.6	0.02	0.39	69
	N	10	10	10	10	10	10	10	10

F TOXICOLOGY
JECT NUMBER 50I0044/92053 N-VINYLCAPROLACTAM

IVIDUAL DATA WITH MEANS DIFFERENTIAL BLOOD COUNT 15-JUN-94

inal days in study 95

L E S		DIFFERENTIAL COUNT							MORPHOLOGICAL VARIATIONS (CODE)									
		WBC GIGA/L	EOS %	BASO %	BAND %	POLY %	LYMP %	MONO %	04	21	22	25	27	41	42	43	61	64
UP 0																		
0 MG/L																		
	1	5.24	8	0	0	18	61	13	-	1	-	1	-	1	-	-	1	-
	2	6.00	4	1	0	7	86	2	-	-	-	2	-	-	-	-	-	-
	3	5.49	3	1	1	18	70	7	-	-	1	-	-	-	-	-	1	-
	4	6.79	6	0	0	9	82	3	-	-	1	2	-	-	-	-	-	1
	5	4.79	5	0	1	11	75	8	1	-	-	-	-	-	1	-	-	-
	6	8.17	1	1	0	5	87	6	-	-	1	1	-	-	-	-	-	-
	7	5.81	2	0	0	7	85	6	-	1	-	-	-	-	1	-	1	-
	8	7.18	4	0	0	11	81	4	-	-	-	2	-	-	-	-	-	-
	9	8.47	1	0	0	13	84	2	-	-	-	1	-	-	-	-	-	-
	10	4.65	2	0	0	8	86	4	-	-	1	1	-	-	-	-	-	-
	M	6.26	3.60	0.30	0.20	10.70	79.70	5.50										
	SD	1.35	2.27	0.48	0.42	4.50	8.51	3.34										
	N	10	10	10	10	10	10	10										
OUP 1																		
5.8 MG/L																		
	11	6.41	5	0	0	2	88	5	-	-	-	-	-	-	-	-	-	-
	12	5.98	2	1	0	7	86	4	-	-	1	2	-	-	-	-	-	-
	13	7.96	3	0	0	9	82	6	-	1	-	2	-	-	-	-	-	-
	14	4.48	4	0	0	10	82	4	-	-	-	1	-	-	-	-	-	-
	15	7.61	2	0	0	5	90	3	-	-	-	1	-	-	-	-	-	-
	16	6.44	4	0	0	9	80	7	-	-	-	-	1	-	-	-	-	-
	17	5.04	4	0	0	10	83	3	-	-	-	-	-	-	-	-	-	-
	18	5.49	8	0	0	17	71	4	-	-	-	3	-	-	-	-	-	-
	19	8.05	3	0	0	6	89	2	-	-	-	-	-	-	-	-	-	-
	20	6.15	2	0	0	8	85	5	-	-	-	-	-	-	-	-	-	-
	M	6.36	3.70	0.10	0.00	8.30	83.60	4.30										
	SD	1.21	1.83	0.32	0.00	3.95	5.52	1.49										
	N	10	10	10	10	10	10	10										

;F TOXICOLOGY
)JECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

)IVIDUAL DATA WITH MEANS

DIFFERENTIAL BLOOD COUNT

15-JUN-94

ninal days in study 95

\ L E S		WBC GIGA/L	DIFFERENTIAL COUNT EOS %	BASO %	BAND %	POLY %	LYMP %	MONO %	MORPHOLOGICAL VARIATIONS (CODE) 04	21	22	25	27	41	42	43	61	64
)UP 2																		
58 MG/L																		
	21	5.97	1	0	0	3	94	2	-	-	-	-	-	-	-	-	-	-
	22	7.56	2	0	0	10	80	8	-	1	-	2	-	-	-	1	-	-
	23	9.06	1	0	0	16	80	3	-	-	-	2	-	-	-	-	-	-
	24	6.69	3	0	0	6	81	10	-	1	1	2	-	-	-	-	-	-
	25	6.62	3	0	0	1	95	1	-	-	-	-	-	-	-	-	-	-
	26	5.93	3	0	0	4	87	6	-	1	-	-	-	-	-	-	-	-
	27	6.91	1	0	0	9	87	3	-	-	-	-	-	-	-	-	-	-
	28	6.77	1	1	0	7	88	3	-	-	-	1	-	-	-	-	-	-
	29	5.81	4	0	0	19	75	2	-	-	-	2	-	-	-	-	-	-
	30	6.86	1	0	0	5	89	5	-	-	-	1	-	-	-	-	-	-
	M	6.82	2.00	0.10	0.00	8.00	85.60	4.30										
	SD	0.95	1.15	0.32	0.00	5.72	6.47	2.91										
	N	10	10	10	10	10	10	10										
OUP 3																		
174 MG/L																		
	31	7.97	1	0	0	32	65	2	-	-	-	-	-	-	-	-	-	-
	32	7.19	4	1	0	10	83	2	-	1	-	1	-	-	-	-	-	-
	33	9.80	1	0	0	10	85	4	-	-	-	-	-	-	1	-	-	1
	34	5.54	3	0	0	13	76	8	-	1	-	-	-	-	-	-	-	-
	35	6.43	1	1	1	15	79	3	-	-	-	2	-	-	-	-	-	-
	36	6.76	1	0	0	4	88	7	-	-	-	1	-	1	-	-	-	-
	37	7.90	2	0	0	23	69	6	-	-	-	3	-	-	-	-	-	-
	38	7.13	2	1	0	12	79	6	-	-	-	1	-	-	-	-	-	-
	39	6.68	2	1	0	12	79	6	-	-	-	1	-	-	-	-	-	-
	40	5.12	6	1	0	17	69	7	-	1	-	-	-	-	-	-	-	-
	M	7.05	2.30	0.50	0.10	14.80	77.20	5.10										
	SD	1.32	1.64	0.53	0.32	7.81	7.50	2.18										
	N	10	10	10	10	10	10	10										

SF TOXICOLOGY
OJECT NUMBER 50I0044/92053 N-VINYLCAPROLACTAM

DIVIDUAL DATA WITH MEANS DIFFERENTIAL BLOOD COUNT 15-JUN-94

minal days in study 95

A L E S		DIFFERENTIAL COUNT							MORPHOLOGICAL VARIATIONS (CODE)									
		WBC GIGA/L	EOS GIGA/L	BASO GIGA/L	BAND GIGA/L	POLY GIGA/L	LYMP GIGA/L	MONO GIGA/L	04	21	22	25	27	41	42	43	61	64
OUP 0																		
0 MG/L																		
	1	5.24	0.42	0.00	0.00	0.94	3.20	0.68	-	1	-	1	-	1	-	-	1	-
	2	6.00	0.24	0.06	0.00	0.42	5.16	0.12	-	-	-	2	-	-	-	-	-	-
	3	5.49	0.16	0.05	0.05	0.99	3.84	0.38	-	-	1	-	-	-	-	-	1	-
	4	6.79	0.41	0.00	0.00	0.61	5.57	0.20	-	-	1	2	-	-	-	-	-	1
	5	4.79	0.24	0.00	0.05	0.53	3.59	0.38	1	-	-	-	-	-	1	-	-	-
	6	8.17	0.08	0.08	0.00	0.41	7.11	0.49	-	-	1	1	-	-	-	-	-	-
	7	5.81	0.12	0.00	0.00	0.41	4.94	0.35	-	1	-	-	-	-	1	-	1	-
	8	7.18	0.29	0.00	0.00	0.79	5.82	0.29	-	-	-	2	-	-	-	-	-	-
	9	8.47	0.08	0.00	0.00	1.10	7.11	0.17	-	-	-	1	-	-	-	-	-	-
	10	4.65	0.09	0.00	0.00	0.37	4.00	0.19	-	-	1	1	-	-	-	-	-	-
	M	6.26	0.21	0.02	0.01	0.66	5.03	0.33										
	SD	1.35	0.13	0.03	0.02	0.28	1.39	0.17										
	N	10	10	10	10	10	10	10										
ROUP 1																		
5.8 MG/L																		
	11	6.41	0.32	0.00	0.00	0.13	5.64	0.32	-	-	-	-	-	-	-	-	-	-
	12	5.98	0.12	0.06	0.00	0.42	5.14	0.24	-	-	1	2	-	-	-	-	-	-
	13	7.96	0.24	0.00	0.00	0.72	6.53	0.48	-	1	-	2	-	-	-	-	-	-
	14	4.48	0.18	0.00	0.00	0.45	3.67	0.18	-	-	-	1	-	-	-	-	-	-
	15	7.61	0.15	0.00	0.00	0.38	6.85	0.23	-	-	-	1	-	-	-	-	-	-
	16	6.44	0.26	0.00	0.00	0.58	5.15	0.45	-	-	-	-	1	-	-	-	-	-
	17	5.04	0.20	0.00	0.00	0.50	4.18	0.16	-	-	-	-	-	-	-	-	-	-
	18	5.49	0.44	0.00	0.00	0.93	3.90	0.22	-	-	-	3	-	-	-	-	-	-
	19	8.05	0.24	0.00	0.00	0.48	7.16	0.16	-	-	-	-	-	-	-	-	-	-
	20	6.15	0.12	0.00	0.00	0.49	5.23	0.31	-	-	-	-	-	-	-	-	-	-
	M	6.36	0.23	0.01	0.00	0.51	5.35	0.27										
	SD	1.21	0.10	0.02	0.00	0.21	1.22	0.12										
	N	10	10	10	10	10	10	10										

ASF TOXICOLOGY
ROJECT NUMBER 5010044/92053 N-VINYLCAPROLACTAM

NDIVIDUAL DATA WITH MEANS DIFFERENTIAL BLOOD COUNT 15-JUN-94

ominal days in study 95

A L E S		DIFFERENTIAL COUNT							MORPHOLOGICAL VARIATIONS (CODE)									
		WBC GIGA/L	EOS GIGA/L	BASO GIGA/L	BAND GIGA/L	POLY GIGA/L	LYMP GIGA/L	MONO GIGA/L	04	21	22	25	27	41	42	43	61	64
ROUP 2																		
58 MG/L																		
	21	5.97	0.06	0.00	0.00	0.18	5.61	0.12	-	-	-	-	-	-	-	-	-	-
	22	7.56	0.15	0.00	0.00	0.76	6.05	0.60	-	1	-	2	-	-	-	1	-	-
	23	9.06	0.09	0.00	0.00	1.45	7.25	0.27	-	-	-	2	-	-	-	-	-	-
	24	6.69	0.20	0.00	0.00	0.40	5.42	0.67	-	1	1	2	-	-	-	-	-	-
	25	6.62	0.20	0.00	0.00	0.07	6.29	0.07	-	-	-	-	-	-	-	-	-	-
	26	5.93	0.18	0.00	0.00	0.24	5.16	0.36	-	1	-	-	-	-	-	-	-	-
	27	6.91	0.07	0.00	0.00	0.62	6.01	0.21	-	-	-	-	-	-	-	-	-	-
	28	6.77	0.07	0.07	0.00	0.47	5.96	0.20	-	-	-	1	-	-	-	-	-	-
	29	5.81	0.23	0.00	0.00	1.10	4.36	0.12	-	-	-	2	-	-	-	-	-	-
	30	6.86	0.07	0.00	0.00	0.34	6.11	0.34	-	-	-	1	-	-	-	-	-	-
	M	6.82	0.13	0.01	0.00	0.56	5.82	0.30										
	SD	0.95	0.07	0.02	0.00	0.43	0.76	0.20										
	N	10	10	10	10	10	10	10										
ROUP 3																		
174 MG/L																		
	31	7.97	0.08	0.00	0.00	2.55	5.18	0.16	-	-	-	-	-	-	-	-	-	-
	32	7.19	0.29	0.07	0.00	0.72	5.97	0.14	-	1	-	1	-	-	-	-	-	-
	33	9.80	0.10	0.00	0.00	0.98	8.33	0.39	-	-	-	-	-	-	1	-	-	1
	34	5.54	0.17	0.00	0.00	0.72	4.21	0.44	-	1	-	-	-	-	-	-	-	-
	35	6.43	0.06	0.06	0.06	0.96	5.08	0.19	-	-	-	2	-	-	-	-	-	-
	36	6.76	0.07	0.00	0.00	0.27	5.95	0.47	-	-	-	1	-	1	-	-	-	-
	37	7.90	0.16	0.00	0.00	1.82	5.45	0.47	-	-	-	3	-	-	-	-	-	-
	38	7.13	0.14	0.07	0.00	0.86	5.63	0.43	-	-	-	1	-	-	-	-	-	-
	39	6.68	0.13	0.07	0.00	0.80	5.28	0.40	-	-	-	1	-	-	-	-	-	-
	40	5.12	0.31	0.05	0.00	0.87	3.53	0.36	-	1	-	-	-	-	-	-	-	-
	M	7.05	0.15	0.03	0.01	1.05	5.46	0.35										
	SD	1.32	0.09	0.03	0.02	0.65	1.26	0.13										
	N	10	10	10	10	10	10	10										

SF TOXICOLOGY
OJECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

DIVIDUAL DATA WITH MEANS

DIFFERENTIAL BLOOD COUNT

15-JUN-94

minal days in study 92

E M A L E S

		WBC GIGA/L	DIFFERENTIAL COUNT EOS %	BASO %	BAND %	POLY %	LYMP %	MONO %	MORPHOLOGICAL VARIATIONS (CODE) 04	21	22	25	41	42	61
OUP 0															
0 MG/L															
	41	4.17	4	0	0	13	79	4	-	-	-	-	-	-	-
	42	3.86	1	0	0	13	77	9	-	-	-	1	-	-	-
	43	4.02	4	0	0	23	64	9	-	-	-	-	-	-	-
	44	4.47	3	1	0	22	67	7	-	-	-	-	1	-	-
	45	4.66	2	0	1	17	75	5	-	-	-	-	-	-	-
	46	4.27	1	0	0	11	83	5	-	-	1	-	-	-	-
	47	3.59	4	0	0	13	78	5	-	-	-	-	-	-	-
	48	4.30	2	0	1	15	76	6	-	-	-	1	-	-	-
	49	3.88	3	0	1	11	85	0	-	-	-	-	-	-	-
	50	5.15	2	0	0	11	82	5	-	-	-	1	-	-	-
	M	4.24	2.60	0.10	0.30	14.90	76.60	5.50							
	SD	0.45	1.17	0.32	0.48	4.43	6.69	2.59							
	N	10	10	10	10	10	10	10							
ROUP 1															
5.8 MG/L															
	51	5.10	0	0	0	14	81	5	-	-	-	-	-	-	-
	52	3.10	3	0	0	6	88	3	-	-	-	1	-	-	-
	53	5.33	4	0	1	9	85	1	1	-	-	-	-	-	-
	54	4.11	2	0	1	7	88	2	-	-	1	-	-	-	-
	55	4.35	1	0	0	6	84	9	-	-	-	-	-	-	-
	56	4.86	2	1	0	11	83	3	-	-	-	-	-	-	-
	57	4.93	3	0	0	14	79	4	-	-	-	2	-	-	-
	58	5.65	2	0	0	11	87	0	-	-	-	4	-	-	-
	59	3.96	8	0	0	17	73	2	-	-	-	2	-	-	-
	60	4.92	4	0	0	10	84	2	-	-	1	2	-	-	-
	M	4.63	2.90	0.10	0.20	10.50	83.20	3.10							
	SD	0.75	2.18	0.32	0.42	3.69	4.61	2.51							
	N	10	10	10	10	10	10	10							

SF TOXICOLOGY
OJECT NUMBER 50I0044/92053 N-VINYLCAPROLACTAM

IDIVIDUAL DATA WITH MEANS DIFFERENTIAL BLOOD COUNT 15-JUN-94

minal days in study 92

E M A L E S

			DIFFERENTIAL COUNT						MORPHOLOGICAL VARIATIONS (CODE)						
		WBC GIGA/L	EOS %	BASO %	BAND %	POLY %	LYMP %	MONO %	04	21	22	25	41	42	61
OUP 2															
58 MG/L															
	61	4.39	3	2	0	5	90	0	-	1	-	1	-	-	-
	62	3.43	4	0	0	18	71	7	-	-	-	-	-	-	-
	63	3.61	3	1	0	15	72	9	-	1	-	-	-	1	-
	64	3.79	3	0	0	10	85	2	-	-	-	-	-	-	-
	65	3.94	1	0	0	26	70	3	-	-	-	-	-	-	-
	66	4.68	1	0	0	5	90	4	-	-	-	-	-	-	-
	67	3.54	2	0	0	10	84	4	-	-	1	-	-	-	-
	68	2.78	2	0	1	11	84	2	-	1	1	1	-	1	1
	69	6.17	0	0	0	11	84	5	-	-	-	2	-	-	-
	70	5.37	1	1	0	14	83	1	-	-	-	-	-	-	-
	M	4.17	2.00	0.40	0.10	12.50	81.30	3.70							
	SD	1.01	1.25	0.70	0.32	6.24	7.53	2.75							
	N	10	10	10	10	10	10	10							
ROUP 3															
174 MG/L															
	71	6.31	0	0	0	9	88	3	-	-	-	-	-	-	-
	72	6.20	3	0	0	13	76	8	-	-	-	-	-	-	-
	73	5.81	0	0	0	7	89	4	-	-	1	1	-	-	-
	74	5.32	4	0	0	11	85	0	-	-	-	-	-	-	-
	75	4.99	2	1	1	16	74	6	-	-	1	-	-	-	-
	76	5.70	0	0	0	6	92	2	-	-	-	-	-	-	-
	77	6.98	3	0	1	10	82	4	-	-	1	1	-	-	-
	78	4.96	0	0	0	24	73	3	-	-	-	-	-	-	-
	79	4.90	8	0	0	15	67	10	-	-	1	1	-	-	-
	80	6.75	3	1	1	23	68	4	-	-	-	1	-	-	-
	M	5.79	2.30	0.20	0.30	13.40	79.40	4.40							
	SD	0.75	2.54	0.42	0.48	6.20	9.00	2.91							
	N	10	10	10	10	10	10	10							

F TOXICOLOGY
JECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

IVIDUAL DATA WITH MEANS

DIFFERENTIAL BLOOD COUNT

15-JUN-94

inal days in study 92

M A L E S

		DIFFERENTIAL COUNT						MORPHOLOGICAL VARIATIONS (CODE)						
		WBC GIGA/L	EOS GIGA/L	BASO GIGA/L	BAND GIGA/L	POLY GIGA/L	LYMP GIGA/L	MONO GIGA/L	04	21	22	25	41	42	61
DUP 0															
0 MG/L															
	41	4.17	0.17	0.00	0.00	0.54	3.29	0.17	-	-	-	-	-	-	-
	42	3.86	0.04	0.00	0.00	0.50	2.97	0.35	-	-	-	1	-	-	-
	43	4.02	0.16	0.00	0.00	0.92	2.57	0.36	-	-	-	-	-	-	-
	44	4.47	0.13	0.04	0.00	0.98	2.99	0.31	-	-	-	-	1	-	-
	45	4.66	0.09	0.00	0.05	0.79	3.50	0.23	-	-	-	-	-	-	-
	46	4.27	0.04	0.00	0.00	0.47	3.54	0.21	-	-	1	-	-	-	-
	47	3.59	0.14	0.00	0.00	0.47	2.80	0.18	-	-	-	-	-	-	-
	48	4.30	0.09	0.00	0.04	0.65	3.27	0.26	-	-	-	1	-	-	-
	49	3.88	0.12	0.00	0.04	0.43	3.30	0.00	-	-	-	-	-	-	-
	50	5.15	0.10	0.00	0.00	0.57	4.22	0.26	-	-	-	1	-	-	-
	M	4.24	0.11	0.00	0.01	0.63	3.25	0.23							
	SD	0.45	0.04	0.01	0.02	0.20	0.46	0.10							
	N	10	10	10	10	10	10	10							
DUP 1															
5.8 MG/L															
	51	5.10	0.00	0.00	0.00	0.71	4.13	0.26	-	-	-	-	-	-	-
	52	3.10	0.09	0.00	0.00	0.19	2.73	0.09	-	-	-	1	-	-	-
	53	5.33	0.21	0.00	0.05	0.48	4.53	0.05	1	-	-	-	-	-	-
	54	4.11	0.08	0.00	0.04	0.29	3.62	0.08	-	-	1	-	-	-	-
	55	4.35	0.04	0.00	0.00	0.26	3.65	0.39	-	-	-	-	-	-	-
	56	4.86	0.10	0.05	0.00	0.53	4.03	0.15	-	-	-	-	-	-	-
	57	4.93	0.15	0.00	0.00	0.69	3.89	0.20	-	-	-	2	-	-	-
	58	5.65	0.11	0.00	0.00	0.62	4.92	0.00	-	-	-	4	-	-	-
	59	3.96	0.32	0.00	0.00	0.67	2.89	0.08	-	-	-	2	-	-	-
	60	4.92	0.20	0.00	0.00	0.49	4.13	0.10	-	-	1	2	-	-	-
	M	4.63	0.13	0.00	0.01	0.49	3.85	0.14							
	SD	0.75	0.09	0.02	0.02	0.19	0.67	0.11							
	N	10	10	10	10	10	10	10							

SF TOXICOLOGY
OJECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

IDIVIDUAL DATA WITH MEANS

DIFFERENTIAL BLOOD COUNT

15-JUN-94

minal days in study 92

E M A L E S

		DIFFERENTIAL COUNT							MORPHOLOGICAL VARIATIONS (CODE)						
		WBC GIGA/L	EOS GIGA/L	BASO GIGA/L	BAND GIGA/L	POLY GIGA/L	LYMP GIGA/L	MONO GIGA/L	04	21	22	25	41	42	61
ROUP 2															
58 MG/L															
	61	4.39	0.13	0.09	0.00	0.22	3.95	0.00	-	1	-	1	-	-	-
	62	3.43	0.14	0.00	0.00	0.62	2.44	0.24	-	-	-	-	-	-	-
	63	3.61	0.11	0.04	0.00	0.54	2.60	0.32	-	1	-	-	-	1	-
	64	3.79	0.11	0.00	0.00	0.38	3.22	0.08	-	-	-	-	-	-	-
	65	3.94	0.04	0.00	0.00	1.02	2.76	0.12	-	-	-	-	-	-	-
	66	4.68	0.05	0.00	0.00	0.23	4.21	0.19	-	-	-	-	-	-	-
	67	3.54	0.07	0.00	0.00	0.35	2.97	0.14	-	-	1	-	-	-	-
	68	2.78	0.06	0.00	0.03	0.31	2.34	0.06	-	1	1	1	-	1	1
	69	6.17	0.00	0.00	0.00	0.68	5.18	0.31	-	-	-	2	-	-	-
	70	5.37	0.05	0.05	0.00	0.75	4.46	0.05	-	-	-	-	-	-	-
	M	4.17	0.08	0.02	0.00	0.51	3.41	0.15							
	SD	1.01	0.04	0.03	0.01	0.26	0.98	0.11							
	N	10	10	10	10	10	10	10							
ROUP 3															
174 MG/L															
	71	6.31	0.00	0.00	0.00	0.57	5.55	0.19	-	-	-	-	-	-	-
	72	6.20	0.19	0.00	0.00	0.81	4.71	0.50	-	-	-	-	-	-	-
	73	5.81	0.00	0.00	0.00	0.41	5.17	0.23	-	-	1	1	-	-	-
	74	5.32	0.21	0.00	0.00	0.59	4.52	0.00	-	-	-	-	-	-	-
	75	4.99	0.10	0.05	0.05	0.80	3.69	0.30	-	-	1	-	-	-	-
	76	5.70	0.00	0.00	0.00	0.34	5.24	0.11	-	-	-	-	-	-	-
	77	6.98	0.21	0.00	0.07	0.70	5.72	0.28	-	-	1	1	-	-	-
	78	4.96	0.00	0.00	0.00	1.19	3.62	0.15	-	-	-	-	-	-	-
	79	4.90	0.39	0.00	0.00	0.74	3.28	0.49	-	-	1	1	-	-	-
	80	6.75	0.20	0.07	0.07	1.55	4.59	0.27	-	-	-	1	-	-	-
	M	5.79	0.13	0.01	0.02	0.77	4.61	0.25							
	SD	0.75	0.13	0.03	0.03	0.36	0.85	0.16							
	N	10	10	10	10	10	10	10							

= TOXICOLOGY - DATATOX RC.7
JECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

IVIDUAL DATA LISTING WITH MEANS

RETICULOCYTES

PRINT DATE 15-JUN-94

inal days in study 95

L E S

	Animal No.	RETI 0/00
UP 0		
	1	34
	2	24
	3	34
	4	42
	5	41
	6	29
	7	38
	8	39
	9	27
	10	34
	M	34
	SD	6
	N	10
UP 1		
	11	23
	12	33
	13	29
	14	32
	15	29
	16	28
	17	34
	18	30
	19	28
	20	29
	M	30
	SD	3
	N	10

SF TOXICOLOGY - DATATOX RC.7
OJECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

DIVIDUAL DATA LISTING WITH MEANS

RETICULOCYTES

PRINT DATE 15-JUN-94

minal days in study 95

A L E S

	Animal No.	RETI 0/00
ROUP 2		
	21	30
	22	31
	23	27
	24	36
	25	31
	26	33
	27	29
	28	25
	29	40
	30	46
	M	33
	SD	6
	N	10
ROUP 3		
	31	44
	32	33
	33	43
	34	35
	35	33
	36	34
	37	39
	38	35
	39	27
	40	24
	M	35
	SD	6
	N	10

SF TOXICOLOGY - DATATOX RC.7
OJECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

DIVIDUAL DATA LISTING WITH MEANS

RETICULOCYTES

PRINT DATE 15-JUN-94

minal days in study 92

E M A L E S

Animal No.	RETI 0/00
OUP 0	
41	22
42	23
43	30
44	25
45	26
46	20
47	26
48	31
49	19
50	27
M	25
SD	4
N	10
OUP 1	
51	21
52	30
53	23
54	24
55	27
56	21
57	26
58	18
59	26
60	19
M	24
SD	4
N	10

ASF TOXICOLOGY - DATATOX RC.7
ROJECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

NDIVIDUAL DATA LISTING WITH MEANS

RETICULOCYTES

PRINT DATE 15-JUN-94

Nominal days in study 92

E M A L E S

	Animal No.	RETI 0/00
GROUP 2		
	61	21
	62	28
	63	24
	64	25
	65	33
	66	22
	67	26
	68	24
	69	26
	70	22
	M	25
	SD	4
	N	10
GROUP 3		
	71	32
	72	31
	73	33
	74	31
	75	16
	76	26
	77	30
	78	23
	79	34
	80	30
	M	29
	SD	6
	N	10

TOXICOLOGY - DATATOX RC.7
ECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

PRINT DATE 15-JUN-94

VIDUAL DATA LISTING WITH MEANS

CLOTTING ANALYSES

inal days in study 95

L E S

	Animal No.	HQT SECONDS
UP 0		
	1	30.3
	2	28.4
	3	27.8
	4	26.9
	5	28.0
	6	28.3
	7	29.3
	8	29.4
	9	28.3
	10	29.5
	M	28.6
	SD	1.0
	N	10
UP 1		
	11	27.7
	12	26.0
	13	26.9
	14	27.1
	15	26.6
	16	27.2
	17	27.7
	18	28.9
	19	22.5X
	20	29.1
	M	27.5
	SD	1.0
	N	9

ninal days in study 95

A L E S

	Animal No.	HQT SECONDS
OUP 2		
	21	29.7
	22	29.9
	23	27.7
	24	27.6
	25	27.0
	26	27.6
	27	29.7
	28	28.1
	29	26.6
	30	28.5
	M	28.2
	SD	1.2
	N	10
OUP 3		
	31	27.8
	32	29.0
	33	28.4
	34	28.9
	35	27.6
	36	27.6
	37	26.1
	38	29.3
	39	28.2
	40	24.6
	M	27.8
	SD	1.4
	N	10

TOXICOLOGY - DATATOX RC.7
ECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

VIDUAL DATA LISTING WITH MEANS CLOTTING ANALYSES

PRINT DATE 15-JUN-94

nal days in study 92

M A L E S

	Animal No.	HQT SECONDS
UP 0		
	41	25.0
	42	24.7
	43	26.4
	44	26.5
	45	25.7
	46	25.6
	47	24.6
	48	25.4
	49	25.6
	50	24.8
	M	25.4
	SD	0.7
	N	10
UP 1		
	51	27.5
	52	25.5
	53	24.4
	54	23.9
	55	25.7
	56	24.8
	57	25.4
	58	26.5
	59	25.3
	60	24.3
	M	25.3
	SD	1.1
	N	10

ninal days in study 92

E M A L E S

	Animal No.	HQT SECONDS
OUP 2		
	61	26.4
	62	26.7
	63	24.7
	64	25.1
	65	23.8
	66	NM
	67	24.8
	68	25.5
	69	23.5
	70	25.6
	M	25.1
	SD	1.1
	N	9
OUP 3		
	71	25.9
	72	23.4
	73	24.2
	74	26.5
	75	27.1
	76	25.7
	77	23.6
	78	25.2
	79	24.6
	80	26.4
	M	25.3
	SD	1.3
	N	10

F TOXICOLOGY - DATATOX RC.7
JECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

PRINT DATE 15-JUN-94

IVIDUAL DATA LISTING WITH MEANS ENZYMES

inal days in study 95

L E S

	Animal No.	ALT MYKAT/L	AST MYKAT/L	ALP MYKAT/L	SGGT NAKAT/L
UP 0					
	1	0.98	1.77	4.37	29
	2	1.12	2.35	5.18	0
	3	1.25	2.18	4.98	57
	4	0.94	2.57	5.13	14
	5	1.21	2.00	4.35	0
	6	1.32	3.34	5.59	0
	7	1.09	1.92	5.62	0
	8	1.32	2.13	5.76	0
	9	1.24	2.28	5.45	0
	10	1.23	2.52	4.31	14
	M	1.17	2.31	5.07	11
	SD	0.13	0.44	0.56	19
	N	10	10	10	10
OUP 1					
	11	0.98	1.61	4.42	0
	12	0.99	1.90	4.33	14
	13	0.93	1.72	3.73	0
	14	1.09	1.67	5.35	86
	15	1.15	2.05	4.60	0
	16	0.73	1.95	3.25	0
	17	1.19	1.40	4.66	14
	18	1.06	1.36	4.63	14
	19	1.29	2.04	5.13	14
	20	1.18	1.97	5.54	43
	M	1.06	1.77	4.56	19
	SD	0.16	0.25	0.70	27
	N	10	10	10	10

