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PULMONARY EFFECTS OF VINYL CHLORIDE. COOPERATIVE STUDY NO. 3

WITH THE MT. SINAI SCHOOL OF MEDICINE, NEW YORK, NEW YORK

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H. O. Yake1 June 5, 1980

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REVIEWER'S SIGNATURE

M. J. McKenna 5 June '80

M. J. McKenna

This
report
is:

☐ INTERIM

☒ FINAL

and mainly:

☒ NEW

☐ REVI

DESCRIPTIVE SUMMARY
WITH CONCLUSIONS:

This study was conducted in cooperation with Dr. Yasunosuke Suzuki, Research Professor of Community Medicine, Mt. Sinai School of Medicine, New York, NY. The study design was recommended by Dr. Suzuki after consultation with Dr. Michael J. McKenna of the Toxicology Research Laboratory and Dr. William Wagner of NIOSH. This report is limited to the methodology used and results obtained during the exposure portion of this study.

See Pursuant

100-337

Case No. 84-01 (293 J.H.)
Western District of New York

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PULMONARY EFFECTS OF VINYL CHLORIDE
COOPERATIVE STUDY NO. 3
WITH THE MT. SINAI SCHOOL OF MEDICINE, NEW YORK, NY

By

H. O. Yake1 and M. J. McKenna

Exhibit A, Defendant's Material Produced Pursuant
to Protective Order No. 1337
in
S. 111 v. Dow Chemical Company
Case No. 84-1000 (SDNY)
Western District of New York

Toxicology Research Laboratory
Health and Environmental Sciences, USA
Dow Chemical USA
1803 Building
Midland, Michigan 48640

INTRODUCTION

This study is a continuation of the work on "Pulmonary Effects of Vinyl Chloride" conducted in cooperation with Dr. Yasunosuke Suzuki, Research Professor of Community Medicine, Mt. Sinai School of Medicine, New York, NY. The first cooperative study was completed and is the subject of Toxicology Research Laboratory report HET-K-1711-(27) issued July 17, 1979 entitled "30-Day Inhalation Study of Vinyl Chloride in Mice and Hamsters".

Since all animals in this study were shipped live by air freight to the Mt. Sinai School of Medicine upon termination of exposures, this report is limited to the methodology used and results obtained during the exposure portion of this study.

METHOD

Test Material

The vinyl chloride was supplied by the Dow Chemical Company and was determined to be 99.9% pure by gas chromatography.

Test Animals

The animals used in this study were male CD-1 mice, 5-6 weeks old (Charles River Laboratories, Portage, MI). All animals were randomized from a single lot using a statistical randomization procedure generated by a digital computer program. The mice were individually identified with a metal ear tag and acclimated to the laboratory environment for approximately two weeks before starting exposures. Body weights were taken on all mice on experiment days 0, 4, 11, 18 and 25, and analyzed by analysis of variance and Dunnett's test. All animals were observed daily for signs of toxicity as well as changes in appearance and demeanor.

Exposure Regimen

Two groups of animals, each consisting of 30 male mice, were exposed to 0 (control), and 300 ppm vinyl chloride. One group of 40 male mice was exposed to 600 ppm vinyl chloride. The control animals were maintained in an exposure chamber under identical conditions as the treatment groups except for the absence of vinyl chloride in the chamber.

Exposures were 6 hours per day, 5 days per week for a total of 22 exposures in 30 days.

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The chambers used for this study were stainless steel and glass Rochester-type, approximately one cubic meter in volume. The chambers were operated under dynamic airflow conditions with temperature and humidity controlled to approximately 70°F and 50% RH. Vinyl chloride gas was metered at a controlled rate into the airstream where it was further diluted to the desired concentration.

RESULTS

The mean values of body weights for the exposed mice (Table 1) showed no statistically significant difference from the mean values of body weights for the control mice. Daily observations of the animals revealed no adverse effects other than two mice in the 600 ppm group that appeared to develop a rough appearing fur coat one week after starting exposures. Even this effect was not observed in one of the mice one week later and was barely noticeable in the other for the remainder of the study.