SF TOXICOLOGY - DATATOX RC.7
OJECT NUMBER 50I0044/92053 N-VINYLCAPROLACTAM

DIVIDUAL DATA LISTING WITH MEANS ENZYMES PRINT DATE 15-JUN-94

minal days in study 95

A L E S

	Animal No.	ALT MYKAT/L	AST MYKAT/L	ALP MYKAT/L	SGGT NAKAT/L
OUP 2					
	21	1.13	1.71	5.41	29
	22	1.17	1.95	5.22	0
	23	0.99	1.22	5.42	29
	24	1.44	3.31	5.76	0
	25	1.53	3.62	5.52	0
	26	0.98	1.46	6.14	14
	27	1.23	1.58	4.91	0
	28	1.08	1.51	4.71	0
	29	1.25	1.87	5.41	0
	30	1.25	1.47	5.72	14
	M	1.21	1.97	5.42	9
	SD	0.18	0.82	0.41	12
	N	10	10	10	10
ROUP 3					
	31	1.21	2.65	4.84	0
	32	1.35	2.29	5.65	14
	33	1.02	1.67	4.56	0
	34	1.19	2.11	4.26	0
	35	1.17	1.93	4.61	14
	36	1.08	1.68	5.42	14
	37	1.38	3.01	4.75	14
	38	1.52	2.34	5.27	0
	39	1.67	2.19	5.16	0
	40	1.27	1.90	5.09	14
	M	1.29	2.18	4.96	7
	SD	0.20	0.42	0.43	7
	N	10	10	10	10

TOXICOLOGY - DATATOX RC.7
JECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

IVIDUAL DATA LISTING WITH MEANS

LIVER EXAMINATIONS

PRINT DATE 15-JUN-94

inal days in study 95

L E S

	Animal No.	LGGT NAKAT/G P.
UP 0		
	1	6.90
	2	28.73
	3	18.92
	4	19.33
	5	13.70
	6	17.20
	7	34.94
	8	14.88
	9	29.67
	10	43.80
	M	22.81
	SD	11.19
	N	10
UP 1		
	11	2.37
	12	50.26
	13	5.43
	14	5.00
	15	51.58
	16	48.00
	17	29.27
	18	28.54
	19	29.76
	20	38.72
	M	28.89
	SD	19.03
	N	10

minal days in study 95

A L E S

	Animal No.	LGGT NAKAT/G P.
OUP 2		
	21	28.71
	22	37.85
	23	5.00
	24	75.44
	25	14.78
	26	10.73
	27	27.20
	28	2.73
	29	20.49
	30	31.11
	M	25.40
	SD	21.05
	N	10
OUP 3		
	31	33.45
	32	64.59
	33	16.34
	34	35.43
	35	12.62
	36	27.98
	37	37.43
	38	10.43
	39	107.18
	40	23.58
	M	36.90
	SD	29.23
	N	10

F TOXICOLOGY - DATATOX RC.7
JECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

PRINT DATE 15-JUN-94

IVIDUAL DATA LISTING WITH MEANS ENZYMES

inal days in study 92

M A L E S

	Animal No.	ALT MYKAT/L	AST MYKAT/L	ALP MYKAT/L	SGGT NAKAT/L
UP 0					
	41	0.98	1.84	3.15	0
	42	1.00	2.11	3.97	0
	43	1.06	2.41	4.45	0
	44	1.13	2.28	3.54	0
	45	0.73	1.16	2.54	0
	46	1.08	1.92	4.17	0
	47	0.85	1.47	3.71	0
	48	1.26	3.06	3.61	14
	49	0.86	1.94	3.60	43
	50	0.97	2.22	4.04	0
	M	0.99	2.04	3.68	6
	SD	0.15	0.52	0.54	14
	N	10	10	10	10
UP 1					
	51	0.86	1.43	4.13	0
	52	0.83	1.83	5.09	0
	53	1.08	2.47	4.33	0
	54	0.97	1.71	3.05	0
	55	0.87	1.47	4.53	29
	56	0.92	1.36	3.30	0
	57	0.97	1.80	3.42	0
	58	0.91	1.71	4.39	0
	59	1.05	1.80	3.76	0
	60	0.72	1.82	2.59	14
	M	0.92	1.74	3.86	4
	SD	0.11	0.31	0.77	10
	N	10	10	10	10

ASF TOXICOLOGY - DATATOX RC.7
PROJECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

INDIVIDUAL DATA LISTING WITH MEANS ENZYMES

PRINT DATE 15-JUN-94

Nominal days in study 92

FEMALES

	Animal No.	ALT MYKAT/L	AST MYKAT/L	ALP MYKAT/L	SGGT NAKAT/L
GROUP 2					
	61	1.05	2.90	3.40	0
	62	1.01	1.38	3.41	0
	63	1.09	2.31	3.55	0
	64	0.94	1.69	2.75	14
	65	0.91	1.33	3.13	0
	66	0.89	1.68	2.55	0
	67	0.95	1.41	3.17	0
	68	0.77	1.20	2.69	0
	69	1.08	1.26	4.52	0
	70	0.98	1.67	3.63	0
	M	0.97	1.68	3.28	1
	SD	0.10	0.54	0.57	4
	N	10	10	10	10
GROUP 3					
	71	1.00	1.59	4.08	0
	72	1.16	2.31	3.36	29
	73	0.88	1.52	3.49	0
	74	0.94	1.32	2.83	0
	75	1.07	1.85	3.14	0
	76	1.09	1.95	3.47	14
	77	1.65	2.63	2.65	0
	78	0.92	1.75	3.14	0
	79	1.02	1.66	2.58	0
	80	1.12	1.53	3.88	0
	M	1.09	1.81	3.26	4
	SD	0.22	0.40	0.50	10
	N	10	10	10	10

F TOXICOLOGY - DATATOX RC.7
JECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

IVIDUAL DATA LISTING WITH MEANS LIVER EXAMINATIONS

PRINT DATE 15-JUN-94

inal days in study 92

M A L E S

	Animal No.	LGGT NAKAT/G P.
OUP 0		
	41	85.37
	42	44.74
	43	247.98
	44	210.37
	45	24.25
	46	30.95
	47	33.95
	48	71.06
	49	107.63
	50	89.82
	M	94.61
	SD	76.68
	N	10
OUP 1		
	51	74.42
	52	37.68
	53	50.35
	54	25.65
	55	80.55
	56	133.81
	57	26.42
	58	160.53
	59	50.00
	60	83.28
	M	72.27
	SD	44.99
	N	10

ISF TOXICOLOGY - DATATOX RC.7
ROJECT NUMBER 50I0044/92053 N-VINYLCAPROLACTAM

NDIVIDUAL DATA LISTING WITH MEANS LIVER EXAMINATIONS PRINT DATE 15-JUN-94

ominal days in study 92

E M A L E S

Animal No.	LGGT NAKAT/G P.
ROUP 2	
61	75.00
62	108.78
63	175.39
64	27.95
65	74.25
66	117.86
67	12.77
68	53.91
69	79.45
70	84.79
M	81.02
SD	46.36
N	10
ROUP 3	
71	59.50
72	216.51
73	71.79
74	165.66
75	58.02
76	164.55
77	111.04
78	87.67
79	161.65
80	180.28
M	127.67
SD	56.88
N	10

TOXICOLOGY - DATATOX RC.7
ECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

PRINT DATE 15-JUN-94

VIDUAL DATA LISTING WITH MEANS

BLOOD CHEMISTRY

nal days in study 95

L E S	Animal No.	NA MMOL/L	K MMOL/L	CL MMOL/L	INP MMOL/L	CA MMOL/L	UREA MMOL/L	CREA MYMOL/L	GLUC MMOL/L	TBIL MYMOL/L
UP 0										
	1	143.6	6.43	113.6	1.90	2.69	5.96	56.1	9.60	1.04
	2	145.0	6.63	111.5	1.96	2.65	6.58	64.4	8.35	2.85
	3	148.1	6.52	110.8	1.52	2.68	7.05	56.1	9.29	2.60
	4	146.9	7.02	112.8	1.97	2.59	6.28	59.4	8.71	1.17
	5	145.8	6.97	114.5	2.00	2.59	6.19	54.5	8.09	2.08
	6	149.7	7.20	113.7	2.27	2.67	6.46	56.1	8.66	0.91
	7	146.9	6.76	110.4	2.00	2.67	7.22	54.5	9.38	1.56
	8	146.7	6.87	114.1	2.09	2.66	6.43	54.5	8.68	2.98
	9	143.0	6.42	113.5	1.99	2.62	5.52	54.5	8.30	2.34
	10	144.6	6.68	111.3	2.07	2.63	6.43	52.8	7.76	1.95
	M	146.0	6.75	112.6	1.98	2.65	6.41	56.3	8.68	1.95
	SD	2.1	0.26	1.5	0.19	0.04	0.49	3.3	0.59	0.76
	N	10	10	10	10	10	10	10	10	10
UP 1										
	11	146.7	6.71	111.3	2.15	2.64	5.96	56.1	7.98	1.82
	12	147.0	7.02	112.7	2.08	2.72	6.64	54.5	7.27	1.82
	13	148.4	7.39	110.4	2.31	2.67	7.02	51.2	8.11	2.60
	14	147.1	7.28	111.8	1.99	2.66	7.16	56.1	9.01	1.82
	15	149.2	7.18	111.7	2.47	2.79	6.05	59.4	7.01	1.69
	16	149.2	6.52	119.7	2.27	2.82	5.78	56.1	6.78	1.69
	17	147.4	6.90	112.7	1.80	2.81	6.58	59.4	9.12	2.08
	18	148.7	6.43	114.2	1.86	2.65	6.66	52.8	8.00	2.08
	19	154.8	7.33	113.3	2.51	2.98	7.46	64.4	7.72	2.85
	20	148.9	7.50	113.3	2.15	2.78	6.55	59.4	8.28	1.82
	M	148.7	7.03	113.1	2.16	2.75	6.59	56.9	7.93	2.03
	SD	2.3	0.37	2.6	0.24	0.11	0.54	3.8	0.77	0.40
	N	10	10	10	10	10	10	10	10	10

: TOXICOLOGY - DATATOX RC.7
IECT NUMBER 5010044/92053 N-VINYLCAPROLACTAM

IVIDUAL DATA LISTING WITH MEANS BLOOD CHEMISTRY PRINT DATE 15-JUN-94

inal days in study 95

L E S

	Animal No.	NA MMOL/L	K MMOL/L	CL MMOL/L	INP MMOL/L	CA MMOL/L	UREA MMOL/L	CREA MYMOL/L	GLUC MMOL/L	TBIL MYMOL/L
UP 2										
	21	147.6	7.12	109.6	2.23	2.70	6.93	54.5	7.44	1.95
	22	144.9	6.90	115.6	2.01	2.63	6.37	51.2	7.82	1.95
	23	150.3	7.09	113.1	1.96	2.74	6.72	54.5	9.96	2.08
	24	148.0	7.41	111.7	2.18	2.70	7.08	52.8	7.68	1.69
	25	147.6	7.47	114.5	2.36	2.72	6.99	57.8	7.58	2.73
	26	146.0	7.65	115.2	2.08	2.74	7.02	54.5	8.57	2.34
	27	148.1	7.61	114.9	2.10	2.73	7.19	56.1	7.57	2.08
	28	147.9	6.83	112.3	1.82	2.68	6.37	56.1	7.79	1.17
	29	147.3	6.72	111.7	2.36	2.80	7.37	57.8	7.66	1.95
	30	151.7	7.21	111.9	2.41	2.78	5.93	52.8	7.14	2.85
	M	147.9	7.20	113.1	2.15	2.72	6.80	54.8	7.92	2.08
	SD	1.9	0.33	1.9	0.19	0.05	0.45	2.2	0.80	0.48
	N	10	10	10	10	10	10	10	10	10
)UP 3										
	31	140.9	6.86	117.4	2.12	2.64	6.55	51.2	6.65	1.95
	32	146.2	6.78	113.2	2.06	2.69	6.75	54.5	8.66	4.41
	33	146.9	6.91	110.8	2.06	2.66	5.46	52.8	8.42	2.85
	34	147.7	6.28	114.0	1.95	2.57	5.81	52.8	7.29	2.08
	35	147.9	7.34	115.0	1.82	2.69	6.69	56.1	8.64	1.82
	36	147.0	7.18	113.9	2.08	2.77	6.28	52.8	8.46	1.04
	37	149.1	7.04	110.9	2.10	2.73	6.34	56.1	9.27	2.47
	38	148.0	6.54	111.8	2.02	2.71	5.70	54.5	8.07	1.69
	39	145.8	6.84	111.1	1.88	2.67	6.72	57.8	8.40	1.82
	40	144.2	7.02	109.3	1.90	2.74	6.14	57.8	8.24	2.73
	M	146.4	6.88	112.7	2.00	2.69	6.24	54.6	8.21	2.29
	SD	2.4	0.30	2.4	0.10	0.06	0.46	2.3	0.74	0.92
	N	10	10	10	10	10	10	10	10	10

TOXICOLOGY - DATATOX RC.7
JECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

PRINT DATE 15-JUN-94

IVIDUAL DATA LISTING WITH MEANS

BLOOD CHEMISTRY

inal days in study 95

L E S	Animal No.	TPROT G/L	ALB G/L	GLOB G/L	TRIG MMOL/L	CHOL MMOL/L	MG MMOL/L
UP 0							
	1	68.33	31.36	36.97	7.88	1.60	0.79
	2	67.81	31.77	36.04	5.26	2.39	0.87
	3	68.90	32.26	36.64	4.35	2.52	0.89
	4	65.92	31.08	34.84	3.38	2.06	0.93
	5	65.95	29.96	35.99	3.36	2.29	0.83
	6	63.89	30.03	33.86	5.70	2.20	0.89
	7	66.70	31.66	35.04	4.65	2.02	0.75
	8	67.50	30.99	36.51	3.10	2.25	0.69
	9	67.81	31.52	36.29	4.18	2.62	0.77
	10	65.49	30.19	35.30	3.51	1.68	0.85
	M	66.83	31.08	35.75	4.54	2.16	0.83
	SD	1.53	0.79	0.97	1.46	0.33	0.07
	N	10	10	10	10	10	10
OUP 1							
	11	64.38	30.66	33.72	3.00	2.49	0.82
	12	70.30	33.17	37.13	2.87	2.23	0.84
	13	69.47	32.26	37.21	3.73	2.50	0.90
	14	67.24	32.70	34.54	5.87	1.93	0.84
	15	70.47	33.31	37.16	3.40	2.38	1.00
	16	68.73	29.94	38.79	4.02	3.21	0.82
	17	72.73	33.57	39.16	3.04	2.78	0.86
	18	67.41	31.68	35.73	4.17	2.32	0.84
	19	76.88	32.23	44.65	2.74	3.14	0.93
	20	69.58	33.57	36.01	4.53	1.62	0.87
	M	69.72	32.31	37.41	3.74	2.46	0.87
	SD	3.37	1.24	3.06	0.96	0.49	0.06
	N	10	10	10	10	10	10

SF TOXICOLOGY - DATATOX RC.7
OJECT NUMBER 50I0044/92053 N-VINYLCAPROLACTAM

DIVIDUAL DATA LISTING WITH MEANS BLOOD CHEMISTRY PRINT DATE 15-JUN-94

minal days in study 95

A L E S

	Animal No.	TPROT G/L	ALB G/L	GLOB G/L	TRIG MMOL/L	CHOL MMOL/L	MG MMOL/L
ROUP 2							
	21	67.55	32.13	35.42	5.60	2.25	0.83
	22	67.58	31.33	36.25	2.54	2.15	0.83
	23	67.07	31.83	35.24	6.23	1.98	0.80
	24	70.41	32.55	37.86	4.87	2.29	0.94
	25	72.42	33.01	39.41	5.57	2.12	0.91
	26	68.67	32.07	36.60	4.08	2.75	0.94
	27	71.59	33.26	38.33	3.66	2.12	0.92
	28	70.24	30.94	39.30	5.55	2.10	0.80
	29	70.10	31.42	38.68	5.71	2.96	0.96
	30	69.84	33.65	36.19	2.82	1.90	0.92
	M	69.55	32.22	37.33	4.66	2.26	0.89
	SD	1.79	0.89	1.58	1.31	0.34	0.06
	N	10	10	10	10	10	10
ROUP 3							
	31	67.70	31.30	36.40	5.60	2.92	0.81
	32	66.12	33.10	33.02	2.34	3.11	0.88
	33	66.87	31.74	35.13	3.46	2.23	0.88
	34	68.18	31.77	36.41	3.84	1.89	0.91
	35	64.66	30.49	34.17	4.53	2.45	0.75
	36	68.81	31.60	37.21	7.51	2.34	0.87
	37	69.64	32.52	37.12	4.56	2.35	0.95
	38	69.35	32.44	36.91	5.67	2.39	0.98
	39	66.98	32.18	34.80	5.46	1.99	0.91
	40	73.04	34.00	39.04	5.51	2.72	0.89
	M	68.14	32.11	36.02	4.85	2.44	0.88
	SD	2.30	0.98	1.75	1.44	0.38	0.07
	N	10	10	10	10	10	10

SF TOXICOLOGY - DATATOX RC.7
)JECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

)IVIDUAL DATA LISTING WITH MEANS

BLOOD CHEMISTRY

PRINT DATE 15-JUN-94

nimal days in study 92

E M A L E S

Animal No.	NA MMOL/L	K MMOL/L	CL MMOL/L	INP MMOL/L	CA MMOL/L	UREA MMOL/L	CREA MYMOL/L	GLUC MMOL/L	TBIL MYMOL/L
OUP 0									
41	140.6	5.43	113.8	1.38	2.57	5.85	49.5	7.18	2.74
42	139.1	5.99	112.1	1.57	2.71	5.96	52.5	7.67	2.48
43	144.9	5.43	113.8	1.21	2.59	7.09	55.6	6.47	2.22
44	140.8	6.25	114.2	1.72	2.58	6.41	57.2	8.75	2.87
45	137.4	5.54	112.6	1.39	2.60	5.96	52.5	7.28	2.09
46	142.1	6.71	111.9	2.13	2.83	6.67	61.8	6.72	3.26
47	147.1	5.82	116.3	1.66	2.60	6.16	52.5	7.04	1.44
48	142.0	5.48	114.8	1.50	2.59	6.33	52.5	6.87	3.65
49	148.8	5.86	115.6	1.60	2.62	7.35	57.2	6.93	2.48
50	141.0	5.60	113.6	1.72	2.54	5.68	49.5	6.80	1.96
M	142.4	5.81	113.9	1.59	2.62	6.35	54.1	7.17	2.52
SD	3.5	0.42	1.4	0.25	0.09	0.55	3.8	0.65	0.65
N	10	10	10	10	10	10	10	10	10
OUP 1									
51	143.8	6.17	114.3	1.78	2.74	6.98	54.1	7.46	2.35
52	141.8	4.71	115.3	1.48	2.59	5.54	49.5	7.29	2.61
53	147.8	5.99	114.8	1.81	2.62	6.47	55.6	6.75	2.74
54	147.0	6.40	113.7	1.71	2.66	5.93	52.5	8.24	2.61
55	137.8	5.67	112.8	1.86	2.68	6.58	55.6	7.38	2.74
56	145.3	5.83	113.8	1.81	2.64	6.02	51.0	7.59	2.48
57	146.0	6.28	114.0	2.06	2.70	6.16	60.3	6.95	4.44
58	142.6	5.81	113.4	1.44	2.47	5.71	51.0	7.33	1.83
59	142.8	6.57	114.3	1.71	2.74	5.14	55.6	7.97	3.26
60	140.5	6.00	114.5	1.74	2.64	6.44	57.2	6.78	3.00
M	143.5	5.94	114.1	1.74	2.65	6.10	54.2	7.37	2.81
SD	3.1	0.52	0.7	0.18	0.08	0.55	3.3	0.48	0.69
N	10	10	10	10	10	10	10	10	10

SF TOXICOLOGY - DATATOX RC.7
OJECT NUMBER 50I0044/92053 N-VINYLCAPROLACTAM

IDIVIDUAL DATA LISTING WITH MEANS BLOOD CHEMISTRY PRINT DATE 15-JUN-94

minal days in study 92

E M A L E S

	Animal No.	NA MMOL/L	K MMOL/L	CL MMOL/L	INP MMOL/L	CA MMOL/L	UREA MMOL/L	CREA MYMOL/L	GLUC MMOL/L	TBIL MYMOL/L
ROUP 2										
	61	139.1	6.19	110.8	2.11	2.64	6.16	55.6	6.39	2.48
	62	140.1	5.60	115.7	1.71	2.62	6.67	55.6	7.92	1.57
	63	140.5	6.21	115.3	1.55	2.58	4.89	54.1	7.34	2.61
	64	142.9	5.54	112.9	1.52	2.67	6.55	52.5	8.59	2.35
	65	142.6	6.06	112.6	1.89	2.75	6.24	58.7	7.16	3.00
	66	141.2	6.12	114.0	1.95	2.61	5.79	54.1	7.16	2.87
	67	137.6	5.78	114.8	1.65	2.67	6.10	54.1	7.24	2.22
	68	144.0	5.54	112.7	1.34	2.76	5.57	47.9	7.98	1.04
	69	143.4	6.65	113.3	2.06	2.78	6.47	58.7	7.34	3.00
	70	136.5	5.86	114.4	1.79	2.59	6.44	52.5	7.27	2.22
	M	140.8	5.96	113.7	1.76	2.67	6.09	54.4	7.44	2.34
	SD	2.5	0.36	1.5	0.25	0.07	0.54	3.2	0.60	0.63
	N	10	10	10	10	10	10	10	10	10
ROUP 3										
	71	145.1	5.82	113.7	1.78	2.67	5.79	54.1	6.77	3.52
	72	142.9	6.05	113.2	1.86	2.67	5.82	51.0	7.13	2.87
	73	139.1	5.94	111.8	1.91	2.66	5.23	49.5	7.77	4.44
	74	140.8	5.04	112.6	1.60	2.63	4.61	51.0	7.25	3.39
	75	139.8	5.74	112.1	1.75	2.48	5.88	46.4	6.49	1.96
	76	139.9	6.36	110.4	2.03	2.66	5.17	54.1	7.01	2.87
	77	141.1	5.93	112.6	1.69	2.60	5.85	55.6	7.28	1.57
	78	146.6	5.65	113.5	2.00	2.61	9.61	51.0	7.11	4.96
	79	140.9	5.45	113.1	1.99	2.64	5.17	49.5	6.71	2.74
	80	138.7	6.08	113.2	1.74	2.61	7.15	52.5	8.03	3.13
	M	141.5	5.81	112.6	1.84	2.62	6.03	51.5	7.16	3.15
	SD	2.6	0.37	1.0	0.15	0.06	1.43	2.7	0.47	1.02
	N	10	10	10	10	10	10	10	10	10

F TOXICOLOGY - DATATOX RC.7
JECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

IVIDUAL DATA LISTING WITH MEANS

BLOOD CHEMISTRY

PRINT DATE 15-JUN-94

inal days in study 92

M A L E S

Animal No.	TPROT G/L	ALB G/L	GLOB G/L	TRIG MMOL/L	CHOL MMOL/L	MG MMOL/L
UP 0						
41	67.75	34.60	33.15	3.07	1.96	0.82
42	74.19	38.67	35.52	3.21	2.09	0.97
43	68.87	34.68	34.19	2.96	2.03	0.99
44	69.76	34.14	35.62	3.01	1.91	0.92
45	68.38	35.21	33.17	1.61	2.50	0.78
46	72.59	38.90	33.69	2.64	2.59	1.04
47	69.10	34.08	35.02	4.53	1.84	0.93
48	67.64	33.16	34.48	4.22	2.07	0.83
49	71.10	34.46	36.64	2.17	2.26	0.97
50	64.21	32.82	31.39	2.96	2.23	0.90
M	69.36	35.07	34.29	3.04	2.15	0.92
SD	2.79	2.08	1.52	0.86	0.25	0.08
N	10	10	10	10	10	10
UP 1						
51	70.50	36.10	34.40	3.64	2.00	0.99
52	67.12	34.64	32.48	1.91	1.85	0.91
53	67.98	35.96	32.02	2.65	2.03	1.04
54	71.07	36.81	34.26	3.73	1.82	0.91
55	70.36	37.14	33.22	3.14	2.70	0.95
56	67.67	32.92	34.75	1.13	2.57	0.93
57	70.67	36.33	34.34	2.12	2.55	1.08
58	61.46	31.73	29.73	1.69	2.10	0.90
59	66.98	35.98	31.00	1.49	1.65	0.94
60	70.33	37.05	33.28	1.45	2.56	0.97
M	68.41	35.47	32.95	2.30	2.18	0.96
SD	2.92	1.82	1.65	0.94	0.38	0.06
N	10	10	10	10	10	10

SF TOXICOLOGY - DATATOX RC.7
OJECT NUMBER 5010044/92053 N-VINYLCAPROLACTAM

DIVIDUAL DATA LISTING WITH MEANS BLOOD CHEMISTRY PRINT DATE 15-JUN-94

minal days in study 92

E M A L E S

	Animal No.	TPROT G/L	ALB G/L	GLOB G/L	TRIG MMOL/L	CHOL MMOL/L	MG MMOL/L
OUP 2							
	61	71.13	35.08	36.05	1.73	1.81	1.06
	62	66.58	34.68	31.90	5.50	1.78	0.90
	63	68.44	35.18	33.26	1.63	3.11	0.97
	64	71.59	37.72	33.87	2.86	2.46	0.86
	65	74.99	35.84	39.15	2.14	2.62	1.04
	66	67.27	34.14	33.13	2.16	1.99	0.92
	67	70.96	37.24	33.72	3.64	1.95	0.90
	68	74.47	38.44	36.03	5.89	1.93	0.90
	69	70.56	35.82	34.74	3.88	2.45	1.09
	70	67.30	34.31	32.99	2.87	2.21	0.96
	M	70.33	35.85	34.48	3.23	2.23	0.96
	SD	2.94	1.48	2.10	1.50	0.43	0.08
	N	10	10	10	10	10	10
OUP 3							
	71	66.47	32.26	34.21	3.73	2.36	0.96
	72	69.41	34.42	34.99	2.51	2.36	1.01
	73	65.52	34.02	31.50	4.25	3.21	0.84
	74	64.32	31.66	32.66	3.73	2.26	0.90
	75	61.00	32.11	28.89	3.67	1.90	0.96
	76	68.78	33.44	35.34	2.74	2.35	1.08
	77	64.72	33.11	31.61	7.12	3.07	0.89
	78	65.21	33.24	31.97	2.57	2.60	0.95
	79	69.04	32.15	36.89	5.26	2.59	0.95
	80	66.61	32.22	34.39	2.68	1.89	0.91
	M	66.11	32.86	33.25	3.83	2.46	0.95
	SD	2.57	0.92	2.35	1.45	0.43	0.07
	N	10	10	10	10	10	10

TABLE B 037

TOXICOLOGY
CT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

IDUAL DATA

URINALYSIS: CHEMICAL EXAMINATIONS

AL DAYS IN STUDY 81

E S	NI-TRITE	PH-VALUE	PRO-TEIN	GLU-COSE	KE-TONES	UROBILI-NOGEN	BILI-RUBIN	BLOOD	URINE VOLUME (ML)	SPEC. GRAVITY (G/L)	COLOUR	TURBIDITY
P 0												
1	0	7	1	0	1	0	0	3	4.4	1060	Y	CL
2	0	6	0	0	1	0	0	1	4.0	1060	Y	C
3	0	7	0	0	0	0	0	0	3.9	1046	Y	C
4	0	6	0	0	1	1	1	3	5.1	1049	Y	CL
5	0	6	1	0	1	0	0	2	2.4	1060	Y	CL
6	0	7	1	0	0	1	1	1	3.9	1066	Y	CL
7	0	7	0	0	0	0	0	1	10.4	1034	Y	C
8	0	6	0	0	1	1	0	1	5.4	1048	Y	C
9	0	7	0	0	1	0	0	1	6.3	1040	Y	C
10	0	6	1	0	1	0	0	1	3.2	1070	Y	C
P 1												
11	0	7	1	0	1	0	0	1	3.8	1074	Y	C
12	0	7	1	0	1	0	1	0	2.6	1076	Y	C
13	0	6	1	0	1	0	0	1	3.6	1062	Y	CL
14	0	7	0	0	1	1	0	1	6.4	1048	Y	CL
15	0	6	0	0	0	0	0	1	6.7	1033	Y	CL
16	0	6	0	0	1	0	0	1	3.1	1070	Y	C
17	0	7	0	0	1	0	0	0	4.5	1070	Y	C
18	0	6	0	0	1	0	0	1	4.3	1064	Y	CL
19	0	6	0	0	1	1	1	0	3.7	1078	D Y	CL
20	1	7	0	0	1	2	1	0	2.7	1076	D Y	C

TABLE B 038

TOXICOLOGY
ECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

VIDUAL DATA

URINALYSIS: CHEMICAL EXAMINATIONS

NAL DAYS IN STUDY 81

L E S		NI-TRITE	PH-VALUE	PRO-TEIN	GLU-COSE	KE-TONES	UROBILI-NOGEN	BILI-RUBIN	BLOOD	URINE VOLUME (ML)	SPEC. GRAVITY (G/L)	COLOUR	TURBIDITY
IP 2													
	21	0	6	1	0	0	0	0	2	5.4	1045	Y	CL
	22	0	6	0	0	1	0	0	0	4.4	1070	Y	CL
	23	0	7	1	0	1	1	0	0	3.5	1068	Y	C
	24	0	6	1	0	1	1	0	3	3.5	1066	Y	CL
	25	0	6	0	0	1	0	0	1	4.4	1043	Y	C
	26	0	7	1	0	0	0	0	0	4.5	1056	Y	CL
	27	0	7	0	0	0	0	0	0	9.5	1032	Y	C
	28	0	7	0	0	1	0	0	1	2.1	1064	Y	C
	29	0	7	1	0	1	1	1	1	3.5	1066	D Y	CL
	30	1	7	0	0	0	0	0	0	5.4	1037	Y	CL
UP 3													
	31	0	6	0	0	1	1	0	0	3.7	1074	Y	C
	32	0	7	0	0	0	1	0	0	4.6	1044	Y	C
	33	0	7	1	0	1	1	0	0	3.0	1058	Y	C
	34	0	6	0	0	1	2	0	0	3.0	1070	D Y	CL
	35	1	7	1	0	0	0	0	0	6.5	1046	Y	CL
	36	0	6	0	0	0	0	0	1	4.3	1033	Y	C
	37	0	6	1	0	1	1	0	0	3.9	1066	Y	CL
	38	0	7	1	0	0	0	0	1	5.3	1048	Y	C
	39	0	7	0	0	0	0	0	0	8.2	1031	Y	C
	40	0	6	1	0	1	1	0	1	4.0	1058	Y	C

TOXICOLOGY
CT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

IDUAL DATA

URINALYSIS: SEDIMENT

NAL DAYS IN STUDY 81

L E S		FAT	CRYS-TALS	EPITHELIAL CELLS			CASTS	ERY.	LEUCO.	BACT.	REMARKS
				RENAL TUBULAR	TRANSI-TIONAL	SQUA-MOUS					
P 0											
	1	0	3 TP	3	3	2 V	0	1	0	1	
	2	0	1	0	0	1	0	0	0	0	
	3	0	3 TP	0	0	1	0	0	0	1	
	4	0	2	0	0	0	0	2	0	1	
	5	0	3 TP	3	3	0	1 GC	0	0	1	
	6	0	3 TP	0	0	1	0	0	0	0	
	7	0	2	0	0	1	0	0	0	1	
	8	0	3 TP	0	0	1	0	0	0	1	
	9	0	3 TP	0	0	0	0	1	0	1	
	10	0	2	0	0	0	0	0	0	0	
P 1											
	11	0	3 TP	1	0	0	0	0	0	0	
	12	0	3 TP	0	0	0	0	0	0	0	
	13	0	3 TP	0	0	0	0	0	0	1	
	14	1	3 TP	0	0	1	0	1	0	1	
	15	1	2	0	0	1	0	0	0	3	
	16	0	1	0	0	1	0	0	0	0	
	17	0	3 TP	0	0	1	0	0	0	0	
	18	2	0	0	0	0	0	1	0	1	
	19	0	3 TP	1	0	1	0	1	0	1	
	20	0	2	0	0	1	0	0	0	0	

TABLE B 040

TOXICOLOGY
ECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

VIDUAL DATA

URINALYSIS: SEDIMENT

NAL DAYS IN STUDY 81

L E S		FAT	CRYS-TALS	EPITHELIAL CELLS: RENAL TUBULAR	EPITHELIAL CELLS: TRANSITIONAL	EPITHELIAL CELLS: SQUAMOUS	CASTS	ERY.	LEUCO.	BACT.	REMARKS
UP 2											
	21	0	1	2	0	1	1 GC	3	0	1	
	22	1	3 TP	0	0	1	0	0	0	0	
	23	0	2	0	0	0	0	0	0	0	
	24	0	1	0	0	0	0	3	0	0	
	25	0	3 TP	0	0	1	0	0	0	1	
	26	0	2	0	0	2 V	0	1	0	3	
	27	0	2	1	1	1	0	0	0	2	
	28	0	2	0	0	0	0	0	0	0	
	29	0	3 TP	0	0	0	0	0	0	0	
	30	0	2	0	0	0	0	1	0	3	
UP 3											
	31	0	2	0	0	0	0	0	0	0	
	32	1	3 TP	0	0	1	0	0	0	1	
	33	0	3 TP	0	0	0	0	0	0	0	
	34	1	2	0	0	1	0	0	0	0	
	35	0	3 TP	1	0	2	0	1	0	1	
	36	0	1	0	0	1	0	0	0	1	
	37	0	3 TP	0	0	1	0	0	0	0	
	38	0	2	0	0	1	0	1	0	2	
	39	0	2	0	0	1	0	0	0	3	
	40	0	2	1	0	1	0	0	0	1	

TABLE B 041

TOXICOLOGY
CT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

IDUAL DATA

URINALYSIS: CHEMICAL EXAMINATIONS

AL DAYS IN STUDY 81

A L E S		NI-TRITE	PH-VALUE	PRO-TEIN	GLU-COSE	KE-TONES	UROBILI-NOGEN	BILI-RUBIN	BLOOD	URINE VOLUME (ML)	SPEC. GRAVITY (G/L)	COLOUR	TURBIDITY
0													
	41	0	6	1	0	1	0	0	0	2.5	1056	Y	CL
	42	0	6	1	0	1	1	0	0	0.5	1060	Y	C
	43	1	6	0	0	0	0	0	0	3.5	1034	Y	C
	44	1	6	0	0	1	1	0	0	0.5	1064	Y	C
	45	0	6	1	0	0	0	2	0	0.2	1068	Y	C
	46	0	6	1	0	1	2	0	0	1.8	1078	D Y	CL
	47	0	6	0	0	0	0	0	0	3.5	1046	Y	CL
	48	0	6	1	0	1	1	1	0	2.0	1080	D Y	CL
	49	1	6	0	0	0	1	0	0	3.3	1048	Y	CL
	50	0	6	0	0	0	1	0	0	4.2	1046	Y	CL
1													
	51	0	6	1	0	1	1	0	0	2.0	1080	D Y	C
	52	0	6	0	0	1	1	1	0	2.3	1052	Y	C
	53	0	6	0	0	1	1	0	0	3.1	1056	D Y	C
	54	0	6	0	0	1	1	0	0	3.0	1056	Y	CL
	55	0	6	0	0	1	1	0	0	3.0	1062	Y	CL
	56	0	6	1	0	1	1	0	0	2.4	1072	D Y	CL
	57	0	6	0	0	1	1	0	0	2.4	1068	Y	CL
	58	0	6	1	0	1	2	0	1	1.5	1066	D Y	CL
	59	0	6	0	0	1	0	0	0	1.9	1076	D Y	CL
	60	0	6	1	0	1	1	1	0	1.4	1088	Y	CL

TABLE B 042

TOXICOLOGY
ECT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

VIDUAL DATA

URINALYSIS: CHEMICAL EXAMINATIONS

NAL DAYS IN STUDY 86

M A L E S	NI-TRITE	PH-VALUE	PRO-TEIN	GLU-COSE	KE-TONES	UROBILI-NOGEN	BILI-RUBIN	BLOOD	URINE VOLUME (ML)	SPEC. GRAVITY (G/L)	COLOUR	TURBIDITY
UP 2												
61	0	6	0	0	1	1	0	0	4.0	1033	Y	CL
62	0	6	0	0	0	0	0	0	4.7	1021	Y	CL
63	0	6	0	0	0	0	0	0	4.9	1044	Y	CL
64	0	6	0	0	0	0	0	0	5.4	1040	Y	CL
65	0	6	0	0	1	1	0	0	3.8	1043	Y	CL
66	0	6	0	0	1	1	0	0	3.5	1056	Y	CL
67	1	6	0	0	1	1	1	0	2.5	1056	Y	CL
68	0	6	0	0	1	1	0	0	1.8	1056	Y	C
69	0	6	0	0	0	0	0	0	5.4	1035	Y	C
70	0	6	0	0	1	1	0	0	1.8	1076	D Y	CL
UP 3												
71	0	6	0	0	0	1	0	0	4.9	1048	D Y	CL
72	0	6	1	0	1	1	0	0	3.0	1068	D Y	CL
73	0	6	0	0	1	0	0	0	3.9	1045	Y	CL
74	0	6	0	0	1	1	0	0	3.1	1042	Y	CL
75	1	6	0	0	0	0	0	0	7.8	1030	Y	CL
76	0	6	0	0	0	0	0	0	6.4	1035	Y	CL
77	0	6	0	0	0	0	0	3	7.5	1034	Y	C
78	0	7	0	0	0	1	0	0	4.0	1024	Y	C
79	1	6	0	0	1	0	0	0	7.2	1037	Y	CL
80	0	6	0	0	0	0	0	0	5.3	1043	Y	C

TOXICOLOGY
CT NUMBER 50I0044/92053

N-VINYLCAPROLACTAM

IDUAL DATA

URINALYSIS: SEDIMENT

AL DAYS IN STUDY 81

A L E S		FAT	CRYS-TALS	EPITHELIAL CELLS			CASTS	ERV.	LEUCO.	BACT.	REMARKS
				RENAL TUBULAR	TRANSI-TIONAL	SQUA-MOUS					
P 0											
	41	2	0	0	0	1	0	1	0	1	
	42	0	0	0	0	1	0	1	0	1	
	43	0	0	0	1	2 V	0	0	1	3	
	44	0	0	0	0	0	0	0	0	0	
	45	0	1	0	0	0	0	0	0	0	
	46	1	2	0	0	1	0	0	0	2	
	47	2	0	0	0	1	0	0	0	2	
	48	1	2	0	0	1	0	0	0	1	
	49	0	2	0	0	1	0	1	0	1	
	50	0	0	0	1	0	0	0	1	1	
P 1											
	51	0	2	0	1	1	0	0	0	1	
	52	0	1	1	0	1	0	0	0	1	
	53	0	3 TP	0	0	1	0	1	0	1	
	54	2	0	0	0	2 V	0	0	1	1	
	55	0	1	0	0	1	0	1	0	1	
	56	0	0	0	1	2 V	0	0	1	1	
	57	1	0	0	1	1	0	1	0	2	
	58	0	2	0	0	1	0	1	0	1	
	59	0	2	0	0	1	0	0	0	1	
	60	1	0	0	0	1	0	0	0	2	

TOXICOLOGY
ECT NUMBER 5010044/92053

N-VINYLCAPROLACTAM

/IDUAL DATA

URINALYSIS: SEDIMENT

NAL DAYS IN STUDY 81

MALES		FAT	CRYS-TALS	EPITHELIAL CELLS: RENAL TUBULAR	EPITHELIAL CELLS: TRANSI-TIONAL	EPITHELIAL CELLS: SQUA-MOUS	CASTS	ERY.	LEUCO.	BACT.	REMARKS
P 2											
	61	1	2	0	0	1	0	0	1	1	
	62	0	0	0	0	1	0	1	2	2	
	63	0	0	0	0	1	0	0	2	1	
	64	0	0	0	1	1	0	1	0	1	
	65	0	2	0	0	1	0	3	0	1	
	66	0	2	0	0	1	0	0	0	1	
	67	2	0	0	0	1	0	1	0	1	
	68	0	0	0	0	1	0	1	0	2	
	69	0	0	0	0	1	0	1	0	1	
	70	0	1	0							
P 3											
	71	0	2	0	0	1	0	2	0	2	
	72	0	3 TP	1	1	1	0	0	0	1	
	73	0	0	0	0	1	0	0	3	2	
	74	2	0	0	0	1	0	0	3	1	
	75	0	2	0	0	1	0	0	0	2	
	76	0	2	0	0	1	0	2	0	2	
	77	0	0	0	1	2 V	0	3	1	1	
	78	0	2	0	0	1	0	0	0	1	
	79	0	0	0	0	2 V	0	0	1	3	
	80	0	2	1	0	1	0	1	0	1	

Part C "ANALYSIS"

Tables C 001 - C 005

KEY TO THE ABBREVIATIONS

m^3	= cubicmeter
m^3/h	= cubicmeter per hour
mg/m^3	= milligram per cubicmeter
x	= mean of the daily means
s	= standard deviation
Pa	= Pascal
C	= degree Celsius
%	= per cent

Report; Project No.: 50I0044/92053

Table: C 001

DAILY MEANS - ANALYTICAL CONCENTRATIONS

STUDY MEANS ± STANDARD DEVIATION

Date	Test group 1 Target concentration (5.8 mg/m³)	Test group 2 Target concentration (58 mg/m³)	Test group 3 Target concentration (174 mg/m³)
May 28, 1993	6.30	69.2	154
June 01, 1993	4.98	59.4	152
June 02, 1993	4.63	46.9	153
June 03, 1993	6.09	59.7	138
June 04, 1993	6.56	61.2	157
June 07, 1993	5.86	55.3	159
June 08, 1993	6.73	60.1	194
June 09, 1993	6.15	55.6	177
June 11, 1993	6.04	44.6	171
June 14, 1993	4.99	33.5	153
June 15, 1993	5.00	47.3	162
June 16, 1993	5.76	56.5	86*
June 17, 1993	5.47	59.2	150
June 18, 1993	5.90	60.0	170
June 21, 1993	8.04	62.1	129
June 22, 1993	5.73	58.0	171
June 23, 1993	5.86	62.0	183
June 24, 1993	5.91	55.4	191
June 25, 1993	5.98	55.2	174
June 28, 1993	6.66	60.5	170
June 29, 1993	5.39	55.2	179
June 30, 1993	7.27	60.8	190

* = because technical reasons

Report; Project No.: 50I0044/92053

Table: C 001 (continued)

DAILY MEANS - ANALYTICAL CONCENTRATIONS

STUDY MEANS ± STANDARD DEVIATION

Date	Test group 1 Target concentration (5.8 mg/m³)	Test group 2 Target concentration (58 mg/m³)	Test group 3 Target concentration (174 mg/m³)
July 01, 1993	5.11	71.3	184
July 02, 1993	5.12	67.3	196
July 05, 1993	5.72	66.2	167
July 06, 1993	5.09	66.7	177
July 07, 1993	5.39	63.2	174
July 08, 1993	5.75	60.4	176
July 09, 1993	6.16	54.7	179
July 12, 1993	5.44	58.5	181
July 13, 1993	6.41	58.9	185
July 14, 1993	4.56	51.0	177
July 15, 1993	7.52	54.8	181
July 16, 1993	6.26	62.1	196
July 19, 1993	5.70	59.6	188
July 20, 1993	6.21	58.6	185
July 21, 1993	5.95	59.2	194
July 22, 1993	5.44	58.1	185
July 23, 1993	5.86	65.7	194
July 26, 1993	5.14	60.3	182
July 27, 1993	5.42	57.7	173
July 28, 1993	5.47	62.5	188
July 29, 1993	6.42	61.1	190
July 30, 1993	5.05	60.3	190

Table: C 001 (continued)

DAILY MEANS - ANALYTICAL CONCENTRATIONS

STUDY MEANS ± STANDARD DEVIATION

Date	Test group 1 Target concentration (5.8 mg/m³)	Test group 2 Target concentration (58 mg/m³)	Test group 3 Target concentration (174 mg/m³)
Aug. 02, 1993	6.62	76.8	230
Aug. 03, 1993	6.67	71.4	215
Aug. 04, 1993	4.81	61.3	224
Aug. 05, 1993	5.68	65.9	196
Aug. 06, 1993	5.88	61.7	192
Aug. 09, 1993	6.21	57.3	196
Aug. 10, 1993	5.40	55.1	193
Aug. 11, 1993	4.80	54.9	188
Aug. 12, 1993	5.03	58.5	205
Aug. 13, 1993	6.73	52.5	205
Aug. 16, 1993	7.18	59.3	194
Aug. 17, 1993	4.94	57.0	196
Aug. 18, 1993	5.22	55.5	182
Aug. 19, 1993	5.22	59.2	200
Aug. 20, 1993	7.25	60.1	189
Aug. 23, 1993	6.95	57.9	190
Aug. 24, 1993	6.89	48.0	207
Aug. 25, 1993	5.28	44.0	183
Aug. 26, 1993	4.90	42.4	193
Aug. 27, 1993	5.79	36.5	193
Aug. 30, 1993	5.89	47.3	189
Aug. 31, 1993	7.53	46.5	186
x ± s	5.87 ± 0.78	57.7 ± 7.63	181 ± 21.7

Report; Project No.: 50I0044/92053

Table: C 002

DAILY MEANS - CHAMBER PARAMETERS

STUDY MEANS ± STANDARD DEVIATION

Test group 0

Date	Supply air [m³/h] Blast air 1	Exhaust air [m³/h]	Chamber humidity [%]	Chamber temp. [°C]	Chamber pressure [Pa]
May 28, 1993	21.1	20.8	43.2	23.3	10.6
June 01, 1993	21.1	20.8	44.2	23.6	10.5
June 02, 1993	21.0	20.8	44.2	23.7	10.6
June 03, 1993	21.1	20.9	44.3	23.7	10.5
June 04, 1993	21.1	20.9	44.4	23.7	10.5
June 07, 1993	21.1	20.9	44.7	23.9	10.5
June 08, 1993	21.1	20.9	43.3	24.1	10.5
June 09, 1993	21.1	20.9	42.3	24.1	10.5
June 11, 1993	21.1	20.9	41.9	23.9	10.4
June 14, 1993	21.1	20.9	43.0	24.2	10.6
June 15, 1993	21.1	20.9	43.3	24.2	10.3
June 16, 1993	21.1	20.9	43.0	24.2	10.6
June 17, 1993	21.1	20.9	43.0	24.1	10.6
June 18, 1993	21.1	20.9	43.0	24.1	10.5
June 21, 1993	21.1	20.9	42.9	24.1	10.6
June 22, 1993	21.1	20.9	42.7	24.2	10.6
June 23, 1993	21.1	20.9	42.8	24.3	10.6
June 24, 1993	21.1	20.9	43.0	24.0	10.5
June 25, 1993	21.1	20.9	43.3	24.1	10.5
June 28, 1993	21.1	20.9	42.1	24.1	10.5
June 29, 1993	21.1	20.9	43.5	24.1	10.7
June 30, 1993	21.1	20.9	42.6	24.2	10.5

Table: C 002 (continued)

DAILY MEANS - CHAMBER PARAMETERS

STUDY MEANS ± STANDARD DEVIATION

Test group 0

Date	Supply air [m³/h] Blast air 1	Exhaust air [m³/h]	Chamber humidity [%]	Chamber temp. [°C]	Chamber pressure [Pa]
July 01, 1993	21.1	20.9	43.5	24.1	10.5
July 02, 1993	21.1	20.9	43.2	24.0	10.6
July 05, 1993	21.1	20.9	44.4	24.2	10.5
July 06, 1993	21.1	20.9	42.8	24.1	10.5
July 07, 1993	21.1	20.9	43.2	24.2	10.5
July 08, 1993	21.1	20.9	42.8	24.1	10.5
July 09, 1993	21.1	20.9	42.8	24.1	10.7
July 12, 1993	21.1	20.9	42.1	24.1	10.6
July 13, 1993	21.1	20.9	43.1	23.9	10.5
July 14, 1993	21.1	20.9	42.6	24.1	10.6
July 15, 1993	21.1	20.9	43.3	24.2	10.6
July 16, 1993	21.1	20.9	44.6	24.3	10.5
July 19, 1993	21.1	20.9	42.7	24.2	10.6
July 20, 1993	21.1	20.9	42.7	24.1	10.6
July 21, 1993	21.1	20.9	42.8	24.0	10.5
July 22, 1993	21.1	20.9	42.8	24.1	10.5
July 23, 1993	21.1	20.9	43.2	24.1	10.5
July 26, 1993	21.1	20.9	42.3	24.1	10.5
July 27, 1993	21.1	20.9	42.5	24.1	10.6
July 28, 1993	21.1	20.9	43.4	24.2	10.5
July 29, 1993	21.1	20.9	44.1	24.1	10.6
July 30, 1993	21.1	20.9	44.0	24.3	10.5

Table: C 002 (continued)

DAILY MEANS - CHAMBER PARAMETERS

STUDY MEANS ± STANDARD DEVIATION

Test group 0

Date	Supply air [m³/h]	Exhaust air [m³/h]	Chamber humidity	Chamber temp.	Chamber pressure
	Blast air 1		[%]	[°C]	[Pa]
Aug. 02, 1993	21.1	20.9	42.8	24.2	10.5
Aug. 03, 1993	21.1	20.9	43.0	24.3	10.5
Aug. 04, 1993	21.1	20.9	42.9	24.3	10.6
Aug. 05, 1993	21.1	20.9	43.1	24.4	10.6
Aug. 06, 1993	21.1	20.9	41.9	24.4	10.5
Aug. 09, 1993	21.1	20.9	41.7	24.4	10.6
Aug. 10, 1993	21.1	20.9	42.0	24.4	10.5
Aug. 11, 1993	21.1	20.9	41.9	24.5	12.1
Aug. 12, 1993	21.1	20.9	41.8	24.5	10.6
Aug. 13, 1993	21.1	20.9	42.3	24.5	10.5
Aug. 16, 1993	21.1	20.9	42.1	24.6	10.5
Aug. 17, 1993	21.1	20.9	41.8	24.6	10.5
Aug. 18, 1993	21.1	20.9	41.5	24.6	10.6
Aug. 19, 1993	21.1	20.9	42.0	24.6	10.6
Aug. 20, 1993	21.1	20.9	41.2	24.6	10.6
Aug. 23, 1993	21.1	20.9	41.0	24.6	10.5
Aug. 24, 1993	21.1	20.9	40.6	24.5	10.5
Aug. 25, 1993	21.1	20.9	40.7	24.5	10.5
Aug. 26, 1993	21.1	20.9	40.8	24.5	10.5
Aug. 27, 1993	21.1	20.9	41.0	24.5	10.7
Aug. 30, 1993	21.1	20.9	41.1	24.6	10.5
Aug. 31, 1993	21.1	20.9	39.8	24.5	10.5
x ± s	21.1 ± 0.0	20.9 ± 0.02	42.7 ± 1.01	23.6 ± 1.97	10.6 ± 0.20

Report; Project No.: 50I0044/92053

Table: C 003

DAILY MEANS - CHAMBER PARAMETERS

STUDY MEANS ± STANDARD DEVIATION

Test group 1

Date	Supply air [m³/h]		Exhaust air [m³/h]	Chamber humidity [%]	Chamber temp. [°C]	Chamber pressure [Pa]
	Blast air 1	Blast air 2				
May 28, 1993	23.7	6.0	25.1	45.5	23.4	-14.0
June 01, 1993	23.8	6.0	24.5	46.1	24.0	-14.6
June 02, 1993	23.7	6.0	24.5	46.3	23.8	-14.2
June 03, 1993	23.8	6.0	24.5	46.1	23.7	-14.2
June 04, 1993	22.5	6.0	23.1	46.4	23.9	-12.6
June 07, 1993	22.0	6.0	22.4	46.6	24.2	-11.0
June 08, 1993	22.0	6.0	22.5	45.2	24.1	-11.0
June 09, 1993	22.0	6.0	22.5	44.5	24.1	-11.1
June 11, 1993	22.1	6.0	22.6	43.7	24.1	-10.6
June 14, 1993	22.0	6.0	22.5	44.7	24.1	-11.0
June 15, 1993	22.0	6.0	22.5	45.5	23.9	-11.0
June 16, 1993	22.0	6.0	22.5	45.2	24.2	-11.0
June 17, 1993	22.0	6.0	22.5	45.2	23.9	-11.0
June 18, 1993	22.0	6.0	22.5	45.0	23.9	-11.4
June 21, 1993	22.0	6.0	22.5	44.4	24.2	-11.1
June 22, 1993	22.0	6.0	22.5	44.5	24.2	-10.8
June 23, 1993	22.0	6.0	22.5	44.0	24.4	-11.0
June 24, 1993	22.0	6.0	22.5	44.3	24.2	-11.1
June 25, 1993	22.0	6.0	22.5	44.5	24.2	-11.0
June 28, 1993	22.0	6.0	22.5	43.8	24.5	-10.9
June 29, 1993	22.0	6.0	22.5	44.7	24.3	-10.9
June 30, 1993	22.0	6.0	22.5	44.0	24.4	-11.0

Table: C 003 (continued)

DAILY MEANS - CHAMBER PARAMETERS

STUDY MEANS ± STANDARD DEVIATION

Test group 1

Date	Supply air [m³/h]		Exhaust air [m³/h]	Chamber humidity [%]	Chamber temp. [°C]	Chamber pressure [Pa]
	Blast air 1	Blast air 2				
July 01, 1993	22.0	6.0	22.5	44.8	24.5	-11.0
July 02, 1993	21.7	6.0	22.3	44.7	24.4	-20.9
July 05, 1993	22.0	6.0	22.5	45.2	24.6	-9.8
July 06, 1993	22.0	6.0	22.6	44.4	24.2	-9.7
July 07, 1993	22.0	6.0	22.5	44.4	24.3	-9.9
July 08, 1993	22.0	6.0	22.5	44.0	24.3	-9.9
July 09, 1993	22.0	6.0	22.5	44.0	24.3	-10.0
July 12, 1993	22.0	6.0	22.5	43.9	24.3	-9.9
July 13, 1993	22.0	6.0	22.5	44.2	24.3	-10.0
July 14, 1993	22.0	6.0	22.5	44.3	24.2	-9.9
July 15, 1993	22.0	6.0	22.5	44.3	24.4	-9.9
July 16, 1993	22.0	6.0	22.5	46.1	24.3	-9.8
July 19, 1993	22.0	6.0	22.6	43.8	24.5	-9.8
July 20, 1993	22.0	6.0	22.5	44.2	24.2	-9.8
July 21, 1993	22.0	6.0	22.5	44.0	24.2	-9.9
July 22, 1993	22.0	6.0	22.6	44.7	24.3	-9.9
July 23, 1993	22.0	6.0	22.6	45.1	24.1	-11.7
July 24, 1993	22.0	6.0	22.6	43.4	24.3	-9.9
July 27, 1993	22.0	6.0	22.5	43.8	24.3	-9.8
July 28, 1993	22.0	6.0	22.6	44.3	24.4	-10.0
July 29, 1993	22.0	6.0	22.6	45.2	24.3	-17.4
July 30, 1993	22.0	6.0	22.5	45.2	24.5	-9.7

Table: C 003 (continued)

DAILY MEANS - CHAMBER PARAMETERS

STUDY MEANS ± STANDARD DEVIATION

Test group 1

Date	Supply air [m³/h]		Exhaust air [m³/h]	Chamber humidity [%]	Chamber temp. [°C]	Chamber pressure [Pa]
	Blast air 1	Blast air 2				
Aug. 02, 1993	22.0	6.0	22.6	44.3	24.4	-9.8
Aug. 03, 1993	22.0	6.0	22.6	44.8	24.4	-9.9
Aug. 04, 1993	22.0	6.0	22.6	43.8	24.8	-9.9
Aug. 05, 1993	22.0	6.0	22.6	44.6	24.5	-9.8
Aug. 06, 1993	22.0	6.0	22.6	44.1	24.3	-9.9
Aug. 09, 1993	22.0	6.0	22.6	43.6	24.5	-9.9
Aug. 10, 1993	22.0	6.0	22.5	43.5	24.5	-9.8
Aug. 11, 1993	22.0	6.0	22.6	43.9	24.3	-9.8
Aug. 12, 1993	22.0	6.0	22.6	43.8	24.5	-9.8
Aug. 13, 1993	22.0	6.0	22.6	44.4	24.3	-9.9
Aug. 16, 1993	22.0	6.0	22.6	44.3	24.4	-9.9
Aug. 17, 1993	22.0	6.0	22.6	44.3	24.4	-9.9
Aug. 18, 1993	22.0	6.0	22.5	44.2	24.3	-10.0
Aug. 19, 1993	22.0	6.0	22.5	44.3	24.3	-9.6
Aug. 20, 1993	22.0	6.0	22.6	44.1	24.2	-9.9
Aug. 23, 1993	22.0	6.0	22.6	44.0	24.3	-9.9
Aug. 24, 1993	22.0	6.0	22.6	43.6	24.3	-9.9
Aug. 25, 1993	22.0	6.0	22.6	43.6	24.1	-9.9
Aug. 26, 1993	22.0	6.0	22.5	43.3	24.3	-9.9
Aug. 27, 1993	22.0	6.0	22.6	43.6	24.2	-9.9
Aug. 30, 1993	22.0	6.0	22.6	43.9	24.2	-9.8
Aug. 31, 1993	22.0	6.0	22.6	43.3	23.4	-9.3
x ± s	22.1 ± 0,43	6.0 ± 0,00	22.7 ± 0.52	44.5 ± 0.78	24.2 ± 0.24	-10.8 ± 1.90

Report; Project No.: 50I0044/92053

Table: C 004

DAILY MEANS - CHAMBER PARAMETERS

STUDY MEANS ± STANDARD DEVIATION

Test group 2

Date	Supply air [m³/h]			Exhaust air [m³/h]	Chamber humidity [%]	Chamber temp. [°C]	Chamber pressure [Pa]
	Blast air 1	Blast air 2	Compressed air				
May 28, 1993	21.4	6.0	0.39	22.3	40.6	24.0	-14.0
June 01, 1993	21.4	6.0	0.39	22.3	41.4	24.5	-14.0
June 02, 1993	21.4	6.0	0.39	22.3	41.7	24.1	-13.9
June 03, 1993	21.4	6.0	0.38	22.3	41.8	24.0	-14.0
June 04, 1993	21.4	6.0	0.38	22.3	41.5	24.3	-14.0
June 07, 1993	21.4	6.0	0.40	22.2	41.4	24.6	-13.9
June 08, 1993	21.4	6.0	0.39	22.1	40.5	24.3	-14.0
June 09, 1993	21.4	6.0	0.39	21.4	39.0	24.5	-14.0
June 11, 1993	21.5	6.0	0.39	22.4	38.7	24.3	-13.8
June 14, 1993	21.4	6.0	0.39	22.2	41.3	24.0	-14.0
June 15, 1993	21.4	6.0	0.48	22.6	40.0	24.0	-13.9
June 16, 1993	21.4	6.0	0.53	22.6	39.9	24.2	-13.9
June 17, 1993	21.4	6.0	0.53	22.6	39.8	24.3	-13.9
June 18, 1993	21.4	6.0	0.53	22.6	39.7	24.2	-13.9
June 21, 1993	21.4	6.0	0.53	22.6	40.1	24.0	-13.9
June 22, 1993	21.4	6.0	0.54	22.5	39.2	24.4	-14.0
June 23, 1993	21.4	6.0	0.55	22.5	38.8	24.6	-14.0
June 24, 1993	21.4	6.0	0.54	22.6	39.3	24.5	-14.0
June 25, 1993	21.4	6.0	0.54	22.7	39.6	24.4	-14.0
June 28, 1993	21.4	6.0	0.54	22.6	38.7	24.4	-14.1
June 29, 1993	21.5	6.0	0.55	22.7	39.2	24.6	-13.9
June 30, 1993	21.4	6.0	0.55	22.6	39.1	24.7	-13.9

Report; Project No.: 50I0044/92053

Table: C 004 (continued)

DAILY MEANS - CHAMBER PARAMETERS

STUDY MEANS ± STANDARD DEVIATION

Test group 2

Date	Supply air [m³/h]			Exhaust air [m³/h]	Chamber humidity [%]	Chamber temp. [°C]	Chamber pressure [Pa]
	Blast air 1	Blast air 2	Compressed air				
July 01, 1993	21.4	6.0	0.55	22.7	39.7	24.7	-14.0
July 02, 1993	21.5	6.0	0.55	22.7	39.1	24.7	-13.8
July 05, 1993	21.4	6.0	0.56	22.7	39.8	25.0	-13.9
July 06, 1993	21.5	6.0	0.55	22.7	39.2	24.3	-13.9
July 07, 1993	21.4	6.0	0.55	22.7	39.8	24.3	-14.0
July 08, 1993	21.4	6.0	0.55	22.7	38.7	24.5	-13.9
July 09, 1993	21.4	6.0	0.55	22.7	39.2	24.4	-14.0
July 12, 1993	21.4	6.0	0.54	22.7	38.6	24.3	-14.0
July 13, 1993	21.4	6.0	0.37	22.3	40.7	24.0	-13.9
July 14, 1993	21.4	6.0	0.37	22.3	40.5	24.0	-14.0
July 15, 1993	21.4	6.0	0.37	22.3	40.7	24.2	-13.9
July 16, 1993	21.4	6.0	0.38	22.3	42.7	24.3	-14.2
July 19, 1993	21.4	6.0	0.38	22.3	40.3	24.3	-14.0
July 20, 1993	21.4	6.0	0.38	22.2	39.5	24.3	-13.9
July 21, 1993	21.4	6.0	0.37	22.2	40.4	24.2	-13.9
July 22, 1993	21.4	6.0	0.37	22.3	40.8	24.1	-14.0
July 23, 1993	21.4	6.0	0.37	22.3	41.4	24.1	-14.4
July 26, 1993	21.5	6.0	0.37	22.4	39.5	24.3	-13.9
July 27, 1993	21.4	6.0	0.37	22.2	40.0	24.2	-13.9
July 28, 1993	21.4	6.0	0.37	22.3	40.8	24.3	-14.0
July 29, 1993	21.4	6.0	0.38	22.4	41.4	24.4	-14.0
July 30, 1993	21.4	6.0	0.39	22.2	40.8	24.5	-13.9