The concentration of vinyl chloride in each chamber was analyzed a minimum of ten times daily and a mean analytical concentration for each exposure chamber was calculated (Table 2).

On the day following the last exposure, all the mice were delivered by air freight to Dr. Suzuki. It was confirmed by a telephone conversation with Dr. Suzuki that the mice had arrived in his laboratory in good condition approximately 48 hours after leaving Midland.

Written by:

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Senior Research Biologist
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Reviewed by:

M. J. McKenna 5 June '88
M. J. McKenna, Ph.D.
Group Leader

Group Leader
Inhalation Toxicology
Case No. 90-4337
New York Company
New York City
New York District of New York

TABLE 1

VINYL CHLORIDE HET-K-1711-(31)

MEAN $\pm$ SD BODY WEIGHTS (GRAMS) FOR MALE MICE

<u>Experiment Day</u>	<u>Low Level</u>	<u>High Level</u>	<u>Control</u>
0	36.4 $\pm$ 1.7	36.0 $\pm$ 1.7	36.0 $\pm$ 1.9
4	35.6 $\pm$ 1.7	35.1 $\pm$ 2.3	35.4 $\pm$ 2.1
11	35.8 $\pm$ 1.7	35.7 $\pm$ 2.3	35.5 $\pm$ 2.2
18	37.4 $\pm$ 2.0	37.4 $\pm$ 2.4	37.0 $\pm$ 2.6
25	37.6 $\pm$ 2.4	37.2 $\pm$ 2.3	36.8 $\pm$ 2.5

There were no statistically significant deviations from control using Dunnett's test, $p < 0.05$.

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TABLE 2

VINYL CHLORIDE HET-K-1711-(31)

ANALYTICAL CONCENTRATIONS - TWA

<u>Exposure Day</u>	<u>Date</u>	<u>Experiment Day</u>	<u>Low Level (ppm)</u>	<u>High Level (ppm)</u>
1	2-20-80	1	296.2	617.0
2	2-21-80	2	308.5	610.8
3	2-22-80	3	298.7	606.0
4	2-25-80	6	297.8	608.2
5	2-26-80	7	293.2	604.3
6	2-27-80	8	300.7	594.7
7	2-28-80	9	294.0	594.5
8	2-29-80	10	296.0	614.7
9	3- 3-80	13	284.5	589.2
10	3- 4-80	14	295.2	607.0
11	3- 5-80	15	293.8	611.6
12	3- 6-80	16	291.8	600.4
13	3- 7-80	17	297.8	609.5
14	3-10-80	20	292.5	593.6
15	3-11-80	21	303.8	605.5
16	3-12-80	22	310.6	602.1
17	3-13-80	23	299.4	603.1
18	3-14-80	24	316.7	602.0
19	3-17-80	27	319.4	595.6
20	3-18-80	28	322.4	635.2
21	3-19-80	29	305.7	599.8
22	3-20-80	30	308.5	590.1

Mean $\pm$ SD 301.2 $\pm$ 9.7 604.3 $\pm$ 10.3

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WELFARE

TITLE OF STUDY: Vinyl Chloride- Cooperative Study No. 3

In compliance with Good Laboratory Practice Regulations, this study was inspected by the Quality Assurance Unit and the results of these inspections reported to Management and the Study Director on the dates listed below.

The report accurately reflects the data generated in accordance with the regulations and standard operating procedures of the Laboratory. All data and the reports are located at the submitting laboratory.

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Date Recd. 5 June 1980
Western District of New York

Study Started: 2 Feb. 80

Report Issued Date: 5 June 80

Dates of Inspection: 1 Feb. 80

Date of Report: 1 Feb. 80

4 June 80

4 June 80

W. E. Hoover 5 June 80
W. E. Hoover (Date)
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