Report; Project No.: 50I0044/92053

Table: C 004 (continued)

DAILY MEANS - CHAMBER PARAMETERS

STUDY MEANS ± STANDARD DEVIATION

Test group 2

Date	Supply air [m³/h]			Exhaust air [m³/h]	Chamber humidity [%]	Chamber temp. [°C]	Chamber pressure [Pa]
	Blast air 1	Blast air 2	Compressed air				
Aug. 02, 1993	21.4	6.0	0.38	22.3	40.1	24.3	-14.0
Aug. 03, 1993	21.4	6.0	0.38	22.3	40.3	24.5	-14.0
Aug. 04, 1993	21.4	6.0	0.39	22.2	39.6	24.7	-13.9
Aug. 05, 1993	21.5	6.0	0.38	22.3	39.7	24.4	-13.9
Aug. 06, 1993	21.4	6.0	0.38	22.3	40.0	24.2	-14.0
Aug. 09, 1993	21.4	6.0	0.38	22.3	38.5	24.5	-13.9
Aug. 10, 1993	21.4	6.0	0.38	22.3	39.2	24.5	-14.0
Aug. 11, 1993	21.4	6.0	0.37	22.3	39.8	24.4	-13.9
Aug. 12, 1993	21.4	6.0	0.38	22.3	39.7	24.4	-13.9
Aug. 13, 1993	21.4	6.0	0.38	22.3	39.5	24.4	-14.0
Aug. 16, 1993	21.4	6.0	0.38	22.3	40.2	24.6	-13.9
Aug. 17, 1993	21.5	6.0	0.38	22.5	40.1	24.4	-13.9
Aug. 18, 1993	21.4	6.0	0.38	22.4	39.8	24.3	-14.1
Aug. 19, 1993	21.4	6.0	0.38	22.4	39.8	24.5	-13.5
Aug. 20, 1993	21.4	6.0	0.38	23.5	39.9	24.3	-12.4
Aug. 23, 1993	21.4	6.0	0.37	22.3	39.8	24.2	-14.0
Aug. 24, 1993	21.4	6.0	0.37	22.3	38.9	24.3	-13.9
Aug. 25, 1993	21.4	6.0	0.37	22.3	39.4	24.2	-13.9
Aug. 26, 1993	21.4	6.0	0.37	22.3	39.5	24.2	-14.0
Aug. 27, 1993	21.4	6.0	0.37	22.3	39.6	24.2	-13.9
Aug. 30, 1993	21.4	6.0	0.38	22.3	39.7	24.4	-14.0
Aug. 31, 1993	21.4	6.0	0.37	22.5	38.4	23.8	-13.0
x ± s	21.4 ± 0.03	6.0 ± 0.00	0.43 ± 0.08	22.4 ± 0.25	40.0 ± 0.90	24.3 ± 0.21	-14.0 ± 0.27

Report; Project No.: 50I0044/92053

Table: C 005

DAILY MEANS - CHAMBER PARAMETERS

STUDY MEANS ± STANDARD DEVIATION

Test group 3

Date	Supply air [m³/h]			Exhaust air [m³/h]	Chamber humidity [%]	Chamber temp. [°C]	Chamber pressure [Pa]
	Blast air 1	Blast air 2	Compressed air				
May 28, 1993	21.4	6.0	0.37	23.1	44.0	23.5	-9.9
June 01, 1993	21.4	6.0	0.37	23.1	46.0	23.8	-9.8
June 02, 1993	21.4	6.0	0.37	23.0	45.6	23.7	-9.6
June 03, 1993	21.0	6.0	0.37	22.0	46.0	23.6	-10.8
June 04, 1993	21.4	6.0	0.37	20.7	44.9	24.2	-10.6
June 07, 1993	20.7	6.0	0.37	21.5	46.3	24.6	-9.9
June 08, 1993	20.6	8.0	0.38	21.8	47.0	24.6	-9.9
June 09, 1993	20.7	8.0	0.38	21.7	47.8	24.8	-10.0
June 11, 1993	20.7	8.0	0.38	21.9	49.6	24.8	-10.0
June 14, 1993	20.7	8.0	0.39	21.7	51.5	24.5	-10.1
June 15, 1993	20.7	8.0	0.38	21.6	52.0	24.6	-10.0
June 16, 1993	20.7	6.0	0.45	21.5	51.5	24.4	-10.1
June 17, 1993	20.7	8.0	0.52	22.0	51.0	24.7	-9.9
June 18, 1993	20.7	8.0	0.48	21.9	52.4	24.6	-10.0
June 21, 1993	20.7	8.0	0.47	21.8	50.8	25.2	-9.9
June 22, 1993	20.7	8.0	0.43	21.9	51.9	25.1	-9.9
June 23, 1993	20.7	8.0	0.44	21.9	53.4	25.3	-9.8
June 24, 1993	20.7	8.0	0.44	21.8	53.8	24.9	-9.9
June 25, 1993	20.7	8.0	0.44	21.9	54.6	25.1	-9.8
June 28, 1993	20.7	8.0	0.44	21.9	55.5	25.3	-9.9
June 29, 1993	20.7	8.0	0.45	22.0	58.1	25.0	-9.8
June 30, 1993	20.7	8.0	0.45	22.0	58.6	25.3	-9.9

Report; Project No.: 50I0044/92053

Table: C 005 (continued)

DAILY MEANS - CHAMBER PARAMETERS

STUDY MEANS ± STANDARD DEVIATION

Test group 3

Date	Supply air [m³/h]			Exhaust air [m³/h]	Chamber humidity [%]	Chamber temp. [°C]	Chamber pressure [Pa]
	Blast air 1	Blast air 2	Compressed air				
July 01, 1993	20.7	8.0	0.45	22.0	61.2	25.2	-9.8
July 02, 1993	20.7	8.0	0.45	22.0	61.7	25.3	-9.8
July 05, 1993	20.7	8.0	0.46	22.0	54.3	25.2	-13.4
July 06, 1993	20.7	8.0	0.45	22.6	39.8	25.2	-10.0
July 07, 1993	20.7	8.0	0.45	22.5	39.8	25.2	-10.0
July 08, 1993	20.7	8.0	0.45	22.6	40.1	25.2	-9.9
July 09, 1993	20.7	8.0	0.46	22.6	43.3	24.4	-9.9
July 12, 1993	20.7	8.0	0.46	22.6	46.0	24.4	-9.7
July 13, 1993	20.7	8.0	0.42	22.5	49.2	24.3	-9.9
July 14, 1993	20.7	8.0	0.42	22.5	51.6	24.4	-9.9
July 15, 1993	20.7	8.0	0.42	22.5	54.7	24.4	-9.9
July 16, 1993	20.7	8.0	0.42	22.5	58.7	24.7	-9.8
July 19, 1993	20.7	8.0	0.42	22.5	58.1	24.6	-9.9
July 20, 1993	20.7	8.0	0.42	22.5	61.4	24.6	-9.8
July 21, 1993	20.7	8.0	0.42	22.5	63.4	24.5	-9.9
July 22, 1993	20.7	8.0	0.41	22.5	64.9	24.7	-10.0
July 23, 1993	20.7	8.0	0.41	22.5	66.4	24.5	-9.5
July 26, 1993	20.7	8.0	0.41	22.5	53.9	24.7	-9.9
July 27, 1993	20.7	8.0	0.41	22.5	60.5	24.7	-7.0
July 28, 1993	20.7	8.0	0.41	22.5	61.1	24.9	-9.8
July 29, 1993	20.7	8.0	0.41	22.5	61.8	24.8	-14.1
July 30, 1993	20.7	8.0	0.41	22.5	59.9	24.7	-9.9

Report; Project No.: 50I0044/92053

Table: C 005 (continued)

DAILY MEANS - CHAMBER PARAMETERS

STUDY MEANS ± STANDARD DEVIATION

Test group 3

Date	Supply air [m³/h]			Exhaust air [m³/h]	Chamber humidity [%]	Chamber temp. [°C]	Chamber pressure [Pa]
	Blast air 1	Blast air 2	Compressed air				
Aug. 02, 1993	20.7	8.0	0.41	22.5	57.4	24.7	-10.0
Aug. 03, 1993	20.7	8.0	0.41	22.5	57.4	24.8	-9.9
Aug. 04, 1993	20.7	8.0	0.41	22.5	55.0	25.4	-9.8
Aug. 05, 1993	20.7	8.0	0.41	22.5	57.5	24.9	-9.9
Aug. 06, 1993	20.7	8.0	0.41	22.5	53.6	24.3	-10.2
Aug. 09, 1993	20.7	8.0	0.41	22.5	54.8	24.8	-9.9
Aug. 10, 1993	20.7	8.0	0.41	22.5	54.9	24.9	-9.9
Aug. 11, 1993	20.7	8.0	0.41	22.5	53.0	24.8	-9.9
Aug. 12, 1993	20.7	8.0	0.41	22.5	55.6	24.9	-9.8
Aug. 13, 1993	20.7	8.0	0.41	22.5	52.3	24.6	-10.0
Aug. 16, 1993	20.7	8.0	0.39	22.5	54.4	24.9	-9.9
Aug. 17, 1993	20.7	8.0	0.40	22.6	53.9	24.8	-9.9
Aug. 18, 1993	20.7	8.0	0.39	22.5	52.3	24.7	-10.0
Aug. 19, 1993	20.7	8.0	0.40	22.5	51.0	25.0	-9.8
Aug. 20, 1993	20.7	8.0	0.40	22.5	52.8	24.5	-9.9
Aug. 23, 1993	20.7	8.0	0.40	22.5	51.3	24.7	-10.0
Aug. 24, 1993	20.7	8.0	0.41	22.5	50.7	24.6	-9.8
Aug. 25, 1993	20.7	8.0	0.39	22.5	52.0	24.4	-9.9
Aug. 26, 1993	20.7	8.0	0.39	22.5	51.2	24.3	-9.9
Aug. 27, 1993	20.7	8.0	0.39	22.5	53.1	24.4	-10.0
Aug. 30, 1993	20.7	8.0	0.39	22.5	49.2	24.6	-9.9
Aug. 31, 1993	20.7	8.0	0.40	22.5	51.7	23.8	-12.5
x ± s Aug. 02, 1993	20.8 ± 0.27	7.8 ± 0.58	0.42 ± 0.03	22.3 ± 0.41	53.0 ± 5.87	24.4 ± 0.55	-10.0 ± 0.84

BASF
Abteilung Toxikologie
Department of Toxicology

D-67056 Ludwigs-
hafen, FRG

ga-bh; 0217

REPORT

Study on the inhalation toxicity
of

Vinylcaprolactam

as a vapor in rats
90-day test

Project No.: 50I0044/92053

Pathology Report
VOLUME III

Contains No CBI

Dieses Dokument enthält Betriebs- und Geschäftsgeheimnisse der BASF. Es ist Eigentum der BASF und darf nur zu dem von BASF vorgesehenen Zweck verwendet werden. Jede andere oder darüber hinausgehende Verwendung, Verwertung, Weitergabe, Vervielfältigung oder Veröffentlichung bedarf der Einwilligung der BASF.

This document contains manufacturing and trade secrets of BASF. It is the property of BASF and may be used only for that purpose for which it was intended by BASF. Every other or additional use, exploitation, reproduction, publication or submission to other parties require the written permission of BASF.

TABLE OF CONTENTS

MATERIALS AND METHODS	2 - 5
RESULTS	6 - 7
DISCUSSION	8
CONCLUSIONS	9 - 10
LIST OF ABBREVIATIONS	11
ABSOLUTE WEIGHTS - MEAN VALUES (MALE)	12
ABSOLUTE WEIGHTS - MEAN VALUES (FEMALE)	13
RELATIVE WEIGHTS - MEAN VALUES (MALE)	14
RELATIVE WEIGHTS - MEAN VALUES (FEMALE)	15
INCIDENCE OF GROSS LESIONS	16
INCIDENCE OF MICROSCOPIC FINDINGS	17 - 19
INCIDENCE OF SELECTED MICROSCOPIC FINDINGS WITH GRADINGS	20
ABSOLUTE WEIGHTS - INDIVIDUAL VALUES	21 - 28
RELATIVE WEIGHTS - INDIVIDUAL VALUES	29 - 30
SINGLE ANIMAL SHEET	31 - 114

MATERIALS AND METHODS

The animals were sacrificed by exsanguination from the abdominal aorta and vena cava under Nembutal anesthesia. Then the animals were necropsied and assessed by gross pathology.

The weight of the anesthetized animals as well as the weights of liver, kidneys, adrenal glands, lungs, and testes from all animals sacrificed at the scheduled dates were determined.

Subsequently the following organs or tissues were fixed in 4% formaldehyde solution:

- brain
- pituitary gland
- thyroid and parathyroid glands
- head
- larynx
- trachea
- thymus
- lungs
- heart
- aorta
- salivary glands (mandibular and sublingual)
- liver (fixed in Carnoy's solution)
- spleen
- kidneys
- adrenal glands
- pancreas
- testes/ovaries
- uterus/vagina
- accessory genital organs (epididymides, prostate, seminal vesicles)
- skin
- esophagus
- stomach (forestomach and glandular stomach)
- duodenum
- jejunum
- ileum
- cecum
- colon
- rectum
- urinary bladder
- lymph nodes (mesenteric, mediastinal)
- female mammary gland
- skeletal muscle
- sciatic nerve
- femur with knee joint and bone marrow
- eyes
- sternum with marrow
- spinal cord (cervical, thoracic and lumbar)
- extraorbital lacrimal gland
- all gross lesions

MATERIALS AND METHODS

After the tissues have been fixed, the processing and the examination by light microscopy was performed according to the following table:

Organs	Test groups (concentration)			
	0 (control)	1 (5.8 mg/m³)	2 (58 mg/m³)	3 (174 mg/m³)
all gross lesions	A2	A2	A2	A2
brain	A1			A1
pituitary gland	A1			A1
thyroid glands	A1			A1
parathyroid glands	A1			A1
thymus	A1			A1
nasal cavity (levels I, II, III, IV)	A1	A1	A1	A1
larynx	A1			A1
trachea (longitudinal, with carina)	A1			A1
lungs	A1	A1	A1	A1
heart	A1			A1
aorta	A1			A1
salivary glands (sublingual and mandibular glands)	A1			A1
liver	A1	A1	A1	A1

MATERIALS AND METHODS

spleen	A1			A1
kidneys	A1			A1
adrenal glands	A1			A1
pancreas	A1			A1
testes/ovaries	A1			A1
uterus	A1			A1
esophagus	A1			A1
stomach (fore-, glandular)	A1			A1
duodenum, jejunum, ileum	A1			A1
cecum, colon, rectum	A1			A1
urinary bladder	A1			A1
mesenteric and mediastinal lymph nodes	A1			A1
sciatic nerve	A1			A1
sternum, with marrow	A1			A1
bone marrow	A1			A1

METHODS
A - Hematoxylin-eosin

SCOPE OF EXAMINATIONS
1 - all animals/group
2 - all animals affected/group

Of the liver of few animals, Oil-Red-O (ORO) staining was performed.

MATERIALS AND METHODS

Statistical Evaluation

The calculations were carried out on the computer systems of Department of Toxicology (responsible Dr. H.D. Hoffmann).

Mean and standard deviation were calculated for the statistical evaluation of the study for the variables of terminal body weight and of absolute and relative organ weights (related to terminal body weight) of the animals in each test group and tabulated together with the individual values (absolute and relative organ weights).

The statistical evaluation was carried out using the DUNNETT-test (1, 2) for a simultaneous comparison of several dose groups with a control group.

If the results of this test are significant, p-markers (* for $p \leq 0.05$, ** for $p \leq 0.01$) were printed together with the group mean in the tables.

(1) DUNNETT, C.W. (1955):
A multiple comparison procedure for comparing several treatments with a control
J. Amer. Statist. Assoc. 50, 1096-1121

(2) DUNNETT, C.W. (1964):
New tables for multiple comparisons with a control
Biometrics 20, 482-491

RESULTS

A. WEIGHT PARAMETERS

Male animals:
The terminal body weight and the absolute kidney weights were statistically significantly decreased ($p \leq 0.05$) in group 3.
The relative liver and testes weights were statistically significantly increased ($p \leq 0.05$) in group 3. Furthermore, the relative weight of the lungs was statistically significantly increased ($p \leq 0.05$) in groups 1 and 3.

Female animals:
The absolute and relative liver weights were statistically significantly increased ($p \leq 0.01$) in group 3.

B. GROSS LESIONS

Gross lesions occurred only sporadically.

C. HISTOPATHOLOGY

Liver:
A minimal centrolobular hypertrophy of hepatocytes was found in five top dose females.
All other findings of the liver occurred either sporadically or were equally distributed between control and treated animals.

Nasal cavity:
In the anterior part of the nasal cavity (level I), a hyperplasia of the transitional epihelium of the lateral wall was observed in 9 males of group 1, and in all 10 males of groups 2 and 3. In females, hyperplasia of the transitional epithelium occurred in all treated animals. The degree of severity varied between minimal (grade 1) and moderate (grade 3) showing dose-response relationship.
In the respiratory epithelium of the septum, a hyperplasia of basal cells was noted in all treated males and females of groups 2 and 3. The degree of severity ranged from minimal to moderate in males, and from slight (grade 2) to severe (grade 4) in females, and was dose-related increased.
In the dorsal meatus, at the transition of respiratory epithelium into olfactory epithelium, disarrangement, characterized by a disordered structure of the epithelium, was visible in each one male and female of group 2, and in eight males and five females of group 3. Two males and one female of group 3 showed minimal or slight inflammation. A focal metaplasia of respiratory into squamous cell epithelium was found in one top dose female. A minimal or slight hyperplasia of goblet cells in the ventral and median part of the septum, a common finding in untreated animals, was seen in five control males and could not be found in treated males or in control and treated females.

RESULTS

In level II, a focal atrophy of the olfactory epithelium in the dorsal meatus was observed in each one animal of group 2 (minimal), and in eight males (minimal or slight), and all females (slight or moderate) of group 3. A minimal to moderate (multi)focal hyperplasia of the olfactory epithelium occurred in each two males and females of group 1, nine males and six females of group 2, and in all animals of group 3. Each one control male and female also showed this finding in a slight (male) or minimal (female) degree, respectively. The degree of severity was increased in groups 2 and 3 in a dose-related fashion.
A minimal purulent inflammation was visible in one control group female.

In the posterior part of the nasal cavity (level III), a (multi)focal hyperplasia of the olfactory epithelium occurred in each one male of the control group (minimal) and of group 2 (slight) and in all treated males and females of group 3. In high dose animals, the severity of hyperplasia varied between moderate and massive (grade 5).

In level IV, a (multi)focal hyperplasia of the olfactory epithelium was noted in two males (minimal degree) and three females of group 2 (minimal or slight degree), and in all top dose males and females (slight to severe). A focal minimal purulent inflammation was seen in one top dose female.

Larynx:
A dilation of an excretory duct was visible in two control males, three control females, and three top dose males. A slight focal purulent inflammation due to a focal calcification occurred in one top dose male, and foreign body granulomas were noted in each one top dose male and female. Both findings were located in the submucosa of the ventral diverticulum.

Trachea:
There were no histopathological findings in the trachea.

Lungs:
In the lungs, all observed findings occurred sporadically or were equally distributed between control animals and treated animals.

All other findings were either single observations or they occurred at biologically comparable incidences in the treated and untreated animals.

DISCUSSION

The inhalation of the test article led to a significant reduction of the terminal body weight in top dose males. The reported weight changes of the testes and lungs in top dose males do not represent a treatment related effect, as they are only a consequence of the reduced terminal body weight of these animals. Moreover, in none of these organs any relevant toxicological finding was noted during necrospy or by histopathological examination.

Target organs were the liver and the nasal cavity.

In the liver, the inhalation of the test article caused a minimal centrolobular hypertrophy in half of the top dose females. The hypertrophy might be responsible for the increase of the absolute and relative liver weight in top dose females. Although in top dose males, there was no histopathological correlate for the increase of the relative liver weight and although the mean absolute liver weights were comparable to controls, a substance-related effect cannot be ruled out.

In the nasal cavity, treatment-related lesions consisted of different types of focal hyperplasia including hyperplasia of transitional cells in the anterior part in all treated animals, of basal cells in areas lined by respiratory epithelium, and hyperplasia of the olfactory epithelium (except the hyperplasia at level III in a single male of group 2) in animals of groups 2 and 3. Additionally, disarrangement (level I) and focal atrophy of the olfactory epithelium (level II) in the dorsal meatus were treatment-related observations in top dose animals. Both findings were observed in each one male and female of group 2, also.
Although the focal metaplasia of respiratory epithelium into squamous cell epithelium was only seen in a single top dose female, this finding is considered to be a treatment-related effect.
Inflammation occurred in individual top dose animals and one control female and is regarded as incidental.
The hyperplasia of olfactory epithelium in each two males and females of group 1 at level II of the nasal cavity as well as in one male of group 2 at level III of the nasal cavity is considered as spontaneous, because this finding was also observed in single control animals.

There were no treatment-related findings in the larynx, trachea, and lungs.

All other findings were either single observations or they occurred at biologically comparable incidences in the treated and untreated animals.

CONCLUSIONS

When compared with the control groups, the following treatment-related findings were noted in male and female Wistar rats after 90 days inhalation of the test article.

174 mg/m³:

- statistically significant reduction of the terminal body weight in males
- statistically significant increase of the absolute liver weight in females and of the relative liver weight in males and females
- centrolobular hypertrophy of hepatocytes in five females
- hyperplasia of transitional epithelium in the nasal cavity (level I) of all males and all females
- hyperplasia of basal cells of the respiratory epithelium of the nasal cavity (level I) in all males and all females
- (multi)focal hyperplasia of the olfactory epithelium in the nasal cavity (levels II, III, IV) of all males and all females
- disarrangement (distorted structure) of the epithelium in the dorsal meatus of the nasal cavity (level I) in eight males and five females
- atrophy of the olfactory epithelium in the nasal cavity (level II) of eight males and all females
- focal metaplasia of respiratory epithelium into squamous cell epithelium in the nasal cavity (level I) of one female

58 mg/m³:

- hyperplasia of transitional epithelium in the nasal cavity (level I) of all males and all females
- hyperplasia of basal cells of the repiratory epithelium of the nasal cavity (level I) in all males and all females
- (multi)focal hyperplasia of the olfactory epithelium in the nasal cavity of nine males and six females in level II and of two males and three females in level IV
- disarrangement (distorted structure) of the epithelium in the dorsal meatus of the nasal cavity (level I) in each one male and female
- atrophy of the olfactory epithelium in the nasal cavity (level I) of each one male and female

CONCLUSIONS

5.8 mg/m³:

- **hyperplasia of transitional epithelium in the nasal cavity (level I) of nine males and all females**

LIST OF ABBREVIATIONS

F = female animals

F1 = final sacrifice groups

g = weight determination in grams

M = male animals (under sex); mean value (on weight level)

mg = weight determination in milligrams

n = number of values measured for the determination of mean value and standard deviation

NAD = number of animals without gross lesions

mg/m3 = concentration in milligram per cubic meter

SD = Standard Deviation

% = percentage related to the reference weight in relative organ weight calculations

Codes for the Status at Necropsy:

1 = planned sacrifice

Codes used at Finding Level. The codes are used for a grading system which takes into consideration either the

	SEVERITY	or the NUMBER	or the SIZE of a microscopic finding
Grade 1 =	minimal	very few	very small
Grade 2 =	slight	few	small
Grade 3 =	moderate	moderate number	moderate size
Grade 4 =	marked/severe	many	large
Grade 5 =	massive	extensive number	extensive size

ABSOLUTE WEIGHTS - MEAN VALUES (MALE)

Sacrifice group			F1			
Sex			M			
Dose group			0	1	2	3
Terminal body weight	g	M	537.99	517.07	511.83	490.9 *
		SD	25.992	47.817	44.186	28.87
		n	10.	10.	10.	10.
Liver	g	M	22.376	21.423	21.414	22.198
		SD	1.985	2.366	2.266	2.51
		n	10.	10.	10.	10.
Lungs	g	M	1.389	1.478	1.344	1.402
		SD	0.115	0.177	0.112	0.115
		n	10.	10.	10.	10.
Kidneys	g	M	2.982	2.935	2.963	2.728*
		SD	0.201	0.158	0.218	0.209
		n	10.	10.	10.	10.
Testes	g	M	3.595	3.636	3.557	3.746
		SD	0.347	0.314	0.254	0.151
		n	10.	10.	10.	10.
Adrenal glands	mg	M	84.1	87.6	78.9	80.5
		SD	10.63	12.642	7.923	7.276
		n	10.	10.	10.	10.

Dunnett-Test (two-sided)
* P <= 0.05 ** P <= 0.01

ABSOLUTE WEIGHTS - MEAN VALUES (FEMALE)

Sacrifice group			F1			
Sex			F			
Dose group			0	1	2	3
Terminal body weight	g	M	298.64	298.84	296.28	305.06
		SD	18.432	26.737	22.192	29.153
		n	10.	10.	10.	10.
Liver	g	M	11.45	11.586	11.626	13.855**
		SD	0.915	1.335	0.901	1.224
		n	10.	10.	10.	10.
Lungs	g	M	1.094	1.101	1.174	1.16
		SD	0.068	0.124	0.097	0.099
		n	10.	10.	10.	10.
Kidneys	g	M	1.919	1.884	1.915	2.06
		SD	0.117	0.173	0.119	0.201
		n	10.	10.	10.	10.
Adrenal glands	mg	M	102.2	108.2	106.3	110.3
		SD	12.035	15.711	14.345	16.187
		n	10.	10.	10.	10.

Dunnett-Test (two-sided)
* P <= 0.05 ** P <= 0.01

RELATIVE WEIGHTS - MEAN VALUES (MALE)

Sacrifice group			F1			
Sex			M			
Dose group			0	1	2	3
Terminal body weight	%	M	100.	100.	100.	100.
		SD				
		n	10.	10.	10.	10.
Liver	%	M	4.157	4.146	4.18	4.517*
		SD	0.276	0.29	0.17	0.399
		n	10.	10.	10.	10.
Lungs	%	M	0.259	0.286*	0.264	0.286*
		SD	0.022	0.025	0.027	0.016
		n	10.	10.	10.	10.
Kidneys	%	M	0.554	0.571	0.58	0.557
		SD	0.027	0.046	0.036	0.043
		n	10.	10.	10.	10.
Testes	%	M	0.67	0.707	0.699	0.766*
		SD	0.078	0.07	0.073	0.056
		n	10.	10.	10.	10.
Adrenal glands	%	M	0.016	0.017	0.016	0.016
		SD	0.002	0.003	0.002	0.002
		n	10.	10.	10.	10.

Dunnett-Test (two-sided)
* P <= 0.05 ** P <= 0.01

RELATIVE WEIGHTS - MEAN VALUES (FEMALE)

Sacrifice group			F1			
Sex			F			
Dose group			0	1	2	3
Terminal body weight	%	M	100.	100.	100.	100.
		SD				
		n	10.	10.	10.	10.
Liver	%	M	3.834	3.871	3.929	4.557**
		SD	0.191	0.172	0.219	0.356
		n	10.	10.	10.	10.
Lungs	%	M	0.367	0.369	0.398	0.383
		SD	0.028	0.038	0.039	0.051
		n	10.	10.	10.	10.
Kidneys	%	M	0.644	0.632	0.65	0.678
		SD	0.037	0.049	0.061	0.065
		n	10.	10.	10.	10.
Adrenal glands	%	M	0.034	0.036	0.036	0.036
		SD	0.005	0.005	0.006	0.004
		n	10.	10.	10.	10.

Dunnett-Test (two-sided)
* P <= 0.05 ** P <= 0.01

INCIDENCE OF GROSS LESIONS

Sacrifice group	F1							
Sex	M				F			
Dose group	0	1	2	3	0	1	2	3
Animals in selected Group	10	10	10	10	10	10	10	10
NAD	8	10	10	9	10	10	10	8
Forestomach	.	.	.	.	.	.	.	.
- Focus	.	.	.	.	.	.	.	1
Liver	.	.	.	.	.	.	.	.
- Focus	.	.	.	.	.	.	.	1
- Organ size reduced	1	.	.	.	.	.	.	.
Kidneys	.	.	.	.	.	.	.	.
- Focus	1	.	.	.	.	.	.	.
Mandibular lymph n.	.	.	.	.	.	.	.	.
- Enlarged	.	.	.	1	.	.	.	.

INCIDENCE OF MICROSCOPIC FINDINGS

Sacrifice group	F1							
Sex	M				F			
Dose group	0	1	2	3	0	1	2	3
Animals in selected Group	10	10	10	10	10	10	10	10
Sublingual glands	10	.	.	10	10	.	.	10
Mandibular glands	10	.	.	10	10	.	.	10
Esophagus	10	.	.	10	10	.	.	10
Forestomach	10	.	.	10	10	.	.	10
- Cyst(s)	.	.	.	.	.	.	.	1
Glandular stomach	10	.	.	10	10	.	.	10
Duodenum	10	.	.	10	10	.	.	10
Jejunum	10	.	.	10	10	.	.	10
Ileum	10	.	.	10	10	.	.	10
Cecum	10	.	.	10	10	.	.	10
Colon	10	.	.	10	10	.	.	10
- Worm	.	.	.	.	1	.	.	.
Rectum	10	.	.	10	10	.	.	10
Liver	10	10	10	10	10	10	10	10
- Lymphoid infiltr.	8	10	10	10	10	10	10	8
- Fatty infiltr.periph	9	9	8	9	10	10	9	9
- Fatty infiltr.diffus	1	.	2	.	.	.	.	.
- Pigment storage	.	.	1	.	.	.	.	.
- Necrosis, focal	1	.	.	.	.	.	.	.
- Remodeling parenchym	1	.	.	.	.	.	.	.
- Peliosis hepatis	.	.	.	.	.	.	.	1
- Hypertrophy, central	.	.	.	.	.	.	.	5
Pancreas	10	.	.	10	10	.	.	10
- Lymphoid infiltr.	.	.	.	.	.	.	.	1
- Degeneration, focal	1	.	.	1	.	.	.	2
Nasal cavity, I	10	10	10	10	10	10	10	10
- Inflammation	.	.	.	2	.	.	.	1
- Hyperpl. transit. e.	.	9	10	10	.	10	10	10
- Metaplasia, focal	.	.	.	.	.	.	.	1
- Hyperpl. basal cells	.	.	10	10	.	.	10	10
- Hyperpl. goblet cell	5	.	.	.	.	.	.	.
- Disarrangement	.	.	1	8	.	.	1	5
Nasal cavity, II	10	10	10	10	10	10	10	10
- Inflammation	.	.	.	.	1	.	.	.
- Atrophy, olf. epith.	.	.	1	8	.	.	1	10
- Hyperpl. olf. epith.	1	2	9	10	1	2	6	10
Nasal cavity, III	10	10	10	10	10	10	10	10
- Hyperpl. olf. epith.	1	.	1	10	.	.	.	10
Nasal cavity, IV	10	10	10	10	10	9	10	10
- Inflammation	.	.	.	.	.	.	.	1
- Hyperpl. olf. epith.	.	.	2	10	.	.	3	10
Larynx	10	.	.	10	10	.	.	10
- Dilation, excr. duct	2	.	.	3	3	.	.	.
- Inflammation	.	.	.	1	.	.	.	.
- Granuloma, foreign	.	.	.	1	.	.	.	1
Trachea	10	.	.	10	10	.	.	10

INCIDENCE OF MICROSCOPIC FINDINGS

Sacrifice group	F1							
Sex	M				F			
Dose group	0	1	2	3	0	1	2	3
Animals in selected Group	10	10	10	10	10	10	10	10
Lungs	10	10	10	10	10	10	10	10
- Lymphoid infiltr.	.	4	2	2	4	2	2	2
- Granulocytic infiltr	.	.	.	.	.	.	.	1
- Foam cells	4	3	4	5	2	1	1	3
- Fibrosis, focal	3	1	.	.	1	.	.	.
- Focal bone deposit.	2	3	1	2	2	1	.	.
- Thrombus	.	.	.	1	.	.	.	.
- Hyperplasia, alveol.	.	2	.	.	.	.	.	.
- Hyperplasia, bronch.	.	.	.	1	.	.	.	.
Kidneys	10	.	.	10	10	.	.	10
- Cyst(s)	1	.	.	.	.	.	.	.
- Proteinaceous casts	2	.	.	.	.	.	.	.
- Basophilic tubules	2	.	.	2	2	.	.	2
- Calcification	.	.	.	.	9	.	.	9
Urinary bladder	10	.	.	10	10	.	.	10
- Lymphoid infiltr.	.	.	.	.	.	.	.	1
Testes	10	.	.	10	.	.	.	.
- Degeneration	.	.	.	1	.	.	.	.
Ovaries	.	.	.	.	10	.	.	10
- Cyst(s)	.	.	.	.	.	.	.	1
- Atrophy	.	.	.	.	.	.	.	1
Uterus	.	.	.	.	10	.	.	10
- Dilation	.	.	.	.	.	.	.	1
Heart	10	.	.	10	10	.	.	10
- Lymphoid infiltr.	7	.	.	6	1	.	.	2
- Necrosis, focal	.	.	.	1	.	.	.	.
Aorta	10	.	.	10	10	.	.	10
Bone marrow	10	.	.	10	10	.	.	10
Spleen	10	.	.	10	10	.	.	10
Thymus	10	.	.	10	10	.	.	10
- Cyst(s)	.	.	.	1	.	.	.	1
Mesenteric lymph n.	10	.	.	10	10	.	.	10
- Hyperplasia	10	.	.	9	10	.	.	10
Mediastinal lymph n.	10	.	.	10	10	.	.	10
- Hemosiderosis	.	.	.	.	4	.	.	6
- Hyperplasia	5	.	.	1	1	.	.	.
Mandibular lymph n.	.	.	.	1	.	.	.	.
- Hemosiderosis	.	.	.	.	.	.	.	.
- Hyperplasia	.	.	.	1	.	.	.	.
Brain	10	.	.	10	10	.	.	10
Sciatic nerve	10	.	.	10	9	.	.	10
Adrenal cortex	10	.	.	10	10	.	.	10
- Adrenocortic. nodule	1	.	.	.	2	.	.	.
Adrenal medulla	10	.	.	10	10	.	.	10
Thyroid glands	10	.	.	9	10	.	.	10
Parathyroid glands	10	.	.	9	10	.	.	10

INCIDENCE OF MICROSCOPIC FINDINGS

Sacrifice group	F1							
Sex	M				F			
Dose group	0	1	2	3	0	1	2	3
Animals in selected Group	10	10	10	10	10	10	10	10
Pituitary gland	10	.	.	10	10	.	.	10
- Cyst(s)	1	.	.	.	.	.	.	1
- Hypertrophy, focal	.	.	.	.	1	.	.	.
- Vacuolization	.	.	.	.	.	.	.	1
Sternum, with marrow	10	.	.	10	10	.	.	10

INCIDENCE OF SELECTED MICROSCOPIC FINDINGS WITH GRADINGS

Sacrifice group		F1							
Sex		M				F			
Dose group		0	1	2	3	0	1	2	3
Animals in selected Group		10	10	10	10	10	10	10	10
Liver		10	10	10	10	10	10	10	10
- Hypertrophy, central		.	.	.	.	.	.	.	5
	. 1.	.	.	.	.	.	.	.	5
Nasal cavity, I		10	10	10	10	10	10	10	10
- Hyperpl. transit. e.		.	9	10	10	.	10	10	10
	. 1.	.	3	.	.	.	4	1	.
	. 2.	.	3	9	9	.	6	9	5
	. 3.	.	3	1	1	.	.	.	5
- Hyperpl. basal cells		.	.	10	10	.	.	10	10
	. 1.	.	.	5	.	.	.	.	.
	. 2.	.	.	5	7	.	.	9	.
	. 3.	.	.	.	3	.	.	1	5
	. 4.	.	.	.	.	.	.	.	5
- Dysarrangement		.	.	1	8	.	.	1	5
	. P.	.	.	1	8	.	.	1	5
Nasal cavity, II		10	10	10	10	10	10	10	10
- Atrophy, olf. epith.		.	.	1	8	.	.	1	10
	. 1.	.	.	1	2	.	.	1	.
	. 2.	.	.	.	6	.	.	.	7
	. 3.	.	.	.	.	.	.	.	3
Hyperpl. olf. epith.		1	2	9	10	1	2	6	10
	. 1.	.	2	7	.	1	2	6	.
	. 2.	1	.	2	8	.	.	.	1
	. 3.	.	.	.	2	.	.	.	9
Nasal cavity, III		10	10	10	10	10	10	10	10
- Hyperpl. olf. epith.		1	.	1	10	.	.	.	10
	. 1.	1	.	.	.	.	.	.	.
	. 2.	.	.	1	.	.	.	.	.
	. 3.	.	.	.	2	.	.	.	5
	. 4.	.	.	.	6	.	.	.	5
	. 5.	.	.	.	2	.	.	.	.
Nasal cavity, IV		10	10	10	10	10	9	10	10
- Hyperpl. olf. epith.		.	.	2	10	.	.	3	10
	. 1.	.	.	2	1	.	.	2	.
	. 2.	.	.	.	.	.	.	1	1
	. 3.	.	.	.	3	.	.	.	6
	. 4.	.	.	.	6	.	.	.	3

ABSOLUTE WEIGHTS - INDIVIDUAL VALUES

Sacrifice group F1
Sex M
Dose group 0

	Term. body weight	Liver	Lungs	Kidneys	Testes	Adrenal glands
	g	g	g	g	g	mg
M	537.99	22.376	1.389	2.982	3.595	84.1
SD	25.992	1.985	0.115	0.201	0.347	10.63
n	10	10	10	10	10	10
1	550.3	23.44	1.32	2.91	3.4	93.
2	507.5	21.54	1.47	2.81	4.3	96.
3	510.4	21.17	1.34	2.83	3.45	95.
4	504.6	19.58	1.3	2.83	3.08	68.
5	529.8	23.94	1.47	3.13	4.02	70.
6	549.5	19.91	1.2	3.12	3.57	89.
7	579.3	26.02	1.48	3.38	3.49	87.
8	547.9	21.64	1.57	3.15	3.35	84.
9	570.5	23.73	1.45	2.9	3.68	71.
10	530.1	22.79	1.29	2.76	3.61	88.

ABSOLUTE WEIGHTS - INDIVIDUAL VALUES

Sacrifice group F1
Sex M
Dose group 1

	Term. body weight	Liver	Lungs	Kidneys	Testes	Adrenal glands
	g	g	g	g	g	mg
M	517.07	21.423	1.478	2.935	3.636	87.6
SD	47.817	2.366	0.177	0.158	0.314	12.642
n	10	10	10	10	10	10
11	564.9	23.32	1.56	3.11	3.88	82.
12	459.7	20.12	1.42	3.	3.51	64.
13	489.6	23.1	1.27	2.68	3.4	86.
14	532.2	21.36	1.26	2.8	3.87	90.
15	500.2	18.75	1.41	2.81	3.72	101.
16	593.5	25.95	1.7	3.23	3.97	87.
17	529.5	21.15	1.71	2.97	3.29	110.
18	485.5	18.62	1.47	2.89	4.11	95.
19	565.1	22.69	1.68	2.95	3.41	82.
20	450.5	19.17	1.3	2.91	3.2	79.

ABSOLUTE WEIGHTS - INDIVIDUAL VALUES

Sacrifice group F1
Sex M
Dose group 2

	Term. body weight	Liver	Lungs	Kidneys	Testes	Adrenal glands
	g	g	g	g	g	mg
M	511.83	21.414	1.344	2.963	3.557	78.9
SD	44.186	2.266	0.112	0.218	0.254	7.923
n	10	10	10	10	10	10
21	558.6	23.2	1.29	3.25	3.44	92.
22	486.3	19.7	1.25	2.63	3.83	82.
23	559.4	23.62	1.34	3.01	3.72	82.
24	475.	20.2	1.3	2.71	3.56	88.
25	477.4	18.88	1.14	2.74	3.73	77.
26	513.2	21.4	1.33	2.99	3.58	81.
27	560.9	24.36	1.43	3.26	3.81	71.
28	562.6	23.91	1.53	3.12	3.33	65.
29	468.1	20.95	1.36	2.92	2.99	77.
30	456.8	17.92	1.47	3.	3.58	74.

ABSOLUTE WEIGHTS - INDIVIDUAL VALUES

Sacrifice group F1
Sex M
Dose group 3

	Term. body weight	Liver	Lungs	Kidneys	Testes	Adrenal glands
	g	g	g	g	g	mg
M	490.9	22.198	1.402	2.728	3.746	80.5
SD	28.87	2.51	0.115	0.209	0.151	7.276
n	10	10	10	10	10	10
31	526.8	24.28	1.48	2.85	3.85	87.
32	438.8	16.3	1.26	2.27	3.74	78.
33	472.9	22.16	1.36	2.65	3.97	89.
34	469.1	20.66	1.43	2.78	3.72	67.
35	499.2	22.82	1.38	2.75	3.71	78.
36	501.1	25.32	1.31	2.82	3.47	76.
37	484.1	23.38	1.41	2.94	3.84	91.
38	524.1	23.54	1.44	2.83	3.61	75.
39	522.1	20.89	1.66	2.48	3.91	83.
40	470.8	22.63	1.29	2.91	3.64	81.

ABSOLUTE WEIGHTS - INDIVIDUAL VALUES

Sacrifice group F1
Sex F
Dose group 0

	Term. body weight	Liver	Lungs	Kidneys	Adrenal glands
	g	g	g	g	mg
M	298.64	11.45	1.094	1.919	102.2
SD	18.432	0.915	0.068	0.117	12.035
n	10	10	10	10	10
41	308.5	11.62	0.98	1.86	94.
42	284.5	11.23	1.09	1.92	108.
43	263.7	9.69	1.04	1.69	107.
44	304.2	12.14	1.08	2.02	118.
45	293.9	11.57	1.05	1.87	75.
46	293.5	11.1	1.11	1.85	97.
47	332.7	13.17	1.15	1.93	101.
48	315.2	10.7	1.13	2.05	112.
49	294.7	11.37	1.23	2.1	100.
50	295.5	11.91	1.08	1.9	110.

ABSOLUTE WEIGHTS - INDIVIDUAL VALUES

Sacrifice group F1
Sex F
Dose group 1

	Term. body weight	Liver	Lungs	Kidneys	Adrenal glands
	g	g	g	g	mg
M	298.84	11.586	1.101	1.884	108.2
SD	26.737	1.335	0.124	0.173	15.711
n	10	10	10	10	10
51	324.	12.83	1.11	1.82	94.
52	277.5	11.	0.93	1.87	100.
53	272.4	9.93	0.94	1.76	80.
54	332.4	13.77	1.2	2.22	121.
55	307.5	12.2	1.27	1.93	134.
56	297.8	11.6	1.16	1.82	112.
57	321.4	11.57	1.27	1.74	124.
58	302.2	11.44	1.01	1.91	104.
59	307.7	12.32	1.04	2.12	111.
60	245.5	9.2	1.08	1.65	102.

ABSOLUTE WEIGHTS - INDIVIDUAL VALUES

Sacrifice group F1
Sex F
Dose group 2

	Term. body weight	Liver	Lungs	Kidneys	Adrenal glands
	g	g	g	g	mg
M	296.28	11.626	1.174	1.915	106.3
SD	22.192	0.901	0.097	0.119	14.345
n	10	10	10	10	10
61	293.5	10.75	1.06	1.89	93.
62	322.8	12.38	1.11	1.72	93.
63	300.5	11.02	1.21	1.94	101.
64	330.7	12.54	1.12	1.84	100.
65	273.9	10.81	1.19	2.01	138.
66	281.6	10.55	1.18	1.92	92.
67	291.8	12.38	1.17	2.01	117.
68	286.4	11.95	1.13	1.91	104.
69	319.3	12.96	1.42	2.13	116.
70	262.3	10.92	1.15	1.78	109.

ABSOLUTE WEIGHTS - INDIVIDUAL VALUES

Sacrifice group F1
Sex F
Dose group 3

	Term. body weight	Liver	Lungs	Kidneys	Adrenal glands
	g	g	g	g	mg
M	305.06	13.855	1.16	2.06	110.3
SD	29.153	1.224	0.099	0.201	16.187
n	10	10	10	10	10
71	289.3	12.53	1.	1.95	93.
72	257.9	13.07	1.31	1.95	92.
73	329.8	16.04	1.16	2.1	128.
74	335.2	14.84	1.25	2.4	108.
75	267.1	13.86	1.1	1.85	110.
76	297.4	12.54	1.16	1.86	99.
77	343.7	14.66	1.12	1.89	144.
78	295.8	12.51	1.09	2.28	115.
79	329.1	14.91	1.3	2.3	114.
80	305.3	13.59	1.11	2.02	100.

RELATIVE WEIGHTS - INDIVIDUAL VALUES

Sacrifice group			F1			
Sex			M			
Dose group			0	1	2	3
Terminal body weight	%	M	100.	100.	100.	100.
		SD				
		n	10.	10.	10.	10.
Liver	%	M	4.157	4.146	4.18	4.517
		SD	0.276	0.29	0.17	0.399
		n	10.	10.	10.	10.
Lungs	%	M	0.259	0.286	0.264	0.286
		SD	0.022	0.025	0.027	0.016
		n	10.	10.	10.	10.
Kidneys	%	M	0.554	0.571	0.58	0.557
		SD	0.027	0.046	0.036	0.043
		n	10.	10.	10.	10.
Testes	%	M	0.67	0.707	0.699	0.766
		SD	0.078	0.07	0.073	0.056
		n	10.	10.	10.	10.
Adrenal glands	%	M	0.016	0.017	0.016	0.016
		SD	0.002	0.003	0.002	0.002
		n	10.	10.	10.	10.

RELATIVE WEIGHTS - INDIVIDUAL VALUES

Sacrifice group			F1			
Sex			F			
Dose group			0	1	2	3
Terminal body weight	%	M	100.	100.	100.	100.
		SD				
		n	10.	10.	10.	10.
Liver	%	M	3.834	3.871	3.929	4.557
		SD	0.191	0.172	0.219	0.356
		n	10.	10.	10.	10.
Lungs	%	M	0.367	0.369	0.398	0.383
		SD	0.028	0.038	0.039	0.051
		n	10.	10.	10.	10.
Kidneys	%	M	0.644	0.632	0.65	0.678
		SD	0.037	0.049	0.061	0.065
		n	10.	10.	10.	10.
Testes	%	M				
		SD				
		n				
Adrenal glands	%	M	0.034	0.036	0.036	0.036
		SD	0.005	0.005	0.006	0.004
		n	10.	10.	10.	10.

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	0
Animal	1

General Information

Sex	: Male
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	550.3	g
Liver	23.44	g
Lungs	1.32	g
Kidneys	2.91	g
Testes	3.4	g
Adrenal glands	93.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 3.

Nasal cavity, level I
- Hyperplasia of goblet cells, grade 1.

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 3.

Parathyroid glands
- Unilaterally investigated or present. No histopathologic finding noted.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	0
Animal	2

General Information

Sex	: Male
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	507.5	g
Liver	21.54	g
Lungs	1.47	g
Kidneys	2.81	g
Testes	4.3	g
Adrenal glands	96.0	mg

Macroscopy

Kidneys
- Focus, unilateral, diameter 3.0 mm, glassy transparent, finding was noted during trimming.

All other organs without macroscopic findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 3.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.
- Fibrosis, focal/multifocal, grade 1.

Kidneys
- Gross lesion(s) evaluated histopathologically.
- Cyst(s), unilateral, correlates to gross lesion focus.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	0
Animal	3

General Information

Sex	: Male
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	510.4	g
Liver	21.17	g
Lungs	1.34	g
Kidneys	2.83	g
Testes	3.45	g
Adrenal glands	95.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, diffuse, grade 4.

Larynx
- Dilation, excretory duct.

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 1.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Mediastinal lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	0
Animal	4

General Information

Sex	: Male
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	504.6	g
Liver	19.58	g
Lungs	1.3	g
Kidneys	2.83	g
Testes	3.08	g
Adrenal glands	68.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.
- Necrosis, focal, grade 2.

Nasal cavity, level I
- Hyperplasia of goblet cells, grade 2.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 3.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Mediastinal lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	0
Animal	5

General Information

Sex	: Male
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	529.8	g
Liver	23.94	g
Lungs	1.47	g
Kidneys	3.13	g
Testes	4.02	g
Adrenal glands	70.0	mg

Macroscopy

Liver
- Organ size reduced, papillary process, severe, dark red.

All other organs without macroscopic findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Gross lesion(s) evaluated histopathologically.
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 3.
- Parenchymal remodeling, nodular, lobular, correlates to gross lesion organ size reduced.

Pancreas
- Degeneration, focal/multifocal, grade 4.

Larynx
- Dilation, excretory duct.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 3.

Mediastinal lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	0
Animal	6

General Information

Sex	: Male
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	549.5	g
Liver	19.91	g
Lungs	1.2	g
Kidneys	3.12	g
Testes	3.57	g
Adrenal glands	89.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I
- Hyperplasia of goblet cells, grade 1.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.
- Fibrosis, focal/multifocal, grade 1.
- Focal calcium- or bone deposition in alveoli.

Kidneys
- Intratubular proteinaceous casts, unilateral, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Parathyroid glands
- Unilaterally investigated or present. No histopathologic finding noted.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	0
Animal	7

General Information

Sex	: Male
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	579.3	g
Liver	26.02	g
Lungs	1.48	g
Kidneys	3.38	g
Testes	3.49	g
Adrenal glands	87.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 3.

Lungs
- Focal calcium- or bone deposition in alveoli.

Kidneys
- Basophilic tubules, focal/multifocal, unilateral, grade 1.

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Adrenal cortex
- Accessory adrenocortical nodule, unilateral.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	0
Animal	8

General Information

Sex	: Male
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	547.9	g
Liver	21.64	g
Lungs	1.57	g
Kidneys	3.15	g
Testes	3.35	g
Adrenal glands	84.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Fatty infiltration, peripheral, grade 4.

Nasal cavity, level I
- Hyperplasia of goblet cells, grade 1.

Lungs
- Fibrosis, focal/multifocal, grade 1.

Kidneys
- Basophilic tubules, focal/multifocal, unilateral, grade 1.

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 3.

Mediastinal lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Parathyroid glands
- Unilaterally investigated or present. No histopathologic finding noted.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	0
Animal	9

General Information

Sex	: Male
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	570.5	g
Liver	23.73	g
Lungs	1.45	g
Kidneys	2.9	g
Testes	3.68	g
Adrenal glands	71.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Fatty infiltration, peripheral, grade 3.

Nasal cavity, level I
- Hyperplasia of goblet cells, grade 1.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Pituitary gland
- Cyst(s).

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	0
Animal	10

General Information

Sex	: Male
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	530.1	g
Liver	22.79	g
Lungs	1.29	g
Kidneys	2.76	g
Testes	3.61	g
Adrenal glands	88.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 4.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 2.

Kidneys
- Intratubular proteinaceous casts, unilateral, grade 1.

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 3.

Mediastinal lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 3.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	1
Animal	11

General Information

Sex	: Male
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	564.9	g
Liver	23.32	g
Lungs	1.56	g
Kidneys	3.11	g
Testes	3.88	g
Adrenal glands	82.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver

- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 4.

Lungs

- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.
- Focal calcium- or bone deposition in alveoli.
- Hyperplasia, alveolar, focal, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	1
Animal	12

General Information

Sex	: Male
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	459.7	g
Liver	20.12	g
Lungs	1.42	g
Kidneys	3.0	g
Testes	3.51	g
Adrenal glands	64.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 1.

Lungs
- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.
- Foam cells/foam cell granuloma, focal/multifocal, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	1
Animal	13

General Information

Sex	: Male
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	489.6	g
Liver	23.1	g
Lungs	1.27	g
Kidneys	2.68	g
Testes	3.4	g
Adrenal glands	86.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 1.

Lungs
- Hyperplasia, alveolar, focal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	1
Animal	14

General Information

Sex	: Male
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	532.2	g
Liver	21.36	g
Lungs	1.26	g
Kidneys	2.8	g
Testes	3.87	g
Adrenal glands	90.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 3.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 3.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

Lungs
- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.
- Fibrosis, focal/multifocal, grade 2.
- Focal calcium- or bone deposition in alveoli.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	1
Animal	15

General Information

Sex	: Male
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993 95 days after start of exposure 1 day after end of exposure

Organ weights

Terminal body weight	500.2	g
Liver	18.75	g
Lungs	1.41	g
Kidneys	2.81	g
Testes	3.72	g
Adrenal glands	101.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 3.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	1
Animal	16

General Information

Sex	: Male
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	593.5	g
Liver	25.95	g
Lungs	1.7	g
Kidneys	3.23	g
Testes	3.97	g
Adrenal glands	87.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver

- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Nasal cavity, level I

- Hyperplasia of transitional epithelium, grade 2.

Lungs

- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	1
Animal	17

General Information

Sex	: Male
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	529.5	g
Liver	21.15	g
Lungs	1.71	g
Kidneys	2.97	g
Testes	3.29	g
Adrenal glands	110.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 4.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	1
Animal	18

General Information

Sex	: Male
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	485.5	g
Liver	18.62	g
Lungs	1.47	g
Kidneys	2.89	g
Testes	4.11	g
Adrenal glands	95.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 3.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 3.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	1
Animal	19

General Information

Sex	: Male
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	565.1	g
Liver	22.69	g
Lungs	1.68	g
Kidneys	2.95	g
Testes	3.41	g
Adrenal glands	82.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver

- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I

- Hyperplasia of transitional epithelium, grade 3.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	1
Animal	20

General Information

Sex	: Male
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	450.5	g
Liver	19.17	g
Lungs	1.3	g
Kidneys	2.91	g
Testes	3.2	g
Adrenal glands	79.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver

- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Nasal cavity, level I

- Hyperplasia of transitional epithelium, grade 2.

Lungs

- Focal calcium- or bone deposition in alveoli.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	2
Animal	21

General Information

Sex	: Male
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	558.6	g
Liver	23.2	g
Lungs	1.29	g
Kidneys	3.25	g
Testes	3.44	g
Adrenal glands	92.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.
- Pigment storage, focal, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.
- Disarrangement.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

Lungs
- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	2
Animal	22

General Information

Sex	: Male
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	486.3	g
Liver	19.7	g
Lungs	1.25	g
Kidneys	2.63	g
Testes	3.83	g
Adrenal glands	82.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 4.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	2
Animal	23

General Information

Sex : Male
Dose group : 2 (58 mg/m³)
Sacrifice group : Final sacrifice group
Necropsy status : Planned sacrifice
Date of death : Aug/31/1993
95 days after start of exposure
1 day after end of exposure

Organ weights

Terminal body weight	559.4	g
Liver	23.62	g
Lungs	1.34	g
Kidneys	3.01	g
Testes	3.72	g
Adrenal glands	82.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 1.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 2.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 2.

Lungs
- Focal calcium- or bone deposition in alveoli.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	2
Animal	24

General Information

Sex	: Male
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	475.0	g
Liver	20.2	g
Lungs	1.3	g
Kidneys	2.71	g
Testes	3.56	g
Adrenal glands	88.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 3.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 1.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 1.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 2.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	2
Animal	25

General Information

Sex	: Male
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	477.4	g
Liver	18.88	g
Lungs	1.14	g
Kidneys	2.74	g
Testes	3.73	g
Adrenal glands	77.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	2
Animal	26

General Information

Sex	: Male
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	513.2	g
Liver	21.4	g
Lungs	1.33	g
Kidneys	2.99	g
Testes	3.58	g
Adrenal glands	81.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	2
Animal	27

General Information

Sex	: Male
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	560.9	g
Liver	24.36	g
Lungs	1.43	g
Kidneys	3.26	g
Testes	3.81	g
Adrenal glands	71.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 1.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	2
Animal	28

General Information

Sex	: Male
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	562.6	g
Liver	23.91	g
Lungs	1.53	g
Kidneys	3.12	g
Testes	3.33	g
Adrenal glands	65.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, diffuse, grade 2.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 3.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 1.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

Lungs
- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	2
Animal	29

General Information

Sex	: Male
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993 95 days after start of exposure 1 day after end of exposure

Organ weights

Terminal body weight	468.1	g
Liver	20.95	g
Lungs	1.36	g
Kidneys	2.92	g
Testes	2.99	g
Adrenal glands	77.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 3.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 1.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	2
Animal	30

General Information

Sex	: Male
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	456.8	g
Liver	17.92	g
Lungs	1.47	g
Kidneys	3.0	g
Testes	3.58	g
Adrenal glands	74.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver

- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, diffuse, grade 1.

Nasal cavity, level I

- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	3
Animal	31

General Information

Sex	: Male
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	526.8	g
Liver	24.28	g
Lungs	1.48	g
Kidneys	2.85	g
Testes	3.85	g
Adrenal glands	87.0	mg

Macroscopy

Mandibular lymph nodes
- Enlarged, unilateral, moderate, finding was noted during trimming.

All other organs without macroscopic findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 3.
- Disarrangement.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 2.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 2.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Larynx
- Dilation, excretory duct.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

SINGLE ANIMAL SHEET

	Sacrifice group	F1
	Sex	M
	Dose group	3
cont.	Animal	31

Mandibular lymph nodes
- Unilaterally investigated or present. Gross lesion(s) evaluated histopathologically.
- Hyperplasia, lympho-reticulocellular, unilateral, grade 4, correlates to gross lesion enlarged.

Parathyroid glands
- Unilaterally investigated or present. No histopathologic finding noted.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	3
Animal	32

General Information

Sex	: Male
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	438.8	g
Liver	16.3	g
Lungs	1.26	g
Kidneys	2.27	g
Testes	3.74	g
Adrenal glands	78.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.
- Disarrangement.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

Lungs
- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

Heart
- Necrosis, focal/multifocal, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Thyroid glands
- No or insufficient tissue present on slide.

Parathyroid glands
- No or insufficient tissue present on slide.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	3
Animal	33

General Information

Sex	: Male
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	472.9	g
Liver	22.16	g
Lungs	1.36	g
Kidneys	2.65	g
Testes	3.97	g
Adrenal glands	89.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 3.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.
- Disarrangement.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 2.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 2.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

Thymus
- Cyst(s).

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	3
Animal	34

General Information

Sex	: Male
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	469.1	g
Liver	20.66	g
Lungs	1.43	g
Kidneys	2.78	g
Testes	3.72	g
Adrenal glands	67.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I
- Inflammation, purulent, grade 2.
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.
- Disarrangement.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 2.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Lungs
- Focal calcium- or bone deposition in alveoli.
- Thrombus.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	3
Animal	35

General Information

Sex	: Male
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	499.2	g
Liver	22.82	g
Lungs	1.38	g
Kidneys	2.75	g
Testes	3.71	g
Adrenal glands	78.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.
- Disarrangement.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 1.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 2.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Larynx
- Dilation, excretory duct.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Parathyroid glands
- Unilaterally investigated or present. No histopathologic finding noted.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	3
Animal	36

General Information

Sex	: Male
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	501.1	g
Liver	25.32	g
Lungs	1.31	g
Kidneys	2.82	g
Testes	3.47	g
Adrenal glands	76.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 3.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.
- Disarrangement.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 2.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 2.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.
- Hyperplasia, bronchial, focal, grade 2.

Kidneys
- Basophilic tubules, focal/multifocal, grade 1.

Testes
- Degeneration, tubular, focal, unilateral, grade 2.
  Grade 1 in the contralateral organ.

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 1.

SINGLE ANIMAL SHEET

	Sacrifice group	F1
	Sex	M
	Dose group	3
cont.	Animal	36

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.
Mediastinal lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.
Parathyroid glands
- Unilaterally investigated or present. No histopathologic finding noted.
All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	3
Animal	37

General Information

Sex	: Male
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	484.1	g
Liver	23.38	g
Lungs	1.41	g
Kidneys	2.94	g
Testes	3.84	g
Adrenal glands	91.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 4.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.
- Disarrangement.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 1.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 2.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Larynx
- Dilation, excretory duct.

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 1.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	3
Animal	38

General Information

Sex : Male
Dose group : 3 (174 mg/m³)
Sacrifice group : Final sacrifice group
Necropsy status : Planned sacrifice
Date of death : Aug/31/1993
95 days after start of exposure
1 day after end of exposure

Organ weights

Terminal body weight	524.1	g
Liver	23.54	g
Lungs	1.44	g
Kidneys	2.83	g
Testes	3.61	g
Adrenal glands	75.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I
- Inflammation, mucopurulent, grade 2.
- Hyperplasia of transitional epithelium, grade 3.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 3.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 2.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 2.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 5.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Larynx
- Inflammation, purulent due to focal calcification, grade 2.

Kidneys
- Basophilic tubules, focal/multifocal, unilateral, grade 2.

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 1.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	3
Animal	39

General Information

Sex	: Male
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	522.1	g
Liver	20.89	g
Lungs	1.66	g
Kidneys	2.48	g
Testes	3.91	g
Adrenal glands	83.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 4.

Pancreas
- Degeneration, focal/multifocal, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.
- Disarrangement.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 2.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 5.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Larynx
- Foreign body granuloma.

Lungs
- Focal calcium- or bone deposition in alveoli.

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 1.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 3.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	M
Dose group	3
Animal	40

General Information

Sex	: Male
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Aug/31/1993
	95 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	470.8	g
Liver	22.63	g
Lungs	1.29	g
Kidneys	2.91	g
Testes	3.64	g
Adrenal glands	81.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 3.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 2.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 2.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Lungs
- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 3.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 3.

Parathyroid glands
- Unilaterally investigated or present. No histopathologic finding noted.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	0
Animal	41

General Information

Sex	: Female
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	308.5	g
Liver	11.62	g
Lungs	0.98	g
Kidneys	1.86	g
Adrenal glands	94.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Larynx
- Dilation, excretory duct.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

Kidneys
- Calcification, focal, cortico-medullary junction, grade 1.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	0
Animal	42

General Information

Sex	: Female
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	284.5	g
Liver	11.23	g
Lungs	1.09	g
Kidneys	1.92	g
Adrenal glands	108.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Colon
- Worm.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Lungs
- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.

Kidneys
- Calcification, focal, cortico-medullary junction, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Mediastinal lymph nodes
- Hemosiderosis, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	0
Animal	43

General Information

Sex : Female
Dose group : 0 (0 mg/m³)
Sacrifice group : Final sacrifice group
Necropsy status : Planned sacrifice
Date of death : Sep/01/1993
92 days after start of exposure
1 day after end of exposure

Organ weights

Terminal body weight	263.7	g
Liver	9.69	g
Lungs	1.04	g
Kidneys	1.69	g
Adrenal glands	107.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.
- Focal calcium- or bone deposition in alveoli.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	0
Animal	44

General Information

Sex	: Female
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	304.2	g
Liver	12.14	g
Lungs	1.08	g
Kidneys	2.02	g
Adrenal glands	118.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

Larynx
- Dilation, excretory duct.

Kidneys
- Calcification, focal, cortico-medullary junction, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	0
Animal	45

General Information

Sex	: Female
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	293.9	g
Liver	11.57	g
Lungs	1.05	g
Kidneys	1.87	g
Adrenal glands	75.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Lungs
- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 2.

Kidneys
- Calcification, focal, cortico-medullary junction, unilateral, grade 2.
  Grade 1 in the contralateral organ.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Mediastinal lymph nodes
- Hemosiderosis, grade 3.

Sciatic nerve
- No or insufficient tissue present on slide.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	0
Animal	46

General Information

Sex	: Female
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	293.5	g
Liver	11.1	g
Lungs	1.11	g
Kidneys	1.85	g
Adrenal glands	97.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 2.
- Fatty infiltration, peripheral, grade 1.

Lungs
- Focal calcium- or bone deposition in alveoli.

Kidneys
- Calcification, focal, cortico-medullary junction, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Mediastinal lymph nodes
- Hemosiderosis, grade 3.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	0
Animal	47

General Information

Sex	: Female
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	332.7	g
Liver	13.17	g
Lungs	1.15	g
Kidneys	1.93	g
Adrenal glands	101.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Lungs
- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.

Kidneys
- Calcification, focal, cortico-medullary junction, grade 3.

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 1.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	0
Animal	48

General Information

Sex	: Female
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	315.2	g
Liver	10.7	g
Lungs	1.13	g
Kidneys	2.05	g
Adrenal glands	112.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Larynx
- Dilation, excretory duct.

Kidneys
- Basophilic tubules, focal/multifocal, unilateral, grade 1.
- Calcification, focal, cortico-medullary junction, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Mediastinal lymph nodes
- Hemosiderosis, grade 3.

Adrenal cortex
- Accessory adrenocortical nodule, unilateral.

Pituitary gland
- Hypertrophy, focal, pars distalis.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	0
Animal	49

General Information

Sex	: Female
Dose group	: 0 (0 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	294.7	g
Liver	11.37	g
Lungs	1.23	g
Kidneys	2.1	g
Adrenal glands	100.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level II
- Inflammation, purulent, grade 1.

Lungs
- Fibrosis, focal/multifocal, grade 2.

Kidneys
- Calcification, focal, cortico-medullary junction, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Parathyroid glands
- Unilaterally investigated or present. No histopathologic finding noted.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	0
Animal	50

General Information

Sex : Female
Dose group : 0 (0 mg/m³)
Sacrifice group : Final sacrifice group
Necropsy status : Planned sacrifice
Date of death : Sep/01/1993
92 days after start of exposure
1 day after end of exposure

Organ weights

Terminal body weight	295.5	g
Liver	11.91	g
Lungs	1.08	g
Kidneys	1.9	g
Adrenal glands	110.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Lungs
- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.

Kidneys
- Basophilic tubules, focal/multifocal, grade 1.
- Calcification, focal, cortico-medullary junction, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 3.

Mediastinal lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Adrenal cortex
- Accessory adrenocortical nodule, unilateral.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	1
Animal	51

General Information

Sex	: Female
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	324.0	g
Liver	12.83	g
Lungs	1.11	g
Kidneys	1.82	g
Adrenal glands	94.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver

- Lymphoid cell infiltration, focal/multifocal, grade 2.
- Fatty infiltration, peripheral, grade 1.

Nasal cavity, level I

- Hyperplasia of transitional epithelium, grade 2.

Lungs

- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	1
Animal	52

General Information

Sex	: Female
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	277.5	g
Liver	11.0	g
Lungs	0.93	g
Kidneys	1.87	g
Adrenal glands	100.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver

- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I

- Hyperplasia of transitional epithelium, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	1
Animal	53

General Information

Sex	: Female
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	272.4	g
Liver	9.93	g
Lungs	0.94	g
Kidneys	1.76	g
Adrenal glands	80.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver

- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I

- Hyperplasia of transitional epithelium, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	1
Animal	54

General Information

Sex	: Female
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	332.4	g
Liver	13.77	g
Lungs	1.2	g
Kidneys	2.22	g
Adrenal glands	121.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 4.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	1
Animal	55

General Information

Sex	: Female
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	307.5	g
Liver	12.2	g
Lungs	1.27	g
Kidneys	1.93	g
Adrenal glands	134.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 3.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	1
Animal	56

General Information

Sex	: Female
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	297.8	g
Liver	11.6	g
Lungs	1.16	g
Kidneys	1.82	g
Adrenal glands	112.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 3.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.

Nasal cavity, level IV
- No or insufficient tissue present on slide.

Lungs
- Focal calcium- or bone deposition in alveoli.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	1
Animal	57

General Information

Sex	: Female
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	321.4	g
Liver	11.57	g
Lungs	1.27	g
Kidneys	1.74	g
Adrenal glands	124.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver

- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I

- Hyperplasia of transitional epithelium, grade 2.

Lungs

- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	1
Animal	58

General Information

Sex	: Female
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	302.2	g
Liver	11.44	g
Lungs	1.01	g
Kidneys	1.91	g
Adrenal glands	104.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 1.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	1
Animal	59

General Information

Sex	: Female
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	307.7	g
Liver	12.32	g
Lungs	1.04	g
Kidneys	2.12	g
Adrenal glands	111.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 2.
- Fatty infiltration, peripheral, grade 3.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	1
Animal	60

General Information

Sex	: Female
Dose group	: 1 (5.8 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	245.5	g
Liver	9.2	g
Lungs	1.08	g
Kidneys	1.65	g
Adrenal glands	102.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 1.

Lungs
- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	2
Animal	61

General Information

Sex	: Female
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	293.5	g
Liver	10.75	g
Lungs	1.06	g
Kidneys	1.89	g
Adrenal glands	93.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver

- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Nasal cavity, level I

- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 3.

Lungs

- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	2
Animal	62

General Information

Sex	: Female
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	322.8	g
Liver	12.38	g
Lungs	1.11	g
Kidneys	1.72	g
Adrenal glands	93.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver

- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I

- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	2
Animal	63

General Information

Sex	: Female
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	300.5	g
Liver	11.02	g
Lungs	1.21	g
Kidneys	1.94	g
Adrenal glands	101.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.
- Disarrangement.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	2
Animal	64

General Information

Sex	: Female
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993 92 days after start of exposure 1 day after end of exposure

Organ weights

Terminal body weight	330.7	g
Liver	12.54	g
Lungs	1.12	g
Kidneys	1.84	g
Adrenal glands	100.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

Lungs
- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	2
Animal	65

General Information

Sex	: Female
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	273.9	g
Liver	10.81	g
Lungs	1.19	g
Kidneys	2.01	g
Adrenal glands	138.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 1.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	2
Animal	66

General Information

Sex	: Female
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	281.6	g
Liver	10.55	g
Lungs	1.18	g
Kidneys	1.92	g
Adrenal glands	92.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	2
Animal	67

General Information

Sex	: Female
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	291.8	g
Liver	12.38	g
Lungs	1.17	g
Kidneys	2.01	g
Adrenal glands	117.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver

- Lymphoid cell infiltration, focal/multifocal, grade 1.

Nasal cavity, level I

- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.

Nasal cavity, level II

- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	2
Animal	68

General Information

Sex	: Female
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	286.4	g
Liver	11.95	g
Lungs	1.13	g
Kidneys	1.91	g
Adrenal glands	104.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	2
Animal	69

General Information

Sex	: Female
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	319.3	g
Liver	12.96	g
Lungs	1.42	g
Kidneys	2.13	g
Adrenal glands	116.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 1.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	2
Animal	70

General Information

Sex	: Female
Dose group	: 2 (58 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	262.3	g
Liver	10.92	g
Lungs	1.15	g
Kidneys	1.78	g
Adrenal glands	109.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 2.

Nasal cavity, level II
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 1.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	3
Animal	71

General Information

Sex	: Female
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993 92 days after start of exposure 1 day after end of exposure

Organ weights

Terminal body weight	289.3	g
Liver	12.53	g
Lungs	1.0	g
Kidneys	1.95	g
Adrenal glands	93.0	mg

Macroscopy

Liver
- Focus, right medial lobe, diameter 2.0 mm, red.

All other organs without macroscopic findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Gross lesion(s) evaluated histopathologically.
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.
- Peliosis hepatis, correlates to gross lesion focus.
- Hypertrophy of hepatocytes, centrolobular, grade 1.

Nasal cavity, level I
- Inflammation, purulent, grade 1.
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 3.
- Disarrangement.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 2.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Lungs
- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 2.
- Granulocytic infiltration, perivascular/peribronchiolar, grade 2.

Kidneys
- Basophilic tubules, focal/multifocal, grade 2.
- Calcification, focal, cortico-medullary junction, grade 3.

SINGLE ANIMAL SHEET

	Sacrifice group	F1
	Sex	F
	Dose group	3
cont.	Animal	71

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 1.
Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.
Mediastinal lymph nodes
- Hemosiderosis, grade 2.
All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	3
Animal	72

General Information

Sex	: Female
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	257.9	g
Liver	13.07	g
Lungs	1.31	g
Kidneys	1.95	g
Adrenal glands	92.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Fatty infiltration, peripheral, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 3.
- Disarrangement.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 2.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 2.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.
  Focal splitting of the olfactory epihelium due to edema.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

Kidneys
- Calcification, focal, cortico-medullary junction, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Mediastinal lymph nodes
- Hemosiderosis, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	3
Animal	73

General Information

Sex	: Female
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	329.8	g
Liver	16.04	g
Lungs	1.16	g
Kidneys	2.1	g
Adrenal glands	128.0	mg

Macroscopy

Forestomach
- Focus, at the transition to glandular stomach, diameter 2.0 mm, surface raised, finding was noted during trimming.

All other organs without macroscopic findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Forestomach
- Gross lesion(s) evaluated histopathologically.
- Cyst(s), correlates to gross lesion focus.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 3.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 4.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 2.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Kidneys
- Calcification, focal, cortico-medullary junction, grade 3.

Uterus
- Dilation.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	3
cont. Animal	73

Mediastinal lymph nodes
- Hemosiderosis, grade 2.
All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	3
Animal	74

General Information

Sex : Female
Dose group : 3 (174 mg/m³)
Sacrifice group : Final sacrifice group
Necropsy status : Planned sacrifice
Date of death : Sep/01/1993
92 days after start of exposure
1 day after end of exposure

Organ weights

Terminal body weight	335.2	g
Liver	14.84	g
Lungs	1.25	g
Kidneys	2.4	g
Adrenal glands	108.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.
- Hypertrophy of hepatocytes, centrolobular, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 4.
- Disarrangement.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 2.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Kidneys
- Calcification, focal, cortico-medullary junction and renal pelvis, grade 2.

Urinary bladder
- Lymphoid cell infiltration, focal/multifocal, grade 1.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 3.

Mediastinal lymph nodes
- Hemosiderosis, grade 3.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	3
Animal	75

General Information

Sex	: Female
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	267.1	g
Liver	13.86	g
Lungs	1.1	g
Kidneys	1.85	g
Adrenal glands	110.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Pancreas
- Degeneration, focal/multifocal, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 3.
- Squamous cell metaplasia, focal, grade 1.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 4.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 2.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Larynx
- Foreign body granuloma.

Kidneys
- Calcification, focal, cortico-medullary junction, grade 2.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	3
Animal	76

General Information

Sex	: Female
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	297.4	g
Liver	12.54	g
Lungs	1.16	g
Kidneys	1.86	g
Adrenal glands	99.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 3.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 4.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 2.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Lungs
- Lymphoid cell infiltration, perivascular and/or peribronchial, grade 1.

Kidneys
- Calcification, focal, cortico-medullary junction, grade 2.

Heart
- Lymphoid cell infiltration, focal/multifocal, grade 1.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Parathyroid glands
- Unilaterally investigated or present. No histopathologic finding noted.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	3
Animal	77

General Information

Sex	: Female
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	343.7	g
Liver	14.66	g
Lungs	1.12	g
Kidneys	1.89	g
Adrenal glands	144.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.
- Hypertrophy of hepatocytes, centrolobular, grade 1.

Pancreas
- Degeneration, focal/multifocal, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 3.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 4.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 2.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 2.
  Parts of epithelium are missing.

Ovaries
- Cyst(s), unilateral.
- Atrophy, grade 4.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Pituitary gland
- Cyst(s).
- Vacuolization, diffuse, grade 3.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	3
Animal	78

General Information

Sex	: Female
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	295.8	g
Liver	12.51	g
Lungs	1.09	g
Kidneys	2.28	g
Adrenal glands	115.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.
- Hypertrophy of hepatocytes, centrolobular, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 3.
- Disarrangement.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 3.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.
  Focal edema within the olfactory epithelium.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

Kidneys
- Calcification, focal, cortico-medullary junction, grade 3.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	3
Animal	79

General Information

Sex	: Female
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	329.1	g
Liver	14.91	g
Lungs	1.3	g
Kidneys	2.3	g
Adrenal glands	114.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 2.
- Hypertrophy of hepatocytes, centrolobular, grade 1.

Pancreas
- Lymphoid cell infiltration, focal/multifocal, grade 2.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 2.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 3.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 3.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level IV
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Lungs
- Foam cells/foam cell granuloma, focal/multifocal, grade 1.

Kidneys
- Calcification, focal, cortico-medullary junction, grade 3.

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Mediastinal lymph nodes
- Hemosiderosis, grade 3.

All other organs examined without microscopic findings

SINGLE ANIMAL SHEET

Sacrifice group	F1
Sex	F
Dose group	3
Animal	80

General Information

Sex	: Female
Dose group	: 3 (174 mg/m³)
Sacrifice group	: Final sacrifice group
Necropsy status	: Planned sacrifice
Date of death	: Sep/01/1993
	92 days after start of exposure
	1 day after end of exposure

Organ weights

Terminal body weight	305.3	g
Liver	13.59	g
Lungs	1.11	g
Kidneys	2.02	g
Adrenal glands	100.0	mg

Macroscopy

Animal without particular findings.

Microscopy

Sublingual glands
- Unilaterally investigated or present. No histopathologic finding noted.

Mandibular glands
- Unilaterally investigated or present. No histopathologic finding noted.

Liver
- Lymphoid cell infiltration, focal/multifocal, grade 1.
- Fatty infiltration, peripheral, grade 1.

Nasal cavity, level I
- Hyperplasia of transitional epithelium, grade 3.
- Hyperplasia of basal cells in areas lined by respiratory epithelium, grade 3.
- Disarrangement.

Nasal cavity, level II
- Atrophy of the olfactory epithelium, focal, grade 3.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 3.

Nasal cavity, level III
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Nasal cavity, level IV
- Inflammation, purulent, grade 1.
- Hyperplasia of the olfactory epithelium, (multi)focal, grade 4.

Kidneys
- Basophilic tubules, focal/multifocal, unilateral, grade 1.
- Calcification, focal, cortico-medullary junction, grade 2.

Thymus
- Cyst(s).

Mesenteric lymph nodes
- Hyperplasia, lympho-reticulocellular, grade 2.

Mediastinal lymph nodes
- Hemosiderosis, grade 2.

All other organs examined without microscopic findings

BASF
Abteilung Toxikologie
Department of Toxicology

D-67056 Ludwigs-
hafen, FRG

ga-bh; 0217

REPORT

Study on the inhalation toxicity
of

Vinylcaprolactam

as a vapor in rats
90-day test

Contains No CBI

Project No.: 50I0044/92053

Supplement
VOLUME IV

Dieses Dokument enthält Betriebs- und Geschäftsgeheimnisse der BASF. Es ist Eigentum der BASF und darf nur zu dem von BASF vorgesehenen Zweck verwendet werden. Jede andere oder darüber hinausgehende Verwendung, Verwertung, Weitergabe, Vervielfältigung oder Veröffentlichung bedarf der Einwilligung der BASF.

This document contains manufacturing and trade secrets of BASF. It is the property of BASF and may be used only for that purpose for which it was intended by BASF. Every other or additional use, exploitation, reproduction, publication or submission to other parties require the written permission of BASF.

Report; Project No.: 50I0044/92053

CONTENTS

VOLUME IV (Supplement)

I Study protocol; Project No.: 50I0044/92053
Date: Feb. 08, 1993

II Analysis of the substance; report dated May 06, 1993
Reanalysis of the substance; report dated Nov. 02, 1993

BASF
Abteilung Toxikologie
Department of Toxicology

10. Juni 1994

Projektnummer

50I0044/92053

Inhalationstoxizität von N-Vinylcaprolactam als Dampf an Ratten
90-Tage-Studie

Nachtrag Nr. 3 zum Versuchsplan vom 08.02.93

ad 4.4.5. Pathologie

Da im Larynx von den Tieren der Versuchsgruppe 3 keine substanzbedingten Veränderungen auftraten, wird auf das Schneiden und die Untersuchung des Larynx der Tiere der Versuchsgruppen 1 und 2 verzichtet.

A.O. Jones, 10.6.94

Prüfleiter, Unterschrift/Datum

BASF
Abteilung Toxikologie
Department of Toxicology
D-W6700 Ludwigshafen, FRG

ga-bh; 2259

08. Feb. 1993

VERSUCHSPLAN

Prüfung der Inhalationstoxizität von

N-Vinylcaprolactam

als Dampf

an Ratten

90-Tage-Versuch

Projekt-Nr. 50I0044/92053

Laborinterne Abkürzung:	NVC
Substanz-Nummer:	92/44
Durchführendes Institut:	BASF Aktiengesellschaft Abteilung Toxikologie D-W6700 Ludwigshafen/Rhein, FRG
Leitung:	Prof. Dr.med. Dr.rer.nat. H.-P. Gelbke

Dieser Versuchsplan enthält 19 Seiten.

Dieses Dokument enthält Betriebs- und Geschäftsgeheimnisse der BASF. Es ist Eigentum der BASF und darf nur zu dem von BASF vorgesehenen Zweck verwendet werden. Jede andere oder darüber hinausgehende Verwendung, Verwertung, Weitergabe, Vervielfältigung oder Veröffentlichung bedarf der Einwilligung der BASF.

This document contains manufacturing and trade secrets of BASF. It is the property of BASF and may be used only for that purpose for which it was intended by BASF. Every other or additional use, exploitation, reproduction, publication or submission to other parties require the written permission of BASF.

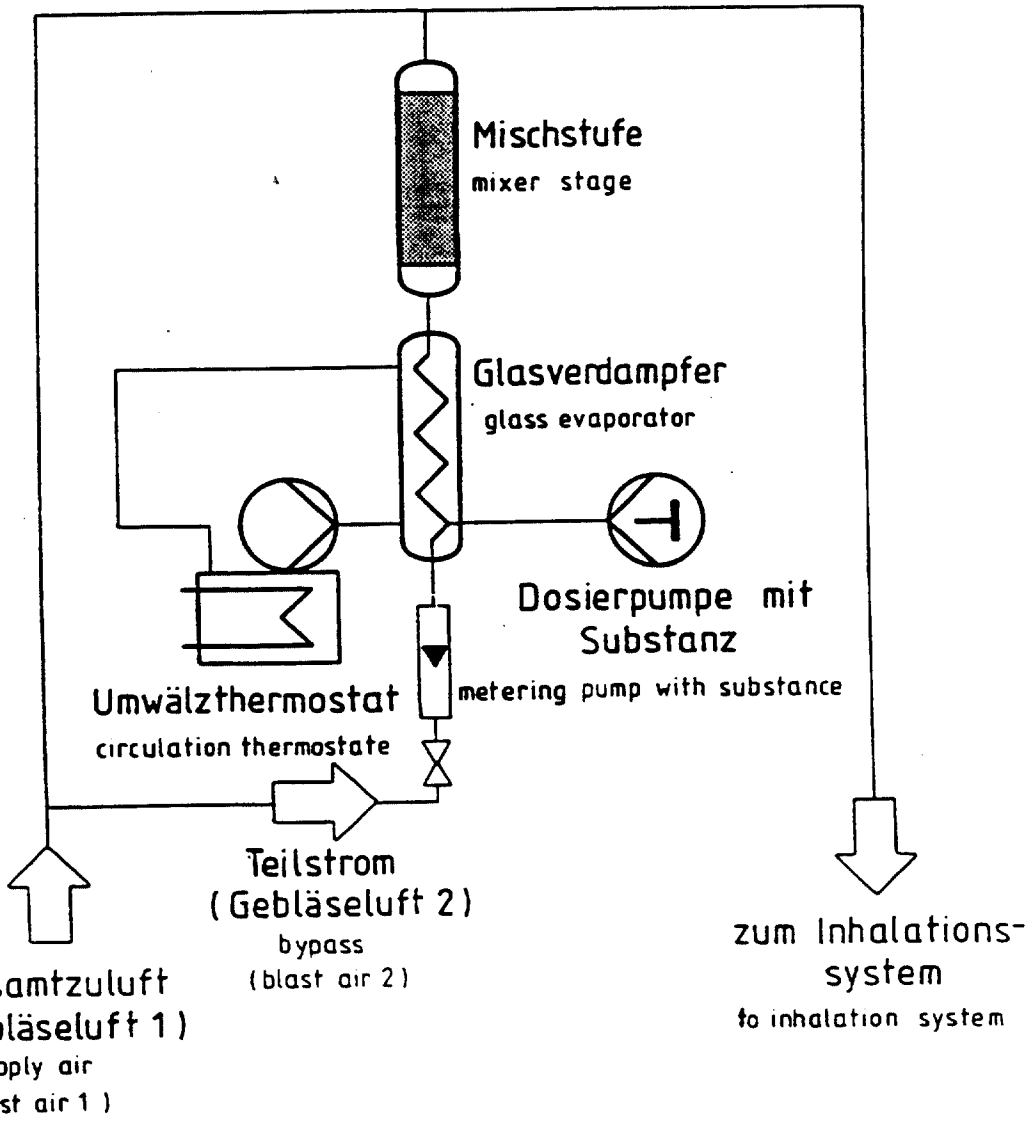
BASF
Abteilung Toxikologie
Department of Toxicology

Versuchsgruppe 0:

Um eine vergleichbare Kammertemperatur wie bei den anderen Versuchsgruppen zu erreichen, wird die Gebläsezuluftleitung elektrisch beheizt.

Versuchsgruppe 1:

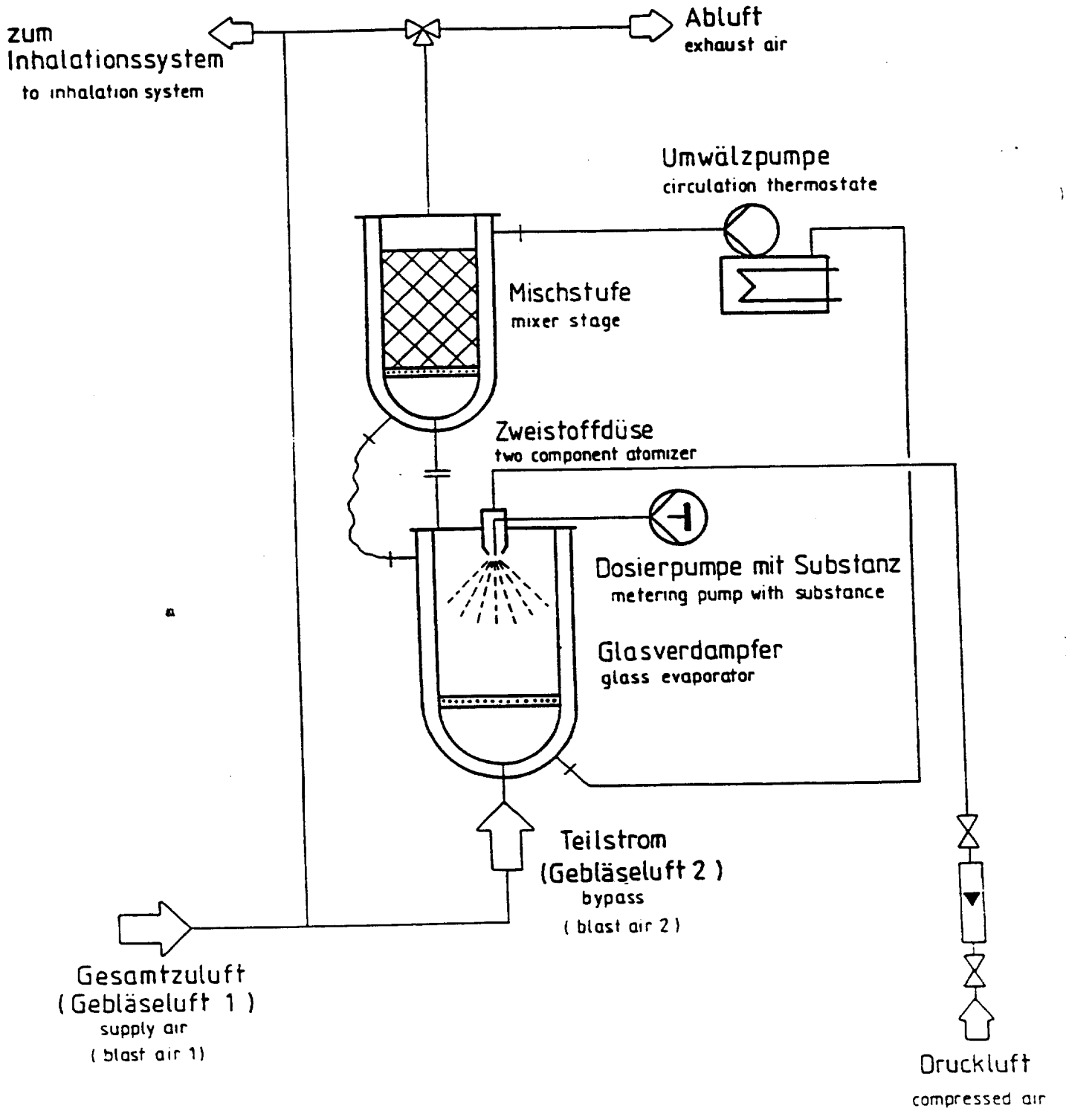
Die Generation erfolgt in einem Glasverdampfer mit Mischstufe (Abbildung).



BASF
Abteilung Toxikologie
Department of Toxicology

Versuchsgruppen 2 und 3:

Die Generation erfolgt mittels Feinverdüsung der Substanz und nachfolgender Verdampferstufe (Abbildung).



BASF
Abteilung Toxikologie
Department of Toxicology

Projekt-Nr.: 50I0044/92053; Nachtrag Nr. 1

Folgende Generatorparameter sind einzustellen:

Versuchsgruppe	Teilstrom (Gebläseluft 2) [m³/h]	Beheizung des Teilstroms [°C]	Druckluft [m³/h]	Generatortemperatur [°C]
1	4 - 8	50 - 65	-	45 - 55
2	4 - 8	50 - 65	0,2 - 0,6	45 - 55
3	4 - 8	50 - 65	0,2 - 0,6	45 - 55

Folgende Substanzdosierströme sind einzustellen:

Versuchsgruppe	Dosierstrom [ml/h]
1	0,12 - 0,32
2	1,2 - 3,2
3	3,6 - 9,7

Folgende Kammerparameter sind einzustellen:

Versuchsgruppe	Zuluft* (Gebläseluft 1) [m³/h]	Abluft* [m³/h]
0	21 - 28	20,5 - 27,5
1	21 - 28	21,5 - 28,5
2	20,6 - 27,6	21,1 - 28,1
3	20,6 - 27,6	21,1 - 28,1

* Die Grenzen im Messwerterfassungssystem (siehe auch 3.3.6. Messung und Protokollierung) werden jeweils 1 m³/h unter den niedrigen, bzw. 1 m³/h über den hohen Wert gesetzt.

BASF
Abteilung Toxikologie
Department of Toxicology

Projekt-Nr.: 50I0044/92053; Nachtrag Nr. 1

zu 3.3.5.: Expositionssysteme

Abweichend von den Angaben im Versuchsplan werden Glas-Stahl-Inhalationskammern, V ≈ 1,4 m^3, eingesetzt.

Bei allen Versuchsgruppen wird als Zieltemperatur (erreichbare Dampfsättigung, siehe 3.3.1.: Konzentrationswahl und Begründung) der Kammern 25 °C angegeben. Die Temperatur soll 26 °C nicht überschreiten und 20 °C nicht unterschreiten.

zu 3.3.6.: Messung Protokollierung betriebstechnischer Bedingungen in den Expositionssystemen

Zusätzlich zu den Angaben im Versuchsplan werden folgende Daten protokolliert:

Die Zuluftströme (Teilströme) durch die Generatoren werden mit Schwebekörperdurchflußmessern kontinuierlich gemessen und einmal täglich protokolliert.

Der Substanzdosierstrom wird einmal täglich an der Dosierpumpe abgelesen und protokolliert.

Die Beheizung des Teilstroms durch die Generatoren erfolgt durch Umspülen der Luftzuleitung mit erwärmten Wasser. Die Temperatur dieses Wassers wird mit Thermometern kontinuierlich gemessen und einmal täglich protokolliert.

zu 3.3.7.2.: Analytische Bestimmungsmethoden

Zusätzlich zu der im Versuchsplan beschriebenen Methode werden bei den Versuchsgruppen 1 und 2 ungeeichte GKWA* zur Überwachung der Konstanz der Konzentration eingesetzt. Es ist vorgesehen, bei stabiler Konstanz die Probenahmefrequenz bei diesen Versuchsgruppen auf jeweils eine Probe am Anfang und Ende der Exposition zu reduzieren (endgültiger Termin siehe Rohdaten).

U.O. Jans, 25.5.93

Versuchsleiter: Unterschrift, Datum

BASF
Abteilung Toxikologie
Department of Toxicology

Projektnummer

50I0044/92053

ga-db; 2626

25. Mai 1993

Inhalationstoxizität von N-Vinylcaprolactam als Dampf an Ratten (90-Tage-Versuch)

Nachtrag Nr. 1 zum Versuchsplan vom 08.02.93

Art des Nachtrags mit Begründung

zu 3.1.: Test-Substanz

Folgende Angaben werden ergänzt:

Chargen-Nr./Lab. J. Nr.:	Vers. 5/93
Herstell-Datum/Abfüll-Datum:	12.03.93
Reinheitsgrad/Gehalt:	99,6 %

Vorsichtsmaßnahmen:

Zusätzlich zu den Angaben im Versuchsplan erfolgt das Ausräumen der Kammern unter Atemlufthauben (Koch, Mod. 45).

zu 3.3.3.: Exposition

Während der Vorströmung sitzen die Tiere in vierfach unterteilten Drahtkäfigen (DK III), die sich in Glas-Stahl-Inhalationskammern, V ≈ 1,4 m³, befinden. Folgende Luftmengenströme werden eingestellt:

	Zuluft [m³/h]	Abluft [m³/h]
Männliche Tiere alle Versuchs-gruppen	21 ± 1	20.5 ± 1
Weibliche Tiere alle Versuchs-gruppen	21 ± 1	20.5 ± 1

zu 3.3.4.: Generation einer Inhalationsatmosphäre (Dampf)

Bei den Versuchsgruppen 1, 2 und 3 wird ein Teil-strom der Gebläsezuluft erwärmt und über ein Generatorsystem geleitet. Die Versuchsgruppen 2 und 3 erhalten einen zusätzlichen Druckluftstrom. Im einzelnen kommen folgende Systeme zum Einsatz:

BASF
Abteilung Toxikologie
Department of Toxicology

gl; 2972-19

Projektnummer

50I0044/92053

30. Aug. 1993

(Inhalationstoxizität von N-Vinylcaprolactam als Dampf an Ratten (90-Tage-Versuch))

Nachtrag Nr. 2 zum Versuchsplan vom 08.02.93

Art des Nachtrags mit Begründung:

Zu 1.1.: Beteiligte Personen/Verantwortlichkeiten

Aus organisatorischen Gründen wird Frau Dr.med.vet. K. Küttler die Bearbeitung des Teilberichtes Pathologie übernehmen.

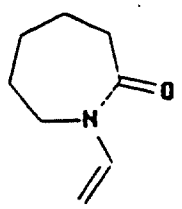
Zu 3.4.4.: Harnuntersuchung

Ergänzend zum Versuchsplan werden die Harnproben in randomisierter Reihenfolge untersucht, um eine unvoreingenommene Untersuchung zu gewährleisten. (Die Liste der Randomisierungsanweisungen wird mit einem Computer erstellt.)

A.O. Jones, 30.8.93

Versuchsleiter: Unterschrift, Datum

Analytical Report
- Re-Characterization of "Vinylcaprolactam" after termination of toxicological studies -

Test substance:	Vinylcaprolactam
Chemical structure:	
Batch no.:	Vers. 5/93
ZAX anal. no.:	0/93/37305
ZHT no.:	92/44 - 1
Analytical sponsor:	H. Maaß, ZHT/E, Z 470
Origin of test substance:	Dr. Maaß, ZHT/E, Z 470
Date of receipt of test substance:	10. September 1993
Manufacturing date:	12. March 1993
Testing facility:	BASF Aktiengesellschaft, ZAX Analytik
Study director:	H. P. Sattel, ZAX/PG, E 210
Head of laboratory:	Dr. Euler, ZAX/OO, E 210 Dr. Krack, ZAX/PS, E 210 Dr. D. Leyendecker, ZAX/PG, E 210
Study period:	23. Sept.- 20.Oct. 1993
Storage conditions:	Room temperature
Retention of records:	GLP archives, ZAX, E 210

Analytical Report
- Re-Characterization of "Vinylcaprolactam" after termination of toxicological studies -

Summary of results:

The purity of the test substance is 99,5 area-% determined by gas chromatography with flame ionization detection. Content of water (0,21 g/100 g) has been considered.
Identity was confirmed by ^{1}H-NMR spectroscopy.
On comparison to analytical data from first characterization (ZAX anal.report 0/93/11621 date 06. May 1993) the test substance shows differences at the content of polymeric material (First characterization < 0,02%, Re-characterization > 0,02%).

1. Appearance and homogeneity

On visual inspection at room temperature the test substance is a slightly yellow, crystalline and after melt a homogenous material.

2. Identity

Method:	^{1}H-NMR spectroscopy (400 MHz) as solution in $CDCl_3$.
Result:	The spectrum exhibits the signals expected for the chemical structure of the test substance. See ^{1}H-NMR spectrum page 7.
Date of test:	24. Sept. 1993

BEST COPY AVAILABLE

Analytical Report
- Re-Characterization of "Vinylcaprolactam" after termination of toxicological studies -

3. Determination of water

Method: Karl-Fischer titration in "Arbeitsmedium K"

Result: $W(H_2O)$ = 0,21 g/100 g

Date of test: 23. Sept. 1993

4. Determination of polymeric material:

Method: Weigh about 1 g of test substance and add 9 g of methylcyclohexane. After mixing the solution was inspected visual.

Reagents: Methylcyclohexane (>98 %, BASF no. 4166600)

Result: The solution was cloudy.
Mass fraction of polymeric material: >0,02 %

The determination was carried out according to ZAX anal.no. O/88/10827.

Date of test: 20. Oct. 1993

5. Gas chromatography

Methods: 1. Area-% evaluation for purity control.
2. Standard addition evaluation for the

Analytical Report
- Re-Characterization of "Vinylcaprolactam" after termination of toxicological studies -

Apparatus: Capillary gas chromatograph equipped with auto sampler, split injector and flame ionization detector (FID) and adapted to an electronic integrator.

Reagents: 1,4-Dioxane (>99 %, Riedel de Haen no.33147)
2-Pyrrolidinone (>99 %, BASF CAS-no. 616-45-5)
Caprolactam (>98 %, Merck no. 802800)

Sample preparation:

1. Purity:
   a) Direct injection after melt of the sample at about 35 °C.
   b) Two solutions were prepared by weighing of about 85 mg of test substance and dissolving in 10 ml 1,4-dioxane.

2. By-products: The contents of 2-pyrrolidinone and caprolactam known as possible by-products of the test substance were determined by standard addition. Four solutions of test substance were prepared by weighing of about 90 mg of test substance and dissolving in 10 ml 1,4-dioxane. Two solutions were spiked with 1,4-dioxane solutions of 2-pyrrolidone and caprolactame in the relevant concentration level.

Analytical Report
- Re-Characterization of "Vinylcaprolactam" after termination of toxicological studies -

Chromatographic conditions:

Column:	Fused silica capillary column: DB-Wax length: 30 m internal diameter: 0,32 mm film thickness: 0,25 µm
Temperature:	
Oven :	140 °C - 240 °C at 5 °C/min, hold 10 min at 240 °C
Injector :	250 °C
Detector (FID):	300 °C
Injection volume:	0,2 µl for direct injections 1,0 µl for the other injections
Carrier gas:	Helium (1,0 bar column head pressure) Split: 50 ml/min Septum purge: 6 ml/min

Results:

1. a) and b) Vinylcaprolactam 99,5 area-%
   2-Pyrrolidinone 0,1 "
   Caprolactam 0,1 "

No other peaks >0.1 area-% detected.
Content of water has been considered.

2. 2-Pyrrolidinone 0,2 g/100g
   Caprolactam 0,1 "

See gas chromatogram page 8.

BEST COPY AVAILABLE

Analytical Report
- Re-Characterization of "Vinylcaprolactam" after termination of toxicological studies -

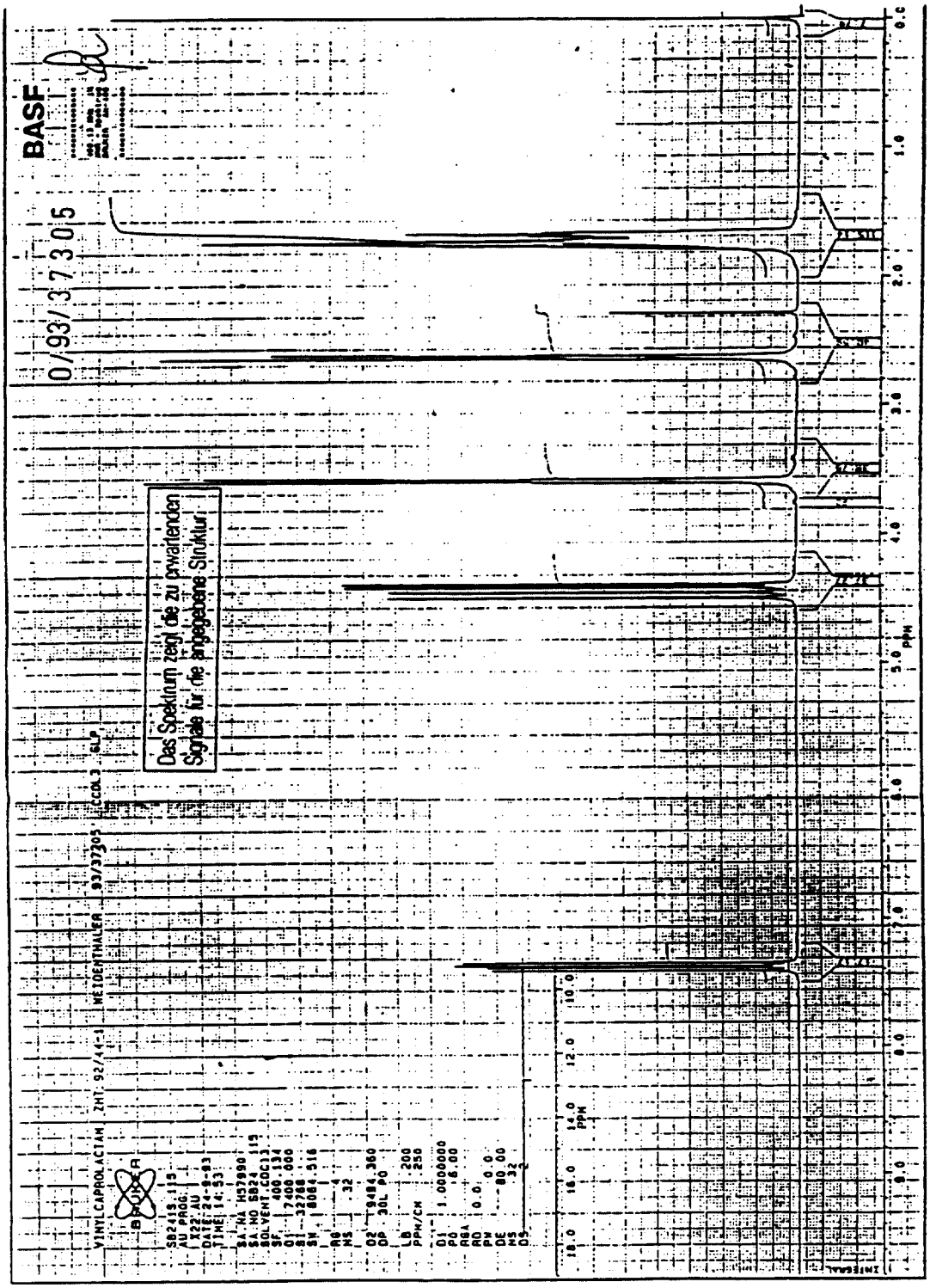
The reported tests were conducted in compliance with the principles of Good Laboratory Practice according to Appendix 1 of the German "Chemikaliengesetz".

Hoffmann ..... 09. November 1993 .....
Author (H. Hoffmann) Date

Sattel ..... 09. November 1993 .....
Study director (H. P. Sattel) Date

Analytical Report
- Re-Characterization of "Vinylcaprolactam" after termination of toxicological studies -

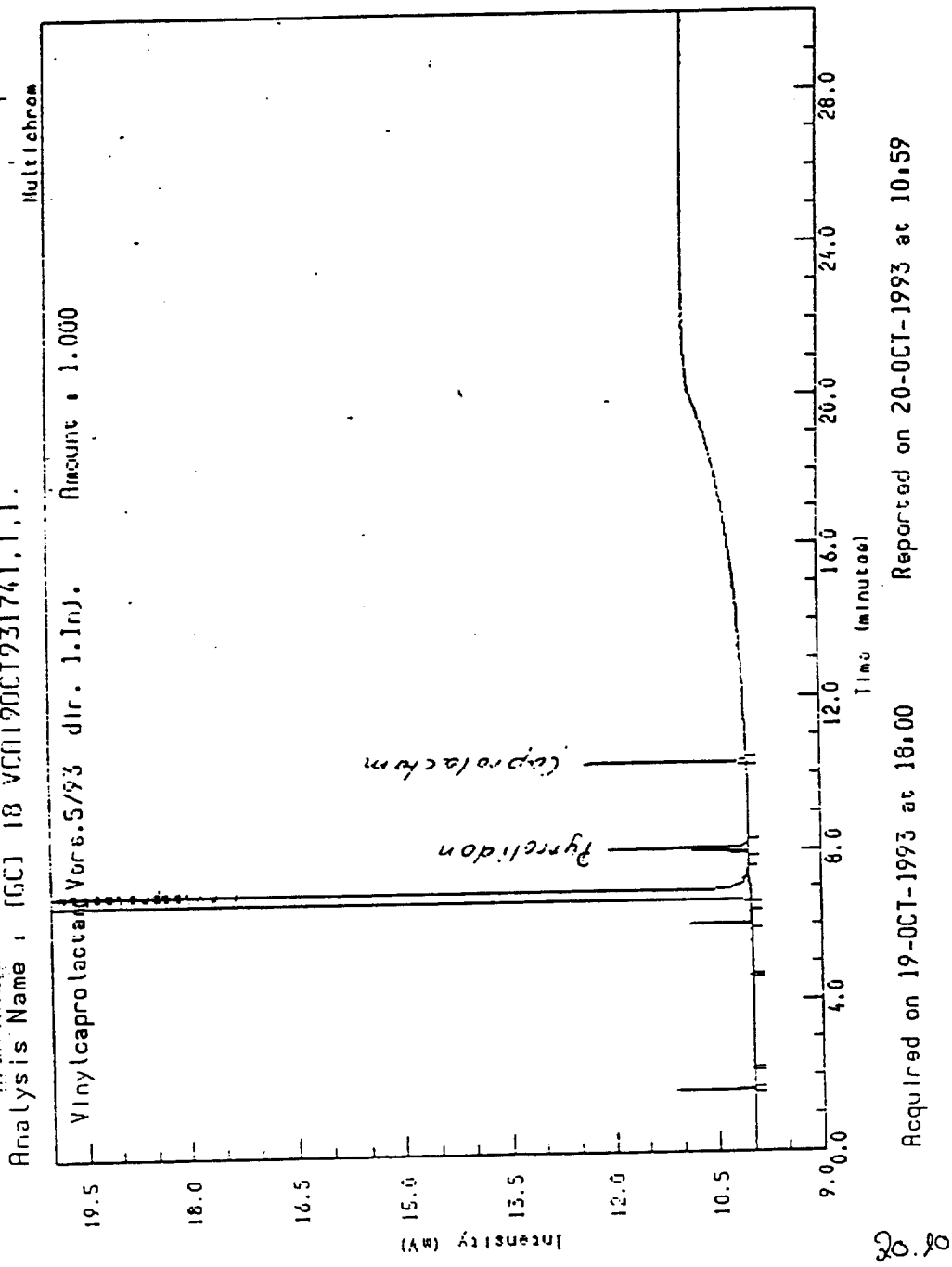
^{1}H-NMR



Analytical Report
- Re-Characterization of "Vinylcaprolactam" after termination of toxicological studies -

Gas chromatogram

0/93/37305



20.10.93

ZAX Analytik

BASF

STATEMENT OF THE QUALITY ASSURANCE UNIT

ZAX-No (analysis) | 0 / 93 / 37305

ZAX is the code of the analytical department of BASF, Ludwigshafen, Germany.
ZAX-No is the ZAX-code of analysed sample(s).

Remark: Since 01. Juli 1993 the former code 'ZSI' is replaced by the new code 'ZAX'.

ZHT-No (substance) (project) | 92 / 44 - 1

Test substance : " Vinylcaprolactam "

Title of report : Analytical Report: Re-Characterization of "Vinylcaprolactam" after termination of toxicological studies

Author / Stud.dir.: HOFFMANN / P. SATTEL

Date of report : 02.Nov.93 (draft)
Date of signature : 04.Nov.93 (draft)

The laboratories and the conduct of analytical studies are inspected in regular intervals. Besides these general inspections we inspected the following items concerning this special study. - Findings are reported to analytical study director and his management.

Inspection of	Date of inspection	Reported to study director and management
Raw data Analytical report (draft)	08.Nov.93	08.Nov.93

Ludwigshafen — Sold (SOLD) — 08.Nov.93 (Date)

BASF Aktiengesellschaft

BASF

Analytik

BASF Aktiengesellschaft · D-6700 Ludwigshafen

Herrn
Dr. Helfert

EDA/EV, G 504

06.05.1993/Ba
ZSZ, E 210
Herr Hoffmann
Tel. 93314
- 0/93/11621 -

D: Dr. Sames
Dr. Klink

Charakterisierung von Vinylcaprolactam, Reindestillat.
- Ihr Auftrag vom 12.03.1993 -

Mit diesem Schreiben erhalten Sie den analytischen Bericht zur Charakterisierung von

Vinylcaprolactam, Reindestillat	
Charge:	Vers. 5/93
Herstelldatum:	12.03.1993
ZST-Nr.:	92/44

für toxikologische und ökotoxikologische Prüfungen.

ZSZ Analytik

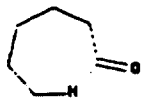
Hoffmann

Anlagen

D.:
H. Jungmann, ZSZ/O, E 210 (GLP-Archiv, Original)
Zentrale Auftragsabwicklung, ZST/E, Z 470

14. Mai 1993

Analytical Report
- Characterization of "Vinylcaprolactam, Reindestillat" -

Test substance:	Vinylcaprolactam, Reindestillat
Chemical structure:	
Batch no.:	Vers. 5/93 from 12.03.1993
ZSZ anal. no.:	0/93/11621
ZST no.:	92/44
Sponsor:	BASF Aktiengesellschaft
Analytical tests ordered by:	Dr. Helfert, EDA/EV, G 504
Receipt of sample:	12.03.1993
Manufacturing date:	12.03.1993
Testing facility:	BASF Aktiengesellschaft, ZSZ Analytik
Study director:	H. Hoffmann, ZSZ/PG, E 210
Study period:	27.03.1993 - 14.04.1993
Storage conditions:	Room temperature
Retention of records:	GLP archives, ZSZ, E 210

Summary of results:

The purity of the test substance is 99,6 area-% determined by gas chromatography with flame ionization detection. Content of water (0,11 g/100 g) has been considered.
Identity was confirmed by ^{1}H-NMR spectroscopy.

BEST COPY AVAILABLE

06.05.1993/Ba
ZSZ, E 210
Herr Hoffmann
Tel. 93314

- 0/93/11621 -

Analytical Report
- Characterization of "Vinylcaprolactam, Reindestillat" -

1. Appearance and homogeneity

On visual inspection at room temperature the test substance is a slightly yellow, crystalline and after melt a homogenous material.

2. Identity

Method:	^{1}H-NMR spectroscopy (400 MHz) as solution in $CDCl_3$.
Result:	The spectrum exhibits the signals expected for the chemical structure of the test substance. See ^{1}H-NMR spectrum page 5.
Date of test:	27.03.1993

3. Determination of water

Method:	Karl-Fischer titration in methanol
Result:	$W(H_2O)$ = 0,11 g/100 g
Date of test:	31.03.1993

4. Determination of polymeric material

Method:	Weigh about 1 g of test substance and add 9 g of methylcyclohexane. After mixing the solution was inspected visual.
Reagents:	Methylcyclohexane (>98 %, BASF no. 4166600)
Result:	The solution was clear. Mass fraction of polymeric material: < 0,02 %

The determination was carried out according to ZSZ anal.no. 0/88/10827.

BEST COPY AVAILABLE

Analytical Report
- Characterization of "Vinylcaprolactam, Reindestillat" -

5. Gas chromatography

Methods:
1. Area-% evaluation for purity control.
2. Standard addition evaluation for the determination of 2-pyrrolidinone and caprolactam.

Apparatus: Capillary gas chromatograph equipped with auto sampler, split injector and flame ionization detector (FID) and adapted to an electronic integrator.

Reagents: 1,4-Dioxane (>99 %, Riedel de Haen no.33147)

2-Pyrrolidinone (>99 %, BASF CAS-no. 616-45-5)

Vinylcaprolactam (>98 %, BASF, ZSZ, E 210)

Caprolactam (>98 %, Merck no. 802800)

Sample preparation:

1. Purity:
a) Direct injection after melt of the sample at about 35 °C.
b) Two solutions were prepared by weighing of about 120 mg of test substance dissolved in 10 ml 1,4-dioxane.

2. By-products: The contents of 2-pyrrolidinone and caprolactam known as possible by-products of the test substance were determined by standard addition. Two samples were prepared by weighing about 115 mg of test substance and dissolved in 10 ml 1,4-dioxane. Sample solution 1 was spiked with 1,4-dioxane solutions of 2-pyrrolidone and caprolactame yielding contents of about 0,1 g/100 g for each component.

Analogously sample 2 was prepared with a

Analytical Report
- Characterization of "Vinylcaprolactam, Reindestillat" -

Chromatographic conditions:

Column:	Fused silica capillary column: DB-Wax length: 30 m internal diameter: 0,32 mm film thickness: 0,25 µm
Temperature:	
Oven :	140 °C - 240 °C at 5 °C/min, hold 10 min at 240 °C
Injector :	250 °C
Detector (FID):	300 °C
Injection volume:	0,02 µl for direct injections 1,0 µl for the other injections
Carrier gas:	Helium (1,0 bar column head pressure) Split: 50 ml/min Septum purge: 6 ml/min

Results:

1. a) and b)	Vinylcaprolactam	99,6	area-%
	2-Pyrrolidinone	0,2	"
	Caprolactam	<0,1	"

No other peaks >0.1 area-% detected.
Content of water has been considered.

2.	2-Pyrrolidinone	0,2	g/100g
	Caprolactam	<0,1	"

See gas chromatogram page 6.

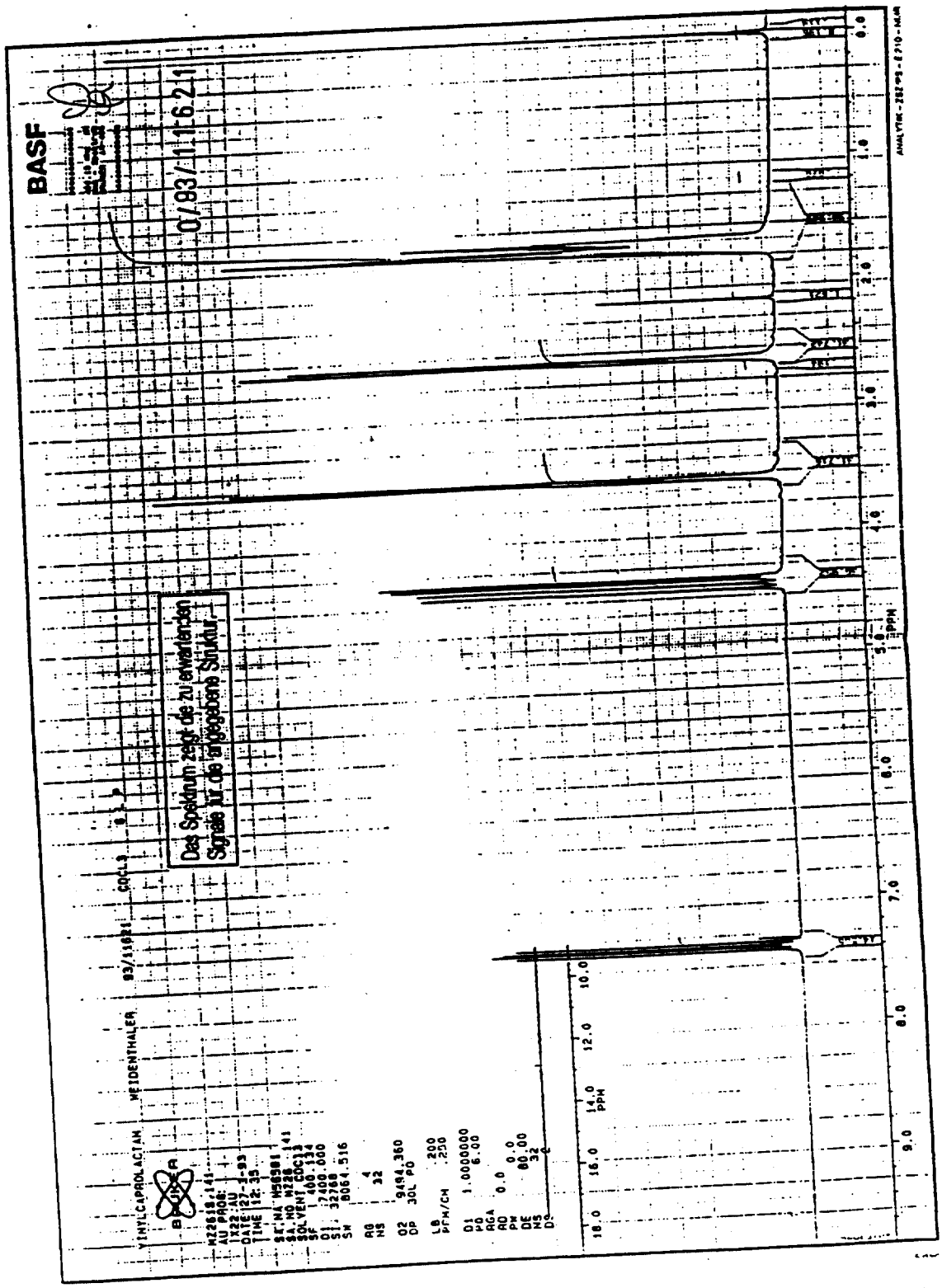
Date of test: 05.04.-07.04.1993

All tests were conducted under GLP-compliance.

Hoffmann ..... 07.05.1993 .....

Analytical Report
- Characterization of "Vinylcaprolactam, Reindestillat" -

^{1}H-NMR



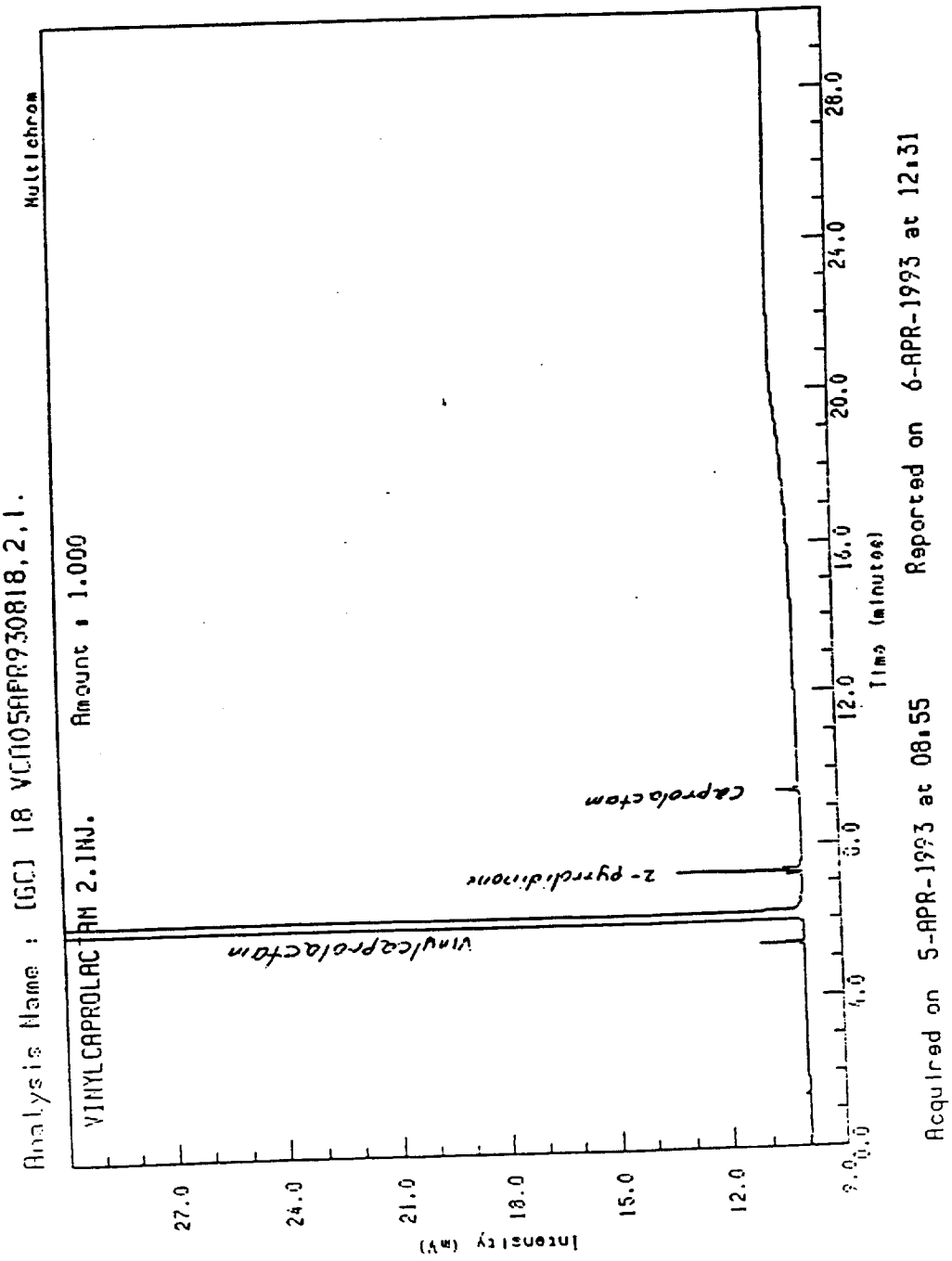
ZSZ Analytik

Group: GC

06.05.1993/Ba
ZSZ, E 210
Herr Hoffmann
Tel. 93314
- 0/93/11621 -

Analytical Report
- Characterization of "Vinylcaprolactam, Reindestillat" -

Gas chromatogram



0/93/11621

ZSZ Analytik

BASF

STATEMENT OF THE QUALITY ASSURANCE UNIT

ZSZ-No (analysis) O/ 93/ 11621

ZSI is the code of the analytical department of BASF, Ludwigshafen, Germany.
ZSI-No is the ZSI-code of analysed sample(s).

ZST-No (substance) 92/ 44
(project)

Test substance : "Vinylcaprolactam, Reindestillat"

Title of report : Analytical Report: Characterization of "Vinylcaprolactam, Reindestillat".

Author / Stud.dir.: HOFFMANN

Date of report : 06.05.93 (dd.mm.yy)
Date of signature : 07.05.93 (dd.mm.yy)

The laboratories and the conduct of analytical studies are inspected in regular intervals. Besides these general inspections we inspected the following items concerning this special study. - Findings are reported to analytical study director and his management.

Inspection of	Date of inspection	Reported to study director and management
Raw data	07.05.93	07.05.93
Analytical report		

Ludwigshafen

L. G. Schnell

Dr.H.W.SCHNELL

07.05.93

(Date: dd.mm.yy)

INHALTSVERZEICHNIS

		Seite
1.	ORGANISATION	1
1.1.	Beteiligte Personen/Verantwortlichkeiten	1
2.	ALLGEMEINES	3
2.1.	Ziel der Untersuchung	3
2.2.	Prüfrichtlinien	3
2.3.	Durchführung der Prüfung	3
2.4.	Aufzubewahrende Labordaten	3
2.5.	Archivierung	3
2.6.	Qualitätssicherung/Gute Laborpraxis	3
2.7.	Labordatenverarbeitung	4
2.8.	Zeitplan	4
3.	MATERIAL UND METHODEN	5
3.1.	Test-Substanz	5
3.2.	Tiere	6
3.2.1.	Tierauswahl	6
3.2.2.	Haltungsbedingungen/Tierraum/Futter/Trinkwasser	6
3.2.3.	Identifizierung der Versuchstiere	7
3.3.	Versuchsdurchführung	8
3.3.1.	Konzentrationswahl und Begründung	8
3.3.2.	Versuchsgruppen	9
3.3.2.1.	Randomisierung	9
3.3.2.2.	Gruppeneinteilung	9
3.3.3.	Exposition	10
3.3.4.	Generation einer Inhalationsatmosphäre (Dampf)	10
3.3.5.	Expositionssysteme	11
3.3.6.	Messung und Protokollierung betriebstechnischer Bedingungen in den Expositionssystemen	11

		Seite
3.3.7.	Analytik der Inhalationsatmosphäre	12
3.3.7.1.	Nominale Konzentration	12
3.3.7.2.	Analytische Bestimmungsmethoden	12
3.4.	Durchzuführende Untersuchungen	13
3.4.1.	Klinik	13
3.4.2.	Augenuntersuchungen	14
3.4.3.	Klinische Chemie und Hämatologie	14
3.4.4.	Harnuntersuchungen	15
3.4.5.	Pathologie	16
4.	LITERATUR	20

BASF
Abteilung Toxikologie
Department of Toxicology

1. ORGANISATION

1.1. Beteiligte Personen/Verantwortlichkeiten

	Name	Unterschrift/ Datum
Versuchsleitung:	Dr. Gamer	Ch. O. Gamer, 8. 2. 93
Augenuntersuchung:	Dr. Kirsch	Kirsch 9.2.1993
Klinische Chemie und Hämatologie:	Dr. Deckardt	Deckardt 09.02.9.
Pathologie:	Dr. Gembardt	10.02.'93
Qualitätssicherung (QAU):	Dr. Fleig	15. 2. 93
Leitung Experimentelle Toxikologie:	Dr. Hildebrand	10.03.93

BASF
Abteilung Toxikologie
Department of Toxicology

Versuchsplan; Projekt-Nr. 50I0044/92053

Auftraggeber: BASF Aktien-gesellschaft

Unterschrift, Datum: 31.04.93
.....
Dr. Druschke,
ED/Q - E 100

2. ALLGEMEINES

2.1. Ziel der Untersuchung

Die Studie soll die Charakterisierung des toxikologischen Wirkprofils und die Abschätzung der toxischen Potenz von N-Vinylcaprolactam, insbesondere im Vergleich zu N-Vinylpyrrolidon, nach subchronischer Exposition gegenüber Dämpfen der Substanz ermöglichen.

2.2. Prüfrichtlinien

Der Versuch wird gemäß den Prüfrichtlinien der OECD (OECD 1981), der EG (EG 1988) und in Anlehnung an die Prüfrichtlinien der EPA durchgeführt.

2.3. Durchführung der Prüfung

Die im folgenden beschriebenen Untersuchungen werden gemäß den SOP der beteiligten Labors durchgeführt.

2.4. Aufzubewahrende Labordaten

Die Protokollierung und Aufbewahrung aller anfallenden Labor- und Meßdaten erfolgt bis zur Fertigstellung des Berichtes in den einzelnen Laborbereichen gemäß der Beschreibung in den jeweiligen SOP's.

2.5. Archivierung

Die Rohdaten, der Versuchsplan und das Original des Berichtes, das Rückstellmuster und das Untersuchungsgut werden in der BASF Aktiengesellschaft mindestens für die durch GLP-Richtlinien vorgeschriebene Dauer archiviert. Das Untersuchungsgut wird nur so lange aufbewahrt, wie die Qualität des Materials eine Auswertung zuläßt.

2.6. Qualitätssicherung/Gute Laborpraxis

Diese Studie wird gemäß den GLP-Grundsätzen des Chemikaliengesetzes (Bundesgesetzblatt 1990, Teil I, 22.03.90, und den OECD-Grundsätzen der Guten Laborpraxis (Paris, 1981)) durchgeführt.

2.7. Labordatenverarbeitung

In der Regel werden alle Berechnungen für die klinischen, hämatologischen und klinisch-chemischen sowie pathologischen Untersuchungen von der Labordatenverarbeitung der Abteilung Toxikologie durchgeführt. Die Berechnung verfahrenstechnischer Parameter erfolgt im Inhalationslabor.

Es werden Mittelwert und Standardabweichung und, wenn erforderlich, zusätzliche statistische Analysen unter der Verwendung geeigneter Methoden durchgeführt. Diese werden ausführlich im endgültigen Bericht beschrieben.

2.8. Zeitplan

männlich	weiblich	Versuchsabschnitt/Untersuchung
10.05.93	10.05.93	Ankunft der Tiere [Alter 45(♂)/42(♀) Tage]
21.05.93	24.05.93	Beginn Vorströmungsperiode
27.05.93	28.05.93	Augenuntersuchung
28.05.93	01.06.93	Beginn AP
17.08.93	18.08.93	Urinuntersuchung
30.08.93	31.08.93	Ende AP
30.08.93	31.08.93	Augenuntersuchung
31.08.93	01.09.93	Blutabnahme**
31.08.93	01.09.93	Tötung*

Voraussichtliche Fertigstellung des englischen Gesamtberichtentwurfes: III/1994

AP = Applikationsperiode

* Vor der Sektion werden die Tiere nicht nüchtern gesetzt.

** Eine Blutuntersuchung wird nur einmal am Ende der Applikationsperiode durchgeführt, um die Irritation der Tiere während der Expositionsperiode zu minimieren.

BASF
Abteilung Toxikologie
Department of Toxicology

3. MATERIAL UND METHODEN

3.1. Test-Substanz

ZST-Substanz-Nr.:	92/44-1
Wissenschaftliche Bezeichnung:	N-Vinylcaprolactam
Werksinterne Bezeichnung:	N-Vinylcaprolactam
Vorgesehene Bezeichnung im Prüfbericht:	Vinylcaprolactam
Laborinterne Abkürzung:	NVC
Chargen-Nr./Lab. J. Nr.:	siehe Versuchsplannachtrag
Herstell-Datum/Abfüll-Datum:	siehe Versuchsplannachtrag
Reinheitsgrad/Gehalt:	siehe Versuchsplannachtrag
Aggregatzustand/ Aussehen:	fest (kristallin-erstarrte Schmelze)/farblos bis gelblich
Stabilität:	Die Stabilität der Prüfsubstanz wird durch Recharakterisierung zu einem Zeitpunkt nach Abschluß der experimentellen Phase der Prüfung überprüft.
Lagerungsbedingungen:	bei Raumtemperatur vor Licht geschützt lagern
Vorsichtsmaßnahmen:	Die allgemein üblichen Vorsichtsmaßnahmen beim Umgang mit Chemikalien sind einzuhalten.

Detaillierte Angaben zur Substanz befinden sich bei den Rohdaten.

Von der Substanz wird ein Rückstellmuster angelegt.

3.2. Tiere

3.2.1. Tierauswahl

Tierart:	Ratte
Stamm/Qualität:	SPF-Wistar/Chbb : THOM
Herkunft:	Dr. K. Thomae GmbH, D-W7950 Biberach
Geschlecht:	männlich / weiblich
Alter bei Lieferung/Vorströmungsbeginn/Expositionsbeginn:	ca. 6 - 7 Wochen/8 Wochen/ 9 Wochen
Gewichtsspanne bei Lieferung:	weibliche Ratten: ca. 140 - 220 g männliche Ratten: ca. 180 - 280 g
Begründung für die Auswahl:	Die Ratte ist das am häufigsten benutzte Labortier, und es liegen mit dieser Spezies weltweite Erfahrungen vor. Ferner wird die Ratte von der OECD als geeignetes Versuchstier vorgeschlagen.

3.2.2. Haltungsbedingungen/Tierraum/Futter/Trinkwasser

Klima:	Zentrale Klimatisierung mit vorgegebenem Temperaturbereich von 20 - 24 °C und vorgegebener relativer Luftfeuchtigkeit von 30 - 70 %. Abweichungen von diesen Vorgaben werden dokumentiert.
Beleuchtungszeit:	06.00 - 18.00 Uhr hell, 18.00 - 06.00 Uhr dunkel
Käfigart:	DK III (Fa. Becker & Co.)
Tierzahl pro Käfig:	Einzelhaltung

BASF
Abteilung Toxikologie
Department of Toxicology

Futterart:	Kliba Labordiät Ratte/Maus/ Hamster Haltungsfutter, Kliba 24-343-4 10 mm Pellets Klingentalmühle AG, CH-4303 Kaiseraugst
Tränkung:	Trinkwasser ad libitum

Futteranalytik:

Das im Versuch verwendete Futter wird auf chemische und mikrobielle Verunreinigungen überprüft. Verunreinigungen, wie sie im kommerziellen Tierfutter vorkommen, dürften das Versuchsergebnis in Anbetracht von Versuchsziel und -dauer nicht beeinflussen.

Trinkwasseranalysen:

Das Trinkwasser wird regelmäßig sowohl von der Stadt Frankenthal als auch von der BASF Aktiengesellschaft, Abteilung Wasserchemie und Technische Dienste, auf chemische Verunreinigungen sowie von einem Kontraktlabor auf mikrobiellen Besatz überprüft. In Anbetracht von Versuchsziel und -dauer werden jedoch keine besonderen Anforderungen an das Wasser gestellt, die über die Spezifikation des Trinkwassers hinausgehen.

3.2.3. Identifizierung der Versuchstiere

Die Ratten werden durch Ohrtätowierung numeriert (vgl. 3.3.2.).

3.3. Versuchsdurchführung

3.3.1. Konzentrationswahl und Begründung

Es werden folgende Konzentrationen eingesetzt:

0; 5,8; 58 und 174 mg/m³* (= 0, 1, 10 und ca. 30 ppm*)

Die Konzentrationswahl orientiert sich an Ergebnissen aus subchronischen Inhalationsstudien mit N-Vinylpyrrolidon (NVP, DFG 1991). Bei 3monatiger Exposition von Sprague-Dawley-Ratten gegenüber Konzentrationen von 120, 45, 15, 5 und 1 ppm NVP kam es zu

- Todesfällen bei 120 ppm
- Nasenschleimhautveränderungen > 5 ppm
- Lebertoxizität bei 5 - 45 ppm.

Eine NOAEC wurde mit 1 ppm erzielt.

In 90-Tage Sondierungs-Studien zur leberschädigenden Wirkung wurden in äquimolarer Dosierung (NVP 100 mg/kg; NVC 130 mg/kg) bei Ratten durch NVP Leberfoci erzeugt, während NVC lediglich zu einer Erhöhung des relativen Lebergewichtes der weiblichen Tiere führte. Bei 260 mg/kg NVC trat bei beiden Geschlechtern eine Erhöhung der Lebergewichte ohne histologisch erkennbare Schädigung auf (Projekt-Nr. 35S0571/85132 und 12C0053/8404). Beide Dosierungen von NVC führten zu einem erhöhten γ-GT-Gehalt im Leberhomogenat weiblicher Tiere, wie er auch bei NVP-Dosierungen ab 40 mg/kg Körpergewicht gefunden wurde. In Inhalationsstudien mit NVP trat ähnliche subchronische Lebertoxizität bei 10 - 20 ppm auf.

Falls N-Vinylcaprolactam per inhalationem eine dem NVP ähnliche Wirkung besitzen sollte, ist in der oberen Konzentration ein toxischer Effekt zu erwarten. Auf jeden Fall wird das toxische Wirkprofil im Bereich der Dampfsättigung abgeklärt.

In der mittleren Konzentration könnten sich noch marginale Effekte, insbesondere am oberen Respirationstrakt und an der Leber, zeigen.

Die niedrige Konzentration müßte eine klare NOAEC darstellen.

---

* maximal technisch erreichbare Konzentration ≈ 90 % der Dampfsättigung
Dampfdruck 20 °C = 0,034 mbar ≙ einer Dampfsättigung von 0,194 mg/l = 34 ppm

3.3.2. Versuchsgruppen

Mit der Tierlieferung werden Ersatztiere mitbestellt, die als Austauschtiere bis zum Beginn des Versuchs (Beginn der Exposition) zur Verfügung stehen. Die Tiere werden zu Adaptationszwecken mit dem Versuchskollektiv vorgeströmt. Eine Überprüfung des Gesundheitszustandes erfolgt bei einem Austausch.

3.3.2.1. Randomisierung

Die männlichen und weiblichen Ratten werden vor der Vorströmung nach Gewicht randomisiert. Es werden gewichtsgleiche Versuchsgruppen erhalten (Randomisationsprogramm WTALOC, Firma Instem).

3.3.2.2. Gruppeneinteilung

Männliche Tiere

Versuchs-gruppe	Farbcode	Konzentration mg/m³	Anzahl der Tiere	Tier-Nr.
0	grau	-	10	1 - 10
1	blau	5,8	10	11 - 20
2	gelb	58	10	21 - 30
3	rot	174*	10	31 - 40

Weibliche Tiere

Versuchs-gruppe	Farbcode	Konzentration mg/m³	Anzahl der Tiere	Tier-Nr.
0	grau	-	10	41 - 50
1	blau	5,8	10	51 - 60
2	gelb	58	10	61 - 70
3	rot	174*	10	71 - 80

In der Pathologie werden die Versuchsgruppennummern unter dem Kennbuchstaben F1 aufgeführt.

3.3.3. Exposition

Expositionsgemisch:	Dampf
Applikationsweg:	Inhalation
Expositionsfrequenz:	arbeitstäglich (5mal pro Woche, Montag bis Freitag, mit Ausnahme von gesetzlichen Feiertagen)
Dauer einer Exposition:	6 Stunden
Anzahl der Expositionen:	65 (Versuchstyp: 90-Tage-Versuch)
Begründung für die Wahl des Applikationsweges:	mögliche Exposition des Menschen

Vor der Expositionsperiode werden die Tiere zur Adaptation an die Expositionsbedingungen an ca. 5 Tagen unter vergleichbaren Strömungsverhältnissen mit Frischluft in Ganzkörper-Inhalationssystemen exponiert.

Während der Exposition wird den Tieren Futter und Trinkwasser entzogen.

3.3.4. Generation einer Inhalationsatmosphäre (Dampf)

Während der Exposition der Tiere wird fortlaufend ein möglichst homogen und konstant zusammengesetztes Expositionsgemisch (Inhalationsatmosphäre: Substanz in Luft) erzeugt.

Die zu prüfende Substanz wird mit Hilfe einer Dosierpumpe in konstanter Menge einem erwärmten Verdampfer zugeführt, die gebildeten Dämpfe mit einem Frischluftstrom vermischt und dem Inhalationssystem zugeleitet.

Detailliertere Angaben werden entsprechend den Ergebnissen von Vorversuchen in einem Versuchsplan-Nachtrag angegeben.

BASF
Abteilung Toxikologie
Department of Toxicology

3.3.5. Expositionssysteme

Folgende Expositionssysteme mit den entsprechenden Betriebsbedingungen werden eingesetzt:

Ganzkörper-Inhalationssystem:

Die Tiere sitzen einzeln in Drahtkäfigen (DK III), die sich in einer Glas-Stahl-Inhalationskammer, V ≈ 1,1 m^3, befinden.

a) Kontrollgruppe 0

Das Saugluftsystem wird gegenüber dem Zuluftstrom geringer eingestellt (Überdruckfahrweise). Hierdurch soll sichergestellt werden, daß an die Kontrolltiere keine Laborluft gelangen kann.

b) Versuchsgruppen 1 - 3

Das Saugluftsystem wird gegenüber dem Zuluftsystem höher eingestellt (Unterdruckfahrweise). Hierdurch soll sichergestellt werden, daß keine Kontamination des Laboratoriums durch etwaige Undichtigkeiten an den Inhalationskammern eintreten kann.

3.3.6. Messung und Protokollierung betriebstechnischer Bedingungen in den Expositionssystemen

Die Luftmengenströme, die Druckverhältnisse in den Kammern, die dortigen relativen Luftfeuchtigkeiten und die Kammertemperaturen werden mit einem Meßwerterfassungssystem kontinuierlich gemessen, auf Grenzen überwacht und zum Teil geregelt. Mit diesem System werden auch die Generatorparameter Temperatur und Druckluft erfaßt.

Prinzip der Meßwerterfassung
(Details sind den Betriebsanweisungen und SOP: LDV 600 - 618; 690; 691 zu entnehmen)

Die einzelnen verfahrenstechnischen Meßwerte werden an den entsprechenden Meßstellen mit geeigneten Meßeinrichtungen (Fühler, Blenden usw.) erfaßt, normiert (0 - 20 bzw. 4 - 20 mA) und Meßschränken zugeführt.

Die gemessenen Größen werden hier - soweit vorgesehen - angezeigt und teilweise als Istwerte zur Regelung des entsprechenden Versuchsparameters herangezogen.

Zusätzlich werden die Meßwerte ca. alle 12 Sekunden abgefragt, Analog / Digital gewandelt, einem PC zugeführt und auf einem Bildschirm dargestellt. Der Rechner überprüft die ankommenden Werte auf vorgegebene Grenzwerte, bildet daraus die Tagesmittelwerte und Standardabweichungen für jeden Parameter und erstellt Tagesprotokolle. Weiterhin wird der Beginn und das Ende der Exposition auf den Tagesprotokollen angegeben.

Bei Störungen, die zu Grenzüberschreitungen führen, erfolgen auf den Tagesprotokollen Störmeldungen, in denen die Art der Störung, die betroffene Meßstelle sowie die Dauer und der Extremwert angegeben werden.

Die Tagesprotokolle gelten als Rohdaten.

Falls Über- oder Unterschreitungen von festgesetzten Grenzwerten länger als 10 Minuten dauern, müssen die 5-Minutenwerte ausgedruckt werden und sind als Rohdaten zu werten.

3.3.7. Analytik der Inhalationsatmosphäre

3.3.7.1. Nominale Konzentration

Die nominale Konzentration in den Inhalationskammern wird aus den dosierten Substanzmengen und den Luftmengen pro Zeiteinheit berechnet.

3.3.7.2. Analytische Bestimmungsmethoden

Zur Bestimmung der analytischen Konzentration in der Inhalationsapparatur werden Absorptionsproben in der Nähe der Atmungszonen der Tiere gezogen.

Die Proben werden gaschromatographisch analysiert.

Probenahmefrequenz: in der Regel stündlich

3.4. Durchzuführende Untersuchungen

3.4.1. Klinik

Tierärztliche Untersuchung:	am Tag der Lieferung
Körpergewichtsentwicklung:	Zu Vorströmungsbeginn, am Versuchstag 0, danach einmal wöchentlich
Futterverzehr; Trinkwasserverbrauch:	Eine Futterverbrauchsbestimmung bzw. Trinkwasserverbrauchsbestimmung wird nicht durchgeführt. Zum einen werden bei der Futterverbrauchsbestimmung mit Pellets keine verläßlichen Werte erhalten, da zum Teil einige Tiere Pellets zernagen, ohne sie zu fressen und damit einen hohen Futterverbrauch vortäuschen. Zum anderen erbringen Futterverbrauchsbestimmung und Trinkwasserverbrauchsbestimmung bei Inhalationsstudien keine Informationen über die aufgenommene Substanzmenge bzw. über Palatabilitätsprobleme, wie es bei Studien nach oraler Gabe der Fall ist.
Allgemeine Beobachtung:	arbeitstäglich, mindestens dreimal an Expositionstagen, mindestens einmal während der Vorströmungs- bzw. am Tötungstag
Überprüfung auf verendete Tiere:	täglich

BASF
Abteilung Toxikologie
Department of Toxicology

3.4.2. Augenuntersuchungen

Vor Beginn der Expositionsperiode werden die Augen aller Tiere und zu Versuchsende die Augen von allen Tieren der Kontrollgruppe und der Versuchsgruppe mit der hohen Konzentration mit einem Ophthalmoskop (1) untersucht.

3.4.3. Klinische Chemie und Hämatologie

Zustand der Tiere: nicht nüchtern

Blutabnahme:

Die Blutabnahme erfolgt in randomisierter Reihenfolge anhand der Tiernummer. Die Liste der Randomisierungsanweisungen wird mit einem Computer durch einen Zufallszahlengenerator erstellt. Die Blutabnahme erfolgt morgens durch Punktieren des retroorbitalen Venenplexus.

Umfang der Untersuchungen:

In den Versuchsgruppen 0 - 3 werden von allen Tieren die im folgenden aufgeführten Parameter untersucht:

1. Hämatologische Untersuchungen
1.1. Leukocyten
1.2. Erythrocyten
1.3. Hämoglobin
1.4. Hämatokrit
1.5. Mittleres korpuskuläres Volumen
1.6. Mittleres korpuskuläres Hämoglobin
1.7. Mittlere korpuskuläre Hämoglobinkonzentration
1.8. Thrombocyten
1.9. Differentialblutbild
1.10. Retikulocyten

2. Gerinnungsuntersuchung
2.1. Hepato Quick-Test

3. Enzyme
3.1. Alanin-Aminotransferase
3.2. Aspartat-Aminotransferase
3.3. Alkalische Phosphatase
3.4. γ-Glutamyltransferase

(1) Heine-Focalux

4. Klinisch-chemische Untersuchungen
4.1. Natrium
4.2. Kalium
4.3. Chlorid
4.4. Anorg. Phosphat
4.5. Calcium
4.6. Harnstoff
4.7. Creatinin
4.8. Glucose
4.9. Gesamtbilirubin
4.10. Gesamteiweiß
4.11. Albumin
4.12. Globuline
4.13. Triglyceride
4.14. Cholesterin
4.15. Magnesium

5. Untersuchungen im Leberhomogenat*
5.1. γ-Glutamyltransferase
5.2. Glutathion-SH

3.4.4. Harnuntersuchungen

Die Harnuntersuchungen werden bei den Versuchsgruppen 0 - 3 durchgeführt.

Am Nachmittag des für die Harngewinnung festgesetzten Tages (siehe 2.8.) werden die Tiere, nach einer Erholungsphase post expositionem mit Angebot von Futter- und Trinkwasser, einzeln in Stoffwechselkäfige umgesetzt (kein Futter und Trinkwasser). Harn wird über Nacht gesammelt. Die folgenden Parameter werden von Einzelharnproben am darauffolgenden Morgen bestimmt:

1. Farbe
2. Trübung
3. Nitrit
4. pH-Wert
5. Eiweiß
6. Glukose
7. Ketone
8. Urobilinogen
9. Bilirubin
10. Blut
11. Volumen
12. spezifisches Gewicht
13. Sediment

* Probengewinnung bei der Sektion

BASF
Abteilung Toxikologie
Department of Toxicology

3.4.5. Pathologie

Die Tötung erfolgt in Nembutal-Narkose durch Entblutung aus der Aorta abdominalis und der Vena cava. Danach werden die Tiere seziert und pathologisch-anatomisch beurteilt. Zwischenzeitlich verendete bzw. moribund getötete Tiere werden möglichst schnell nach Eintritt des Todes seziert und makroskopisch beurteilt.

Von den Tieren, die zum vorgesehenen Termin getötet werden, wird das Gewicht der betäubten Tiere sowie das Gewicht von Leber, Nieren, Nebennieren, Lunge und Hoden bestimmt.

Folgende Organe oder Gewebe werden in 4 %iger Formaldehydlösung fixiert:

1. Gehirn
2. Hypophyse
3. Schilddrüsen
4. Nebenschilddrüsen
5. Kopf
6. Larynx
7. Trachea
8. Thymus
9. Lunge
10. Herz
11. Aorta
12. Speicheldrüsen (1)
13. Leber*
14. Milz
15. Nieren
16. Nebennieren
17. Pankreas
18. Hoden/Ovarien
19. Uterus/Vagina
20. akzessorische Geschlechtsorgane (2)
21. Haut
22. Oesophagus
23. Magen
24. Duodenum
25. Jejunum
26. Ileum
27. Caecum
28. Colon
29. Rectum
30. Harnblase

31. Lymphknoten (3)
32. weibliche Milchdrüse
33. Skelettmuskel
34. Nervus ischiadicus
35. Femur mit Kniegelenk und Mark
36. Augen
37. Sternum mit Mark
38. Rückenmark (4)
39. extraorbitale Tränendrüsen
40. alle makroskopischen Veränderungen
41. Zielorgane

(1) Gl. mandibularis, Gl. sublingualis
(2) Nebenhoden, Prostata, Samenblase
(3) Mediastinallymphknoten, Mesenteriallymphknoten
(4) Hals-, Brust-, Lendenmark

* Die Leber der vorzeitig verendeten bzw. moribund getöteten Tiere wird in Formalin fixiert. Die Leber der am Versuchsende getöteten Tiere wird in Carnoy'schem Gemisch fixiert.

Nach der Fixation erfolgt die histotechnische Aufarbeitung und lichtmikroskopische Untersuchung und Befundung gemäß der nachfolgenden Tabelle:

Organe	Versuchsgruppen (Konzentration)			
	0 (Kontrolle)	1 (5,8 mg/m³)	2 (58 mg/m³)	3 (174 mg/m³)
alle makroskopischen Veränderungen	A2	A2	A2	A2
Gehirn	A1			A1
Hypophyse	A1			A1
Schilddrüsen/Nebenschilddrüsen	A1			A1
Thymus	A1			A1
Nasenhöhle, Ebene I, II, III, IV	A1	A1	A1	A1
Larynx	A1	A1	A1	A1
Trachea längs, mit Bifurkation	A1			A1
Lunge	A1	A1	A1	A1
Herz	A1			A1
Aorta	A1			A1
Speicheldrüsen (Gl. mandibularis, Gl. sublingualis)	A1			A1
Leber	A1	A1	A1	A1
Milz	A1			A1
Nieren	A1			A1
Nebennieren	A1			A1
Pankreas	A1			A1
Hoden/Ovarien	A1			A1
Uterus	A1			A1

Versuchsplan; Projekt-Nr. 50I0044/92053

Organe	Versuchsgruppen (Konzentration)			
	0 (Kontrolle)	1 (5,8 mg/m³)	2 (58 mg/m³)	3 (174 mg/m³)
Oesophagus	A1			A1
Magen	A1			A1
Duodenum, Jejunum, Ileum	A1			A1
Caecum, Colon, Rectum	A1			A1
Harnblase	A1			A1
Mediastinallymph-knoten/Mesenterial-lymphknoten	A1			A1
Nervus ischiadicus	A1			A1
Sternum mit Mark	A1			A1
Knochenmark (Femur)	A1			A1
Zielorgane	A1	A1	A1	A1

METHODEN:

A [a] = Haematoxylin-Eosin

UNTERSUCHUNGSUMFANG:

1 = alle Tiere pro Gruppe
2 = alle betroffenen Tiere pro Gruppe

Von den Tieren, die vorzeitig verenden oder die vorzeitig getötet werden müssen, werden alle aufgeführten Organe untersucht.

Weitere Untersuchungen bzw. Untersuchungsverfahren richten sich nach den anfallenden Versuchsergebnissen.

BASF
Abteilung Toxikologie
Department of Toxicology

4. LITERATUR

- DFG Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe, MAK-Begründung für NVP, 1991

- Environmental Protection Agency (EPA), Health Effects Testing Guidelines, Subpart C - Subchronic exposure -Inhalation Toxicity, 40CFR § 798.2450 unter Berücksichtigung der EPA-SEP (Standard Evaluation Procedure) Inhalation Toxicity Testing, PB 89-100366, August 1988

- EG-Richtlinie der Kommission 87/302/EEC, "Sub-Chronic Inhalation Toxicity Study", Amtsblatt der Europäischen Gemeinschaft L133, 30.05.88

- Organisation für wirtschaftliche Zusammenarbeit und Entwicklung (OECD), OECD-Richtlinien für die Prüfung von Chemikalien, Abschnitt 4, Methode 413 "Subchronic Inhalation Toxicity: 90-day Study", verabschiedet am 12.05.81